

### Vishey Lead-Free Family Summary Sheet-Capacitor Components

| Product Description      |   |                 | Pb Free "2nd-Level Interconnect" Status           |                                 |                              |                            |              |                       | Soldering  |  |                            |  | RoHS Status            |  |                           |                                  | China Pollution Act Information (SJ/T11363-2006) |                               |              |                                    |                                      |  |   |  | PCN-Status                                       |  |                                       |                                  |           |
|--------------------------|---|-----------------|---|---------------------------------|------------------------------|----------------------------|--------------|-----------------------|--|--|----------------------------|--|------------------------|--|---------------------------|----------------------------------|--|-------------------------------|--------------|------------------------------------|--------------------------------------|--|---|--|--|--|---------------------------------------|----------------------------------|-----------|
| Technology/ Product Line | Product Family  | Vishey Division | Pb-free Qual. Complete and Report Available (QTY) | Pb-free Samples available (QTY) | Pb-free Massproduction (QTY) | Termination Finish         | Underlayer   | Lead or Base material | How to Order-Web (Lead Free)   | Tin Lead (SnPb) Product/termination available after Conversion | Moisture Sensitivity Level | IPC/JEDEC J-STD-020C compliant (Temp. Peak T <sub>p</sub> in °C/Time Peak t <sub>p</sub> in sec./Cycles) | Backward Compatibility | RoHS Qual. Complete and Report Available (QTY) | RoHS Compl. Samples (QTY) | RoHS-Compl. Massproduction (QTY) | Exemptions Used                                  | China ROHS Compliant (YES/NO) | EPUP (YEARS) | Location of Hazardous Substance(s) | Pb                                   | Hg   | Cd  | Cr(VI)   | PBB  | PBDE   | Product Change Notification No./ Ref# | Product Change Notification Date |           |
|                          |   |                 |   |                                 |                              |                            |              |                       |  |  |                            |  |                        |  |                           |                                  |  |                               |              |                                    | X for C>MCV 0.1 wt% (SJ/T11363-2006) | X for C>MCV 0 for C-MCV 0.1 wt% (SJ/T11363-2006) | X for C>MCV 0 for C-MCV 0.01 wt% (SJ/T11363-2006) | X for C>MCV 0 for C-MCV 0.1 wt% (SJ/T11363-2006) | X for C>MCV 0 for C-MCV 0.1 wt% (SJ/T11363-2006) | X for C>MCV 0 for C-MCV 0.1 wt% (SJ/T11363-2006) |                                       |                                  |           |
| Aluminum/Electrolytic    |   |                 |   |                                 |                              |                            |              |                       |  |  |                            |  |                        |  |                           |                                  |  |                               |              |                                    |                                      |  |   |  |  |  |                                       |                                  |           |
| ALU ROE                  | Radial EKA, EKB,EKE ("K"), EK, EKX, EK1, EK2, EKO, EKOU, EKS, EKXU,EKV,EKX  | RO              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu           | Fe                    | Standard Part Number   | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | TBD                              | Oct 04    |
| ALU ROE                  | Radial EKC, EKE ("E")   | RO              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu           | Fe                    | 14th digit: "E" -> "F"   | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | TBD                              | Oct 04    |
| ALU ROE                  | Snap-In EYN, EYH  | RO              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu           | Fe                    | Standard Part Number   | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | TBD                              | Oct 04    |
| ALU ROE                  | SMD Vertical ECA, ECB, ECV NOT Lead Free Solderable   | RO              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu           | Fe                    | Order ECA, ECB, ECV -"RK" for Lead Free Solderable 13th&14th: "0K" -> "RK"   | NO   | 1                          | 225/10/2   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | NA                               | NA        |
| ALU ROE                  | SMD Vertical ECA, ECB, ECV dia 5 - 6.3 mm Lead Free Solderable  | RO              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu           | Fe                    | New Part Number ECA, ECB, ECV 13th&14th: "RK"  | NO   | 1                          | 250/10/2   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | NA                               | NA        |
| ALU ROE                  | SMD Vertical ECA, ECB, ECV dia 8 - 10 mm Lead Free Solderable   | RO              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu           | Fe                    | New Part Number ECA, ECB, ECV 13th&14th: "RK"  | NO   | 1                          | 250/5/2  | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | NA                               | NA        |
| ALU ROE                  | Axial ELM/ EBM/ EGM, EL/ EB/ EG, EBU/ EBT, EBR, EBL/ EGL  | RO              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu6S n5      | Cu                    | 14th digit: "B" -> "C" 14th digit: "V" -> "W"  | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | HPC-55-04010                     | 7/12/2004 |
| ALU ROE                  | Mounting Ring EGM, EG, EGL  | RO              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu6S n5 / Cu | Fe                    | 14th digit: "B" -> "C" 14th digit: "V" -> "W"  | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | HPC-55-04010                     | 7/12/2004 |
| ALU ROE                  | DIN-PW+SL EYD, EYK, EYV, EYZ, EY  | RO              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu6S n5 / Cu | Fe                    | 14th digit: "V" -> "W"   | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | HPC-55-04010                     | 7/12/2004 |
| ALU BCC                  | ST 2222 101_ /102_ /103_ /104..._ 106   | BC              | ✓   | ✓                               | ✓                            | NA                         | NA           | NA                    | Standard Part Number   | NO   | NA                         | NA   | NA                     | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | HPC-55-04010                     | 7/12/2004 |
| ALU BCC                  | Clamps for ST series 4322 043 03331 (dia 40) 4322 043 04281 (dia 50) 4322 043 04291 (dia 65) 4322 043 23321 (dia 76) NOT RoHS compliant | BC              | ✓   | ✓                               | ✓                            | Cr(VI) passivation         | Zn           | Fe                    | Order New Part Numbers 4322 043 24041 (dia 40) 4322 043 24051 (dia 50) 4322 043 24061 (dia 65) 4322 043 23322 (dia 76) for RoHS compliant versions | NO   | NA                         | NA   | NA                     | NO   | NO                        | NO                               | None   | NO                            | 50           | anti-rust coating                  | O                                    | O  | O   | O  | X  | O  | O                                     |                                  |           |
| ALU BCC                  | Clamps for ST series 4322 043 24041 (dia 40) 4322 043 24051 (dia 50) 4322 043 24061 (dia 65) RoHS compliant                             | BC              | ✓   | ✓                               | ✓                            | RoHS compliant passivation | Zn           | Fe                    | New Part Numbers 4322 043 24041 (dia 40) 4322 043 24051 (dia 50) 4322 043 24061 (dia 65)   | NO   | NA                         | NA   | NA                     | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     |                                  |           |
| ALU BCC                  | Clamps for ST series 4322 043 23322 (dia 76) RoHS compliant   | BC              | ✓   | ✓                               | ✓                            | NA                         | NA           | Stainless Steel       | New Part Number 4322 032 23322 (dia 76)  | NO   | NA                         | NA   | NA                     | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     |                                  |           |
| ALU BCC                  | Axial 2222 021 xxxxx series excl 2222 021 16472 excl 2222 021 27102   | BC              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu6S n5      | Cu                    | Standard Part Number-Remark"Lead Free"   | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | HPC-55-04010                     | 7/12/2004 |
| ALU BCC                  | Axial PNs 2222 021 16472 2222 021 27102 Lead Containing   | BC              | NO  | NO                              | NO                           | Sn95Pb5                    | none         | Cu                    | Order New Part Numbers 2222 021 90062 2222 021 90064 for Lead Free versions  | NO   | NA                         | NA   | ✓                      | NO   | NO                        | NO                               | None   | NO                            | 50           | solder coating                     | X                                    | O  | O   | O  | O  | O  | O                                     |                                  |           |
| ALU BCC                  | Axial PNs 2222 021 90062 2222 021 90064 Lead Free   | BC              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu6S n5      | Cu                    | New Part Numbers 2222 021 90062 2222 021 90064   | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     |                                  |           |
| ALU BCC                  | Axial 2222 118 xxxxx series excl 2222 118 25102   | BC              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu6S n5      | Cu                    | Standard Part Number-Remark"Lead Free"   | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | HPC-55-04010                     | 7/12/2004 |
| ALU BCC                  | Axial PNs 2222 118 25102 Lead Containing  | BC              | NO  | NO                              | NO                           | Sn95Pb5                    | none         | Cu                    | Order New Part Number 2222 118 90039 for Lead Free version   | NO   | NA                         | NA   | ✓                      | NO   | NO                        | NO                               | None   | NO                            | 50           | solder coating                     | X                                    | O  | O   | O  | O  | O  | O                                     |                                  |           |
| ALU BCC                  | Axial PNs 2222 118 90039 Lead Free  | BC              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu6S n5      | Cu                    | New Part Number 2222 118 90039   | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     |                                  |           |
| ALU BCC                  | Axial 2222 119 xxxxx series excl 2222 119 14102   | BC              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu6S n5      | Cu                    | Standard Part Number-Remark"Lead Free"   | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | HPC-55-04010                     | 7/12/2004 |
| ALU BCC                  | Axial PNs 2222 119 14102 Lead Containing  | BC              | NO  | NO                              | NO                           | Sn95Pb5                    | none         | Cu                    | Order New Part Number 2222 119 90032 for Lead Free version   | NO   | NA                         | NA   | ✓                      | NO   | NO                        | NO                               | None   | NO                            | 50           | solder coating                     | X                                    | O  | O   | O  | O  | O  | O                                     |                                  |           |
| ALU BCC                  | Axial PNs 2222 119 90032 Lead Free  | BC              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu6S n5      | Cu                    | New Part Number 2222 119 90032   | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     |                                  |           |
| ALU BCC                  | Axial 2222 022_ /023_ /024_ /025_ /026_ / 027_ / 030_ /031_ /041_ /042_ /043_ /117_ /120_ /132_ /133_ /138...                           | BC              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu6S n5      | Cu                    | Standard Part Number-Remark"Lead Free"   | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | HPC-55-04010                     | 7/12/2004 |
| ALU BCC                  | Mounting Ring 2222 021_ /022_ / 023_ /024_ /025_ /026_ / 027_ / 041_ /042_ /043_ / 118_ /119_ /120_ /132_ /133_ /138...                 | BC              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu6S n5 / Cu | Fe                    | Standard Part Number-Remark"Lead Free"   | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | HPC-55-04010                     | 7/12/2004 |
| ALU BCC                  | Radial 2222 013_ /036_ / 045_ /046_ /047_ /048_ / 116_ /135_ /136_ / 140_ /148_ /150_ /151_ /152_ /165...                               | BC              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu           | Fe                    | Standard Part Number-Remark"Lead Free"   | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | HPC-55-04010                     | 7/12/2004 |
| ALU BCC                  | Radial 2222 037 >9mm diameter, 2222 038 all diameters, 2222 044 all diameters, 2222 134 >3.5 mm diameter                                | BC              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu           | Fe                    | Standard Part Number-Remark"Lead Free"   | NO   | NA                         | NA   | ✓                      | ✓  | ✓                         | ✓                                | None   | YES                           | NA           |                                    | O                                    | O  | O   | O  | O  | O  | O                                     | HPC-55-04010                     | 7/12/2004 |

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| Product Description      |  | Pb Free "2nd-Level Interconnect" Status |   |                                 |                              |   |             |                       | Soldering   |   |                            |   | RoHS Status            |  |                          |                                 | China Pollution Act Information (SJ/T11363-2006) |                               |              |                                    |  |  |   |  | PCN-Status  |  |                                       |                                  |
|--------------------------|--|---|---|---------------------------------|------------------------------|---|-------------|-----------------------|---|---|----------------------------|---|------------------------|--|--------------------------|---------------------------------|--|-------------------------------|--------------|------------------------------------|--|--|---|--|---|--|---------------------------------------|----------------------------------|
| Technology/ Product Line | Product Family   | Vishey Division                         | Pb-free Qual. Complete and Report Available (QTY) | Pb-free Samples available (QTY) | Pb-free Massproduction (QTY) | Termination Finish                          | Underlayer  | Lead or Base material | How to Order-Web (Lead Free)  | Tin Lead (SnPb) Products/termination available after Conversion | Moisture Sensitivity Level | IPC/JEDEC J-STD-020/02C compliant (Temp. Peak T <sub>p</sub> in °C Time Peak t <sub>p</sub> in sec./Cycles) | Backward Compatibility | RoHS Qual. Complete and Report Available (QTY) | RoHS-Compl Samples (QTY) | RoHS-Compl Massproduction (QTY) | Exemptions Used                                  | China ROHS Compliant (YES/NO) | EPUP (YEARS) | Location of Hazardous Substance(s) | Pb<br>X for C>MCV<br>O for C=MCV<br>0,1 wt% (SJ/T11363-2006) | Hg<br>X for C>MCV<br>O for C=MCV<br>0,1 wt% (SJ/T11363-2006) | Cd<br>X for C>MCV<br>O for C=MCV<br>0,01 wt% (SJ/T11363-2006) | Cr(VI)<br>X for C>MCV<br>O for C=MCV<br>0,1 wt% (SJ/T11363-2006) | PBB<br>X for C>MCV<br>O for C=MCV<br>0,1 wt% (SJ/T11363-2006) | PBDE<br>X for C>MCV<br>O for C=MCV<br>0,1 wt% (SJ/T11363-2006) | Product Change Notification No./ Ref# | Product Change Notification Date |
| ALU BCC                  | Radial 2222 134 < 4 mm diameter  | BC                                      | NO  | NO                              | NO                           | Sn95Pb5                                     | Cu          | Fe                    | Order 2222 134 devices with >3.5 mm diameter for Lead Free versions   | YES   | NA                         | NA  | ✓                      | NO   | NO                       | NO                              | None   | NO                            | 50           | solder coating                     | X  | O  | O   | O  | O   | O  |                                       |                                  |
| ALU BCC                  | Radial 2222 037 <9 mm diameter, 097  | BC                                      | ✓   | ✓                               | ✓                            | Sn / SnBi3                                  | Cu          | Fe                    | Standard Part Number-Remark"Lead Free"  | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | HPC-55-04010                          | 7/12/2004                        |
| ALU BCC                  | Snap-In + DIN-PW + SL 2222 050./051./052./053./056./057./058./059./100./156./157./158./159./162./163./193./198..                                       | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | Cu6Sn5 / Cu | Fe                    | Standard Part Number-Remark"Lead Free"  | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | HPC-55-04010                          | 7/12/2004                        |
| ALU BCC                  | Snap-In 2222 093./094./197./199..  | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | Cu6Sn5 / Cu | Fe                    | Standard Part Number  | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | HPC-55-04010                          | LF since intro                   |
| ALU BCC                  | Snap-In 2222 096   | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | Cu6Sn5 / Cu | Fe                    | Standard Part Number  | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | HPC-55-04010                          | LF since intro                   |
| ALU BCC                  | Clamps for SL series<br>4322 043 03301 (dia 25)<br>4322 043 03311 (dia 30)<br>4322 043 04272 (dia 35)<br>4322 043 03331 (dia 40)<br>NOT RoHS compliant | BC                                      | ✓   | ✓                               | ✓                            | Cr(VI) passivation                          | Zn          | Fe                    | Order New Part Numbers<br>4322 043 24011 (dia 25)<br>4322 043 24021 (dia 30)<br>4322 043 24031 (dia 35)<br>4322 043 24041 (dia 40)<br>for RoHS compliant versions | NO  | NA                         | NA  | NA                     | NO   | NO                       | NO                              | None   | NO                            | 50           | anti-rust coating                  | O  | O  | O   | X  | O   | O  |                                       |                                  |
| ALU BCC                  | Clamps for SL series<br>4322 043 24011 (dia 25)<br>4322 043 24021 (dia 30)<br>4322 043 24031 (dia 35)<br>4322 043 24041 (dia 40)<br>RoHS compliant     | BC                                      | ✓   | ✓                               | ✓                            | RoHS compliant passivation                  | Zn          | Fe                    | New Part Numbers<br>4322 043 24011 (dia 25)<br>4322 043 24021 (dia 30)<br>4322 043 24031 (dia 35)<br>4322 043 24041 (dia 40)                                      | NO  | NA                         | NA  | NA                     | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  |                                       |                                  |
| ALU BCC                  | SMD Horizontal 2222 085./139..<br>NOT Lead Free Solderable   | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | Cu6Sn5      | Cu                    | Standard Part Number  | NO  | 1                          | 225/10/2  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | HPC-55-04010                          | 7/12/2004                        |
| ALU BCC                  | SMD Vertical 2222 048./140./150./165.. 95xyz and 2222 153 6wxyz sizes 1012 and 1014 Existing series;<br>NOT Lead Free Solderable                       | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | Cu          | Fe                    | Order 2222 048./140./150./165.. 97xyz 2222 153 7wxyz size(1012/1014) for Lead Free Solderable   | NO  | 1                          | 225/10/2  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | HPC-55-04010                          | 7/12/2004                        |
| ALU BCC                  | SMD Vertical 2222 048./140./150./165.. 97xyz and 2222 153 7wxyz sizes 1012 and 1014 New series; Lead Free Solderable.                                  | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | Cu          | Fe                    | New Part Number<br>2222 048./140./150./165.. 97xyz<br>2222 153 7wxyz size(1012/1014)  | NO  | 1                          | 240/10/2  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | HPC-55-04010                          | 7/12/2004                        |
| ALU BCC                  | SMD Vertical 2222 136 95x0z Existing series;<br>NOT Lead Free Solderable   | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | Cu          | Fe                    | Order 2222 136 97x0z for Lead Free Solderable   | NO  | 1                          | 225/10/2  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | HPC-55-04010                          | 7/12/2004                        |
| ALU BCC                  | SMD Vertical 2222 136 97x0z New series;<br>Lead Free Solderable.   | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | Cu          | Fe                    | New Part Number<br>2222 136 97x0z   | NO  | 1                          | 240/10/2  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | HPC-55-04010                          | 7/12/2004                        |
| ALU BCC                  | SMD Vertical 2222 153 6wxyz size <= 1010 Existing series;<br>NOT Lead free Solderable.   | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | Cu          | Fe                    | Order 2222 153 7wxyz size(<=1010) for Lead Free Solderable  | NO  | 1                          | 225/10/2  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | HPC-55-04010                          | 7/12/2004                        |
| ALU BCC                  | SMD Vertical 2222 153 7wxyz size <= 0605 New series;<br>Lead free Solderable.  | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | Cu          | Fe                    | New Part Number<br>2222 153 7wxyz size(<=1010)  | NO  | 1                          | 250/10/2  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | HPC-55-04010                          | 7/12/2004                        |
| ALU BCC                  | SMD Vertical 2222 153 7wxyz sizes 0807,0810,1010 New series;<br>Lead free Solderable.  | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | Cu          | Fe                    | New Part Number<br>2222 153 7wxyz size(<=1010)  | NO  | 1                          | 240/10/2  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | HPC-55-04010                          | 7/12/2004                        |
| ALU BCC                  | SAL Axial 2222 123 vwxyz Lead Containing   | BC                                      | NO  | NO                              | NO                           | Sn/Pb                                       | none        | Cu                    | Order 2281 123 vwxyz for Lead Free version  | YES   | NA                         | NA  | ✓                      | NO   | NO                       | NO                              | None   | NO                            | 50           | solder coating                     | X  | O  | O   | O  | O   | O  | PCN-AC-002-2005 rev 4                 | 10/ 31 / 2005                    |
| ALU BCC                  | SAL Axial 2281 123 vwxyz Lead Free   | BC                                      | ✓   | ✓                               | ✓                            | Anode:100% Sn Ho Dip Cathode: 100% Sn matte | Cu6Sn5      | Cu                    | New Part Number<br>Order 2281 123 vwxyz   | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | PCN-AC-002-2005 rev 4                 | 10/ 31 / 2005                    |
| ALU BCC                  | SAL Radial 2222 128 vwxyz Lead Containing  | BC                                      | NO  | NO                              | NO                           | SnPb  | none        | Cu                    | Order 2281 128 vwxyz for Lead Free version  | NO  | NA                         | NA  | ✓                      | NO   | NO                       | NO                              | None   | NO                            | 50           | solder coating + solder inside     | X  | O  | O   | O  | O   | O  | PCN-AC-002-2005 rev 4                 | 10/ 31 / 2005                    |
| ALU BCC                  | SAL Radial 2281 128 vwxyz Lead Free  | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | Cu6Sn5      | Cu                    | New Part Number<br>Order 2281 128 vwxyz   | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | PCN-AC-002-2005 rev 4                 | 10/ 31 / 2005                    |
| ALU BCC                  | SMD Vertical 2222 175 5wxyz  | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | Cu6Sn5      | Fe                    | Order 2222 175 7wxyz for Lead Free terminations / RoHS compliant (with exemption)   | NO  | 1                          | 260/10/2  | ✓                      | ✓  | ✓                        | ✓                               | RoHS Annex 7a HMP Solder connection inside       | NO                            | 50           | solder coating + solder inside     | X  | O  | O   | O  | O   | O  | PCN-AC-002-2005 rev 4                 | 10/ 31 / 2005                    |
| ALU BCC                  | EDLC 2222 196...   | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | Cu          | Fe                    | Standard Part Number-Remark"Lead Free"  | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | HPC-55-04010                          | 7/12/2004                        |
| ALU INDIA                | Radial 2215 037./038./190./191./193.   | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn                                     | Cu          | Fe                    | Standard Part Number  | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | -                                     | LF since intro                   |
| ALU INDIA                | Radial 2215 044./045./135./136..   | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn                                     | Cu          | Fe                    | Standard Part Number  | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | -                                     | 2002                             |
| ALU INDIA                | Snap-In 2215 157./159..  | BC                                      | ✓   | ✓                               | ✓                            | 100% Sn                                     | Cu          | Fe                    | Standard Part Number  | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | -                                     | 2002                             |
| ALU SPRAGUE              | Axial TE, TVA Lead Containing  | SP                                      | NO  | NO                              | NO                           | Sn/Pb                                       | none        | Cu                    | NA  | YES   | NA                         | NA  | ✓                      | NO   | NO                       | NO                              | None   | NO                            | 50           | solder coating                     | X  | O  | O   | O  | O   | O  | TBD                                   | TBD                              |
| ALU SPRAGUE              | Axial TE, TVA Lead Free  | SP                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | none        | Cu                    | add "E3" (Note "2" sign !)  | YES   | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | TBD                                   | TBD                              |
| ALU SPRAGUE              | Axial 34D, 40D f NOT to be used for new designs !  | SP                                      | NO  | NO                              | NO                           | Sn/Pb                                       | none        | Cu                    | NA  | NA  | NA                         | ✓   | NO                     | NO   | NO                       | NO                              | None   | NO                            | 50           | solder coating                     | X  | O  | O   | O  | O   | O  | TBD                                   | TBD                              |
| ALU SPRAGUE              | Axial 30D, 39D, 53D, 500D, 600D, 601D, 604D, 610D, 630D Lead Containing  | SP                                      | NO  | NO                              | NO                           | Sn/Pb                                       | none        | Cu                    | NA  | YES   | NA                         | NA  | ✓                      | NO   | NO                       | NO                              | None   | NO                            | 50           | solder coating                     | X  | O  | O   | O  | O   | O  | TBD                                   | TBD                              |
| ALU SPRAGUE              | Axial 30D, 39D, 53D, 500D, 600D, 601D, 604D, 610D, 630D Lead Free  | SP                                      | ✓   | ✓                               | ✓                            | 100% Sn matte                               | none        | Cu                    | add "E3"  | YES   | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | TBD                                   | TBD                              |
| ALU SPRAGUE              | Radial 510D, 510DX, 511D, 672D, 678D Lead Containing   | SP                                      | NO  | NO                              | NO                           | Sn/Pb                                       | none        | Cu                    | NA  | YES   | NA                         | NA  | ✓                      | NO   | NO                       | NO                              | None   | NO                            | 50           | solder coating                     | X  | O  | O   | O  | O   | O  | TBD                                   | TBD                              |

### Vishay Lead-Free Family Summary Sheet-Capacitor Components

| Product Description                                      |   |                 | Pb Free "2nd-Level Interconnect" Status           |                                 |                              |                            |            |                       |  | Soldering   |                            |   |                        | RoHS Status                                    |                          |                                 |  | China Pollution Act Information (SJ/T11363-2006) |            |                                 |                                    |   |   |  | PCN-Status  |  |   |  |                                  |
|--|---|-----------------|---|---------------------------------|------------------------------|----------------------------|------------|-----------------------|--|---|----------------------------|---|------------------------|--|--------------------------|---------------------------------|--|--|------------|---------------------------------|------------------------------------|---|---|--|---|--|---|--|----------------------------------|
| Technology/ Product Line                                 | Product Family  | Vishay Division | Pb-free Qual. Complete and Report Available (QTY) | Pb-free Samples available (QTY) | Pb-free Massproduction (QTY) | Termination Finish         | Underlayer | Lead or Base material | How to Order-Web (Lead Free)   | Tin Lead (SnPb) Products/termination available after Conversion | Moisture Sensitivity Level | IPC/JEDEC J-STD-020C compliant (Temp. Peak T <sub>p</sub> in °C Time Peak tp in sec / Cycles) | Backward Compatibility | RoHS Qual. Complete and Report Available (QTY) | RoHS-Compl Samples (QTY) | RoHS-Compl Massproduction (QTY) | Exemptions Used                                | China ROHS Compliant (YES/NO)                    | RoHS ( / ) | EPUP (YEARS)                    | Location of Hazardous Substance(s) | Pb X for C>MCV 0,1 wt% (SJ/T11363-2006) | Hg X for C>MCV 0 for C<MCV 0,1 wt% (SJ/T11363-2006) | Cd X for C>MCV 0 for C<MCV 0,01 wt% (SJ/T11363-2006) | Cr(VI) X for C>MCV 0 for C<MCV 0,1 wt% (SJ/T11363-2006) | PBB X for C>MCV 0 for C<MCV 0,1 wt% (SJ/T11363-2006) | PBDE X for C>MCV 0 for C<MCV 0,1 wt% (SJ/T11363-2006) | Product Change Notification No. / Ref# | Product Change Notification Date |
| ALU SPRAGUE  | Radial 510D, 510DX, 511D, 672D, 678D Lead Free  | SP              | ✓   | ✓                               | ✓                            | 100% Sn matte              | none       | Cu                    | add "E3"   | YES   | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES  | NA         |                                 | O                                  | O                                       | O   | O  | O   | O  | TBD   | TBD                                    |                                  |
| ALU SPRAGUE  | Axial 516D Lead Free  | SP              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu         | Fe                    | add "E3"   | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES  | NA         |                                 | O                                  | O                                       | O   | O  | O   | O  | PCN-ACS-001-2005 Rev 0                                | 4/28/2005                              |                                  |
| ALU SPRAGUE  | Radial 515D, 517D Lead Free   | SP              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu         | Fe                    | add "E3"   | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES  | NA         |                                 | O                                  | O                                       | O   | O  | O   | O  | PCN-ACS-001-2005 Rev 0                                | 4/28/2005                              |                                  |
| ALU SPRAGUE  | Radial U673D, U674D, U676D, 757D  | SP              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu         | Fe                    | add "E3"   | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   |  |            |                                 |                                    |   |   |  |   |  | TBD   | TBD                                    |                                  |
| ALU SPRAGUE  | SMD 518D OBSOLETE per April'06  | SP              | NO  | NO                              | NO                           | Sn/Pb                      | Cu         | Fe                    | NA   | NA  | 1                          | 225/10/2  | ✓                      | NO   | NO                       | NO                              | None   | NO   | 50         | solder coating                  | X                                  | O                                       | O   | O  | O   | O  | O   | TBD                                    | TBD                              |
| ALU SPRAGUE  | Snap-In 80D, 81D, 82D, 81DA, 82DA PNs with sleeve code 2 Lead Containing  | SP              | NO  | NO                              | NO                           | 100% Sn matte              | Cu         | Fe                    | NA   | YES   | NA                         | NA  | ✓                      | NO   | NO                       | NO                              | None   | NO   | 50         | solder coating                  | X                                  | O                                       | O   | O  | O   | O  | O   | TBD                                    | TBD                              |
| ALU SPRAGUE  | Snap-In 80D, 81D, 82D, 81DA, 82DA PNs with sleeve code 2 Lead Free  | SP              | ✓   | ✓                               | ✓                            | 100% Sn matte              | Cu         | Fe                    | add "E3"   | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES  | NA         |                                 | O                                  | O                                       | O   | O  | O   | O  | O   | TBD                                    | TBD                              |
| ALU SPRAGUE  | Snap-In 80D, 81D, 82D, 81DA, 82DA PNs with sleeve code 5 Lead Containing  | SP              | NO  | NO                              | NO                           | Sn/Pb                      | Cu         | Fe                    | NA   | NA  | NA                         | NA  | ✓                      | NO   | NO                       | NO                              | None   | NO   | 50         | solder coating + resin end seal | X                                  | O                                       | O   | O  | O   | O  | O   | TBD                                    | TBD                              |
| ALU SPRAGUE  | ST 32D, 36D, 36DA, 36DE, 36DX, 36DY, U32D, U36D   | SP              | ✓   | ✓                               | ✓                            | NA                         | NA         | NA                    | Standard Part Number   | NO  | NA                         | NA  | NA                     | ✓  | ✓                        | ✓                               | None   | YES  | NA         |                                 | O                                  | O                                       | O   | O  | O   | O  | O   | TBD                                    | TBD                              |
| ALU BCC  | Clamps for ST series 4586-97A (dia 34.9 mm) 4586-48 (dia 50.8 mm) 4586-1 (dia 63.5 mm) 4586-2 (dia 76.2 mm) NOT RoHS compliant          | BC              | ✓   | ✓                               | ✓                            | Cr(VI) passivation         | Zn         | Fe                    | Order New Part Numbers 1245860035 (dia 34.9 mm) 1245860036 (dia 50.8 mm) 1245860037 (dia 63.5 mm) 1245860038 (dia 76.2 mm) for RoHS compliant versions | NO  | NA                         | NA  | NA                     | NO   | NO                       | NO                              | None   | NO   | 50         | anti-rust coating               | O                                  | O                                       | O   | X  | O   | O  | O   |  |                                  |
| ALU BCC  | Clamps for ST series 1245860035 (dia 34.9 mm) 1245860036 (dia 50.8 mm) 1245860037 (dia 63.5 mm) 1245860038 (dia 76.2 mm) RoHS compliant | BC              | ✓   | ✓                               | ✓                            | RoHS compliant passivation | Zn         | Fe                    | New Part Numbers 1245860035 (dia 34.9 mm) 1245860036 (dia 50.8 mm) 1245860037 (dia 63.5 mm) 1245860038 (dia 76.2 mm)                                   | NO  | NA                         | NA  | NA                     | ✓  | ✓                        | ✓                               | None   | YES  | NA         |                                 | O                                  | O                                       | O   | O  | O   | O  | O   |  |                                  |
| ALU SPRAGUE  | OS-CON 94SA, 94SC, 94SH, 94SL, 94SS   | SP              | ✓   | ✓                               | ✓                            | 100% Ag                    | Cu         | Fe                    | Standard Part Number   | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES  | NA         |                                 | O                                  | O                                       | O   | O  | O   | O  | O   | NA                                     | NA                               |
| ALU SPRAGUE  | OS-CON 94SP   | SP              | ✓   | ✓                               | ✓                            | 100% Ag                    | Cu         | Cu                    | Standard Part Number   | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES  | NA         |                                 | O                                  | O                                       | O   | O  | O   | O  | O   | NA                                     | NA                               |
| ALU SPRAGUE  | SMD OS-CON 94SVP  | SP              | ✓   | ✓                               | ✓                            | 100% Ag                    | Cu         | Fe                    | Standard Part Number   | NO  | 3                          | 260/10/1  | ✓                      | ✓  | ✓                        | ✓                               | None   | YES  | NA         |                                 | O                                  | O                                       | O   | O  | O   | O  | O   | NA                                     | NA                               |
| <b>CERAMIC</b>   |   |                 |   |                                 |                              |                            |            |                       |  |   |                            |   |                        |  |                          |                                 |  |  |            |                                 |                                    |   |   |  |   |  |   |  |                                  |
| DRALORIC Disc Capacitors Safety Standard Approved        | VKO, VKP, W1X, WKO, WKP, WYO  | DR              | 4/03  | 1/04                            | 1/04                         | 100% Sn                    | NI         | Cu                    | add "R"  | NO  | NA                         | 260/10/2  | ✓                      | 1/05   | 1/05                     | 1/05                            | Lead content in Ceramic material RoHS Annex 7c | NO   | 50         | ceramic material                | X                                  | O                                       | O   | O  | O   | O  | O   | 13/2004                                | 10/18/2004                       |
| DRALORIC Disc capacitors HV Disc Class 1 Dielectric      | HAU, HBU, HCU, HDU, HEU, HFU  | DR              | 4/03  | 1/04                            | 1/04                         | 100% Sn                    | NI         | Cu                    | add "R"  | NO  | NA                         | 260/10/2  | ✓                      | 1/05   | 1/05                     | 1/05                            | Lead content in Ceramic material RoHS Annex 7c | NO   | 50         | ceramic material                | X                                  | O                                       | O   | O  | O   | O  | O   | 13/2004                                | 10/18/2004                       |
| DRALORIC Disc capacitors DC & HV Disc Class 2 Dielectric | HSE, HSZ, HAZ, HAE, HAX, HBZ, HBE, HBX, HCZ HCE, HCX, HDE, HEE, HFE, HFG, HZ, HIZ   | DR              | 4/03  | 1/04                            | 1/04                         | 100% Sn                    | NI         | Cu                    | add "R"  | NO  | NA                         | 260/10/2  | ✓                      | 1/05   | 1/05                     | 1/05                            | Lead content in Ceramic material RoHS Annex 7c | NO   | 50         | ceramic material                | X                                  | O                                       | O   | O  | O   | O  | O   | 13/2004                                | 10/18/2004                       |
| DRALORIC Disc capacitors Impulse Class 2 Dielectric      | HAK, HBK, HCK, HIK, IBC   | DR              | 4/03  | 1/04                            | 1/04                         | 100% Sn                    | NI         | Cu                    | add "R"  | NO  | NA                         | 260/10/2  | ✓                      | 1/05   | 1/05                     | 1/05                            | Lead content in Ceramic material RoHS Annex 7c | NO   | 50         | ceramic material                | X                                  | O                                       | O   | O  | O   | O  | O   | 13/2004                                | 10/18/2004                       |
| DRALORIC Disc capacitors Impulse Class 1 Dielectric      | IEL ....  | DR              | 4/03  | 1/04                            | 1/04                         | 100% Sn                    | NI         | Cu                    | add "R"  | NO  | NA                         | 260/10/2  | ✓                      | 1/05   | 1/05                     | 1/05                            | Lead content in Ceramic material RoHS Annex 7c | NO   | 50         | ceramic material                | X                                  | O                                       | O   | O  | O   | O  | O   | 13/2004                                | 10/18/2004                       |
| DRALORIC Disc capacitors DC Disc Class 1 Dielectric      | RLA, RLC, RLK, RLP, RLU, RLV,   | DR              | 4/04  | 4/04                            | 4/04                         | 100% Sn                    | None       | Cu                    | add "R"  | NO  | NA                         | 260/10/2  | ✓                      | 1/05   | 1/05                     | 2/05                            | Lead content in Ceramic material RoHS Annex 7c | NO   | 50         | Electrode Material              | X                                  | O                                       | O   | O  | O   | O  | O   | 1/2005                                 | 4/4/2005                         |
| DRALORIC SL Capacitors Feedthru Class 1 Dielectric       | DDLK 03..., DDML 03..., DZML 03..., DZML 03...  | DR              | 4/04  | 4/04                            | 4/04                         | 100% Sn                    | None       | Cu                    | add "R"  | NO  | NA                         | 260/10/2  | ✓                      | 1/05   | 1/05                     | 2/05                            |  | NO   | 50         | Electrode Material              | X                                  | O                                       | O   | O  | O   | O  | O   | 1/2005                                 | 4/4/2005                         |
| DRALORIC SL Capacitors Feedthru Class 2 Dielectric       | DDLK 03..., DDML 03..., DZML 03..., DZML 03..., DVZL 04..., DDML 08...  | DR              | 4/04  | 4/04                            | 4/04                         | 100% Sn                    | None       | Cu                    | add "R"  | NO  | NA                         | 260/10/2  | ✓                      | 1/05   | 1/05                     | 2/05                            |  | NO   | 50         | Electrode Material              | X                                  | O                                       | O   | O  | O   | O  | O   | 1/2005                                 | 4/4/2005                         |
| DRALORIC SL Capacitors Feedthru Class 1 Dielectric       | DDMZ 0315   | DR              | 4/04  | 4/04                            | 4/04                         | 100% Sn                    | None       | Cu                    | add "R"  | NO  | NA                         | 260/10/2  | ✓                      | 1/05   | 1/05                     | 2/05                            |  | NO   | 50         | Electrode Material              | X                                  | O                                       | O   | O  | O   | O  | O   | 1/2005                                 | 4/4/2005                         |
| DRALORIC SL Capacitors Feedthru Class 2 Dielectric       | DDMZ 0315   | DR              | 4/04  | 4/04                            | 4/04                         | 100% Sn                    | None       | Cu                    | add "R"  | NO  | NA                         | 260/10/2  | ✓                      | 1/05   | 1/05                     | 2/05                            |  | NO   | 50         | Electrode Material              | X                                  | O                                       | O   | O  | O   | O  | O   | 1/2005                                 | 4/4/2005                         |
| DRALORIC SL Capacitors Filter Class 2 Dielectric         | DDNL 04..., DDML 04...  | DR              | 4/04  | 4/04                            | 4/04                         | 100% Sn                    | None       | Cu                    | add "R"  | NO  | NA                         | 260/10/2  | ✓                      | 1/05   | 1/05                     | 2/05                            |  | NO   | 50         | Electrode Material              | X                                  | O                                       | O   | O  | O   | O  | O   | 1/2005                                 | 4/4/2005                         |
| DRALORIC SL Capacitors Filter Class 2 Dielectric         | DDML 03..., DDMZ 03...  | DR              | 4/04  | 4/04                            | 4/04                         | 100% Sn                    | None       | Cu                    | add "R"  | NO  | NA                         | 260/10/2  | ✓                      | 1/05   | 1/05                     | 2/05                            |  | NO   | 50         | Electrode Material              | X                                  | O                                       | O   | O  | O   | O  | O   | 1/2005                                 | 4/4/2005                         |

### Vishay Lead-Free Family Summary Sheet-Capacitor Components

| Product Description                               |   |                 | Pb Free "2nd-Level Interconnect" Status           |                                 |                              |                    |            |                       | Soldering  |   |                            |  | RoHS Status            |  |                          |                                 | China Pollution Act Information (SJ/T11363-2006) |                               |            |              |                                    |  |  |   | PCN-Status   |   |  |                                       |                                  |
|---|---|-----------------|---|---------------------------------|------------------------------|--------------------|------------|-----------------------|--|---|----------------------------|--|------------------------|--|--------------------------|---------------------------------|--|-------------------------------|------------|--------------|------------------------------------|--|--|---|--|---|--|---------------------------------------|----------------------------------|
| Technology/ Product Line                          | Product Family                              | Vishay Division | Pb-free Qual. Complete and Report Available (QTY) | Pb-free Samples available (QTY) | Pb-free Massproduction (QTY) | Termination Finish | Underlayer | Lead or Base material | How to Order-Web (Lead Free)                           | Tin Lead (SnPb) Products/termination available after Conversion | Moisture Sensitivity Level | IPC/JEDEC-JSTD-020C compliant (Temp. Peak T <sub>p</sub> in °C/ Time Peak tp in sec./Cycles) | Backward Compatibility | RoHS Qual. Complete and Report Available (QTY) | RoHS-Compl Samples (QTY) | RoHS-Compl Massproduction (QTY) | Exemptions Used                                  | China ROHS Compliant (YES/NO) | RoHS ( / ) | EPUP (YEARS) | Location of Hazardous Substance(s) | Pb<br>X for C>MCV<br>O for C=MCV<br>0,1 wt% (SJ/T11363-2006) | Hg<br>X for C>MCV<br>O for C=MCV<br>0,1 wt% (SJ/T11363-2006) | Cd<br>X for C>MCV<br>O for C=MCV<br>0,01 wt% (SJ/T11363-2006) | Cr(VI)<br>X for C>MCV<br>O for C=MCV<br>0,1 wt% (SJ/T11363-2006) | PBB<br>X for C>MCV<br>O for C=MCV<br>0,1 wt% (SJ/T11363-2006) | PBDE<br>X for C>MCV<br>O for C=MCV<br>0,1 wt% (SJ/T11363-2006) | Product Change Notification No./ Ref# | Product Change Notification Date |
| DRALORIC SL Capacitors Tubular Class 1 Dielectric | RDPT..., RDQT..., RDLT..., MDLT...          | DR              | 1/05  | 1/05                            | 2/05                         | 100% Sn            | None       | Cu                    | add"R"   | NO  | NA                         | 260/10/2   | ✓                      | 1/05   | 1/05                     | 2/05                            |  | NO                            | 50         |              | Electrode Material                 | X  | O  | O   | O  | O   | O  | 1/2005                                | 4/4/2005                         |
| DRALORIC SL Capacitors Tubular Class 2 Dielectric | RDPT..., RDQT..., RDLT..., MDLT...          | DR              | 1/05  | 1/05                            | 2/05                         | 100% Sn            | None       | Cu                    | add"R"   | NO  | NA                         | 260/10/2   | ✓                      | 1/05   | 1/05                     | 2/05                            |  | NO                            | 50         |              | Electrode Material                 | X  | O  | O   | O  | O   | O  | 1/2005                                | 4/4/2005                         |
| DRALORIC SL Capacitors Tubular Class 1 Dielectric | RDLL..., RDQL..., MDLL...                   | DR              | 1/05  | 1/05                            | 2/05                         | 100% Sn            | None       | Cu                    | add"R"   | NO  | NA                         | 260/10/2   | ✓                      | 1/05   | 1/05                     | 2/05                            |  | NO                            | 50         |              | Electrode Material                 | X  | O  | O   | O  | O   | O  | 1/2005                                | 4/4/2005                         |
| DRALORIC SL Capacitors Tubular Class 2 Dielectric | RDLL..., RDQL..., MDLL...                   | DR              | 1/05  | 1/05                            | 2/05                         | 100% Sn            | None       | Cu                    | add"R"   | NO  | NA                         | 260/10/2   | ✓                      | 1/05   | 1/05                     | 2/05                            |  | NO                            | 50         |              | Electrode Material                 | X  | O  | O   | O  | O   | O  | 1/2005                                | 4/4/2005                         |
| CERAMIC BCC MLC Leaded                            | AXIAL KAP A...                              | BC              | 4/03  | ✓                               | ✓                            | 100% Sn            | None       | Cu/Fe                 | Standard Part number                                   | NO  | NA                         | 260/10/2   | ✓                      | ✓  | ✓                        | ✓                               | Lead content in Ceramic material RoHS Annex 7c   | YES                           | NA         |              |                                    | O  | O  | O   | O  | O   | O  | Q2/2002                               |                                  |
| CERAMIC BCC MLC Leaded                            | MONO KAP K...                               | BC              | 4/03  | ✓                               | ✓                            | 100% Sn            | None       | Cu/Fe                 | Standard Part number                                   | NO  | NA                         | 260/10/2   | ✓                      | ✓  | ✓                        | ✓                               | Lead content in Ceramic material RoHS Annex 7c   | NO                            | 50         |              | ceramic material/COG               | X  | O  | O   | O  | O   | O  | Q2/2002                               |                                  |
| BCC RFI new Series                                | VY1..., VY2...                              | BC              | ✓   | ✓                               | ✓                            | 100% Sn            | None       | Cu                    | Standard Part number                                   | NO  | NA                         | 260/10/2   | ✓                      | ✓  | ✓                        | ✓                               | Lead content in Ceramic material RoHS Annex 7c   | NO                            | 50         |              | Ceramic Material                   | X  | O  | O   | O  | O   | O  | NA                                    | New Product                      |
| BCC Disc-Capacitors Gen. Purpose Class 1          | Cleartext Code D.../Code S....              | BC              | 4/03  | 2/04                            | 2/04                         | 100% Sn            | None       | Cu                    | add or replace 16th digit by: "R"                      | NO  | NA                         | 260/10/2   | ✓                      | 1/05   | 1/05                     | 1/05                            | Lead content in Ceramic material RoHS Annex 7c   | NO                            | 50         |              | Ceramic Material                   | X  | O  | O   | O  | O   | O  | 17/2004                               | 10/8/2004                        |
| BCC Disc-Capacitors Gen. Purpose Class 2          | Cleartext Code D.../ Code S.../Code H...    | BC              | 4/03  | 2/04                            | 2/04                         | 100% Sn            | None       | Cu                    | add or replace 16th digit by: "R"                      | NO  | NA                         | 260/10/2   | ✓                      | 1/05   | 1/05                     | 1/05                            | Lead content in Ceramic material RoHS Annex 7c   | NO                            | 50         |              | Ceramic Material                   | X  | O  | O   | O  | O   | O  | 17/2004                               | 10/8/2004                        |
| BCC Disc Capacitors Low loss Class 2              | Cleartext Code F...                         | BC              | 4/03  | 2/04                            | 2/04                         | 100% Sn            | None       | Cu                    | add or replace 16th digit by: "R"                      | NO  | NA                         | 260/10/2   | ✓                      | 1/05   | 1/05                     | 1/05                            | Lead content in Ceramic material RoHS Annex 7c   | NO                            | 50         |              | Ceramic Material                   | X  | O  | O   | O  | O   | O  | 17/2004                               | 10/8/2004                        |
| BCC Disc Capacitors Safety Class X1/Y2            | DN-Type Cleartext Code S. ....              | BC              | 4/03  | 2/04                            | 2/04                         | 100% Sn            | None       | Cu                    | add or replace 16th digit by: "R"                      | NO  | NA                         | 260/10/2   | ✓                      | 1/05   | 1/05                     | 1/05                            | Lead content in Ceramic material RoHS Annex 7c   | NO                            | 50         |              | Ceramic Material                   | X  | O  | O   | O  | O   | O  | 17/2004                               | 10/8/2004                        |
| BCC GAP KAP                                       | Cleartext Code S...                         | BC              | 4/03  | 2/04                            | 2/04                         | 100% Sn            | None       | Cu                    | add or replace 16th digit by: "R"                      | NO  | NA                         | 260/10/2   | ✓                      | 3/05   | 3/05                     | 3/05                            | Lead content in Ceramic material RoHS Annex 7c   | NO                            | 50         |              | Ceramic Material                   | X  | O  | O   | O  | O   | O  | 17/2004                               | 10/8/2004                        |
| CERAMITE Disc Capacitors Lower Voltage Class 1    | GA..., HK..., HM..., TC..., TG..., TS...    | CR              | 4/03  | 1/04                            | 3/04                         | 100% Sn            | NI         | Cu                    | if Parts Number starts with 56... 4th digit:"C" -> "R" | NO  | NA                         | 260/10/2   | ✓                      | 1/05   | 1/05                     | 2/05                            | Lead content in Ceramic material RoHS Annex 7c   | NO                            | 50         |              | Electrode Material                 | X  | O  | O   | O  | O   | O  | 15/2004                               | 10/18/2004                       |
| CERAMITE Disc Capacitors Lower Voltage Class 2    | GA..., HK..., HM..., TC..., TG..., TS...    | CR              | 4/03  | 1/04                            | 3/04                         | 100% Sn            | NI         | Cu                    | if Parts Number starts with 56... 4th digit:"C" -> "R" | NO  | NA                         | 260/10/2   | ✓                      | 1/05   | 1/05                     | 2/05                            | Lead content in Ceramic material RoHS Annex 7c   | NO                            | 50         |              | Electrode Material                 | X  | O  | O   | O  | O   | O  | 15/2004                               | 10/18/2004                       |
| CERAMITE Disc Capacitors AC Line Rated            | 440L, 30LV, 30LVS, 25Y, 125L, 20VL          | CR              | 4/03  | 1/04                            | 3/04                         | 100% Sn            | NI         | Cu                    | add "-R"   | NO  | NA                         | 260/10/2   | ✓                      | 1/05   | 1/05                     | 2/05                            | Lead content in Ceramic material RoHS Annex 7c   | NO                            | 50         |              | Electrode Material                 | X  | O  | O   | O  | O   | O  | 15/2004                               | 10/18/2004                       |
| CERAMITE Disc Capacitors Low DF Class 2           | 1DFO..., 2DFO..., 3DFO...                   | CR              | 4/03  | 1/04                            | 3/04                         | 100% Sn            | NI         | Cu                    | if Parts Number starts with 56... 4th digit:"C" -> "R" | NO  | NA                         | 260/10/2   | ✓                      | 1/05   | 1/05                     | 2/05                            | Lead content in Ceramic material RoHS Annex 7c   | NO                            | 50         |              | Electrode Material                 | X  | O  | O   | O  | O   | O  | 15/2004                               | 10/18/2004                       |
| CERAMITE Disc Capacitors High Voltage Class 1 & 2 | 20GA..., 20TS..., 30GA..., 30TS..., 60GA... | CR              | 4/03  | 1/04                            | 3/04                         | 100% Sn            | NI         | Cu                    | if Parts Number starts with 56... 4th digit:"C" -> "R" | NO  | NA                         | 260/10/2   | ✓                      | 1/05   | 1/05                     | 2/05                            | Lead content in Ceramic material RoHS Annex 7c   | NO                            | 50         |              | Electrode Material                 | X  | O  | O   | O  | O   | O  | 15/2004                               | 10/18/2004                       |
| CERAMITE Disc Capacitors High Voltage Class 2     | Dual Disc, higher Capacitance values        | CR              | 4/04  | 4/04                            | 4/04                         | 100% Sn            | NI         | Cu                    | if Parts Number starts with 56... 4th digit:"C" -> "R" | NO  | NA                         | 260/10/2   | ✓                      | 3/05   | 3/05                     | 3/05                            | Lead content in Ceramic material RoHS Annex 7c   | NO                            | 50         |              | Electrode Material                 | X  | O  | O   | O  | O   | O  | 15/2004                               | 10/18/2004                       |
| DRALORIC HF Power Capacitors                      | Plate Capacitors                            | DR              | ✓   | ✓                               | ✓                            | brass/Cu/Ag        | NA         | brass                 | Standard Part number                                   | NA  | NA                         | NA   | ✓                      | NA   | ✓                        | ✓                               | RoHS Article 3                                   | NO                            | 50         |              | Electrode Material/soldering       | X  | O  | O   | O  | O   | O  | NA                                    | NA                               |
| DRALORIC HF Power Capacitors                      | Barrel Style Capacitors                     | DR              | ✓   | ✓                               | ✓                            | brass/Cu/Ag        | NA         | brass                 | Standard Part number                                   | NA  | NA                         | NA   | ✓                      | NA   | ✓                        | ✓                               | RoHS Article 3                                   | NO                            | 50         |              | Electrode Material/soldering       | X  | O  | O   | O  | O   | O  | NA                                    | NA                               |
| DRALORIC HF Power Capacitors                      | Feed-Through Capacitors                     | DR              | ✓   | ✓                               | ✓                            | brass/Cu/Ag        | NA         | brass                 | Standard Part number                                   | NA  | NA                         | NA   | ✓                      | NA   | ✓                        | ✓                               | RoHS Article 3                                   | NO                            | 50         |              | Electrode Material/soldering       | X  | O  | O   | O  | O   | O  | NA                                    | NA                               |
| DRALORIC HF Power Capacitors                      | Tubular Capacitors                          | DR              | ✓   | ✓                               | ✓                            | brass/Cu/Ag        | NA         | brass                 | Standard Part number                                   | NA  | NA                         | NA   | ✓                      | NA   | ✓                        | ✓                               | RoHS Article 3                                   | NO                            | 50         |              | Electrode Material/soldering       | X  | O  | O   | O  | O   | O  | NA                                    | NA                               |
| DRALORIC HF Power Capacitors                      | Pot Capacitors                              | DR              | ✓   | ✓                               | ✓                            | brass/Cu/Ag        | NA         | brass                 | Standard Part number                                   | NA  | NA                         | NA   | ✓                      | NA   | ✓                        | ✓                               | RoHS Article 3                                   | NO                            | 50         |              | Electrode Material/soldering       | X  | O  | O   | O  | O   | O  | NA                                    | NA                               |
| DRALORIC HF Power Capacitors                      | Watercooled Power RF-Capacitors             | DR              | ✓   | ✓                               | ✓                            | brass/Cu/Ag        | NA         | brass                 | Standard Part number                                   | NA  | NA                         | NA   | ✓                      | NA   | ✓                        | ✓                               | RoHS Article 3                                   | NO                            | 50         |              | Electrode Material/soldering       | X  | O  | O   | O  | O   | O  | NA                                    | NA                               |

### Vishay Lead-Free Family Summary Sheet-Capacitor Components

| Product Description                  |                                   |                 | Pb Free "2nd-Level Interconnect" Status           |                                 |                              |                    |            |                       | Soldering  |   |                            |   | RoHS Status            |  |                          |                                 | China Pollution Act Information (SJ/T11363-2006) |                               |              |                                    |  |  |   |  | PCN-Status  |  |                                   |                                  |
|--------------------------------------|-----------------------------------|-----------------|---|---------------------------------|------------------------------|--------------------|------------|-----------------------|--|---|----------------------------|---|------------------------|--|--------------------------|---------------------------------|--|-------------------------------|--------------|------------------------------------|--|--|---|--|---|--|-----------------------------------|----------------------------------|
| Technology/ Product Line             | Product Family                    | Vishay Division | Pb-free Qual. Complete and Report Available (QTY) | Pb-free Samples available (QTY) | Pb-free Massproduction (QTY) | Termination Finish | Underlayer | Lead or Base material | How to Order-Web (Lead Free)                         | Tin Lead (SnPb) Products/termination available after Conversion | Moisture Sensitivity Level | IPC/JEDEC J-STD-020C compliant (Temp. Peak T <sub>p</sub> in °C/ Time Peak tp in sec./Cycles) | Backward Compatibility | RoHS Qual. Complete and Report Available (QTY) | RoHS-Compl Samples (QTY) | RoHS-Compl Massproduction (QTY) | Exemptions Used                                  | China ROHS Compliant (YES/NO) | EPUP (YEARS) | Location of Hazardous Substance(s) | Pb<br>X for C>MCV 0.1 wt% (SJ/T11363-2006) | Hg<br>X for C>MCV 0 for C=MCV 0.1 wt% (SJ/T11363-2006) | Cd<br>X for C>MCV 0 for C=MCV 0.01 wt% (SJ/T11363-2006) | Cr(VI)<br>X for C>MCV 0 for C=MCV 0.1 wt% (SJ/T11363-2006) | PBB<br>X for C>MCV 0 for C=MCV 0.1 wt% (SJ/T11363-2006) | PBDE<br>X for C>MCV 0 for C=MCV 0.1 wt% (SJ/T11363-2006) | Product Change Notification Ref.# | Product Change Notification Date |
| DRALORIC HV Capacitors               | HV Disc. Ring-styled              | DR              | ✓   | ✓                               | ✓                            | brass/Cu/Ag        | NA         | brass                 | Standard Part number                                 | NA  | NA                         | NA  | ✓                      | NA   | ✓                        | ✓                               | RoHS Article 3                                   | NO                            | 50           | Electrode                          | X  | O  | O   | O  | O   | O  | NA                                | NA                               |
| DRALORIC HV Capacitors               | Capacitor Stacks, Cascades        | DR              | NA  | NA                              | NA                           | 100% Sn            | None       | Cu                    | Standard Part number                                 | NA  | NA                         | NA  | ✓                      | NA   | ✓                        | ✓                               | RoHS Article 3                                   | NO                            | 50           | Ceramic/Electrode/Solder           | X  | O  | O   | O  | O   | O  | NA                                | NA                               |
| CERAMITE Radial leaded HV Capacitors | 75GA.....100GA.....150 GA...      | CR              | 2/05  | 2/05                            | 1/06                         | 100% Sn            | Ni         | Cu                    | replace 615C... by 615R....                          | YES   | NA                         | 260/10/2  | ✓                      | ✓  | ✓                        | ✓                               | RoHS Article 3                                   | NO                            | 50           | Electrode                          | X  | O  | O   | O  | O   | 15/2004  | 10/18/2004                        |                                  |
| CERAMITE Axial leaded HV Capacitors  | 660C series                       | CR              | 2/06  | 4/05                            | 2/06                         | 100% Sn            | Ni         | Cu/Fe                 | add ZZ to get leadfree wires/ 660R... for total RoHS | YES   | NA                         | 260/10/2  | ✓                      | ✓  | ✓                        | ✓                               | RoHS Article 3                                   | NO                            | 50           | Electrode                          | X  | O  | O   | O  | O   | NA   | NA                                |                                  |
| CERAMITE Heavy Duty HV Capacitors    | 715C series                       | CR              | ✓   | ✓                               | ✓                            | brass/Cu/Ag        | NA         | brass                 | Standard Part number                                 | NA  | NA                         | NA  | ✓                      | NA   | ✓                        | ✓                               | RoHS Article 3                                   | NO                            | 50           | Electrode                          | X  | O  | O   | O  | O   | NA   | NA                                |                                  |
| CERAMITE RF Duty Capacitors          | 5F... 7F... Series                | CR              | ✓   | ✓                               | ✓                            | brass/Cu/Ag        | NA         | brass                 | Standard Part number                                 | NA  | NA                         | NA  | ✓                      | NA   | ✓                        | ✓                               | RoHS Article 3                                   | NO                            | 50           | Electrode                          | X  | O  | O   | O  | O   | NA   | NA                                |                                  |
| <b>Film</b>                          |                                   |                 |   |                                 |                              |                    |            |                       |  |   |                            |   |                        |  |                          |                                 |  |                               |              |                                    |  |  |   |  |   |  |                                   |                                  |
| DC capacitors                        | 2222 370                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 37782                            |
| DC capacitors                        | 2222 370 91                       | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 37782                            |
| DC capacitors                        | 2222 371                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 37782                            |
| DC capacitors                        | 2222 372                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 37782                            |
| DC capacitors                        | 2222 373                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 37782                            |
| DC capacitors                        | 2222 470                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 37782                            |
| DC capacitors                        | 2222 471 9                        | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  |                                   |                                  |
| DC capacitors                        | 2222 365/ 366 / 367               | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| DC capacitors                        | 2222 368                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| DC capacitors                        | 2222 369                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  |                                   |                                  |
| DC capacitors                        | 2222 465                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  |                                   |                                  |
| DC capacitors                        | 2222 466                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  |                                   |                                  |
| DC capacitors                        | 2222 467 / 469                    | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| DC capacitors                        | 2222 468                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| DC capacitors                        | 2222 303/ 304                     | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| DC capacitors                        | 2222 347                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 4011                              | 12/22/2004                       |
| AC /pulse capacitors                 | 2222 380                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| AC /pulse capacitors                 | 2222 377                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| AC /pulse capacitors                 | 2222 379 10mm pitch               | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| AC /pulse capacitors                 | 2222 379                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| AC /pulse capacitors                 | 2222 378                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| AC /pulse capacitors                 | 2222 376                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| AC /pulse capacitors                 | 2222 375 10mm pitch               | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| AC /pulse capacitors                 | 2222 375 > 10mm pitch             | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| AC /pulse capacitors                 | 2222 374 4 pitch 7.5 / 10 / 15 mm | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| AC /pulse capacitors                 | 2222 374 4 22.5 / 27.5 mm         | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| AC /pulse capacitors                 | 2222 374 5 pitch 7.5 / 10 mm      | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| AC /pulse capacitors                 | 2222 374 6                        | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| AC /pulse capacitors                 | 2222 479 10mm pitch               | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| AC /pulse capacitors                 | 2222 479 >10mm pitch              | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| AC /pulse capacitors                 | 2222 383                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| AC /pulse capacitors                 | 2222 483                          | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| RFI                                  | 2222 335 59                       | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |
| RFI                                  | 2222 335 5                        | BC              | ✓   | ✓                               | ✓                            | >99.9% Sn Matte    | None       | Cu                    | Standard Part Number-Remark"Lead Free"               | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA           |                                    | O  | O  | O   | O  | O   | O  | 3005                              | 6/10/2003                        |

### Vishay Lead-Free Family Summary Sheet-Capacitor Components

| Product Description      |                                   |                 | Pb Free "2nd-Level Interconnect" Status           |                                 |                              |                    |            |  | Soldering                              |   |                            |   | RoHS Status            |  |                          |                                 | China Pollution Act Information (SJ/T11363-2006) |                               |            |              |                                    |                                      |  | PCN-Status  |  |  |  |  |                                  |
|--------------------------|-----------------------------------|-----------------|---|---------------------------------|------------------------------|--------------------|------------|--|--|---|----------------------------|---|------------------------|--|--------------------------|---------------------------------|--|-------------------------------|------------|--------------|------------------------------------|--------------------------------------|--|---|--|--|--|--|----------------------------------|
| Technology/ Product Line | Product Family                    | Vishay Division | Pb-free Qual. Complete and Report Available (QTY) | Pb-free Samples available (QTY) | Pb-free Massproduction (QTY) | Termination Finish | Underlayer | Lead or Base material                            | How to Order-Web (Lead Free)           | Tin Lead (SnPb) Products/termination available after Conversion | Moisture Sensitivity Level | IPC/JEDEC J-STD-020C compliant (Temp. Peak T <sub>p</sub> in °C Time Peak up in sec / Cycles) | Backward Compatibility | RoHS Qual. Complete and Report Available (QTY) | RoHS-Compl Samples (QTY) | RoHS-Compl Massproduction (QTY) | Exemptions Used                                  | China ROHS Compliant (YES/NO) | RoHS ( / ) | EPUP (YEARS) | Location of Hazardous Substance(s) | Pb                                   | Hg                                       | Cd  | Cr(VI)   | PBB  | PBDE   | Product Change Notification No. / Ref# | Product Change Notification Date |
|                          |                                   |                 |   |                                 |                              |                    |            |  |  |   |                            |   |                        |  |                          |                                 |  |                               |            |              |                                    | X for C>MCV 0,1 wt% (SJ/T11363-2006) | X for C-MCV 0 for C<MCV (SJ/T11363-2006) | X for C-MCV 0 for C-MCV 0,01 wt% (SJ/T11363-2006) | X for C-MCV 0 for C-MCV 0,1 wt% (SJ/T11363-2006) | X for C-MCV 0 for C-MCV 0,1 wt% (SJ/T11363-2006) | X for C-MCV 0 for C-MCV 0,1 wt% (SJ/T11363-2006) |  |                                  |
| RFI                      | 2222 336 10mm pitch               | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 3005                                   | 6/10/2003                        |
| RFI                      | 2222 336 > 10 mm pitch            | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 3005                                   | 6/10/2003                        |
| RFI                      | 2222 338 2 <= 10mm pitch          | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 3005                                   | 6/10/2003                        |
| RFI                      | 2222 338 2 > 10mm pitch           | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 3005                                   | 6/10/2003                        |
| RFI                      | 2222 338 4 < 37,5mm               | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 3005                                   | 6/10/2003                        |
| RFI                      | 2222 338 4 pitch 37,5 and 55 mm   | BC              | ü   | ü                               | ü                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ü  | ü                        | ü                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 3005                                   | 6/10/2003                        |
| RFI                      | 2222 338 6                        | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 3005                                   | 37782                            |
| RFI                      | 2222 338 1                        | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 3005                                   | 37782                            |
| RFI                      | 2222 339                          | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | NA                                     | NA                               |
| RFI                      | 2222 435                          | BC              | NA  | NA                              | NA                           | 95/5 SnPb          | None       | Cu   | NA                                     | NA  | NA                         | ✓   | NA                     | NA   | NA                       | NA                              |  |                               |            |              |                                    |                                      |  |   |  |  |  | NA                                     | NA                               |
| precision                | 2222 416 / 417 / 418/419/420 5mm  | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 3005                                   | 6/10/2003                        |
| precision                | 2222 416 / 417 / 418/419/420 10mm | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 3005                                   | 6/10/2003                        |
| precision                | 2222 416 / 417 / 418/419/420 15mm | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 3005                                   | 6/10/2003                        |
| precision                | 2222 422                          | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 3005                                   | 6/10/2003                        |
| precision                | 2222 460/461/462/463/464          | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 3005                                   | 6/10/2003                        |
| IPD                      | 2222 401                          | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 3005                                   | 6/10/2003                        |
| IPD                      | 2222 405                          | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 3005                                   | 37782                            |
| starter                  | 2222 311                          | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  |  |                                  |
| Mylar inductive type     | 2252 901 / 903                    | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn          | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  |  |                                  |
| varicap / trimmer        | 2215 807                          | BC              | ✓   | ✓                               | NN                           | Sn60Pb40           | None       | Fe or Brass or Bronze                            |  | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | NN                              | NA   | NO                            | 50         | Termination  | X                                  | O                                    | O  | O   | O  | O  |  |  |                                  |
| varicap / trimmer        | 2215 808                          | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn          | NI         | Fe or Brass or Bronze                            | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | Pb in brass                                      | NO                            | 50         | Termination  | X                                  | O                                    | O  | O   | O  | O  |  |  |                                  |
| Trimmer                  | 2222 808 / 809                    | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn or Ag    | Ni or Cu   | Brass and bronze                                 | 2281 808/809 or BFC2 808/809           | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | Pb in brass                                      | NO                            | 50         | Termination  | X                                  | O                                    | O  | O   | O  | O  |  |  |                                  |
| fan regulator            | 2215 315                          | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn          | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 0301                                   | 37879                            |
| CDI                      | 2215 314 , 313                    | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn          | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 0301                                   | 9/15/2003                        |
| others                   | 2215 366,367, 368, 369, 347, 361  | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn          | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 0301                                   | 37879                            |
| others                   | 2215 360, 2215 312                | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn          | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  |  |                                  |
|                          | 2215 357                          | BC              | ✓   | ✓                               | ✓                            | >99,9% Sn          | None       | Cu   | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | 0301                                   | 37879                            |
| Film ERO radial DC       | 1817 standard                     | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | NI         | Cu F 37  | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  |  |                                  |
| Film ERO radial DC       | 1818                              | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | NI         | Cu F 27  | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  |  |                                  |
| Film ERO radial DC       | 1820                              | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | NI         | Cu F 21  | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  |  |                                  |
| Film ERO radial DC       | 1820-615/25x-1                    | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | NI         | Cu F 29/F30                                      | Standard Part Number-Remark"Lead Free" | NO  | NA                         | 260/5/1   | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | X                                  | O                                    | O  | O   | O  | O  |  |  |                                  |
| Film ERO radial DC       | 1822 (pcm > 10)                   | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | NI         | Cu F 21  | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | VS01-03                                | 24.03.03                         |
| Film ERO radial DC       | 1822 (pcm == 10)                  | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | NI         | Cu Ni 18 Zn 20 , F41                             | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | VS01-03                                | 24.03.03                         |
| Film ERO radial DC       | 1830                              | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | NI         | Cu Ni 18 Zn 20 , F41                             | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  |  |                                  |
| Film ERO radial DC       | 1836                              | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | NI         | Cu F 21  | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | VS01-03                                | 24.03.03                         |
| Film ERO radial DC       | 1840 (pcm == 10)                  | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | NI         | Cu Ni 18 Zn 20 , F41 (pcm5), Cu F27 (pcm 7,5/10) | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   |                               |            |              |                                    |                                      |  |   |  |  |  | VS01-03                                | 24.03.03                         |
| Film ERO radial DC       | 1840 (pcm > 10)                   | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | NI         | Cu F 21  | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA   | YES                           | NA         |              | O                                  | O                                    | O  | O   | O  | O  |  | VS01-03                                | 24.03.03                         |

### Vishay Lead-Free Family Summary Sheet-Capacitor Components

| Product Description      |                                    |                 | Pb Free "2nd-Level Interconnect" Status           |                                 |                              |                    |            |                             |  | Soldering   |                            |   |                        | RoHS Status                                    |                          |                                 |                                     | China Pollution Act Information (SJ/T11363-2006) |             |                |                                    |                                      |  |   |  | PCN-Status                                       |  |  |                                  |  |  |
|--------------------------|------------------------------------|-----------------|---|---------------------------------|------------------------------|--------------------|------------|-----------------------------|--|---|----------------------------|---|------------------------|--|--------------------------|---------------------------------|-------------------------------------|--|-------------|----------------|------------------------------------|--------------------------------------|--|---|--|--|--|--|----------------------------------|--|--|
| Technology/ Product Line | Product Family                     | Vishay Division | Pb-free Qual. Complete and Report Available (QTY) | Pb-free Samples available (QTY) | Pb-free Massproduction (QTY) | Termination Finish | Underlayer | Lead or Base material       | How to Order-Web (Lead Free)           | Tin Lead (SnPb) Products/termination available after Conversion | Moisture Sensitivity Level | IPC/JEDEC J-STD-020C compliant (Temp. Peak T <sub>p</sub> in °C/ Time Peak tp in sec./Cycles) | Backward Compatibility | RoHS Qual. Complete and Report Available (QTY) | RoHS-Compl Samples (QTY) | RoHS-Compl Massproduction (QTY) | Exemptions Used                     | China ROHS Compliant (YES/NO)                    | RoHS ( / )  | EPUP (YEARS)   | Location of Hazardous Substance(s) | Pb                                   | Hg   | Cd  | Cr(VI)   | PBB  | PBDE   | Product Change Notification No. / Ref# | Product Change Notification Date |  |  |
|                          |                                    |                 |   |                                 |                              |                    |            |                             |  |   |                            |   |                        |  |                          |                                 |                                     |  |             |                |                                    | X for C>MCV 0,1 wt% (SJ/T11363-2006) | X for C>MCV 0 for C<MCV 0,1 wt% (SJ/T11363-2006) | X for C>MCV 0 for C<MCV 0,01 wt% (SJ/T11363-2006) | X for C>MCV 0 for C<MCV 0,1 wt% (SJ/T11363-2006) | X for C>MCV 0 for C<MCV 0,1 wt% (SJ/T11363-2006) | X for C>MCV 0 for C<MCV 0,1 wt% (SJ/T11363-2006) |  |                                  |  |  |
| Film ERO radial DC       | 1841 (pcm <= 10)                   | RG              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu F 21                     | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| Film ERO radial DC       | 1841 (pcm > 10)                    | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu F 21                     | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| Film ERO radial DC       | 1844                               | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu F 21                     | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| Film ERO radial DC       | 1846                               | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu F 21                     | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| Film ERO radial DC       | 1850                               | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu Ni 18 Zn 20 , F41        | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  |  |                                  |  |  |
| Film ERO radial DC       | 1858                               | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu Ni 18 Zn 20 , F41        | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| Film ERO radial DC       | 1862 (pcm <= 10)                   | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu F 21                     | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| Film ERO radial DC       | 1862 (pcm > 10)                    | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu F 21                     | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| RFI                      | 1710 pcm 10                        | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu F 27                     | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| RFI                      | 1710 (pcm >10)                     | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu F 21                     | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| RFI                      | 1712                               | RO              | EOL   | EOL                             | EOL                          | 60/40 Sn/Pb        | None       | Cu                          | NA                                     | NA  | NA                         | ✓   | EOL                    | EOL  | EOL                      | NA                              | NO                                  | 50   | Termination |                | X                                  | O                                    | O  | O   | O  | O  |  |  |                                  |  |  |
| RFI                      | 1722                               | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu F 21                     | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| RFI                      | 1724                               | RO              | EOL   | EOL                             | EOL                          | 60/40 Sn/Pb        | None       | Cu                          | NA                                     | NA  | NA                         | ✓   | EOL                    | EOL  | EOL                      | NA                              | NO                                  | 50   | Termination |                | X                                  | O                                    | O  | O   | O  | O  |  |  |                                  |  |  |
| RFI                      | 1772                               | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu F 21                     | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| RFI                      | 1774                               | RO              | ✓   | ✓                               | ✓                            | 100% Sn            | None       | Cu                          | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  |  |                                  |  |  |
| RFI                      | 1778 (pcm 10)                      | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu F 27                     | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| RFI                      | 1778 (pcm > 10)                    | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu F 21                     | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| RFI                      | 1779                               | RO              | ✓   | ✓                               | ✓                            | 100% Sn            | None       | Cu                          | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  |  |                                  |  |  |
| RFI                      | 1740                               | RO              | ✓   | ✓                               | ✓                            | 100% Sn            | None       | Cu                          | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  |  |                                  |  |  |
| Radial stacked           | MKT 1826                           | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu                          | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| Radial stacked - SMD     | MKT 1824                           | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | None       | Cu/Ni18Zn27                 | Standard Part Number-Remark"Lead Free" | NO  | 5a                         | 260/5/1   | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| FILM ERO Axial DC        | MKT 1813 Polyester wrapped         | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu                          | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| FILM ERO Axial DC        | MKT 1813 Polycarbonate wrapped     | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu                          | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| FILM ERO Axial DC        | MKP 1839 Polyester wrapped         | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu or Cu/NiZn or steel clad | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| FILM ERO Axial DC        | MKP 1839 Polycarbonate wrapped     | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu                          | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| FILM ERO Axial DC        | MKC 1860 Polyester wrapped         | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu                          | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| FILM ERO Axial DC        | MKC 1860 Polycarbonate wrapped     | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu                          | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| FILM ERO Axial DC        | MKP 1845 Polycarbonate wrapped     | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu                          | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| FILM ERO Axial DC        | MKT 1816 Polycarbonate wrapped     | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu                          | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| FILM ERO Axial AC        | MKP 1842 Polycarbonate wrapped     | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu                          | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| FILM ERO Axial RFI       | F 1773 Polyester wrapped           | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu                          | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| FILM ERO Axial RFI       | F 1773 Polycarbonate wrapped       | RO              | ✓   | ✓                               | ✓                            | >99,9% Sn Matte    | Ni         | Cu                          | Standard Part Number-Remark"Lead Free" | NO  | NA                         | NA  | ✓                      | ✓  | ✓                        | ✓                               | NA                                  | YES  | NA          |                |                                    | O                                    | O  | O   | O  | O  | O  | VS01-03                                | 24.03.03                         |  |  |
| FILM ERO resale          | MKT 1802                           | RO              | NO  | NO                              | NO                           | 95/5 Sn/Pb         |            |                             | NA                                     | NA  | 5a                         | 235/30/1  | ✓                      | NV   | NV                       | NV                              | NA                                  | NO   | 50          | solder coating |                                    | X                                    | O  | O   | O  | O  | O  |  |                                  |  |  |
| <b>MLCC</b>              |                                    |                 |   |                                 |                              |                    |            |                             |  |   |                            |   |                        |  |                          |                                 |                                     |  |             |                |                                    |                                      |  |   |  |  |  |  |                                  |  |  |
| MLCC VITRAMON            | VJ., X termination                 | VT              | ✓   | ✓                               | ✓                            | 100% Sn            | Ni         | Ag                          | Standard Part number                   | YES   | 1                          | ✓   | ✓                      | ✓  | ✓                        | ✓                               | Lead in glass and/or ceramic matrix | NO   | 50          |                | Ceramic                            | X                                    | O  | O   | O  | O  | O  | NA                                     | 1-Jan-96                         |  |  |
| MLCC VITRAMON            | VJ. F termination                  | VT              | ✓   | ✓                               | ✓                            | Ag/Pd              | Ag         | Ceramic                     | Standard Part number                   | NA  | 1                          | NA  | ✓                      | ✓  | ✓                        | ✓                               | Lead in glass and/or ceramic matrix | NO   | 50          |                | Ceramic                            | X                                    | O  | O   | O  | O  | O  | NA                                     | NA                               |  |  |
| MLCC VITRAMON            | CDR..... VJ03028..... VJ03029..... | VT              | NA  | NA                              | NA                           | Sn/Pb              | Ni         | Ag                          | NA                                     | YES   | 1                          | NA  | ✓                      | NA   | NA                       | NA                              | Military product                    | NO   | 50          |                | Ceramic                            | X                                    | O  | O   | O  | O  | O  | NA                                     | NA                               |  |  |
| MLCC BCC                 | VJ..W1BC                           | BC              | ✓   | ✓                               | ✓                            | 100% Sn            | Ni         | Ag or Cu                    | Standard Part number                   | NO  | 1                          | ✓   | ✓                      | ✓  | ✓                        | ✓                               | Lead in glass and/or ceramic matrix | NO   | 50          |                | Ceramic                            | X                                    | O  | O   | O  | O  | O  | NN                                     | NN                               |  |  |

### Vishey Lead-Free Family Summary Sheet-Capacitor Components

| Product Description             |   |                 | Pb Free "2nd-Level Interconnect" Status           |                                 |                              |                    |            |                       |                              | Soldering   |                            |   |                        | RoHS Status                                    |                          |                                 |                           | China Pollution Act Information (SJ/T11363-2006) |            |                                    |                                    |   |   |  |   | PCN-Status   |   |                                    |                                  |  |
|---------------------------------|---|-----------------|---|---------------------------------|------------------------------|--------------------|------------|-----------------------|------------------------------|---|----------------------------|---|------------------------|--|--------------------------|---------------------------------|---------------------------|--|------------|------------------------------------|------------------------------------|---|---|--|---|--|---|------------------------------------|----------------------------------|--|
| Technology/ Product Line        | Product Family  | Vishey Division | Pb-free Qual. Complete and Report Available (QTY) | Pb-free Samples available (QTY) | Pb-free Massproduction (QTY) | Termination Finish | Underlayer | Lead or Base material | How to Order-Web (Lead Free) | Tin Lead (SnPb) Products/termination available after Conversion | Moisture Sensitivity Level | IPC/JEDEC J-STD-020C compliant (Temp. Peak T <sub>p</sub> in °C Time Peak tp in sec / Cycles) | Backward Compatibility | RoHS Qual. Complete and Report Available (QTY) | RoHS-Compl Samples (QTY) | RoHS-Compl Massproduction (QTY) | Exemptions Used           | China ROHS Compliant (YES/NO)                    | RoHS ( / ) | EPUP (YEARS)                       | Location of Hazardous Substance(s) | Pb X for C>MCV O for C<MCV 0.1 wt% (SJ/T11363-2006) | Hg X for C>MCV O for C<MCV 0.1 wt% (SJ/T11363-2006) | Cd X for C>MCV O for C<MCV 0.01 wt% (SJ/T11363-2006) | Cr(VI) X for C>MCV O for C<MCV 0.1 wt% (SJ/T11363-2006) | PBB X for C>MCV O for C<MCV 0.1 wt% (SJ/T11363-2006) | PBDE X for C>MCV O for C<MCV 0.1 wt% (SJ/T11363-2006) | Product Change Notification Ref. / | Product Change Notification Date |  |
| ESTA                            | power caps (med.volt.) indoor acc. IEC 60871  | ES              | NA  | NA                              | NA                           | Pb/Sn              | None       | BRASS                 | Contact Sales                | NA  | NA                         | NA  | NA                     | NA   | NA                       | NA                              | acc. to WEEE, Annex IA, 6 | NO   | 50         | soldered connection/contact        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| ESTA                            | power caps (med.volt.) outdoor acc. IEC 60871                                       | ES              | NA  | NA                              | NA                           | Pb/Sn              | None       | BRASS                 | Contact Sales                | NA  | NA                         | NA  | NA                     | NA   | NA                       | NA                              | acc. to WEEE, Annex IA, 6 | NO   | 50         | soldered connection/contact        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| ESTA                            | power caps (inductive heating) acc. IEC 60110                                       | ES              | NA  | NA                              | NA                           | Pb/Sn              | None       | BRASS, Cu             | Contact Sales                | NA  | NA                         | NA  | NA                     | NA   | NA                       | NA                              | acc. to WEEE, Annex IA, 6 | NO   | 50         | soldered connection/contact        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| ESTA                            | power caps (low volt. PFC) acc. IEC 61071 and 61881                                 | ES              | NA  | NA                              | NA                           | Pb/Sn              | None       | BRASS                 | Contact Sales                | NA  | NA                         | NA  | NA                     | NA   | NA                       | NA                              | acc. to WEEE, Annex IA, 6 | NO   | 50         | soldered connection/contact        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| ESTA                            | PEC rectangular acc. IEC 61071 and 61881  | ES              | NA  | NA                              | NA                           | Pb/Sn              | None       | BRASS, Cu             | Contact Sales                | NA  | NA                         | NA  | NA                     | NA   | NA                       | NA                              | acc. to WEEE, Annex IA, 6 | NO   | 50         | soldered connection/contact        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| ESTA                            | PEC tubular   | ES              | NA  | NA                              | NA                           | Pb/Sn              | None       | BRASS, Cu             | Contact Sales                | NA  | NA                         | NA  | NA                     | NA   | NA                       | NA                              | acc. to WEEE, Annex IA, 6 | NO   | 50         | soldered connection/contact        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| ESTA                            | PEC lamp caps   | ES              | 4/04  | 2/05                            | 4/05                         | 100% Sn            | None       | STEEL                 | Standard Part Number         | NO  | NA                         | NA  | NA                     | 4/04   | 2/05                     | 4/05                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| ESTA                            | PEC (GLI, HDMKP, GTO)   | ES              | 4/04  | 2/05                            | 1/06                         | 100% Sn            | None       | BRASS, Cu             | Contact Sales                | NO  | NA                         | NA  | NA                     | 4/04   | 2/05                     | 1/06                            | None                      | NO   | 50         | soldered connection/contact        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| ESTA                            | PEC tubular caps <1500VDC   | ES              | 4/04  | 2/05                            | 1/06                         | 100% Sn            | None       | BRASS, Cu             | Contact Sales                | NO  | NA                         | NA  | NA                     | 4/04   | 2/05                     | 1/06                            | None                      | NO   | 50         | soldered connection/contact        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| ESTA                            | PEC tubular caps <1000VAC   | ES              | 4/04  | 2/05                            | 1/06                         | 100% Sn            | None       | BRASS, Cu             | Contact Sales                | NO  | NA                         | NA  | NA                     | 4/04   | 2/05                     | 1/06                            | None                      | NO   | 50         | soldered connection/contact        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| ESTA                            | ESTAsym-/ESTAmat-Relais   | ES              | 4/04  | 2/05                            | 1/06                         | 100% Sn            | None       | Cu                    | Contact Sales                | NO  | NA                         | NA  | NA                     | 4/04   | 2/05                     | 1/06                            | None                      | NO   | 50         | soldered connection/contact        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| ESTA Hybrides                   | descharge resistors ELTEX   | ES              | 4/04  | 2/05                            | 4/05                         | 100% Sn            | None       | Arcap AP1D            | Contact Sales                | NO  | NA                         | NA  | NA                     | 4/04   | 2/05                     | 4/05                            | None                      | NO   | 50         | soldered connection/contact        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| ESTA High Voltage Units         | painting units DUERR etc.   | ES              | NA  | NA                              | NA                           | NA                 | NA         | NA                    | Contact Sales                | NA  | NA                         | NA  | NA                     | NA   | NA                       | NA                              | acc. to WEEE, Annex IA, 6 | NO   | 50         | soldered connection/contact        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| ESTA High Voltage Units         | miscellaneous   | ES              | 4/04  | NA                              | NA                           | NA                 | NA         | NA                    | Contact Sales                | NO  | NA                         | NA  | NA                     | NA   | NA                       | NA                              | acc. to WEEE, Annex IA, 6 | NO   | 50         | soldered connection/contact        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| <b>Tantalum</b>                 |   |                 |   |                                 |                              |                    |            |                       |                              |   |                            |   |                        |  |                          |                                 |                           |  |            |                                    |                                    |   |   |  |   |  |   |                                    |                                  |  |
| Conformal                       | 195D A, B, C, D, E, F, S, X, Y, V cases   | SP              | 1/01  | 1/01                            | 1/01                         | 100% Sn            | Ni         | Ag                    | Standard Part number         | YES   | 2a                         | 260/10/3  | ✓                      | 1/01   | 1/01                     | 1/01                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Conformal                       | 695 A, B, D, E, F cases   | SP              | 1/01  | 1/01                            | 1/01                         | 100% Sn            | Ni         | Ag                    | Standard Part number         | YES   | 2a                         | 260/10/3  | ✓                      | 1/01   | 1/01                     | 1/01                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Conformal                       | 591D/592D - A, B, C, D, R, S, T, U, V, W, X cases                                   | SP              | 1/01  | 1/01                            | 1/01                         | 100% Sn            | Ni         | Ag                    | Standard Part number         | YES   | 2a                         | 260/10/3  | ✓                      | 1/01   | 1/01                     | 1/01                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Conformal                       | 594D/595D - A, B, S, T, G, H, M cases   | SP              | 1/01  | 1/01                            | 1/01                         | 100% Sn            | Ni         | Ag                    | Standard Part number         | YES   | 2a                         | 260/10/3  | ✓                      | 1/01   | 1/01                     | 1/01                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Conformal                       | 572D all cases  | SP              | 1/01  | 1/01                            | 1/01                         | 100% Sn            | Ni         | Ag                    | Standard Part number         | YES   | 2a                         | 260/10/3  | ✓                      | 1/01   | 1/01                     | 1/01                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Conformal                       | T95 B, S, V, X, Y cases   | SP              | 1/01  | 1/01                            | 1/01                         | 100% Sn            | Ni         | Ag                    | Standard Part number         | YES   | 2a                         | 260/10/3  | ✓                      | 1/01   | 1/01                     | 1/01                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Conformal                       | 195 D R, Z cases  | SP              | 1/01  | 1/01                            | 1/01                         | 100% Sn            | Ni         | Ag                    | Standard Part number         | YES   | 2a                         | 245/10/3  | ✓                      | 1/01   | 1/01                     | 1/01                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Conformal                       | 695D G, H, Z, N, R cases  | SP              | 1/01  | 1/01                            | 1/01                         | 100% Sn            | Ni         | Ag                    | Standard Part number         | YES   | 2a                         | 245/10/3  | ✓                      | 1/01   | 1/01                     | 1/01                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Conformal                       | 591D/592D Y, X25H cases   | SP              | 1/01  | 1/01                            | 1/01                         | 100% Sn            | Ni         | Ag                    | Standard Part number         | YES   | 2a                         | 245/10/3  | ✓                      | 1/01   | 1/01                     | 1/01                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Conformal                       | 594D/595D C, D, R cases   | SP              | 1/01  | 1/01                            | 1/01                         | 100% Sn            | Ni         | Ag                    | Standard Part number         | YES   | 2a                         | 245/10/3  | ✓                      | 1/01   | 1/01                     | 1/01                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Conformal                       | 597D all cases  | SP              | 1/01  | 1/01                            | 1/01                         | 100% Sn            | Ni         | Ag                    | Standard Part number         | YES   | 2a                         | 245/10/3  | ✓                      | 1/01   | 1/01                     | 1/01                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Conformal                       | T95 C, D, R, Z cases  | SP              | 1/01  | 1/01                            | 1/01                         | 100% Sn            | Ni         | Ag                    | Standard Part number         | YES   | 2a                         | 245/10/3  | ✓                      | 1/01   | 1/01                     | 1/01                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Conformal                       | CWR06 Gold  | SP              | NA  | NA                              | NA                           | 100% Au            | Ni         | Ag                    | NA                           | YES   | 1                          | NA  | ✓                      | NA   | NA                       | NA                              | Military product          | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Conformal                       | CWR06 SnPb  | SP              | NA  | NA                              | NA                           | 60/40 SnPb         | Ni         | Ag                    | NA                           | YES   | 1                          | NA  | ✓                      | NA   | NA                       | NA                              | Military product          | NO   | 50         | TERMINATION                        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Conformal                       | 194D Gold   | SP              | 1/01  | 1/01                            | 1/01                         | 100% Au            | None       | Ni                    | Standard Part number         | YES   | 1                          | NA  | ✓                      | 1/01   | 1/01                     | 1/01                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Conformal                       | 194D SnPb   | SP              | NA  | NA                              | NA                           | 60/40 SnPb         | Ni         | Ni                    | NA                           | YES   | 1                          | NA  | ✓                      | NA   | NA                       | NA                              | Military product          | NO   | 50         | TERMINATION                        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Molded Chip Commercial          | 293D, 593D, 893D  | SP              | 4/04  | 4/04                            | 1/05                         | 100% Sn            | Ni         | Alloy42               | add "-E3"                    | YES   | 1                          | ✓   | ✓                      | 4/04   | 4/04                     | 1/05                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | TC-001-2004 rev 0                                     | 38279                              |                                  |  |
| Molded Chip Military            | CWR11   | SP              | NA  | NA                              | NA                           | 90/10 SnPb         | Ni         | Alloy42               | NA                           | YES   | 1                          | NA  | ✓                      | NA   | NA                       | NA                              | Military product          | NO   | 50         | TERMINATION                        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Molded Chip Y-Chip              | 292D  | SP              | 1/01  | 1/01                            | 1/01                         | 100% Sn            | Ni         | Ag                    | Standard Part number         | YES   | 1                          | ✓   | ✓                      | 1/01   | 1/01                     | 1/01                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Molded Chip MAP                 | 288D, T98, T98  | SP              | 4/05  | 4/05                            | 1/06                         | 100% Sn            | Ni         | Cu                    | Standard Part number         | YES   | 1                          | ✓   | ✓                      | 4/05   | 4/05                     | 1/06                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Semiconductor process capacitor | HPC   | SP              | 4/04  | 4/04                            | 4/04                         | Sn95.5/Ag4/Cu0.5   | None       | Component layers      | Standard Part number         | YES   | 1                          | ✓   | ✓                      | 4/04   | 4/04                     | 4/04                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Leaded                          | 173D, 199D, 299D, 489D, 499D, 790D  | SP              | 2/06  | 1/06                            | 2/06                         | 100% Sn            | None       | Steel                 | add "-E3"                    | YES   | NA                         | NA  | ✓                      | 2/06   | 1/06                     | 2/06                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Hermetics Commercial            | 150D, 152D, 550D, CECC (CTS1, CTS13, CTS32, 749DX)                                  | SP              | 4/06  | 4/06                            | 1/07                         | 100% Sn            | None       | Ni                    | add "-E3"                    | YES   | NA                         | NA  | ✓                      | 4/06   | 4/06                     | 1/07                            | HIGH MELTING SOLDER       | NO   | 50         | HIGH MELTING SOLDER                | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Hermetics Military              | M39003 series   | SP              | NA  | NA                              | NA                           | 60/40 SnPb         | None       | Ni                    | NA                           | NA  | NA                         | ✓   | NA                     | NA   | NA                       | NA                              | Military product          | NO   | 50         | TERMINATION & SOLDER FOR HIGH TEMP | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |
| Wets Commercial                 | 109D, 135D, 138D, CECC (769D, 735D, 735DE, CT79, 738D, CT9), ST, MTP, XTH - Ni lead | SP              | 2/06  | 2/06                            | 2/06                         | 100% Sn            | None       | Ni or Cu              | add "-E3"                    | YES   | NA                         | NA  | ✓                      | 2/06   | 2/06                     | 2/06                            | None                      | YES  | NA         |                                    | O                                  | O   | O   | O  | O   | NA   | NA  |                                    |                                  |  |
| Wets Military                   | M39006 series   | SP              | NA  | NA                              | NA                           | 60/40 SnPb         | None       | Ni or Cu              | NA                           | YES   | NA                         | NA  | ✓                      | NA   | NA                       | NA                              | Military product          | NO   | 50         | TERMINATION                        | X                                  | O   | O   | O  | O   | O  | NA  | NA                                 |                                  |  |



## Vishay Lead-Free Family Summary Sheet-Capacitor Components

| Product Description      |                |                 | Pb Free "2nd-Level Interconnect" Status           |                                 |                              |                    | Soldering  |                       | RoHS Status                  |   | China Pollution Act Information (SJ/T11363-2006) |  |                        |  |                          |                                 |                 | PCN-Status                    |              |                                    |                            |                            |                            |                            |                            |                            |                                       |                                  |
|--------------------------|----------------|-----------------|---|---------------------------------|------------------------------|--------------------|------------|-----------------------|------------------------------|---|--|--|------------------------|--|--------------------------|---------------------------------|-----------------|-------------------------------|--------------|------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|---------------------------------------|----------------------------------|
| Technology/ Product Line | Product Family | Vishay Division | Pb-free Qual. Complete and Report Available (QTY) | Pb-free Samples available (QTY) | Pb-free Massproduction (QTY) | Termination Finish | Underlayer | Lead or Base material | How to Order-Web (Lead Free) | Tin Lead (SnPb) Products/Termination available after Conversion | Moisture Sensitivity Level                       | IPC/JEDEC-J-STD-020C compliant (Temp. Peak T <sub>p</sub> in °C Time Peak tp in sec./Cycles) | Backward Compatibility | RoHS Qual. Complete and Report Available (QTY) | RoHS-Compl Samples (QTY) | RoHS-Compl Massproduction (QTY) | Exemptions Used | China ROHS Compliant (YES/NO) | EPUP (YEARS) | Location of Hazardous Substance(s) | Pb                         | Hg                         | Cd                         | Cr(VI)                     | PBB                        | PBDE                       | Product Change Notification No./ Ref# | Product Change Notification Date |
|                          |                |                 |   |                                 |                              |                    |            |                       |                              |   |  |  |                        |  |                          |                                 |                 |                               |              |                                    | X for C>MCV<br>O for C<MCV | X for C>MCV<br>O for C<MCV | X for C>MCV<br>O for C<MCV | X for C>MCV<br>O for C<MCV | X for C>MCV<br>O for C<MCV | X for C>MCV<br>O for C<MCV |                                       |                                  |
|                          |                |                 |   |                                 |                              |                    |            |                       |                              |   |  |  |                        |  |                          |                                 |                 |                               |              |                                    | ( / )                      | ( )                        |                            |                            |                            |                            |                                       |                                  |

Notes:

● Please contact your local Vishay Sales Office.

-I indicates that the item is complete or compliant. If product is complete/compliant less than a year the actual date is shown.

NA indicates that the item is not applicable (i.e. not converting to Pb-Free)

BC=Vishay Bcomponents, CR=Vishay Ceramite, DR=Vishay Draloric, ES=Vishay ESTA, RO=Vishay Roderstein, SP=Vishay Sprague, VT=Vishay Vitramon

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○ SJ/T11363-2006 indicates all homogeneous materials' hazardous substances content are below the SJ/T11363-2006 MCV limit

○ SJ/T11363-2006 indicates that the hazardous substance content contained in any one of the homogeneous materials of the part exceeded the MCV limits specified in the Standard SJ/T 11363-2006

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