



**MICROCHIP**  
The Embedded Control Solutions Company®

## Product / Process Change Archive

### Product / Process Change Notification CYAR-7RTN2J

[Home](#)

The information below reflects a change that is being implemented.

Notice Date: 08/20/2009

Product Category: dsPIC; PIC18xxx; PIC24xxx

Notification Subject: CCB# 894: Qualification of 28L QFN-S package at UTL (NSEB) assembly site.

Notification Body:

PCN Status:

Final notification

Microchip Part#s Affected (please see the link for these files at the end of this PCN):

See attachment of Affected package/device in Qualification plan.

[Microchip\\_Catalog\\_Part#s\\_Affected.xls](#)

[Microchip\\_Catalog\\_Part#s\\_Affected.pdf](#)

Description of Change:

Adding assembly site

Impacts to Data Sheet:

None

Reason for Change:

Improve on time delivery performance

Change Implementation Status:

In Progress

Estimated First Ship Date:

August 24, 2009 (Date code 0935)

Markings to Distinguish Revised from Unrevised Devices: (e.g.: Date Code, Device Marking, Ship Container Marking)

Traceability code

---

| CATALOG PART NBR         |
|--------------------------|
| DSPIC30F1010-20E/MM      |
| DSPIC30F1010-30I/MM      |
| DSPIC30F1010T-20E/MM     |
| DSPIC30F1010T-30I/MM     |
| DSPIC30F2010-20E/MM      |
| DSPIC30F2010-20I/MM      |
| DSPIC30F2010-30I/MM      |
| DSPIC30F2010-30V/MMA31   |
| DSPIC30F2010T-20E/MM     |
| DSPIC30F2010T-20E/MM021  |
| DSPIC30F2010T-20E/MM022  |
| DSPIC30F2010T-20E/MMG    |
| DSPIC30F2010T-20E/MMG020 |
| DSPIC30F2010T-20I/MM     |
| DSPIC30F2010T-30I/MM     |
| DSPIC30F2010T-30I/MMG    |
| DSPIC30F2010T-30V/MMA31  |
| DSPIC30F2020-20E/MM      |
| DSPIC30F2020-30I/MM      |
| DSPIC30F2020-30I/MMB32   |
| DSPIC30F2020-30I/MMB35   |
| DSPIC30F2020T-20E/MM     |
| DSPIC30F2020T-30I/MM     |
| DSPIC30F2020T-30I/MM020  |
| DSPIC30F2020T-30I/MMB32  |
| DSPIC30F2020T-30I/MMB35  |
| DSPIC33FJ06GS102-E/MM    |
| DSPIC33FJ06GS102-I/MM    |
| DSPIC33FJ06GS102T-E/MM   |
| DSPIC33FJ06GS102T-I/MM   |
| DSPIC33FJ06GS202-E/MM    |
| DSPIC33FJ06GS202-I/MM    |
| DSPIC33FJ06GS202T-E/MM   |
| DSPIC33FJ06GS202T-I/MM   |
| DSPIC33FJ128GP202-E/MM   |
| DSPIC33FJ128GP202-I/MM   |

|                         |
|-------------------------|
| DSPIC33FJ128GP202T-E/MM |
| DSPIC33FJ128GP202T-I/MM |
| DSPIC33FJ128GP802-E/MM  |
| DSPIC33FJ128GP802-I/MM  |
| DSPIC33FJ128GP802T-E/MM |
| DSPIC33FJ128GP802T-I/MM |
| DSPIC33FJ128MC202-E/MM  |
| DSPIC33FJ128MC202-I/MM  |
| DSPIC33FJ128MC202T-E/MM |
| DSPIC33FJ128MC202T-I/MM |
| DSPIC33FJ128MC802-E/MM  |
| DSPIC33FJ128MC802-I/MM  |
| DSPIC33FJ128MC802T-E/MM |
| DSPIC33FJ128MC802T-I/MM |
| DSPIC33FJ16GS402-E/MM   |
| DSPIC33FJ16GS402-I/MM   |
| DSPIC33FJ16GS402T-E/MM  |
| DSPIC33FJ16GS402T-I/MM  |
| DSPIC33FJ16GS502-E/MM   |
| DSPIC33FJ16GS502-I/MM   |
| DSPIC33FJ16GS502T-E/MM  |
| DSPIC33FJ16GS502T-I/MM  |
| DSPIC33FJ32GP202-E/MM   |
| DSPIC33FJ32GP202-I/MM   |
| DSPIC33FJ32GP202T-E/MM  |
| DSPIC33FJ32GP202T-I/MM  |
| DSPIC33FJ32GP302-E/MM   |
| DSPIC33FJ32GP302-I/MM   |
| DSPIC33FJ32GP302T-E/MM  |
| DSPIC33FJ32GP302T-I/MM  |
| DSPIC33FJ32MC202-E/MM   |
| DSPIC33FJ32MC202-I/MM   |
| DSPIC33FJ32MC202T-E/MM  |
| DSPIC33FJ32MC202T-I/MM  |
| DSPIC33FJ32MC302-E/MM   |
| DSPIC33FJ32MC302-I/MM   |
| DSPIC33FJ32MC302T-E/MM  |

|                        |
|------------------------|
| DSPIC33FJ32MC302T-I/MM |
| DSPIC33FJ64GP202-E/MM  |
| DSPIC33FJ64GP202-I/MM  |
| DSPIC33FJ64GP202T-E/MM |
| DSPIC33FJ64GP202T-I/MM |
| DSPIC33FJ64GP802-E/MM  |
| DSPIC33FJ64GP802-I/MM  |
| DSPIC33FJ64GP802T-E/MM |
| DSPIC33FJ64GP802T-I/MM |
| DSPIC33FJ64MC202-E/MM  |
| DSPIC33FJ64MC202-I/MM  |
| DSPIC33FJ64MC202T-E/MM |
| DSPIC33FJ64MC202T-I/MM |
| DSPIC33FJ64MC802-E/MM  |
| DSPIC33FJ64MC802-I/MM  |
| DSPIC33FJ64MC802T-E/MM |
| DSPIC33FJ64MC802T-I/MM |
| PIC18F2331-E/MM        |
| PIC18F2331-I/MM        |
| PIC18F2331T-I/MM       |
| PIC18F2431-E/MM        |
| PIC18F2431-E/MMC01     |
| PIC18F2431-I/MM        |
| PIC18F2431T-I/MM       |
| PIC18F2480-E/ML        |
| PIC18F2480-I/ML        |
| PIC18F2480T-E/ML       |
| PIC18F2480T-I/ML       |
| PIC18F2580-E/ML        |
| PIC18F2580-I/ML        |
| PIC18F2580T-I/ML       |
| PIC18F2580T-I/MLC02    |
| PIC18LF2331-I/MM       |
| PIC18LF2331T-I/MM      |
| PIC18LF2431-I/MM       |
| PIC18LF2431T-I/MM      |
| PIC18LF2480-I/ML       |

|                       |
|-----------------------|
| PIC18LF2480T-I/ML     |
| PIC18LF2580-I/ML      |
| PIC18LF2580-I/MLC01   |
| PIC18LF2580T-I/ML     |
| PIC24HJ128GP202-E/MM  |
| PIC24HJ128GP202-I/MM  |
| PIC24HJ128GP202T-E/MM |
| PIC24HJ128GP202T-I/MM |
| PIC24HJ128GP502-E/MM  |
| PIC24HJ128GP502-I/MM  |
| PIC24HJ128GP502T-E/MM |
| PIC24HJ128GP502T-I/MM |
| PIC24HJ32GP202-E/MM   |
| PIC24HJ32GP202-I/MM   |
| PIC24HJ32GP202T-E/MM  |
| PIC24HJ32GP202T-I/MM  |
| PIC24HJ32GP302-E/MM   |
| PIC24HJ32GP302-I/MM   |
| PIC24HJ32GP302T-E/MM  |
| PIC24HJ32GP302T-I/MM  |
| PIC24HJ64GP202-E/MM   |
| PIC24HJ64GP202-I/MM   |
| PIC24HJ64GP202T-E/MM  |
| PIC24HJ64GP202T-I/MM  |
| PIC24HJ64GP502-E/MM   |
| PIC24HJ64GP502-I/MM   |
| PIC24HJ64GP502T-E/MM  |
| PIC24HJ64GP502T-I/MM  |

| CATALOG PART NBR         |
|--------------------------|
| DSPIC30F1010-20E/MM      |
| DSPIC30F1010-30I/MM      |
| DSPIC30F1010T-20E/MM     |
| DSPIC30F1010T-30I/MM     |
| DSPIC30F2010-20E/MM      |
| DSPIC30F2010-20I/MM      |
| DSPIC30F2010-30I/MM      |
| DSPIC30F2010-30V/MMA31   |
| DSPIC30F2010T-20E/MM     |
| DSPIC30F2010T-20E/MM021  |
| DSPIC30F2010T-20E/MM022  |
| DSPIC30F2010T-20E/MMG    |
| DSPIC30F2010T-20E/MMG020 |
| DSPIC30F2010T-20I/MM     |
| DSPIC30F2010T-30I/MM     |
| DSPIC30F2010T-30I/MMG    |
| DSPIC30F2010T-30V/MMA31  |
| DSPIC30F2020-20E/MM      |
| DSPIC30F2020-30I/MM      |
| DSPIC30F2020-30I/MMB32   |
| DSPIC30F2020-30I/MMB35   |
| DSPIC30F2020T-20E/MM     |
| DSPIC30F2020T-30I/MM     |
| DSPIC30F2020T-30I/MM020  |
| DSPIC30F2020T-30I/MMB32  |
| DSPIC30F2020T-30I/MMB35  |
| DSPIC33FJ06GS102-E/MM    |
| DSPIC33FJ06GS102-I/MM    |
| DSPIC33FJ06GS102T-E/MM   |
| DSPIC33FJ06GS102T-I/MM   |
| DSPIC33FJ06GS202-E/MM    |
| DSPIC33FJ06GS202-I/MM    |
| DSPIC33FJ06GS202T-E/MM   |
| DSPIC33FJ06GS202T-I/MM   |
| DSPIC33FJ128GP202-E/MM   |
| DSPIC33FJ128GP202-I/MM   |
| DSPIC33FJ128GP202T-E/MM  |
| DSPIC33FJ128GP202T-I/MM  |
| DSPIC33FJ128GP802-E/MM   |
| DSPIC33FJ128GP802-I/MM   |
| DSPIC33FJ128GP802T-E/MM  |
| DSPIC33FJ128GP802T-I/MM  |
| DSPIC33FJ128MC202-E/MM   |
| DSPIC33FJ128MC202-I/MM   |
| DSPIC33FJ128MC202T-E/MM  |
| DSPIC33FJ128MC202T-I/MM  |
| DSPIC33FJ128MC802-E/MM   |
| DSPIC33FJ128MC802-I/MM   |
| DSPIC33FJ128MC802T-E/MM  |
| DSPIC33FJ128MC802T-I/MM  |
| DSPIC33FJ16GS402-E/MM    |

|                        |
|------------------------|
| DSPIC33FJ16GS402-I/MM  |
| DSPIC33FJ16GS402T-E/MM |
| DSPIC33FJ16GS402T-I/MM |
| DSPIC33FJ16GS502-E/MM  |
| DSPIC33FJ16GS502-I/MM  |
| DSPIC33FJ16GS502T-E/MM |
| DSPIC33FJ16GS502T-I/MM |
| DSPIC33FJ32GP202-E/MM  |
| DSPIC33FJ32GP202-I/MM  |
| DSPIC33FJ32GP202T-E/MM |
| DSPIC33FJ32GP202T-I/MM |
| DSPIC33FJ32GP302-E/MM  |
| DSPIC33FJ32GP302-I/MM  |
| DSPIC33FJ32GP302T-E/MM |
| DSPIC33FJ32GP302T-I/MM |
| DSPIC33FJ32MC202-E/MM  |
| DSPIC33FJ32MC202-I/MM  |
| DSPIC33FJ32MC202T-E/MM |
| DSPIC33FJ32MC202T-I/MM |
| DSPIC33FJ32MC302-E/MM  |
| DSPIC33FJ32MC302-I/MM  |
| DSPIC33FJ32MC302T-E/MM |
| DSPIC33FJ32MC302T-I/MM |
| DSPIC33FJ64GP202-E/MM  |
| DSPIC33FJ64GP202-I/MM  |
| DSPIC33FJ64GP202T-E/MM |
| DSPIC33FJ64GP202T-I/MM |
| DSPIC33FJ64GP802-E/MM  |
| DSPIC33FJ64GP802-I/MM  |
| DSPIC33FJ64GP802T-E/MM |
| DSPIC33FJ64GP802T-I/MM |
| DSPIC33FJ64MC202-E/MM  |
| DSPIC33FJ64MC202-I/MM  |
| DSPIC33FJ64MC202T-E/MM |
| DSPIC33FJ64MC202T-I/MM |
| DSPIC33FJ64MC802-E/MM  |
| DSPIC33FJ64MC802-I/MM  |
| DSPIC33FJ64MC802T-E/MM |
| DSPIC33FJ64MC802T-I/MM |
| PIC18F2331-E/MM        |
| PIC18F2331-I/MM        |
| PIC18F2331T-I/MM       |
| PIC18F2431-E/MM        |
| PIC18F2431-E/MMC01     |
| PIC18F2431-I/MM        |
| PIC18F2431T-I/MM       |
| PIC18F2480-E/ML        |
| PIC18F2480-I/ML        |
| PIC18F2480T-E/ML       |
| PIC18F2480T-I/ML       |
| PIC18F2580-E/ML        |
| PIC18F2580-I/ML        |

|                       |
|-----------------------|
| PIC18F2580T-I/ML      |
| PIC18F2580T-I/MLC02   |
| PIC18LF2331-I/MM      |
| PIC18LF2331T-I/MM     |
| PIC18LF2431-I/MM      |
| PIC18LF2431T-I/MM     |
| PIC18LF2480-I/ML      |
| PIC18LF2480T-I/ML     |
| PIC18LF2580-I/ML      |
| PIC18LF2580-I/MLC01   |
| PIC18LF2580T-I/ML     |
| PIC24HJ128GP202-E/MM  |
| PIC24HJ128GP202-I/MM  |
| PIC24HJ128GP202T-E/MM |
| PIC24HJ128GP202T-I/MM |
| PIC24HJ128GP502-E/MM  |
| PIC24HJ128GP502-I/MM  |
| PIC24HJ128GP502T-E/MM |
| PIC24HJ128GP502T-I/MM |
| PIC24HJ32GP202-E/MM   |
| PIC24HJ32GP202-I/MM   |
| PIC24HJ32GP202T-E/MM  |
| PIC24HJ32GP202T-I/MM  |
| PIC24HJ32GP302-E/MM   |
| PIC24HJ32GP302-I/MM   |
| PIC24HJ32GP302T-E/MM  |
| PIC24HJ32GP302T-I/MM  |
| PIC24HJ64GP202-E/MM   |
| PIC24HJ64GP202-I/MM   |
| PIC24HJ64GP202T-E/MM  |
| PIC24HJ64GP202T-I/MM  |
| PIC24HJ64GP502-E/MM   |
| PIC24HJ64GP502-I/MM   |
| PIC24HJ64GP502T-E/MM  |
| PIC24HJ64GP502T-I/MM  |



## **QUALIFICATION REPORT**

### **RELIABILITY LABORATORY**

**Q09060**  
**CCB#: 894**  
**PCN#: CYAR-7RTN2J**

Date  
August 07, 2009

**Qualification of 28L QFN-S (6X6X0.9mm)**  
**at UTL (NSEB) Assembly Site**

#### Distribution

Surasit P.  
Wanphen L.  
Wichai K.  
Chaweng W.

Rangsun K.  
C.K. Barlingay  
R. Sharma

Microchip Technology (Thailand) Co., Ltd.  
14 Moo 1 T.Wangtakien A. Muangchacherngsao,  
Chacherngsao, Thailand, 24000  
Tel. (+66 38) 857119-45, 857311-19 ext. 1231  
Fax (+66 38) 857149-50



## **MICROCHIP**

### **PACKAGE QUALIFICATION REPORT**

|                                   |                                                                     |
|-----------------------------------|---------------------------------------------------------------------|
| <b>Purpose</b>                    | Qualification of 28L QFN-S (6x6x0.9mm) at UTL (NSEB) assembly Site. |
| <b>CN</b>                         | BC091365                                                            |
| <b>QUAL ID</b>                    | Q09060                                                              |
| <b>MP CODE</b>                    | DFAR14M2XA20                                                        |
| <b>Part No.</b>                   | DSPIC30F1010-20E/MM                                                 |
| <b>Bonding No.</b>                | A-031826 Rev. Temp (Temporary bonding)                              |
| <b><u>Package</u></b>             |                                                                     |
| <b>Type</b>                       | 28L QFN-S                                                           |
| <b>Package size</b>               | 6 x 6 x 0.9 mm                                                      |
| <b>Die thickness</b>              | 11 mils                                                             |
| <b>Die size</b>                   | 172.70 x 181.90 mils                                                |
| <b><u>Lead Frame</u></b>          |                                                                     |
| <b>Paddle size</b>                | 193 x 193 mils                                                      |
| <b>Material</b>                   | C194                                                                |
| <b>Surface</b>                    | Copper (Ag on Lead only)                                            |
| <b>Process</b>                    | Etched                                                              |
| <b>Lead Lock</b>                  | Yes                                                                 |
| <b>Part Number</b>                | FR0410                                                              |
| <b><u>Die attach material</u></b> |                                                                     |
| <b>Epoxy</b>                      | 8200T / Ablestik (USA)                                              |
| <b>Wire</b>                       | Au wire / Tanaka (Malaysia)                                         |
| <b>Mold Compound</b>              | G770HCD / Sumitomo (Singapore)                                      |
| <b>Plating Composition</b>        | Matte Tin                                                           |



**MICROCHIP**  
**PACKAGE QUALIFICATION REPORT**

**Manufacturing Information**

| Assembly Lot No. | Wafer Lot No.     | Trace Code |
|------------------|-------------------|------------|
| NSEB101000210    | GRSM409361855.200 | 0923C JQ   |
| NSEB101000211    | GRSM409361855.200 | 0923C JQ   |
| NSEB101000212    | GRSM409361855.200 | 0923C JQ   |

**Result**

☒ Pass ☐ Fail ☐ \_\_\_\_\_

28L QFN-S (6x6X0.9mm) assembled by UTL (NSEB) pass reliability test per QCI-39000. This package was qualified the Moisture/Reflow Sensitivity Classification Level 1 at 260°C reflow temperature per IPC/JEDEC J-STD-020C standard.

**Prepared By:** \_\_\_\_\_ **Date:** August 07, 2009 **(Reliability Engineer)**

(Mr. Thinnapol Nakkasun )

**Approved By:** \_\_\_\_\_ **Date:** August 07, 2009 **(Reliability Manager)**

( Mr. Surasit Phurikhup )

# PACKAGE QUALIFICATION REPORT

Qual Report : Q09060

| Test Number<br>(Reference)                 | Test Condition                                                                                                                                                                   | Microchip<br>Spec      | Qty.<br>(Acc.) | Date in  | Date Out | Def/SS. | Result | Remarks      |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------|----------|----------|---------|--------|--------------|
| <b><u>MSL</u></b><br><br>MSL Level 1/260°C | 85°C/ 85%RH Moisture Soak 168 hrs.<br>System: TABAI ESPEC Model PR-3SPH<br><br>3x Convection-Reflow 260°C max<br>System: Vitronics Soltec MR1243<br><br>( IPC/JEDEC J-STD-020C ) | S12/14/16<br><br>(PDC) | 135            | 07/02/09 | 07/10/09 | 0/135   | Pass   |              |
| <b><u>Precondition</u></b>                 |                                                                                                                                                                                  |                        |                |          |          |         |        |              |
| Electrical Test                            | Electrical Test :+25°C and 85°C<br>System: J750                                                                                                                                  | S12/14/16<br><br>(PDC) | 693(0)         | 06/24/09 | 07/01/09 | 693     |        | Good Devices |
| Bake                                       | Bake 150°C, 24 hrs<br>System: CHINEE                                                                                                                                             | PI-92014B              |                | 07/02/09 | 07/03/09 | 693     |        |              |
| Moisture Soak                              | 85°C/85%RH Moisture Soak 168 hrs.<br>System: TABAI ESPEC Model PR-3SPH                                                                                                           | PI-91173B              |                | 07/03/09 | 07/10/09 | 693     |        |              |
| Convection-Reflow                          | 3x Convection-Reflow 260°C max<br><br>System: Vitronics Soltec MR1243                                                                                                            | PI-91160B              |                | 07/10/09 | 07/10/09 | 693     |        |              |
| Electrical Test                            | Electrical Test :+25°C and 85°C<br>System: J750                                                                                                                                  | S12/14/16<br><br>(PDC) |                | 07/10/09 | 07/12/09 | 0/693   | Pass   |              |

# PACKAGE QUALIFICATION REPORT

Qual Report : Q09060

| Test Number<br>(Reference) | Test Condition                                                                                                                                                                | Microchip<br>Spec  | Qty.<br>(Acc.)   | Date in              | Date Out             | Def/SS.      | Result       | Remarks                                       |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------|----------------------|----------------------|--------------|--------------|-----------------------------------------------|
| <b>Temp Cycle</b>          | <b>Stress Condition:</b><br>-65°C to +150°C, 500 Cycles<br>System : TABAI ESPEC TSA-70H<br>Inspection: External crack inspection all units<br>under 40X Optical magnification | PI-91020B          |                  | 07/13/09             | 07/25/09             | 231          |              | Parts had been<br>pre-conditioned at<br>260°C |
|                            |                                                                                                                                                                               | QCI-33003          | 30(0)            | 07/25/09             | 07/25/09             | 0/30         |              |                                               |
|                            | <b>Electrical Test:</b> +85°C<br>System: J750                                                                                                                                 | S12/14/16<br>(PDC) | 231(0)           | 07/25/09             | 07/26/09             | 0/231        | Pass         | 77 units / lot                                |
|                            | <b>Bond Strength:</b><br>Bond Shear (19.20 grams)<br>Wire Pull (> 3 grams)                                                                                                    | QCI-91022          | 15 (0)<br>15 (0) | 07/26/09<br>07/26/09 | 07/26/09<br>07/26/09 | 0/15<br>0/15 | Pass<br>Pass |                                               |
| <b>Pressure Cooker</b>     | <b>Stress Condition:</b><br>+121°C, 100% RH, 15 PSI, 96 hrs.<br>System: TABAI ESPEC TPC-421                                                                                   | PI-92013B          |                  | 07/10/09             | 07/18/09             | 231          |              | Parts had been<br>pre-conditioned at<br>260°C |
|                            | <b>Electrical Test:</b> +25°C<br>System: J750                                                                                                                                 | S12/14/16<br>(PDC) | 231(0)           | 07/18/09             | 07/21/09             | 0/231        | Pass         | 77 units / lot                                |

# PACKAGE QUALIFICATION REPORT

Qual Report : Q09060

| Test Number<br>(Reference)                       | Test Condition                                                                                                                                                                                                                 | Microchip<br>Spec  | Qty.<br>(Acc.)  | Date in                          | Date Out                         | Def/SS.          | Result | Remarks                                       |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------|----------------------------------|----------------------------------|------------------|--------|-----------------------------------------------|
| <b>HAST</b>                                      | <b>Stress Condition:</b><br>+130°C/85%RH, 96 hrs.<br>System: HAST 6000X                                                                                                                                                        | PI-92010B          |                 | 07/17/09                         | 07/21/09                         | 231              |        | Parts had been<br>pre-conditioned at<br>260°C |
|                                                  | <b>Electrical Test:</b> +25°C and 85°C<br>System: J750                                                                                                                                                                         | S12/14/16<br>(PDC) | 231(0)          | 07/21/09                         | 07/22/09                         | 0/231            | Pass   | 77 units / lot                                |
| <b>Solderability</b><br><br><b>Temp 245°C</b>    | <b>Steam Aging:</b> Temp 93°C, 8Hrs<br>System: SAS-3000<br><b>Solder Dipping:</b> Solder Temp. 245°C<br>Solder material: Pb Free Sn 95.5Ag3.9 Cu0.6<br>System: ERS A RA 2200D<br>Visual Inspection: External Visual Inspection | QCI-31003          | 22 (0)          | 07/13/09<br>07/14/09<br>07/14/09 | 07/13/09<br>07/14/09<br>07/14/09 | 22<br>22<br>0/22 | Pass   |                                               |
| <b>Physical</b><br><br><b>Dimensions</b>         | Physical Dimension,<br>30 units from 1 lot                                                                                                                                                                                     | QCI-30017          | 30(0)<br>Units  | -                                | -                                | 0/30             | Pass   |                                               |
| <b>Bond Strength</b><br><br><b>Data Assembly</b> | Bond Shear (19.20 grams)                                                                                                                                                                                                       | QCI-91022          | 30 (0)<br>bonds | -                                | -                                | 0/30             | Pass   |                                               |
|                                                  | Wire Pull (> 4 grams)                                                                                                                                                                                                          |                    | 30 (0)<br>wires | -                                | -                                | 0/30             | Pass   |                                               |