Small Signal Diodes

Vishay Semiconductor (Austria) Ges.m.b.H.

Q u a l P a c k

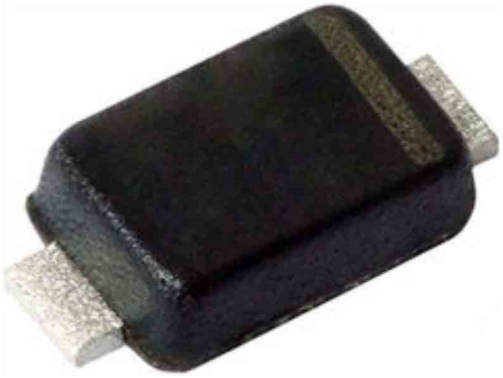
PLZ-Series

Zener Diodes Permitting 500 mW Power Dissipation

Industrial Grade / Part No.: ….G3/H

VISHAY

QualPack PLZ-Series
Industrial Grade



Plastic Case
DO-219AC (MicroSMF)

Pb-free

e3

RoHS
COMPLIANT

HALOGEN
FREE

GREEN
(5-2008)

PLZ-Series

Zener Diodes Permitting 500 mW Power Dissipation

1. Contents

2. General Product Information

Product Name PLZ-Series

Function Zener Diodes Permitting 500 mW Power Dissipation

Package DO-219AC (MicroSMF)

Locations:

Process: / Locations:	Wafer Plant	Assembly Plant	Final Test	Quality Assurance
Vishay Voecklabruck, Austria				X
Vishay Heilbronn, Germany	X			X
Vishay Budapest, Hungary				
Vishay Shanghai, China				
Vishay Tianjin, China		X	X	X
Hangzhou, China	X			

Quality Management Vöcklabruck / AUSTRIA

QA Small-Signal-Diodes

3. Technology Information

Features:

- Silicon planar Zener diodes, ultra small
- Low profile surface mount package
- Low leakage current
- Excellent stability
- High temperature soldering: 260 °C/10 s at terminals
- Wave and reflow solderable (reflow as per JPC/JEDEC® J-STD 020) (double wave as per IEC 61760-1)
- MSL level 1 (according J-STD-020)
- Lead (Pb)-free termination finish = "e3" = matte tin (Sn)
- Base P/N-G3 - RoHS-compliant, commercial grade
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

3.1 Process Technology

Process name:		Zener
Base material:	- material	n-Silicon
	- thickness (finished)	125 µm
Passivation:	- material	CVD Layer
Front metallization:	- material	Al
Back metallization:	- material	Au

3.2 Chip Description

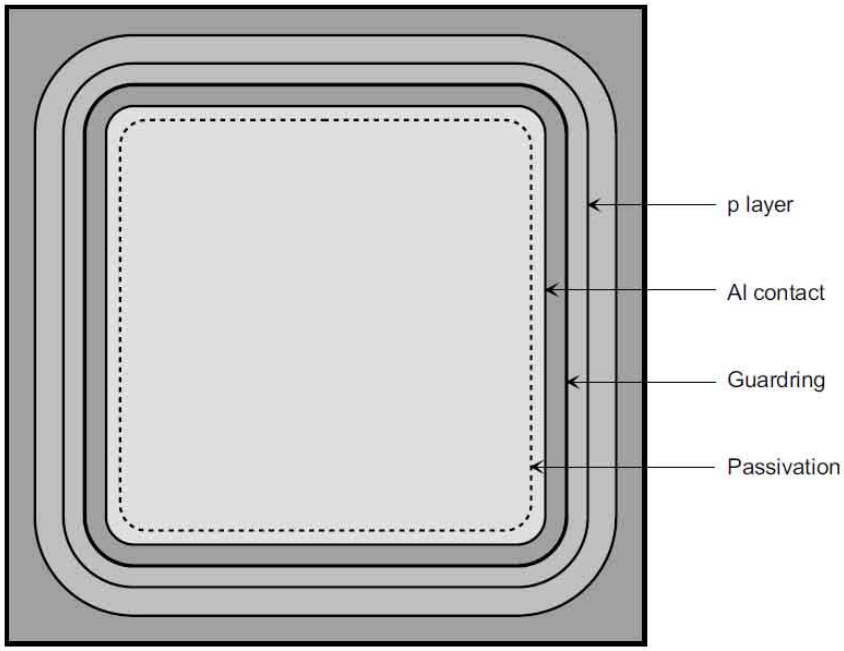
Chip name	Zener
Chip size	320 µm x 320 µm

Device Cross Sections

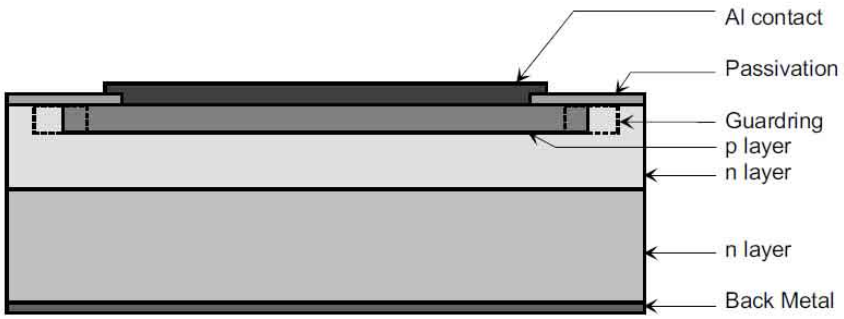
Zener

(both views are not scaled)

Top View:



Sectional View:



3.3 Package Technology

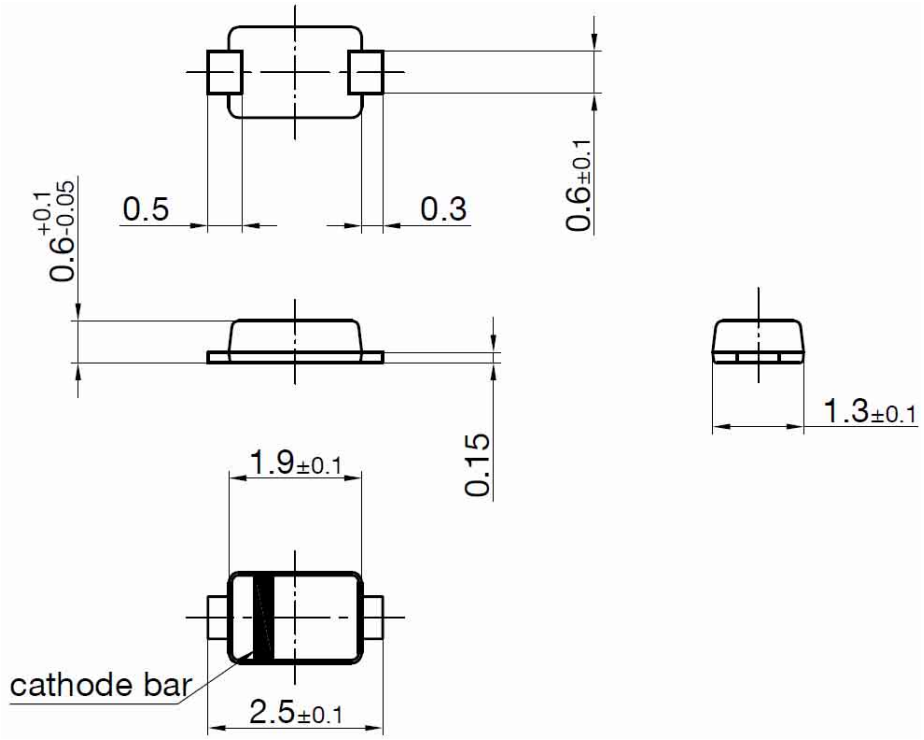
Package type:		**DO-219AC (MicroSMF)**
Package weight:		4,8 mg
Chip separation method:		Sawing
Lead:	- material - lead finish - thickness of plating	Copper Sn – matte ≥ 7 µm annealed 1h / 150°C
Die attach:		Eutectic
Package:	- material	Epoxy
Marking:	- method	Laser marking
Coding:	- method	Packing label / Barcode
Packing: Tape Reel	- SPEC - type - material - type - material - size - number per	IEC 60286 – 3 Carriertape 8mm PC antistatic reel PS antistatic 180 mm diameter 4.500 pieces

Test

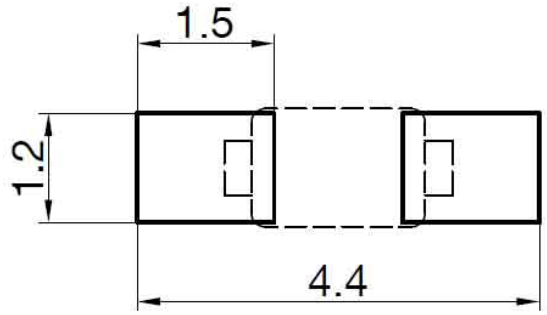
Test equipment:	TMTT Automated
Test temperature	23 ± 3°C
Special tests	none

3.4 Package Dimensions

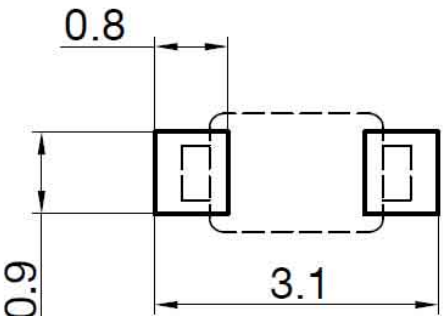
DO-219AC (MicroSMF) Dimension in mm (Inches)



foot print recommendation
for wave soldering:

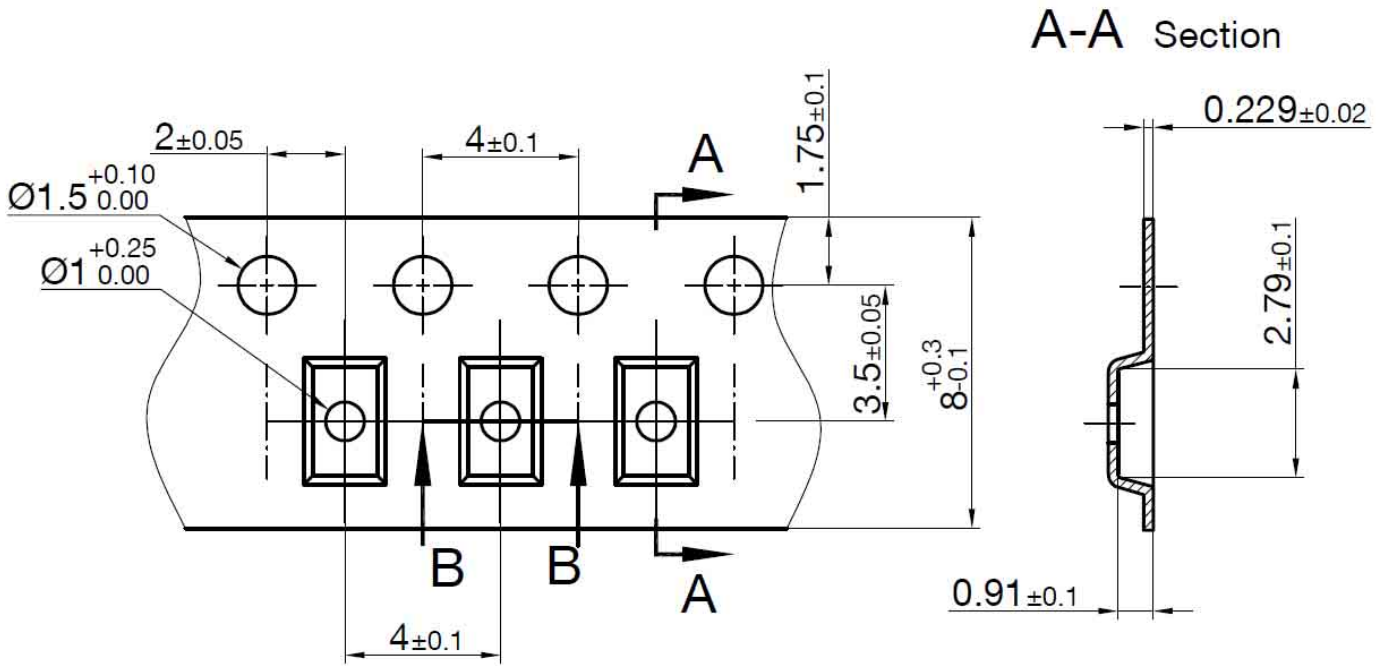


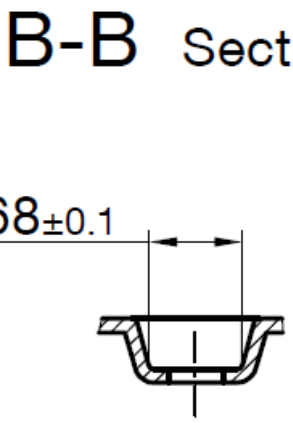
foot print recommendation
for reflow soldering:

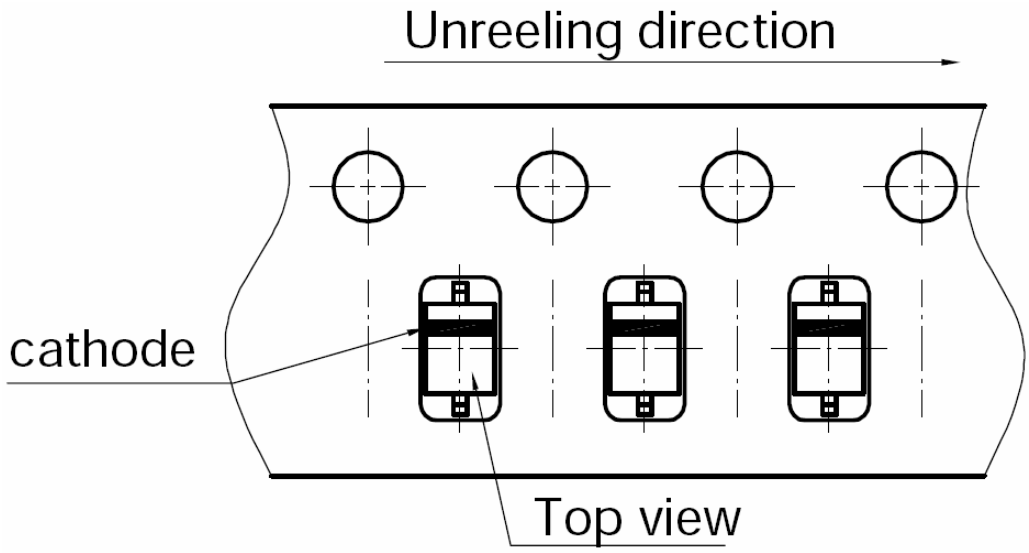


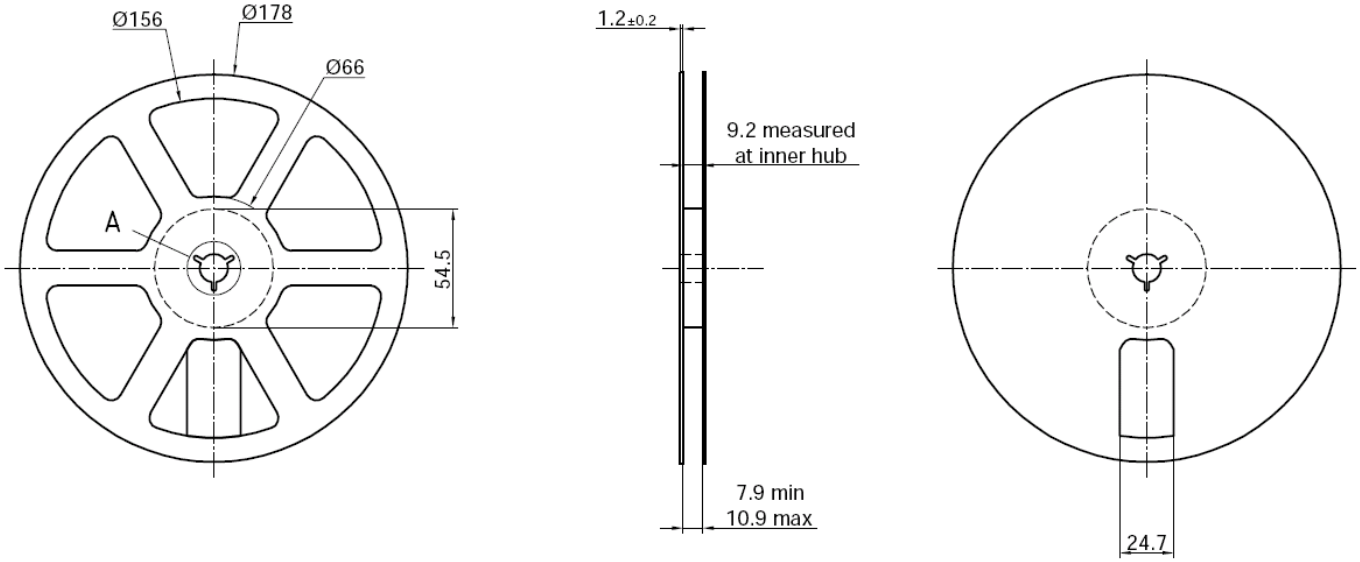
3.5 Tape and Reel Dimensions

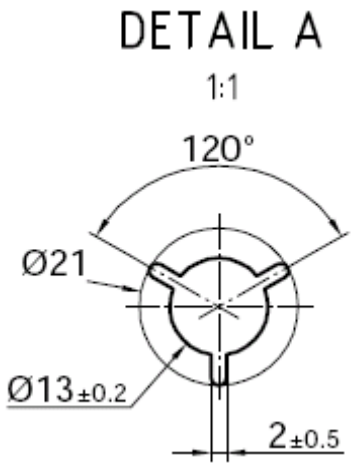
DO-219AC (MicroSMF) (Dimension in mm)

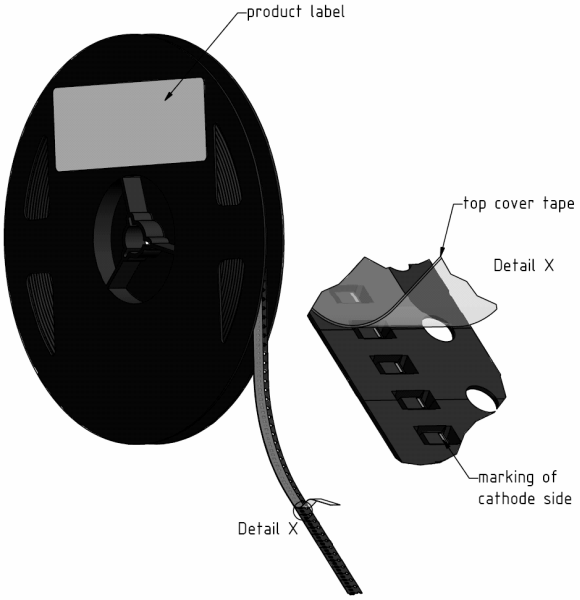





Unreeling direction
cathode
Top view

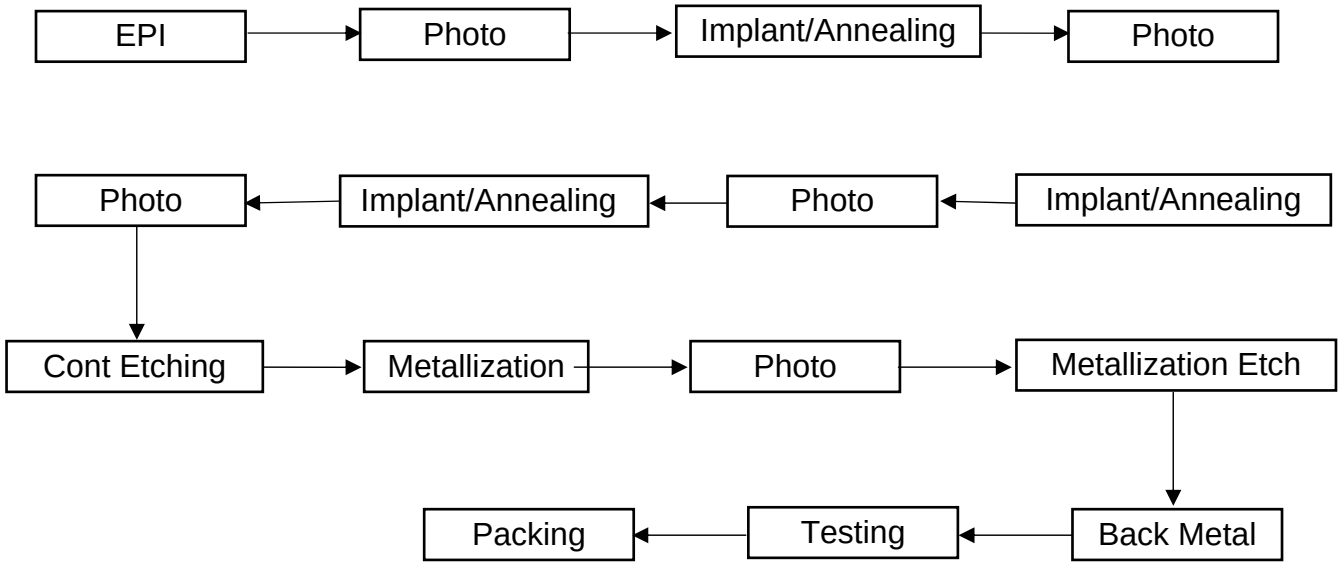

Ø156
Ø178
Ø66
A
54.5
1.2±0.2
9.2 measured
at inner hub
7.9 min
10.9 max
24.7


DETAIL A
1:1
120°
Ø21
Ø13±0.2
2±0.5

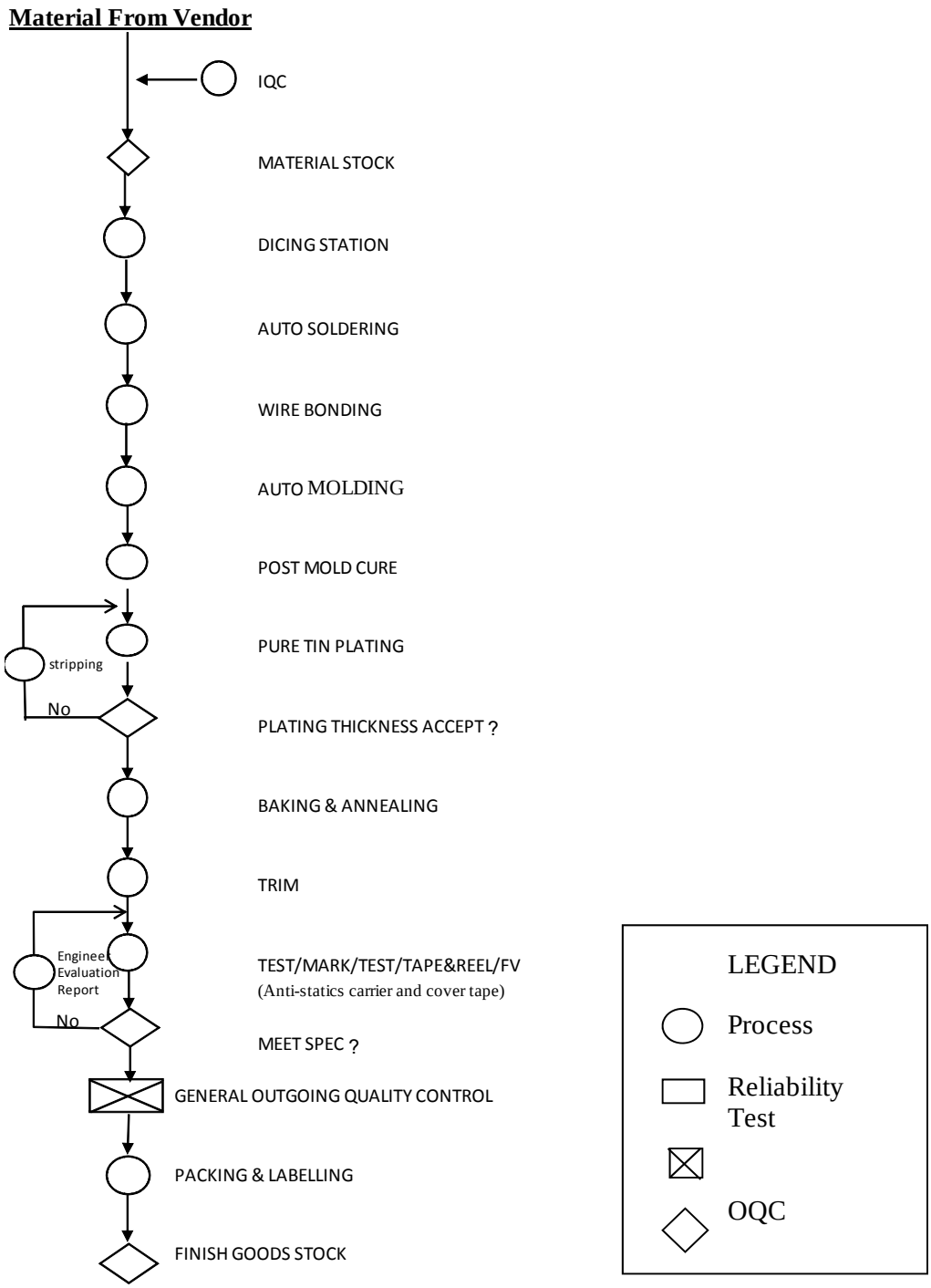

product label
top cover tape
Detail X
marking of
cathode side
Detail X

3.6 Wafer Process Control

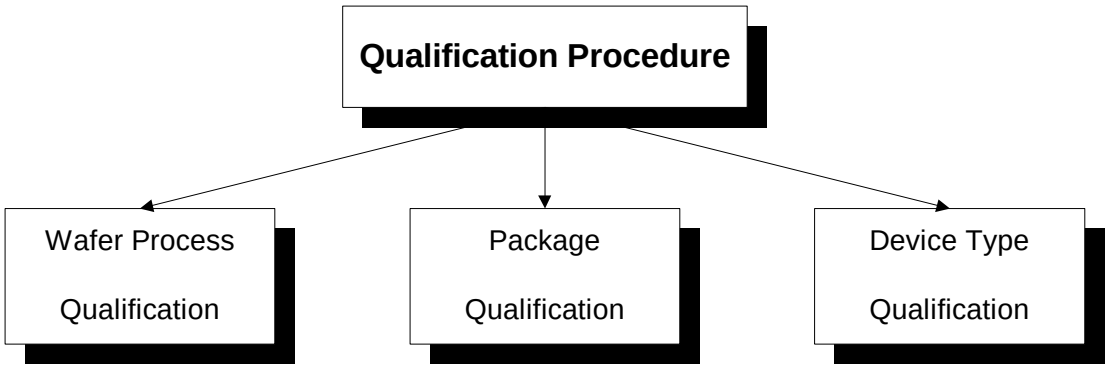
Zener Flow Description



3.7 Assembly Process Control



4. Qualification



All product qualifications are split into three distinct areas as shown above. This same procedure is also used to qualify a change. Before a product is released for use it must have been manufactured using a qualified process and package. Before a device is released for production processing it must also have successfully completed its required type specific qualification.

The standard tests which are used for this procedure are shown in the **"Qualification Test Plan"**.

The data shown for the various qualifications may be from structurally similar parts. The wafer process may be qualified using the same process but with a similar package. Similarly the package may be qualified using a similar wafer process.

4.1 Change Procedure

Changes are controlled by ECN (Engineering Change Notice). For major changes a customer notification procedure is installed. All customers using affected products have to be notified by PCN (Product Change Notification) at least 60 days prior to the implementation of the change.

A major change is defined as a change which affects the electrical and/or mechanical specification as defined in the data sheet.

Examples of a major change:

- Maximum and minimum data book specifications
- End of Life / Product obsolescence
- Manufacturing location (Site Change)
- Direct raw material
- Lead frame material/design
- Package material/design
- Solder/lead plating process

4.2 Reliability Qualification Test Plan

Customer P/N:		User Component Engineer:	
ES Spec:		General Specification: JESD47	
Supplier:	Vishay Semiconductor	Supplier Manufacturing Site	
Supplier Generic P/N:		Required PSW Date:	
Supplier Internal P/N:		Family Type:	

Item	Test	Test Conditions	Exceptions	# Lots	S.S.	Remarks
1	Test	Electrical Characterization @ 25°C.		all	all	
2	Preconditioning	Per JESD22-A113-A Level 1		all	all	
3	External Visual	Per AEC-Q101		all	all	
4	Parametric Verification	Characterization @ -55, 25 & 150°C.		3	25	
5	HTRB	Tj = Tjmax, test @ 0, 500 & 1000 hrs		3	77	
7	Temperature Cycling	Ta = -55 to 150°C., Test @ 0, 500, & 1000 cycles		3	77	
8	Autoclave	96 hrs., Ta = 121°C, rh = 100 % Test @ 0hrs & 96hrs.		3	77	
9	High Humidity High Temp Bias	85C/85RH; Bias @ 80% rated voltage. Test @ 0, 500 & 1000 hrs.		3	77	
10	IOL	Ta = 25°C, Adj for Tj > 100°C; 2 min on/off; Test @ 0, 7500 & 15000 cycles		3	77	
11	ESD	Per AEC-Q101-001 (HBM & MM)		1	30	
12	D.P.A.	Use devices that passed H3TRB & TC		3	2	
13	Physical Dimension	See applicable user device packaging spec.		1	30	
14	Terminal Strength	MIL-STD-750, Method 2036		3	30	
20	Resistance to Solder Heat	Ts = 260°C; Test pre & post		1	30	
21	Solderability	Ts = 245°C Dip & Look Test, Mag = 50X		3	10	
22	Thermal Resistance	JESD-24-3, 24-4, 24-6		1	10	
23	Wire Bond Strength	MIL-STD-750 Method 2037		1	10	
24	Bond Shear	AEC-Q101-003		1	10	
25	Die Shear	MIL-STD-750 Method 2017.2		1	10	
28	Steady State Operation Life	MIL-STD-750 M1038 Cond. B		3	77	
29	High Temp. Storage			3	77	
31	Whisker Test	JESD201, Class 2		3	77	

Comments:

Prepared by:
(supplier)

Pass/fail critera: No catastrophic failures (short/open) (C)
No parameters exeeding spec at and of life (S)
Whisker test pass Class 2

4.3 Whisker Test Report

Whisker Testing Report

JESD201 Class	2
Family	ESMP
Package outline	USMF
P/N	PLZ-20B
Mfg loc	VGSC
Plating line	Meco strip plating line
Plating type	Strip plating
plating solution	Rohm&Haas ST-300T
PB %	<5PPM

Report Date	10/15/13
Finish	Matte
Underlayer	None
Underlayer Spec	N/A
Min thickness Uinch	315.00
Actual thickness	517.61
Min thickness Um	8.00
Actual thickness	13.15
Mitigation	anneal 1H in 150C
DC	/

SPEC: MAX allowable Tin whisker length 45um

Lot No.	Precondition	TC -55C/85C 10min		
		500C	1000C	1500C
1	Pbfree reflow	12.9	18.3	26.1
2	No reflow	21.2	20	23.4
3	Snpb reflow	21.6	23.7	26.6

SPEC: MAX allowable Tin whisker length 40um

Lot No.	Precondition	Temp./Humi. 30C/60%RH			
		1000H	2000H	3000H	4000H
1	Pbfree reflow	0	0	0	0
2	No reflow	0	0	0	0
3	Snpb reflow	0	0	0	0

SPEC: MAX allowable Tin whisker length 40um

Lot No.	Precondition	High Temp./Humi. 55C/85%RH			
		1000H	2000H	3000H	4000H
1	Pbfree reflow	0	0	26.7	34
2	No reflow	0	0	17.5	23.9
3	Snpb reflow	0	0	26	35.4

4.4 ESD Classification

ESD – CLASSIFICATION

ESD CLASSIFICATON		RESULT	
		WITHSTAND VOLTAGE	FAIL/PASS
HMB	HUMAN BODY MODEL	>= 8000 V	0/10
MM	MACHINE MODEL	>= 800 V	0/10

ESD CLASSIFICATION LEVELS:

HUMAN BODY MODEL1500 Ohm / 100 pF	WITHSTAND VOLTAGE	AEC Q101-001	ESD STM5.1 - 1998	Mil-Std-750D JESD22-A114-A
	< 250 V	H0	CLASS 0	CLASS 0
	250 V TO < 500 V	H1A	CLASS 1A	CLASS 1A
	500 V TO < 1000 V	H1B	CLASS 1B	CLASS 1B
	1000 V TO < 2000 V	H1C	CLASS 1C	CLASS 1C
	2000 V TO < 4000 V	H2	CLASS 2	CLASS 2
	4000 V TO < 8000 V	H3A	CLASS 3A	CLASS 3A
	> 8000 V	H3B	CLASS 3B	CLASS 3B
MACHINE MODEL 0 Ohm / 200 pF	WITHSTAND VOLTAGE	AEC Q101-002	ESD STM5.2 - 2009	JESD22-A115-A
	< 25 V	M0	M1A	A
	25 V TO < 50 V	M1A	M1B	A
	50 V TO < 100 V	M1B	M1C	A
	100 V TO < 200 V	M2	M2	A
	200 V TO < 400 V	M3	M3	B
	> 400 V	M4	M4	C

5. User Information

5.1 Reflow Soldering

As per IPC/JEDEC J-STD-020D

- total restricted to 3 soldering operations maximum

Temperature/Time Profile - Infrared-Soldering

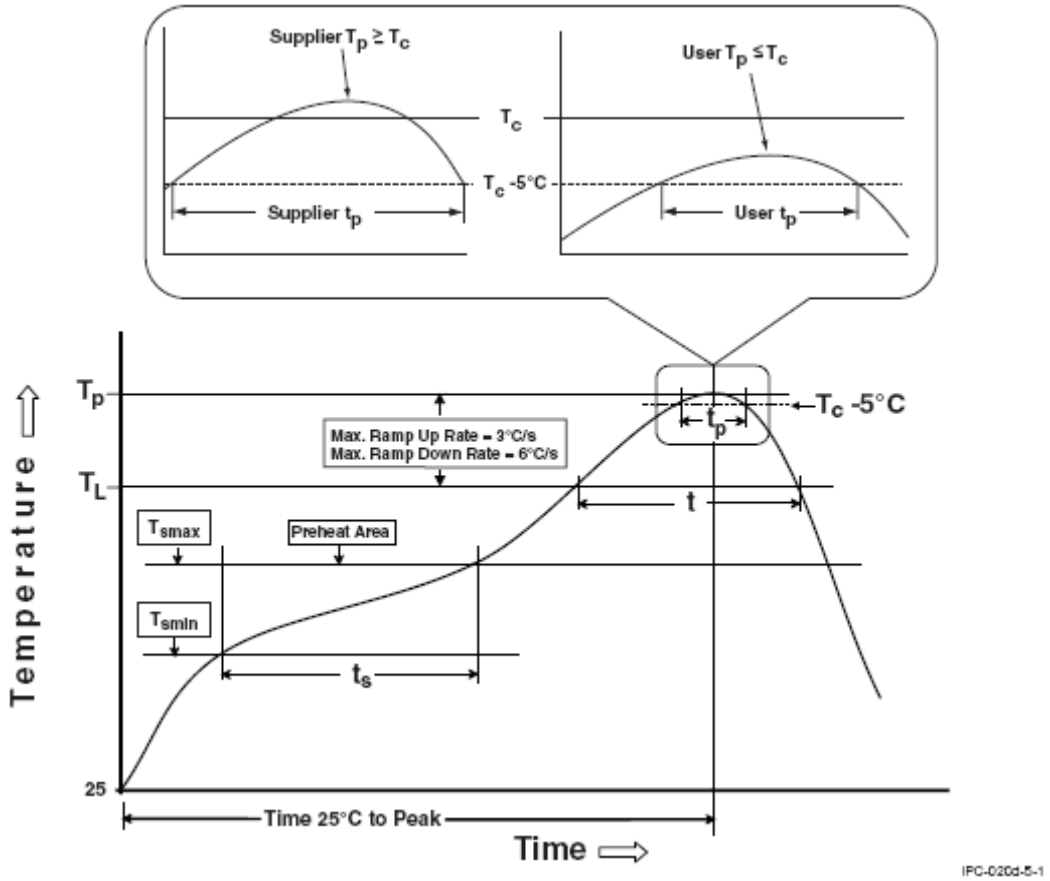


Table 5-2 Classification Reflow Profiles

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat & Soak Temperature min (T_{smin}) Temperature max (T_{smax}) Time (T_{smin} to T_{smax}) (t_s)	 100 °C 150 °C 60-120 seconds	 150 °C 200 °C 60-120 seconds
Average ramp-up rate (T_{smax} to T_p)	3 °C/second max.	3 °C/second max.
Liquidous temperature (T_L) Time at liquidous (t_L)	183 °C 60-150 seconds	217 °C 60-150 seconds
Peak package body temperature (T_p)*	See classification temp in Table 4.1	See classification temp in Table 4.2
Time (t_p)** within 5 °C of the specified classification temperature (T_c)	20** seconds	30** seconds
Average ramp-down rate (T_p to T_{smax})	6 °C/second max.	6 °C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.
* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum. ** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.		

Note 1: All temperatures refer to the center of the package, measured on the package body surface that is facing up during assembly reflow (e.g., live-bug). If parts are reflowed in other than the normal live-bug assembly reflow orientation (i.e., dead-bug), T_p **shall** be within ± 2 °C of the live-bug T_p and still meet the T_c requirements, otherwise, the profile **shall** be adjusted to achieve the latter. To accurately measure actual peak package body temperatures refer to JEP140 for recommended thermocouple use.

Note 2: Reflow profiles in this document are for classification/preconditioning and are not meant to specify board assembly profiles. Actual board assembly profiles should be developed based on specific process needs and board designs and should not exceed the parameters in Table 5-2.

For example, if T_c is 260 °C and time t_p is 30 seconds, this means the following for the supplier and the user.

For a supplier: The peak temperature must be at least 260 °C. The time above 255 °C must be at least 30 seconds.

For a user: The peak temperature must not exceed 260 °C. The time above 255 °C must not exceed 30 seconds.

Note 3: All components in the test load **shall** meet the classification profile requirements.

Note 4: SMD packages classified to a given moisture sensitivity level by using Procedures or Criteria defined within any previous version of J-STD-020, JESD22-A112 (rescinded), IPC-SM-786 (rescinded) do not need to be reclassified to the current revision unless a change in classification level or a higher peak classification temperature is desired.

Table 4-1 SnPb Eutectic Process - Classification Temperatures (T_c)

Package Thickness	Volume mm^3 <350	Volume mm^3 ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 4-2 Pb-Free Process - Classification Temperatures (T_c)

Package Thickness	Volume mm^3 <350	Volume mm^3 350 - 2000	Volume mm^3 >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 mm - 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Note 1: At the discretion of the device manufacturer, but not the board assembler/user, the maximum peak package body temperature (T_p) can exceed the values specified in Tables 4-1 or 4-2. The use of a higher T_p does not change the classification temperature (T_c).

Note 2: Package volume excludes external terminals (e.g., balls, bumps, lands, leads) and/or nonintegral heat sinks.

Note 3: The maximum component temperature reached during reflow depends on package thickness and volume. The use of convection reflow processes reduces the thermal gradients between packages. However, thermal gradients due to differences in thermal mass of SMD packages may still exist.

Note 4: Moisture sensitivity levels of components intended for use in a Pb-free assembly process **shall** be evaluated using the Pb-free classification temperatures and profiles defined in Tables 4.2 and 5-2, whether or not Pb-free.

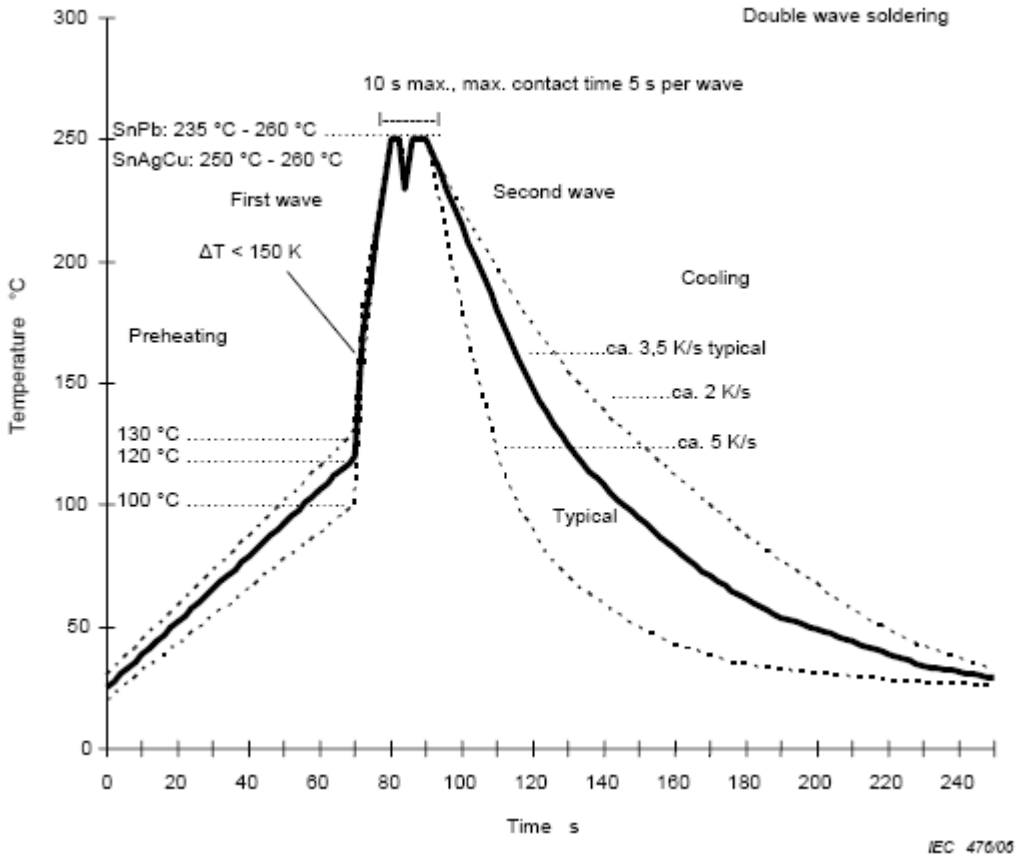
Note 5: SMD packages classified to a given moisture sensitivity level by using Procedures or Criteria defined within any previous version of J-STD-020, JESD22-A112 (rescinded), IPC-SM-786 (rescinded) do not need to be reclassified to the current revision unless a change in classification level or a higher peak classification temperature is desired.

5.2 Double Wave Soldering

As per IEC 61760-1

- maximum 2x
- total restricted to 3 soldering operations maximum

Temperature/Time Profile – Double Wave



6. Environmental Information

6.1 Environmental Policy

Vishay Small Signal Products has defined Environmental policy aimed at

- reducing the use of harmful chemicals in its processes
- reducing the content of harmful materials in its products
- using recyclable materials wherever possible
- reducing the energy content of its products

As part of that plan no ozone depleting chemicals are known to be used by either Vishay Small Signal Products or its sub-contractors processes.

All production sites are certified according to the international environmental standard ISO 14001.

6.2 Declaration of Material Contents

SEMICONDUCTOR
Small Signal Products

MATERIAL CONTENT LIST

PACKAGE FAMILY: DO-219AC (MicroSMF)
DATE: 23-May-2014
REVISION: 2

GREEN (5-2008)**

RoHS COMPLIANT

Pb-free

MATERIAL CONTENT					
Part	**Material**	**CAS N°**	**Actual weight (mg)**	**% of weight**	**ppm of total weight**
Mold compound 51,91%	Silica	60676-86-0	1,9934	80,00%	415283
	Epoxy Resin	Trade secret	0,2492	10,00%	51910
	Phenolic resin	Trade secret	0,2367	9,50%	49315
	Carbon Black	1333-86-4	0,0125	0,50%	2596
	TOTAL		**2,49**		
Lead frame 44,91%	Cu	7440-50-8	2,045693	94,89%	426186
	Ag	7440-22-4	0,053895	2,50%	11228
	Fe	7439-89-6	0,050661	2,35%	10554
	Pb	7439-92-1	0,001078	0,05%	225
	P	7723-14-0	0,001779	0,08%	371
	Zn	7440-66-6	0,002695	0,13%	561
	TOTAL		**2,16**		
Terminal finish 2,34%	Sn	7440-31-5	0,11248875	99,99%	23435,156
	other	-	0,00001125	0,01%	2,34375
	TOTAL		**0,11**		
Silicon chip 0,65%	Si	7440-21-3	0,028	89,5%	5777
	Al	7429-90-5	0,001	3,9%	249
	Au	7440-57-5	0,001	4,5%	293
	O	17778-80-2	0,001	2,2%	140
	TOTAL		**0,03**		
Bond wire 0,19%	Cu	7440-50-8	0,0089991	99,99%	1875
	other	-	0,0000009	0,01%	0,188
	TOTAL		**0,01**		
Total weight			**4,8**		

Remarks: Total weight range ± 10%
Reflow Soldering acc. J-STD-020D
* Not detected
** Please see document "Vishay Green and Halogen-Free Definitions (5-2008)"
http://www.Vishay.com/doc?99902
Material Analysis Reports available on request

Other Data

6.3 Approval Certificates

Vishay Semiconductor, Vöcklabruck, Austria
ISO/TS16949 / ISO9001 / ISO14001 / OHSAS18001 / EMAS

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

VISHAY Semiconductor (Austria) Ges.m.b.H
Telefunkenstrasse 5
4840 Vöcklabruck
Austria

has established and applies
a Quality Management System for

Design and Manufacture
of Semiconductors.

An audit was performed, Report No. 70004203.
Proof has been furnished that the requirements
according to

ISO 9001:2008

are fulfilled.
The certificate is valid from 2015-08-10 until 2018-08-09.
Certificate Registration No.: 12 100 12741 TMS.

Product Compliance Management
Munich, 2015-08-10

TÜV SÜD Management Service GmbH • Zertifizierungsstelle • Ridlerstraße 65 • 80339 München • Germany
www.tuev-sued.de/certificate-validity-check

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

VISHAY Semiconductor (Austria) Ges.m.b.H
Telefunkenstrasse 5
4840 Vöcklabruck
Austria

has established and applies
a Quality Management System for

Design and Manufacture
of Semiconductors
(with Product Design as per Chapter 7.3).

An audit was performed, Report No. 70004203.
Proof has been furnished that the requirements
according to

ISO/TS 16949:2009
Third Edition 2009-06-15

are fulfilled.
Issue date: 2015-08-10
Expiry date: 2018-08-09
Certificate Registration No.: 12 111 12741 TMS
IATF Certificate No.: 0216204
Part of the certificate is an appendix.

Product Compliance Management
Munich, 2015-08-10

Page 1 of 2

TÜV SÜD Management Service GmbH • Zertifizierungsstelle • Ridlerstraße 65 • 80339 München • Germany
www.tuev-sued.de/certificate-validity-check

ISO 14001

N° U-13-12402

Within a certification audit the

Vishay Semiconductor (Austria)
Ges.m.b.H.

at the location

Telefunkenstraße 5, A-4840 Vöcklabruck

has proved that an environmental management system was successfully established and is being continuously applied. This management system meets the requirements of the international standard

ISO 14001

Issue of November 2004

for the activities

Production of other electronic components

This certificate is valid until 1 June 2016.

Berlin, 17 July 2013

Prof. Dr.-Ing. Jan Uwe Lieback
Environmental Verifier DE-V-0026

Andreas Lemke
Head of Certification Office

Certificate

GUTcert

Eichenstraße 3 b • 12435 Berlin • Germany
Tel.: +49 30 2332021-0 • Fax: +49 30 2332021-39 • www.gut-cert.de

afnor

QualPack PLZ-Series
Industrial Grade

Certificate

BS OHSAS 18001

N° S-1S-12402-EN

Within a certification audit the organization

VISHAY

Vishay Semiconductor (Austria) Ges.m.b.H.

at the location

Telefunkenstraße 5, A-4840 Vöcklabruck

has proved that an occupational health and safety management system was established and is successfully applied in accordance with the requirements of the international standard

BS OHSAS 18001

Issue of July 2007

for the following activity

Production of other electronic components

This certificate is valid from 13 June 2015 until 12 June 2018.

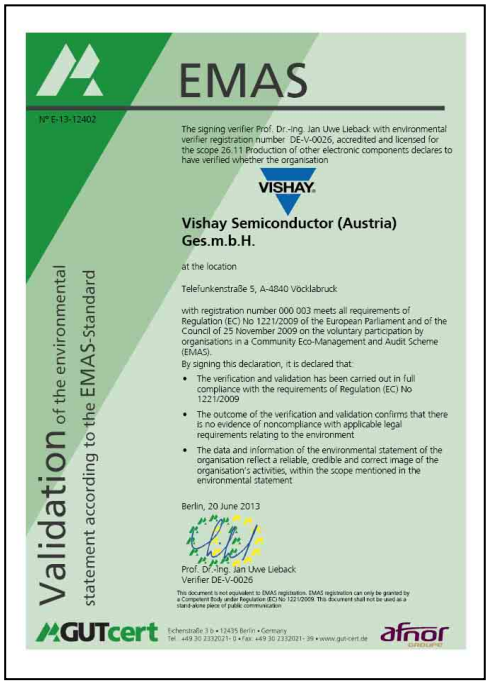
Berlin, 11 June 2015

Andreas Lemke
Head of Certification Office

GUTcert

Eichenstraße 3 b • 12435 Berlin • Germany
Tel.: +49 30 2332021-0 • Fax: +49 30 2332021-39 • www.gut-cert.de

afnor



Validation of the environmental statement according to the EMAS-Standard

EMAS

N° E-13-12402

The signing verifier Prof. Dr.-Ing. Jan Uwe Lieback with environmental verifier registration number DE-V-0026, accredited and licensed for the scope 26.11 Production of other electronic components declares to have verified whether the organisation

VISHAY

Vishay Semiconductor (Austria) Ges.m.b.H.

at the location

Telefunkenstraße 5, A-4840 Vöcklabruck

with registration number 000 003 meets all requirements of Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community Eco-Management and Audit Scheme (EMAS).

By signing this declaration, it is declared that:

- The verification and validation has been carried out in full compliance with the requirements of Regulation (EC) No 1221/2009
- The outcome of the verification and validation confirms that there is no evidence of noncompliance with applicable legal requirements relating to the environment
- The data and information of the environmental statement of the organisation reflect a reliable, credible and correct image of the organisation's activities, within the scope mentioned in the environmental statement

Berlin, 20 June 2013

Prof. Dr.-Ing. Jan Uwe Lieback
Verifier DE-V-0026

This document is not equivalent to EMAS registration. EMAS registration can only be granted by a Competent Body under Regulation (EC) No 1221/2009. This document shall not be used as a stand-alone piece of public communication

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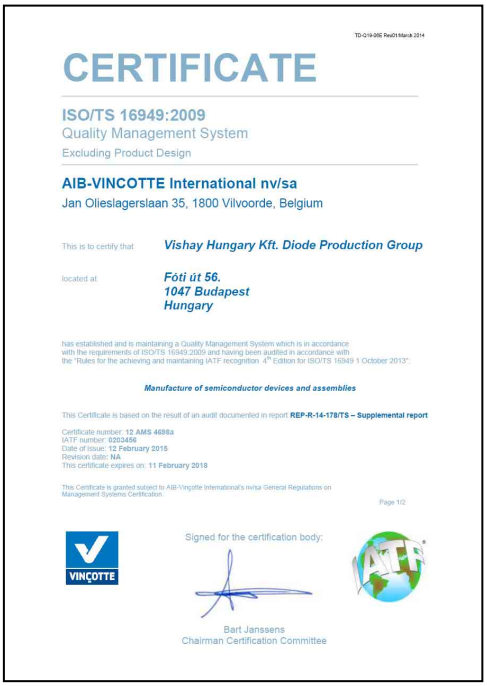
afnor

Vishay Budapest, Hungary
ISO/TS16949 / OHSAS18001 (MSZ 28001) / ISO14001



CERTIFICATE

ISO/TS 16949:2009
Quality Management System
Excluding Product Design

AIB-VINCOTTE International nv/sa
Jan Olieslagerslaan 35, 1800 Vilvoorde, Belgium

This is to certify that *Vishay Hungary Kft. Diode Production Group*

located at *Fóti út 56.*
1047 Budapest
Hungary

has established and is maintaining a Quality Management System which is in accordance with the requirements of ISO/TS 16949:2009 and having been audited in accordance with the "Rules for the achieving and maintaining IATF recognition 4th Edition for ISO/TS 16949 1 October 2013".

Manufacture of semiconductor devices and assemblies

This Certificate is based on the result of an audit documented in report **REP-R-14-178/TS – Supplemental report**

Certificate number: **12 AMS 4698a**
IATF number: **0203456**
Date of issue: **12 February 2015**
Revision date: **NA**
This certificate expires on: **11 February 2018**

This Certificate is granted subject to AIB-Vincotte International's nv/sa General Regulations on Management Systems Certification.

Page 1/2

Signed for the certification body:

Bart Janssens
Chairman Certification Committee

CERTIFICATE

ÉMI-TÜV SÜD Kft.
H – 2000 Szentendre, Dózsa György út 26.
hereby certifies that

Vishay Hungary Kft.
H – 1047 Budapest
Fóti út 56.

has established and applies
an Industrial Safety Management Systems for

Production of microelectronic devices and systems.

An audit was performed, Report No. 9925633
Proof has been furnished that the requirements
according to

MSZ 28001: 2008

are fulfilled. This Certificate is valid until **2017-07-27**.
Certificate Registration No. **MS 1124/M-038**

Szentendre, 2014-07-28

ZERTIFIKAT ◆ CERTIFICATE ◆ CERTIFICADO ◆ CERTIFICAT ◆ СЕРТИФИКАТ

TANÚSÍTVÁNY

Az **ÉMI-TÜV SÜD Kft.**
H – 2000 Szentendre, Dózsa György út 26.
tanúsítja, hogy a

Vishay Hungary Kft.
H – 1047 Budapest
Fóti út 56.

Mikroelektronikai eszközök és rendszerek gyártása

érvényességi területre vonatkozóan
környezetközpontú irányítási rendszert vezetett be és alkalmaz.
Az audit során (jelentésszám: 9925633) bizonyítást nyert,
hogy a rendszer megfelel az

MSZ EN ISO 14001: 2005

szabvány követelményeinek.
Ez a tanúsítvány **2017-07-27** –ig érvényes.
Nyilvántartási szám: **MS 1124/K-038**

Szentendre, 2014-07-28

ZERTIFIKAT ◆ CERTIFICATE ◆ CERTIFICADO ◆ CERTIFICAT ◆ СЕРТИФИКАТ

Vishay, Heilbronn, Germany
ISO/TS16949 / ISO9001 / ISO14001

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

Vishay Semiconductor GmbH
Theresienstraße 2
74072 Heilbronn
Germany

has established and applies
a Quality Management System for

Design and Manufacture of
Optoelectronic Components
(with Product Design as per Chapter 7.3)

An audit was performed, Report No. 70007368
Proof has been furnished that the requirements
according to

ISO/TS 16949:2009
Third Edition 2009-06-15

are fulfilled. The certificate is valid from 2013-04-11 until 2016-04-10
Certificate Registration No.: 12 111 21690 TMS
IATF Certificate No.: 0160505
Part of the certificate is an appendix.

Product Compliance Management
Munich, 2013-04-11

Page 1 of 2

TÜV SÜD Management Service GmbH • Zertifizierungsstelle • Ridlerstraße 65 • 80339 München • Germany

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

Vishay Semiconductor GmbH
Theresienstraße 2
74072 Heilbronn
Germany

has established and applies
a Quality Management System for

Design, Manufacture and Sales of
Optoelectronic Components

An audit was performed, Report No. 70007368
Proof has been furnished that the requirements
according to

ISO 9001:2008

are fulfilled. The certificate is valid from 2013-04-11 until 2016-04-10.
Certificate Registration No. 12 100 21690 TMS

Product Compliance Management
Munich, 2013-04-11

TÜV SÜD Management Service GmbH • Zertifizierungsstelle • Ridlerstraße 65 • 80339 München • Germany

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

Vishay Semiconductor GmbH
Theresienstraße 2
74072 Heilbronn
Germany

has established and applies
an Environmental Management System for

Design, Manufacture and Sales of
Optoelectronic Components

An audit was performed, Report No. 70007368.
Proof has been furnished that the requirements
according to

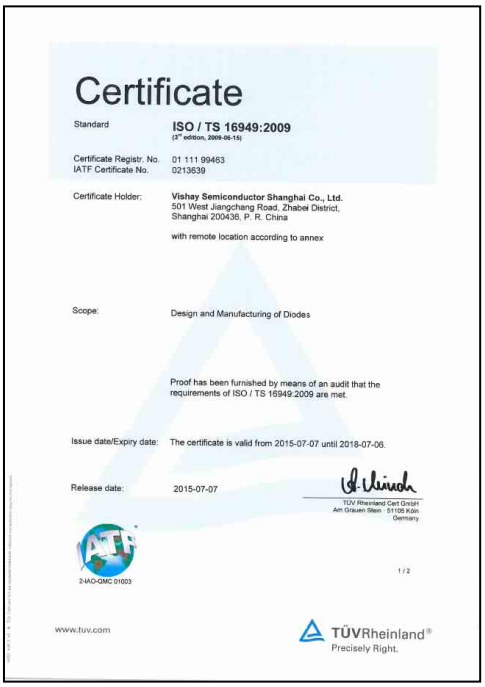
ISO 14001:2004

are fulfilled. The certificate is valid from 2014-01-26 until 2017-01-25.
Certificate Registration No. 12 104 21690 TMS

Product Compliance Management
Munich, 2014-01-22

TÜV SÜD Management Service GmbH • Zertifizierungsstelle • Ridlerstraße 65 • 80339 München • Germany

Vishay Shanghai, China
ISO/TS16949 / ISO 9001 / ISO14001 / BS OHSAS 18001



Certificate

Standard: ISO / TS 16949:2009 (3rd edition, 2009-06-15)

Certificate Registr. No. 01 111 99463
IATF Certificate No. 0213639

Certificate Holder: Vishay Semiconductor Shanghai Co., Ltd.
501 West Jiangchang Road, Zhabei District,
Shanghai 200436, P. R. China

with remote location according to annex

Scope: Design and Manufacturing of Diodes

Proof has been furnished by means of an audit that the requirements of ISO / TS 16949:2009 are met.

Issue date/Expiry date: The certificate is valid from 2015-07-07 until 2018-07-06.

Release date: 2015-07-07

TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln
Germany

2-IAO-QMC 01003

1 / 2

www.tuv.com

TÜVRheinland®
Precisely Right.

Certificate

Standard: GB/T 19001-2008/ISO 9001:2008

Certificate Registr. No. 01 100 99463

Certificate Holder: Vishay Semiconductor Shanghai Co., Ltd.
Organization Code: 607336851
Registration Address: 501 West Jiangchang Road,
Zhabei District, Shanghai 200436, P. R. China
Operation Address: same as above

Scope: Design and Manufacturing of Diodes

Proof has been furnished by means of an audit that the requirements of GB/T 19001-2008/ISO 9001:2008 are met.

Validity: The certificate is valid from 2015-07-17 until 2018-07-16.

This certificate information can be searched on CNCA official website http://www.cnca.gov.cn

2015-07-07

TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln

www.tuv.com

DAkkS

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Certificate

Standard: ISO 14001:2004 + Cor. 1:2009

Certificate Registr. No. 01 104 000495

Certificate Holder: Vishay Semiconductor Shanghai Co., Ltd.
501 West Jiangchang Road, Zhabei District,
Shanghai 200436, P. R. China

Scope: Design and Manufacturing of Diodes

Proof has been furnished by means of an audit that the requirements of ISO 14001:2004 + Cor. 1:2009 are met.

Validity: The certificate is valid from 2016-01-06 until 2018-09-14.
First certification 2001

2015-10-29

TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln

www.tuv.com

DAkkS

TÜVRheinland®
Precisely Right.

Certificate

Standard: BS OHSAS 18001:2007

Certificate Registr. No. 01 113 000495

Certificate Holder: Vishay Semiconductor Shanghai Co., Ltd.
501 West Jiangchang Road, Zhabei District,
Shanghai 200436, P. R. China

Scope: Design and Manufacturing of Diodes

Proof has been furnished by means of an audit that the requirements of BS OHSAS 18001:2007 are met.

Validity: The certificate is valid from 2016-01-07 until 2019-01-06.
First certification 2013

2015-10-29

TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln

www.tuv.com

DAkkS

TÜVRheinland®
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6.4 Databook Reference

The following data references are available for this device:

1. Vishay Databook
2. Applications Notes
3. Internet homepage: http://www.vishay.com

Reference Address
All enquiries relating to this document should be addressed to the following:

Vishay Semiconductor (Austria) Ges.m.b.H.
Telefunkenstraße 5
A–4840 Vöcklabruck / AUSTRIA
Phone : + 43 7672 72451 0
Fax : + 43 7672 72451 280

Vishay

7. Locations

General Production Locations of the Division Small Signal Products

Location	Country	City	Assessment
Vishay Vöcklabruck	Austria	Vöcklabruck	ISO/TS 16949 ISO 9001 ISO 14001 OHSAS 18001 EMAS
Vishay Budapest	Hungary	Budapest	ISO/TS 16949 ISO 9001 ISO 14001 OHSAS 18001
Vishay Heilbronn	Germany	Heilbronn	ISO/TS 16949 ISO 9001 ISO 14001
Vishay Shanghai	China	Shanghai	ISO/TS 16949 ISO 9001 ISO 14001
Vishay Tianjin	China	Tianjin	ISO/TS 16949 ISO 9001 ISO 14001
Subcon	China	Chuzhou	ISO/TS 16949 ISO 9001 ISO 14001
Subcon	China	Suzhou	ISO/TS 16949 ISO 9001 ISO 14001 OHSAS 18001
Subcon	Korea	Iksan	ISO/TS 16949 ISO 9001 ISO 14001
Subcon	China	Shanwei	ISO/TS 16949 ISO 9001 ISO 14001
Subcon	China	Chengdu	ISO/TS 16949 ISO 9001 ISO 14001 OHSAS 18001
Wafer Foundry	China	Hangzhou	ISO/TS 16949 ISO 9001 ISO 14001

8. Revision history

Issue	Revision	Modification Notice	Applicable from
FEB-14	Revision 1	1st Edition	February 2014
JUL-14	Revision 2	General Update	July 2014
SEP-14	Revision 3	µSMF to MicroSMF	September 2014
JUl-15	Revision 4	MicroSMF to DO-219 (MicroSMF)	July 2015
AUG-15	Revision 5	General Update	August 2015
OCT-15	Revision 6	General Update	October 2015
FEB-16	Revision 7	Industrial Grade	February 2016