

Small Signal Zener Diodes



FEATURES

- Zener voltage specified at 50 μ A
- Maximum delta V_Z given from 10 μ A to 100 μ A
- Very high stability
- Low noise
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

APPLICATIONS

- Voltage stabilization

PRIMARY CHARACTERISTICS

PARAMETER	VALUE	UNIT
V_Z range nom.	1.8 to 43	V
Test current I_{ZT}	0.05	mA
V_Z specification	Pulse current	
Int. construction	Single	

ORDERING INFORMATION

DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
TZS4678 to TZS4717	TZS4678-GS08 to TZS4717-GS08	2500 (per 7" reel)	12 500/box

PACKAGE

PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
QuadroMELF SOD-80	34 mg	n/a	n/a	260 °C/10 s at terminals

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ °C}$, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Power dissipation	$R_{thJA} \leq 300\text{ K/W}$	P_{tot}	500	mW
Zener current		I_Z	P_{tot}/V_Z	mA
Junction to ambient air	On PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	-65 to +175	°C
Forward voltage (max.)	$I_F = 100\text{ mA}$	V_F	1.5	V



ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)								
PART NUMBER	ZENER VOLTAGE RANGE			TEST CURRENT		REVERSE CURRENT ⁽³⁾		VOLTAGE CHANGE ⁽⁴⁾
	V_Z at I_{ZT1}			I_{ZT1}	I_{ZT2} ⁽²⁾	I_R at V_R		ΔV_Z
	V			mA		μA	V	V
	MIN.	NOM. ⁽¹⁾	MAX.			MAX.		MAX.
TZX4678	1.71	1.8	1.89	0.05	120	7.5	1	0.7
TZX4679	1.9	2	2.1	0.05	110	5	1	0.7
TZX4680	2.09	2.2	2.31	0.05	100	4	1	0.75
TZX4681	2.28	2.4	2.52	0.05	95	2	1	0.8
TZX4682	2.565	2.7	2.835	0.05	90	1	1	0.85
TZX4683	2.85	3	3.15	0.05	85	0.8	1	0.9
TZX4684	3.135	3.3	3.465	0.05	80	7.5	1.5	0.95
TZX4685	3.42	3.6	3.78	0.05	75	7.5	2	0.95
TZX4686	3.705	3.9	4.095	0.05	70	5	2	0.97
TZX4687	4.085	4.3	4.515	0.05	65	4	2	0.99
TZX4688	4.465	4.7	4.935	0.05	60	10	3	0.99
TZX4689	4.845	5.1	5.355	0.05	55	10	3	0.97
TZX4690	5.32	5.6	5.88	0.05	50	10	4	0.96
TZX4691	5.89	6.2	6.51	0.05	45	10	5	0.95
TZX4692	6.46	6.8	7.14	0.05	35	10	5.1	0.9
TZX4693	7.125	7.5	7.875	0.05	31.8	10	5.7	0.75
TZX4694	7.79	8.2	8.61	0.05	29	1	6.2	0.5
TZX4695	8.265	8.7	9.135	0.05	27.4	1	6.6	0.1
TZX4696	8.645	9.1	9.555	0.05	26.2	1	6.9	0.08
TZX4697	9.5	10	10.5	0.05	24.8	1	7.6	0.1
TZX4698	10.45	11	11.55	0.05	21.6	0.05	8.4	0.11
TZX4699	11.4	12	12.6	0.05	20.4	0.05	9.1	0.12
TZX4700	12.35	13	13.65	0.05	19	0.05	9.8	0.13
TZX4701	13.3	14	14.7	0.05	17.5	0.05	10.6	0.14
TZX4702	14.25	15	15.75	0.05	16.3	0.05	11.4	0.15
TZX4703	15.2	16	16.8	0.05	15.4	0.05	12.1	0.16
TZX4704	16.15	17	17.85	0.05	14.5	0.05	12.9	0.17
TZX4705	17.1	18	18.9	0.05	13.2	0.05	13.6	0.18
TZX4706	18.05	19	19.95	0.05	12.5	0.05	14.4	0.19
TZX4707	19	20	21	0.05	11.9	0.01	15.2	0.2
TZX4708	20.9	22	23.1	0.05	10.8	0.01	16.7	0.22
TZX4709	22.8	24	25.2	0.05	9.9	0.01	18.2	0.24
TZX4710	23.75	25	26.25	0.05	9.5	0.01	19	0.25
TZX4711	25.65	27	28.35	0.05	8.8	0.01	20.4	0.27
TZX4712	26.6	28	29.4	0.05	8.5	0.01	21.2	0.28
TZX4713	28.5	30	31.5	0.05	7.9	0.01	22.8	0.3
TZX4714	31.35	33	34.65	0.05	7.2	0.01	25	0.33
TZX4715	34.2	36	37.8	0.05	6.6	0.01	27.3	0.36
TZX4716	37.05	39	40.95	0.05	6.1	0.01	29.6	0.39
TZX4717	40.85	43	45.15	0.05	5.5	0.01	32.6	0.43

Notes

- (1) Tolerancing and voltage designation (V_Z). The type numbers shown have a standard tolerance of $\pm 5\%$ on the nominal zener voltage.
- (2) Maximum zener current ratings (I_{ZM}). Maximum zener current ratings are based on maximum zener voltage of the individual units.
- (3) Reverse leakage current (I_R). Reverse leakage currents are guaranteed and measured at V_R as shown on the table.
- (4) Maximum voltage change (ΔV_Z). Voltage change is equal to the difference between V_Z at 100 μA and V_Z at 10 μA .

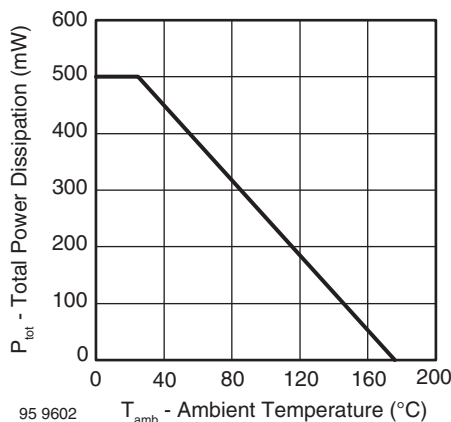
BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Total Power Dissipation vs. Ambient Temperature

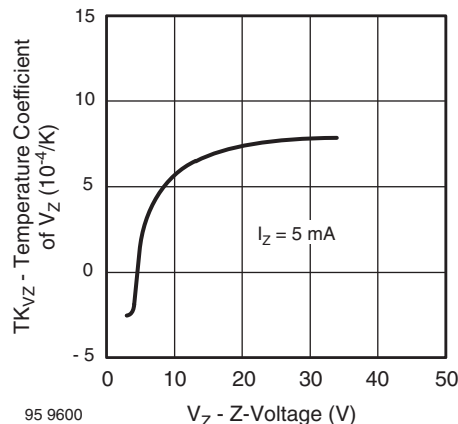
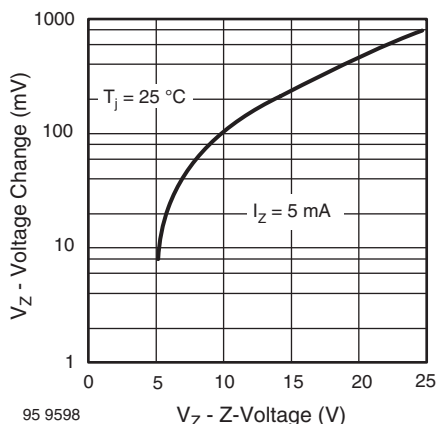
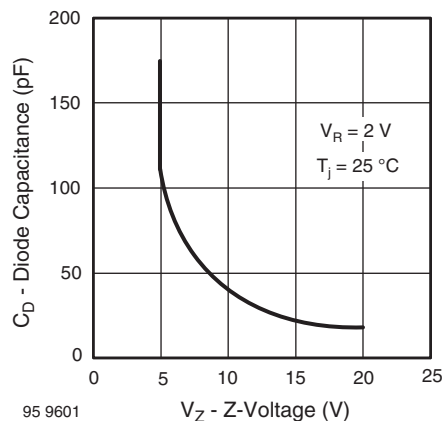

Fig. 4 - Temperature Coefficient of V_Z vs. Z-Voltage

Fig. 2 - Typical Change of Working Voltage under Operating Conditions at $T_{amb} = 25\text{ }^{\circ}\text{C}$


Fig. 5 - Diode Capacitance vs. Z-Voltage

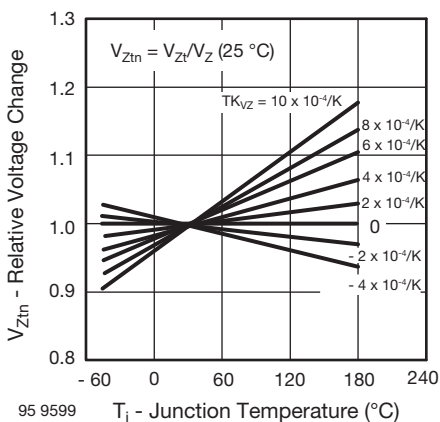


Fig. 3 - Typical Change of Working Voltage vs. Junction Temperature

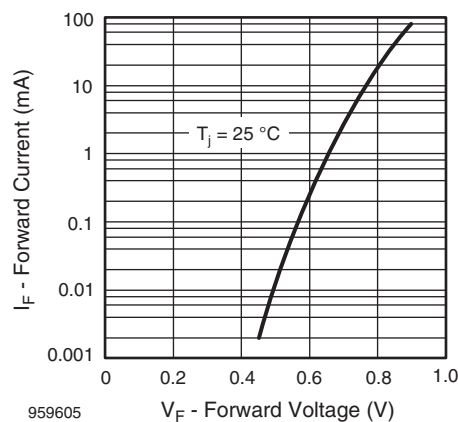


Fig. 6 - Forward Current vs. Forward Voltage

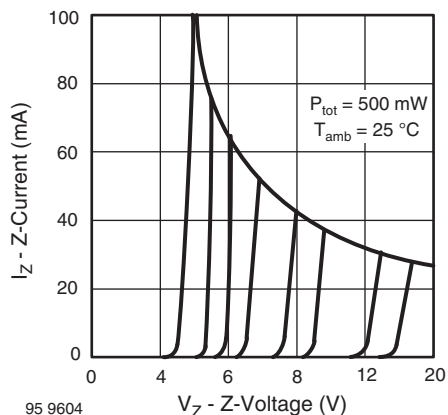


Fig. 7 - Z-Current vs. Z-Voltage

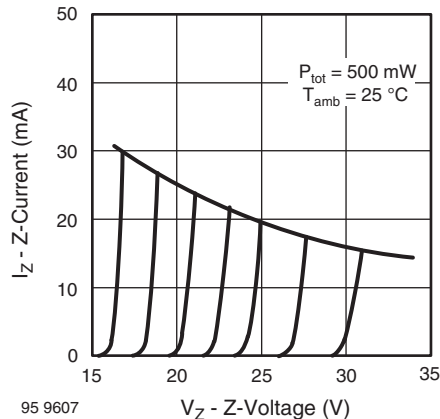


Fig. 8 - Z-Current vs. Z-Voltage

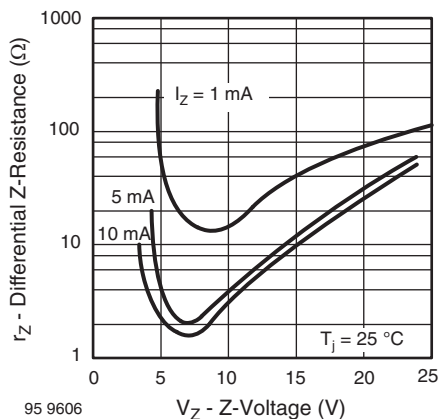


Fig. 9 - Differential Z-Resistance vs. Z-Voltage

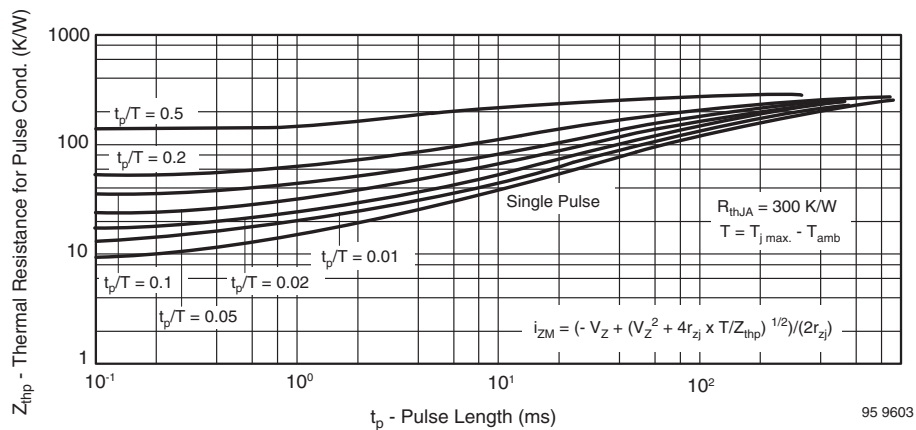
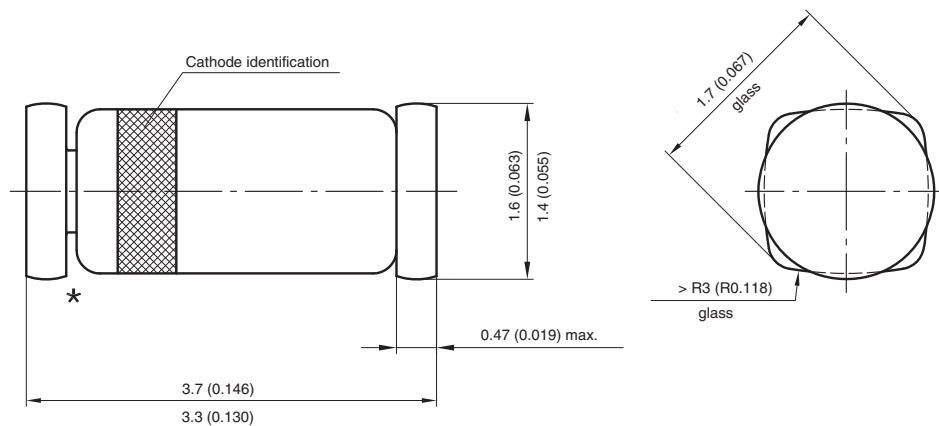


Fig. 10 - Thermal Response

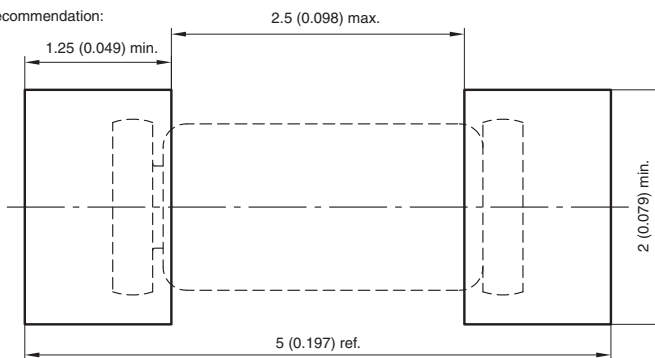


PACKAGE DIMENSIONS in millimeters (inches): **QuadroMELF SOD-80**



★ The gap between plug and glass can be either on cathode or anode side

Foot print recommendation:



Created - Date: 03.November.2003
Rev. 11 - Date: 07.June 2006
Document no.:6.560-5006.01-4
96 12071



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.