

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

DESIGN SUPPORT TOOLS

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3D
Models
Available

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	
Circuit configuration	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	UL 94 V-0	MSL level 1 (according J-STD-020)	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 .

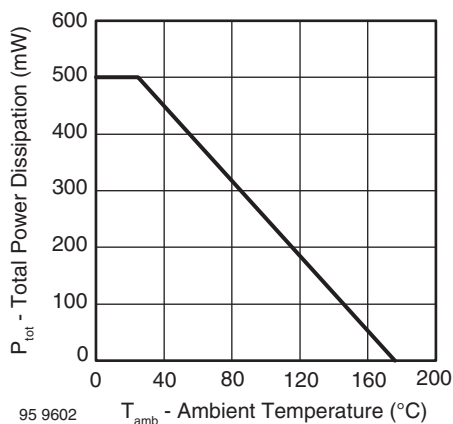
BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Total Power Dissipation vs. Ambient Temperature

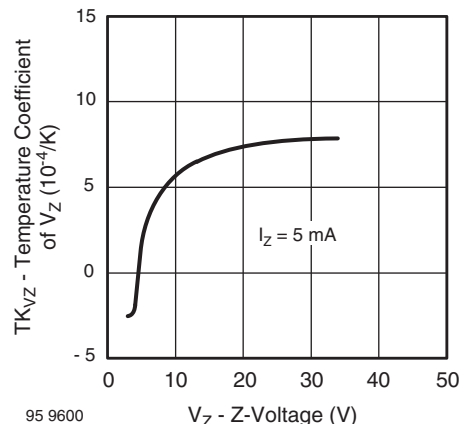
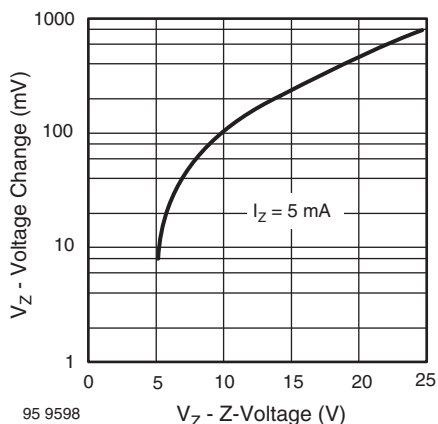
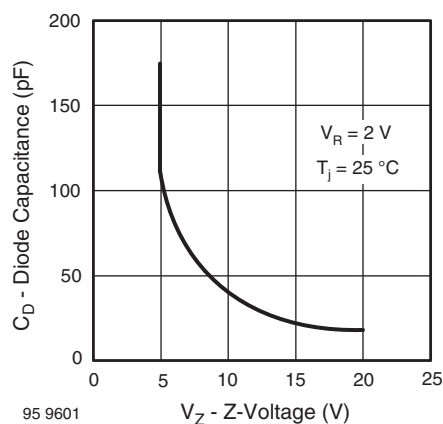

Fig. 4 - Temperature Coefficient of V_Z vs. Z-Voltage

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

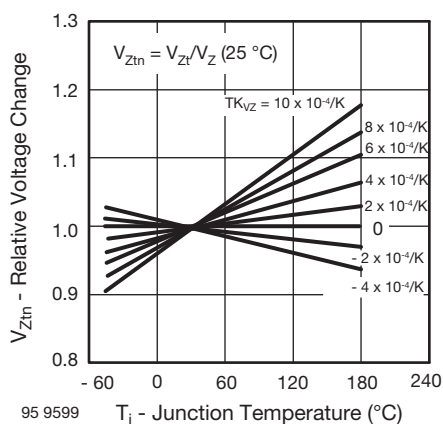


Fig. 3 - Typical Change of Working Voltage vs. Junction Temperature

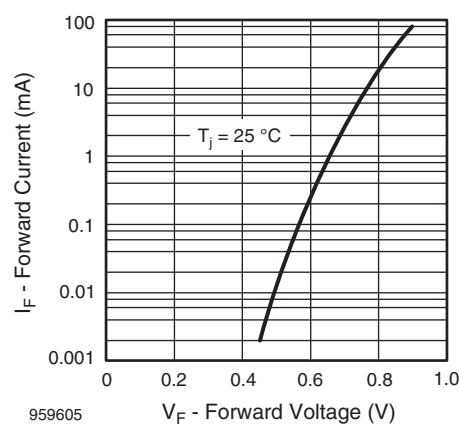


Fig. 6 - Forward Current vs. Forward Voltage

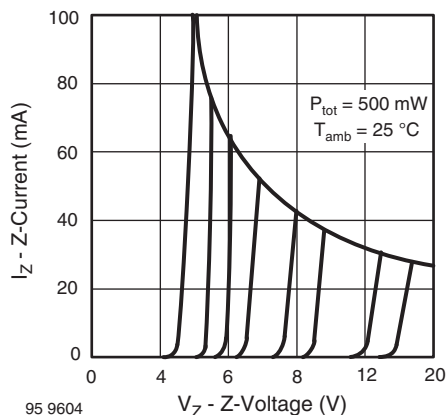


Fig. 7 - Z-Current vs. Z-Voltage

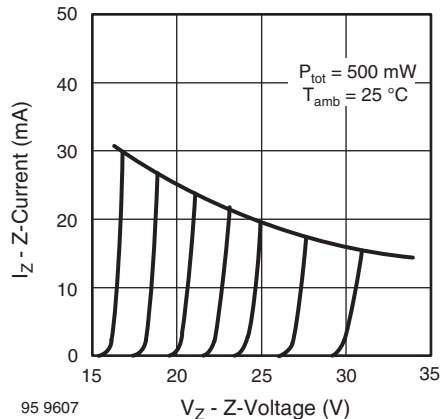


Fig. 8 - Z-Current vs. Z-Voltage

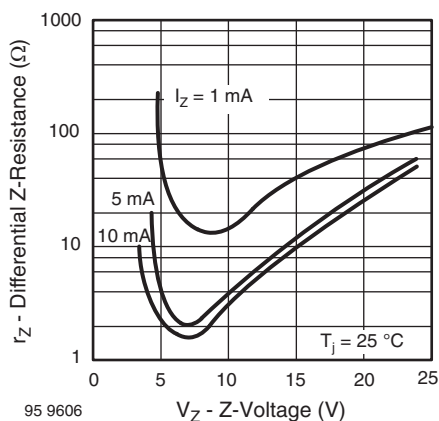


Fig. 9 - Differential Z-Resistance vs. Z-Voltage

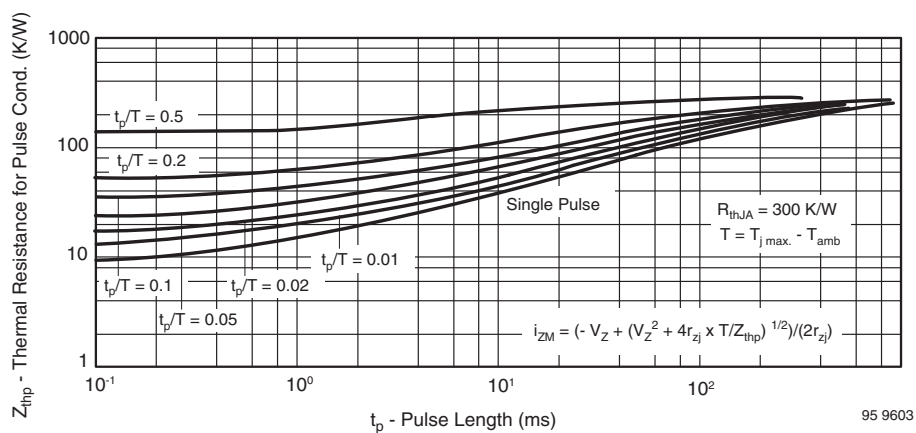
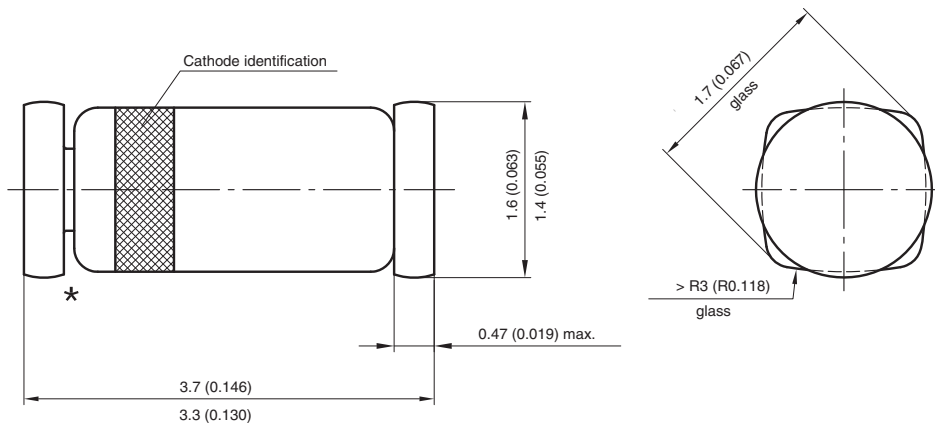


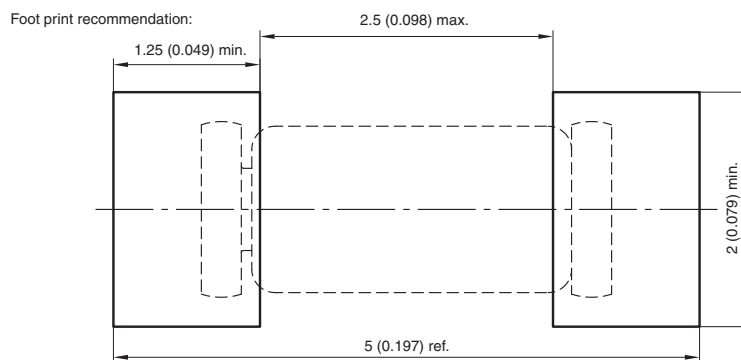
Fig. 10 - Thermal Response



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



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



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



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