Small Signal Zener Diodes

FEATURES

- Zener voltage specified at 50 µA
- Maximum delta V_Z given from 10 µA to 100 µA
- 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 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Power dissipation	$R_{thJA} \leq 300$ 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 mA	V_F	1.5	V

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °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.
TZS4678	1.71	1.8	1.89	0.05	120	7.5	1	0.7
TZS4679	1.9	2	2.1	0.05	110	5	1	0.7
TZS4680	2.09	2.2	2.31	0.05	100	4	1	0.75
TZS4681	2.28	2.4	2.52	0.05	95	2	1	0.8
TZS4682	2.565	2.7	2.835	0.05	90	1	1	0.85
TZS4683	2.85	3	3.15	0.05	85	0.8	1	0.9
TZS4684	3.135	3.3	3.465	0.05	80	7.5	1.5	0.95
TZS4685	3.42	3.6	3.78	0.05	75	7.5	2	0.95
TZS4686	3.705	3.9	4.095	0.05	70	5	2	0.97
TZS4687	4.085	4.3	4.515	0.05	65	4	2	0.99
TZS4688	4.465	4.7	4.935	0.05	60	10	3	0.99
TZS4689	4.845	5.1	5.355	0.05	55	10	3	0.97
TZS4690	5.32	5.6	5.88	0.05	50	10	4	0.96
TZS4691	5.89	6.2	6.51	0.05	45	10	5	0.95
TZS4692	6.46	6.8	7.14	0.05	35	10	5.1	0.9
TZS4693	7.125	7.5	7.875	0.05	31.8	10	5.7	0.75
TZS4694	7.79	8.2	8.61	0.05	29	1	6.2	0.5
TZS4695	8.265	8.7	9.135	0.05	27.4	1	6.6	0.1
TZS4696	8.645	9.1	9.555	0.05	26.2	1	6.9	0.08
TZS4697	9.5	10	10.5	0.05	24.8	1	7.6	0.1
TZS4698	10.45	11	11.55	0.05	21.6	0.05	8.4	0.11
TZS4699	11.4	12	12.6	0.05	20.4	0.05	9.1	0.12
TZS4700	12.35	13	13.65	0.05	19	0.05	9.8	0.13
TZS4701	13.3	14	14.7	0.05	17.5	0.05	10.6	0.14
TZS4702	14.25	15	15.75	0.05	16.3	0.05	11.4	0.15
TZS4703	15.2	16	16.8	0.05	15.4	0.05	12.1	0.16
TZS4704	16.15	17	17.85	0.05	14.5	0.05	12.9	0.17
TZS4705	17.1	18	18.9	0.05	13.2	0.05	13.6	0.18
TZS4706	18.05	19	19.95	0.05	12.5	0.05	14.4	0.19
TZS4707	19	20	21	0.05	11.9	0.01	15.2	0.2
TZS4708	20.9	22	23.1	0.05	10.8	0.01	16.7	0.22
TZS4709	22.8	24	25.2	0.05	9.9	0.01	18.2	0.24
TZS4710	23.75	25	26.25	0.05	9.5	0.01	19	0.25
TZS4711	25.65	27	28.35	0.05	8.8	0.01	20.4	0.27
TZS4712	26.6	28	29.4	0.05	8.5	0.01	21.2	0.28
TZS4713	28.5	30	31.5	0.05	7.9	0.01	22.8	0.3
TZS4714	31.35	33	34.65	0.05	7.2	0.01	25	0.33
TZS4715	34.2	36	37.8	0.05	6.6	0.01	27.3	0.36
TZS4716	37.05	39	40.95	0.05	6.1	0.01	29.6	0.39
TZS4717	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 ± 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 °C, unless otherwise specified)

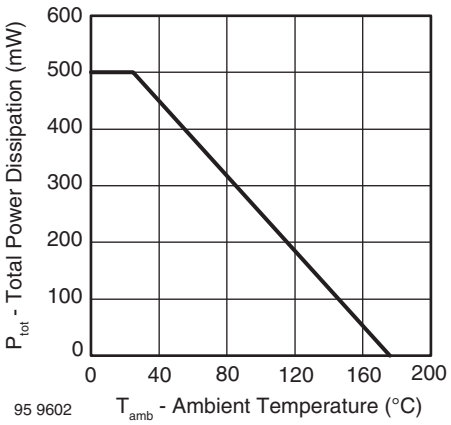


Fig. 1 - Total Power Dissipation vs. Ambient Temperature

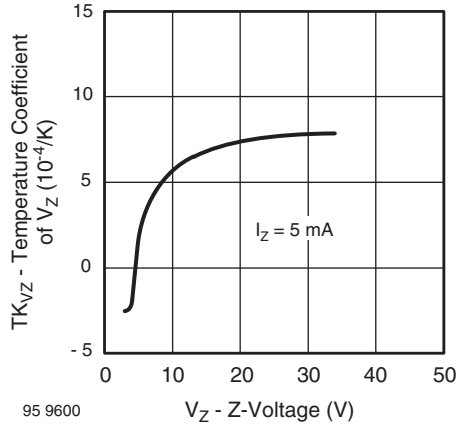


Fig. 4 - Temperature Coefficient of V_Z vs. Z-Voltage

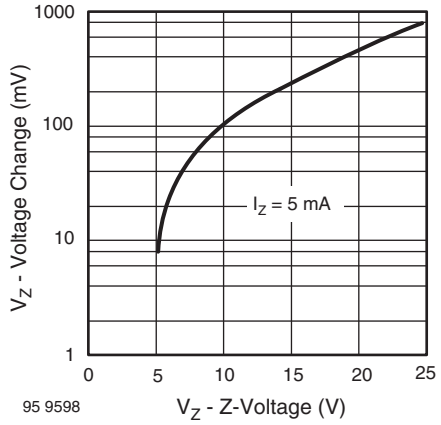


Fig. 2 - Typical Change of Working Voltage under Operating Conditions at T_{amb} = 25 °C

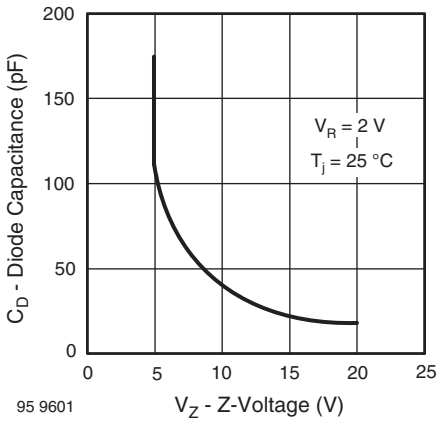


Fig. 5 - Diode Capacitance vs. Z-Voltage

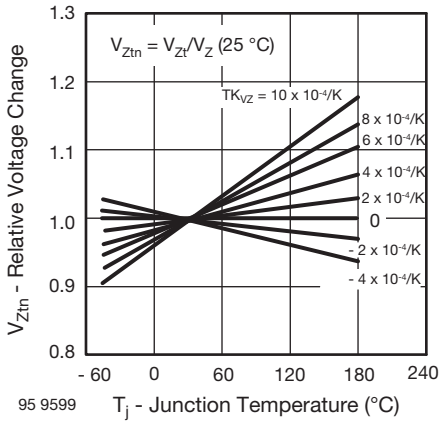


Fig. 3 - Typical Change of Working Voltage vs. Junction Temperature

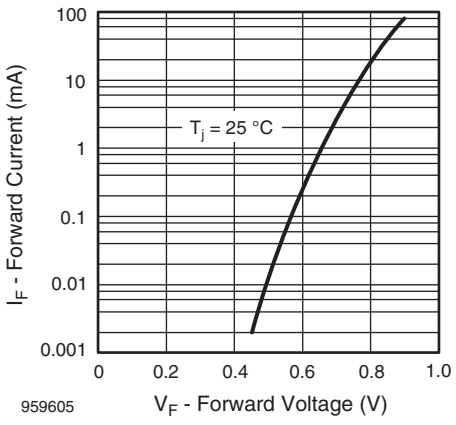


Fig. 6 - Forward Current vs. Forward Voltage

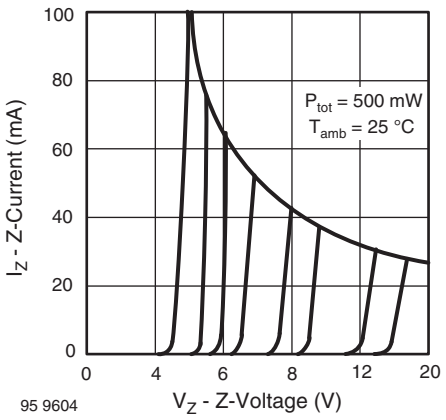


Fig. 7 - Z-Current vs. Z-Voltage

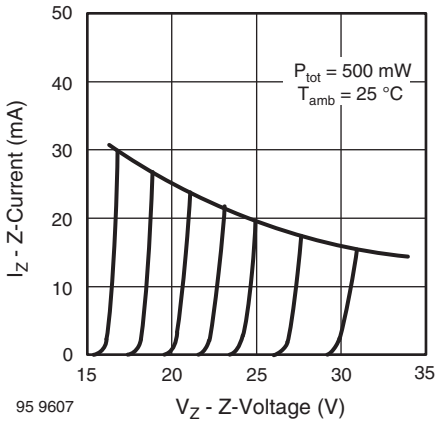


Fig. 8 - Z-Current vs. Z-Voltage

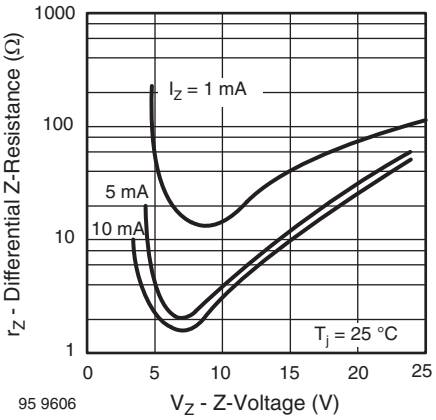


Fig. 9 - Differential Z-Resistance vs. Z-Voltage

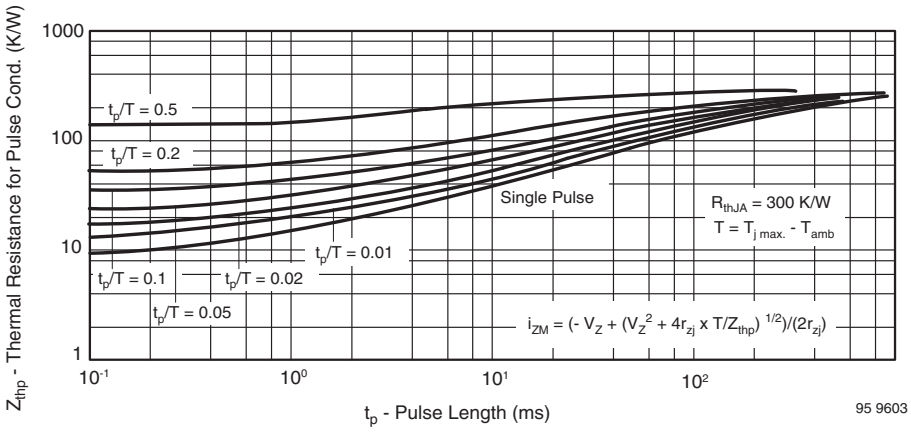
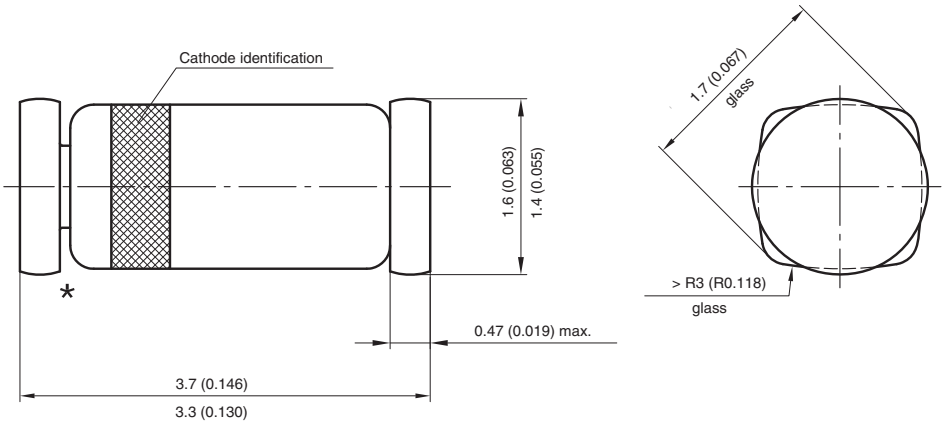
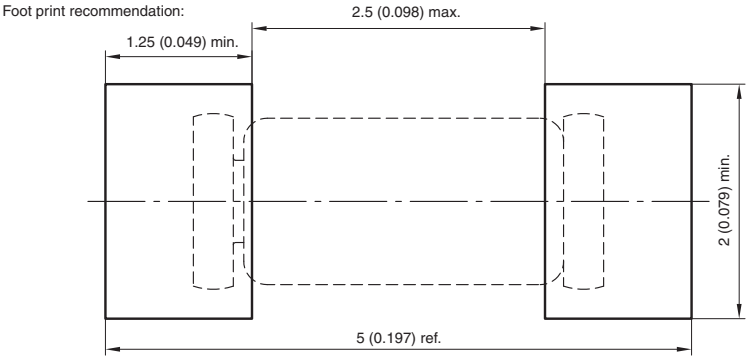


Fig. 10 - Thermal Response

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



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



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