Small Signal Zener Diodes



FEATURES

- Very sharp reverse characteristic
- Low reverse current level
- Available with tighter tolerances
- Very high stability
- Low noise
- V_Z - tolerance ± 5 %
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

LINKS TO ADDITIONAL RESOURCES

3D Models

APPLICATIONS

- Voltage stabilization

PRIMARY CHARACTERISTICS		
PARAMETER	VALUE	UNIT
V_Z range nom.	2.4 to 75	V
Test current I_{ZT}	1.7 to 20	mA
V_Z specification	Thermal equilibrium	
Circuit configuration	Single	

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
TZQ5221B to TZQ5267B	TZQ5221B to TZQ5267-series-GS18	10 000 (per 13" reel)	10 000/box
TZQ5221B to TZQ5267B	TZQ5221B to TZQ5267B-series-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, maximum		T_j	175	°C
Storage temperature range		T_{stg}	-65 to +175	°C
Forward voltage (max.)	I_F = 200 mA	V_F	1.5	V

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ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

PART NUMBER	ZENER VOLTAGE RANGE	TEST CURRENT		REVERSE LAEKAGE CURRENT		DYNAMIC RESISTANCE		TEMPERATURE COEFFICIENT
	V_Z at I_{ZT1}	I_{ZT1}	I_{ZT2}	I_R at V_R		Z_Z at I_{ZT1}	Z_{ZK} at I_{ZT2}	TK_{VZ}
	V	mA		µA	V	Ω		%/K
	NOM.							
TZQ5221B	2.4	20	0.25	< 100	1	< 30	< 1200	< -0.085
TZQ5222B	2.5	20	0.25	< 100	1	< 30	< 1250	< -0.085
TZQ5223B	2.7	20	0.25	< 75	1	< 30	< 1300	< -0.080
TZQ5224B	2.8	20	0.25	< 75	1	< 30	< 1400	< -0.080
TZQ5225B	3	20	0.25	< 50	1	< 29	< 1600	< -0.075
TZQ5226B	3.3	20	0.25	< 25	1	< 28	< 1600	< -0.070
TZQ5227B	3.6	20	0.25	< 15	1	< 24	< 1700	< -0.065
TZQ5228B	3.9	20	0.25	< 10	1	< 23	< 1900	< -0.060
TZQ5229B	4.3	20	0.25	< 5	1	< 22	< 2000	< ± 0.055
TZQ5230B	4.7	20	0.25	< 5	2	< 19	< 1900	< ± 0.030
TZQ5231B	5.1	20	0.25	< 5	2	< 17	< 1600	< ± 0.030
TZQ5232B	5.6	20	0.25	< 5	3	< 11	< 1600	< +0.038
TZQ5233B	6	20	0.25	< 5	3.5	< 7	< 1600	< +0.038
TZQ5234B	6.2	20	0.25	< 5	4	< 7	< 1000	< +0.045
TZQ5235B	6.8	20	0.25	< 3	5	< 5	< 750	< +0.050
TZQ5236B	7.5	20	0.25	< 3	6	< 6	< 500	< +0.058
TZQ5237B	8.2	20	0.25	< 3	6.5	< 8	< 500	< +0.062
TZQ5238B	8.7	20	0.25	< 3	6.5	< 8	< 600	< +0.065
TZQ5239B	9.1	20	0.25	< 3	7	< 10	< 600	< +0.068
TZQ5240B	10	20	0.25	< 3	8	< 17	< 600	< +0.075
TZQ5241B	11	20	0.25	< 2	8.4	< 22	< 600	< +0.076
TZQ5242B	12	20	0.25	< 1	9.1	< 30	< 600	< +0.077
TZQ5243B	13	9.5	0.25	< 0.5	9.9	< 13	< 600	< +0.079
TZQ5244B	14	9	0.25	< 0.1	10	< 15	< 600	< +0.082
TZQ5245B	15	8.5	0.25	< 0.1	11	< 16	< 600	< +0.082
TZQ5246B	16	7.8	0.25	< 0.1	12	< 17	< 600	< +0.083
TZQ5247B	17	7.4	0.25	< 0.1	13	< 19	< 600	< +0.084
TZQ5248B	18	7	0.25	< 0.1	14	< 21	< 600	< +0.085
TZQ5249B	19	6.6	0.25	< 0.1	14	< 23	< 600	< +0.086
TZQ5250B	20	6.2	0.25	< 0.1	15	< 25	< 600	< +0.086
TZQ5251B	22	5.6	0.25	< 0.1	17	< 29	< 600	< +0.087
TZQ5252B	24	5.2	0.25	< 0.1	18	< 33	< 600	< +0.088
TZQ5253B	25	5	0.25	< 0.1	19	< 35	< 600	< +0.089
TZQ5254B	27	4.6	0.25	< 0.1	21	< 41	< 600	< +0.090
TZQ5255B	28	4.5	0.25	< 0.1	21	< 44	< 600	< +0.091
TZQ5256B	30	4.2	0.25	< 0.1	23	< 49	< 600	< +0.091
TZQ5257B	33	3.8	0.25	< 0.1	25	< 58	< 700	< +0.092
TZQ5258B	36	3.4	0.25	< 0.1	27	< 70	< 700	< +0.093
TZQ5259B	39	3.2	0.25	< 0.1	30	< 80	< 800	< +0.094
TZQ5260B	43	3	0.25	< 0.1	33	< 93	< 900	< +0.095
TZQ5261B	47	2.7	0.25	< 0.1	36	< 105	< 1000	< +0.095
TZQ5262B	51	2.5	0.25	< 0.1	39	< 125	< 1100	< +0.096
TZQ5263B	56	2.2	0.25	< 0.1	43	< 150	< 1300	< +0.096
TZQ5264B	60	2.1	0.25	< 0.1	46	< 170	< 1400	< +0.097
TZQ5265B	62	2	0.25	< 0.1	47	< 185	< 1400	< +0.097
TZQ5266B	68	1.8	0.25	< 0.1	52	< 230	< 1600	< +0.097
TZQ5267B	75	1.7	0.25	< 0.1	56	< 270	< 1700	< +0.098

Note

- Based on DC measurement at thermal equilibrium; case temperature maintained at 30 °C ± 2 °C

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BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

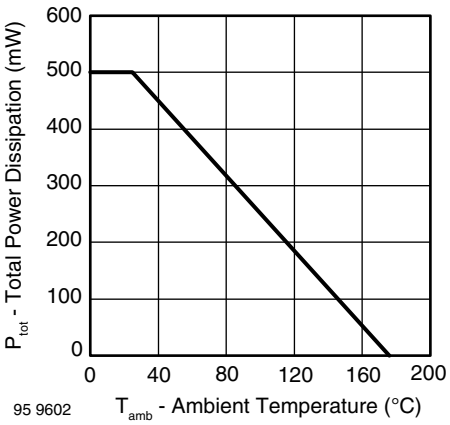


Fig. 1 - Total Power Dissipation vs. Ambient Temperature

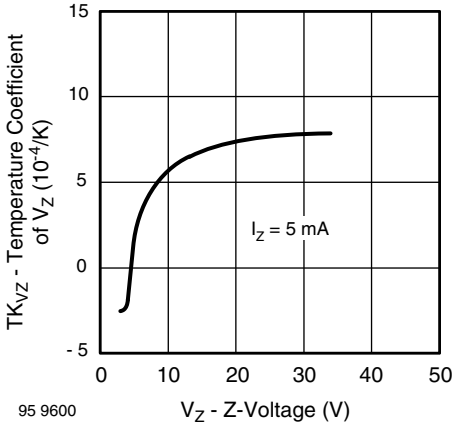


Fig. 4 - Temperature Coefficient of V_Z vs. Z-Voltage

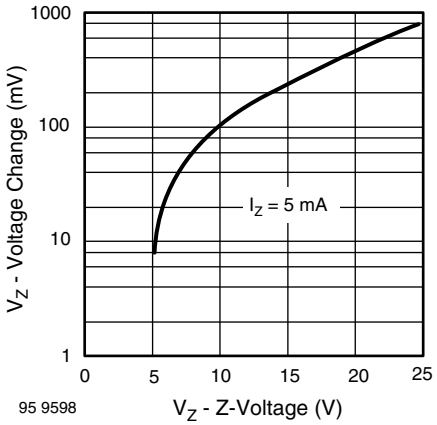


Fig. 2 - Typical Change of Working Voltage under Operating Conditions at T_{amb} = 25 °C

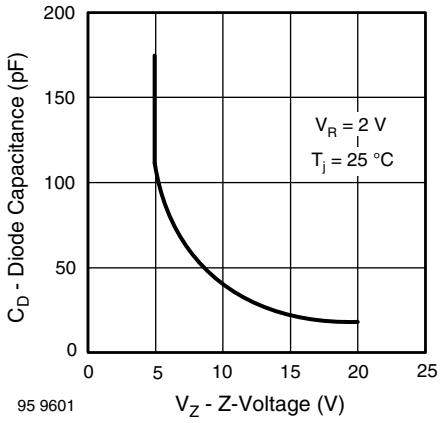


Fig. 5 - Diode Capacitance vs. Z-Voltage

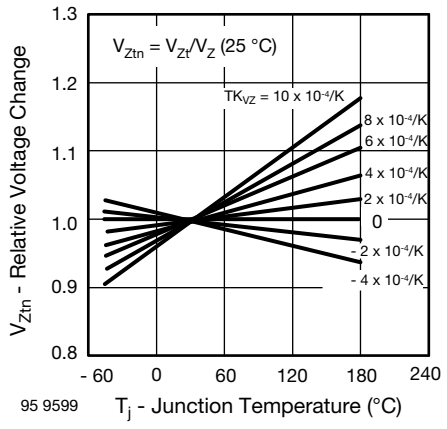


Fig. 3 - Typical Change of Working Voltage vs. Junction Temperature

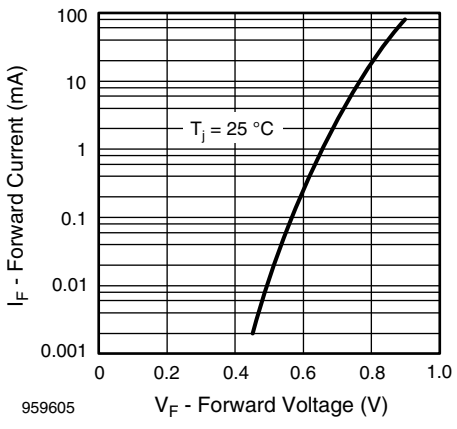


Fig. 6 - Forward Current vs. Forward Voltage

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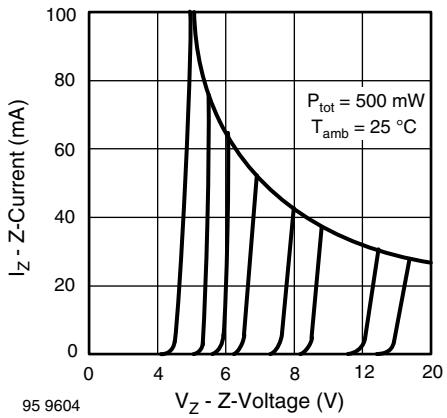


Fig. 7 - Z-Current vs. Z-Voltage

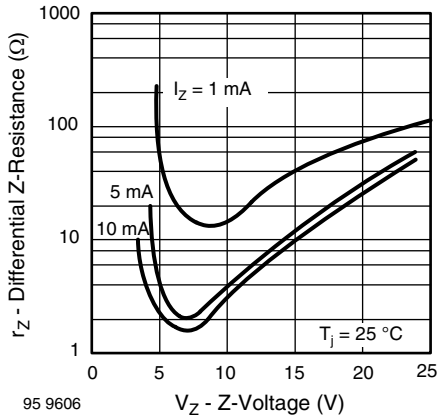


Fig. 9 - Differential Z-Resistance vs. Z-Voltage

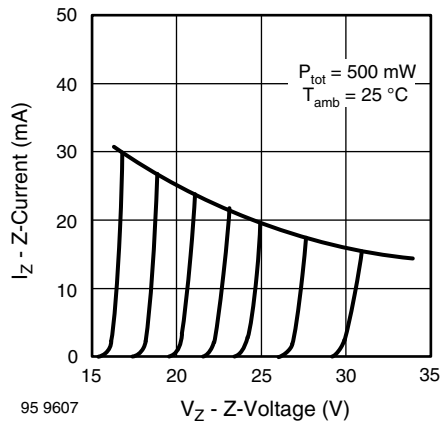


Fig. 8 - Z-Current vs. Z-Voltage

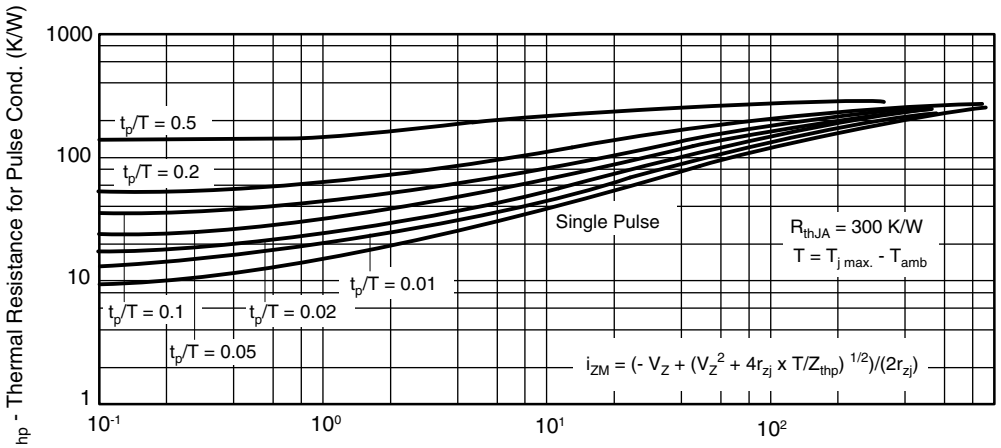
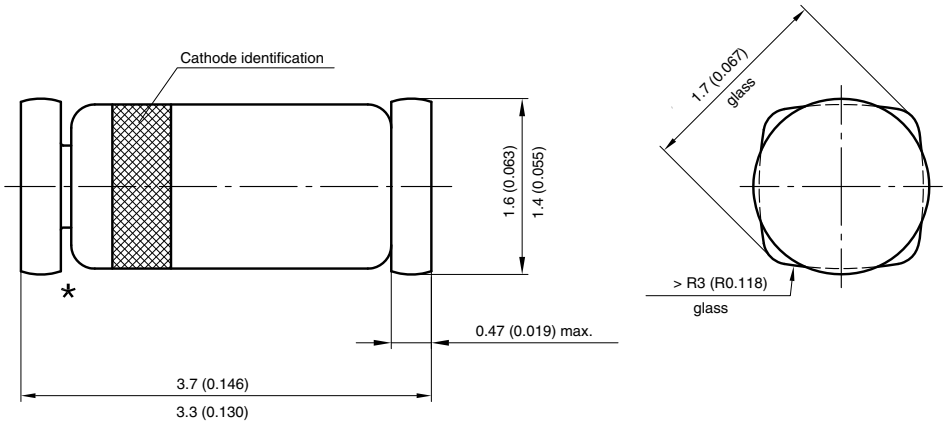


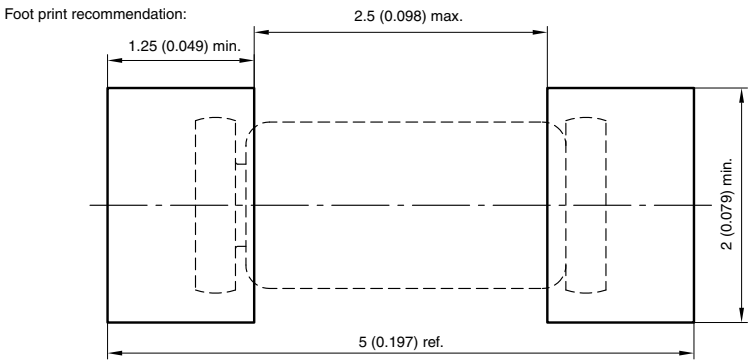
Fig. 10 - Thermal Response

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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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