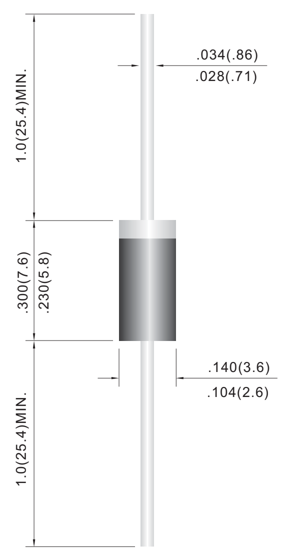
PANJIT SEMI CONDUCTOR

2EZ6.8~2EZ51

SILICON ZENER DIODES

VOLTAGE	6.8 to 51 Volts	POWER	2.0 Watts

DO-15 Unit: inch(mm)



FEATURES

- Low profile package
- Built-in strain relief
- Low inductance
- Plastic package has Underwriters Laboratory Flammability Classification 94V-O
- High temperature soldering : 260°C /10 seconds at terminals
- In compliance with EU RoHS 2002/95/EC directives

MECHANICAL DATA

- Case: JEDEC DO-15, Molded plastic over passivated junction
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes positive end (cathode)
- Standard packing: 52mm tape
- Weight: 0.014 ounce, 0.0397 gram

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Max Steady State Power Dissipation @$T_L \leq 80^oC$ (Note A) Derate above $T_A=25^oC$	P_D	2	Watts
Peak Forward Surge Current 8.3ms single half sine-wave soperimposed on rated load (JEDEC mehod)	I_{FSM}	15	Amps
Thermal resistance Junction to Ambient Junction to Lead	$R_{\Theta JA}$ $R_{\Theta JL}$	60 32	$^oC/W$
Operating Junction and Storage Temperature Range	T_J , T_{STG}	-55 to + 150	^oC

NOTES:

A.Mounted on infinite heat sink with L=2mm

B.Measured on8.3ms, and single half sine-wave or equivalent square wave ,duty cycle=4 pulses per minute maximum

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Part Number	Nominal Zener Voltage			Maximum Zener Impedance				Leakage Current		Marking Code
	V_Z @ I_{ZT}			Z_{ZT} @ I_{ZT}		Z_{ZK} @ I_{ZK}		I_R @V_R		
	Nom. V	Min. V	Max. V	Ω	mA	Ω	mA	uA	V	
2.0 Watt ZENER										
2EZ6.8	6.8	6.46	7.14	2	73.5	700	1	5	4	2EZ6.8
2EZ7.5	7.5	7.13	7.88	2	66.5	700	0.5	5	5	2EZ7.5
2EZ8.2	8.2	7.79	8.61	2	61	700	0.5	5	6	2EZ8.2
2EZ8.7	8.7	8.27	9.14	2	58	700	0.5	4	6.6	2EZ8.7
2EZ9.1	9.1	8.65	9.56	3	55	700	0.5	3	7	2EZ9.1
2EZ10	10	9.5	10.5	4	50	700	0.25	3	7.6	2EZ10
2EZ11	11	10.45	11.55	4	45.5	700	0.25	1	8.4	2EZ11
2EZ12	12	11.4	12.6	5	41.5	700	0.25	1	9.1	2EZ12
2EZ13	13	12.35	13.65	5	38.5	700	0.25	0.5	9.9	2EZ13
2EZ14	14	13.3	14.7	6	35.7	700	0.25	0.5	10.6	2EZ14
2EZ15	15	14.25	15.75	7	33.4	700	0.25	0.5	11.4	2EZ15
2EZ16	16	15.2	16.8	8	31.2	700	0.25	0.5	12.2	2EZ16
2EZ17	17	16.15	17.85	9	29.4	750	0.25	0.5	13	2EZ17
2EZ18	18	17.1	18.9	10	27.8	750	0.25	0.5	13.7	2EZ18
2EZ19	19	18.05	19.95	11	26.3	750	0.25	0.5	14.4	2EZ19
2EZ20	20	19	21	11	25	750	0.25	0.5	15.2	2EZ20
2EZ22	22	20.9	23.1	12	22.8	750	0.25	0.5	16.7	2EZ22
2EZ24	24	22.8	25.2	13	20.8	750	0.25	0.5	18.2	2EZ24
2EZ25	25	23.75	26.25	14	20	750	0.25	0.5	19	2EZ25
2EZ27	27	25.65	28.35	18	18.5	750	0.25	0.5	20.6	2EZ27
2EZ28	28	26.6	29.4	18	17	750	0.25	0.5	21.3	2EZ28
2EZ30	30	28.5	31.5	20	16.6	1000	0.25	0.5	22.5	2EZ30
2EZ33	33	31.35	34.65	23	15.1	1000	0.25	0.5	25.1	2EZ33
2EZ36	36	34.2	37.8	25	13.9	1000	0.25	0.5	27.4	2EZ36
2EZ39	39	37.05	40.95	30	12.8	1000	0.25	0.5	29.7	2EZ39
2EZ43	43	40.85	45.15	35	11.6	1500	0.25	0.5	32.7	2EZ43
2EZ47	47	44.65	49.35	40	10.6	1500	0.25	0.5	35.8	2EZ47
2EZ51	51	48.45	53.55	48	9.8	1500	0.25	0.5	38.8	2EZ51

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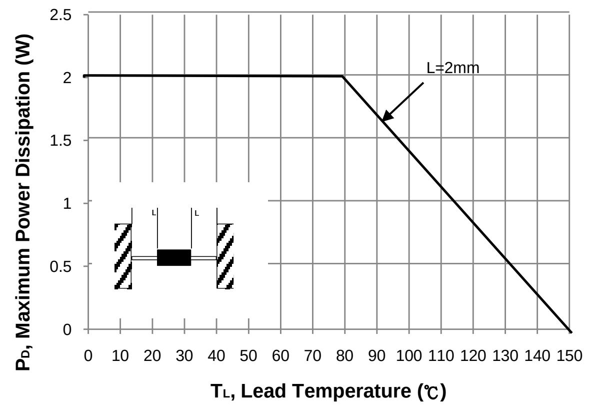

Fig.1 Power Temperature Derating Curve

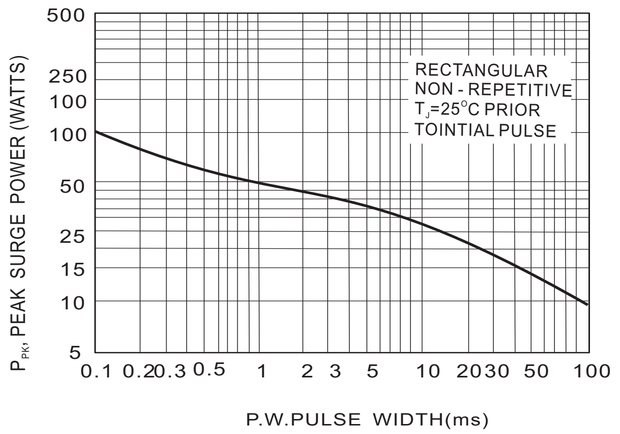

FIGURE 2. MAXIMUM SURGE POWER

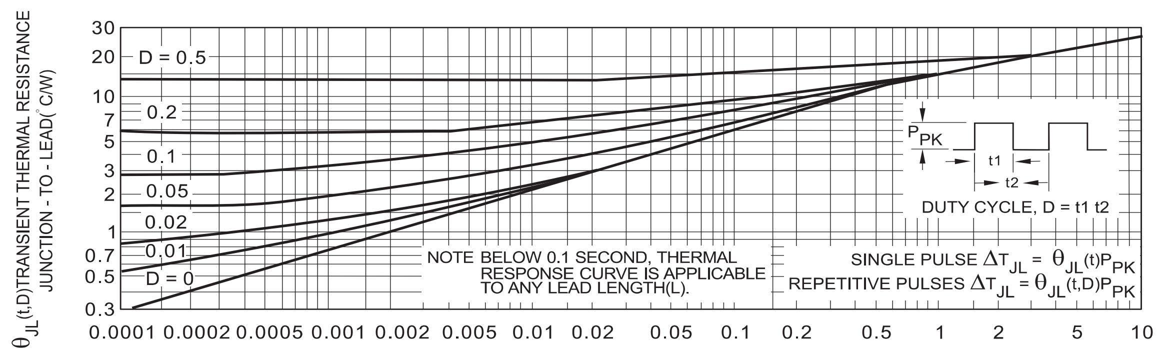

FIGURE 3. TYPICAL THERMAL RESPONSEL,

APPLICATION NOTE:

Since the actual voltage available from a given zener diode is temperature dependent, it is necessary to determinejunction temperature under any set of operating conditions in order to calculate its value. The following procedure is recommended:

Lead Temperature, T_L, should be determined from:

$$T_L = {}_{\theta}L_A P_D + T_A$$

${}_{\theta}L_A$ is the lead-to-ambient thermal resistance (°C/W) and Pd is the power dissipation. The value for ${}_{\theta}L_A$ will vary and depends on the device mounting method. ${}_{\theta}L_A$ is generally 30-40 °C/W for the various clips and tie points in common use and for printed circuit board wiring.

The temperature of the lead can also be measured using a thermocouple placed on the lead as close as possible to the tie point. The thermal mass connected to the tie point is normally large enough so that it will not significantly respond to heat surges generated in the diode as a result of pulsed operation once steady-state conditions are achieved. Using the measured value of TL, the junction temperature may be determined by:

$$T_J = T_L + \Delta T_{JL}$$

ΔT_{JL} is the increase in junction temperature above the lead temperature and may be found from Figure 3 for a train of power pulses or from Figure 10 for dc power.

$$\Delta T_{JL} = {}_{\theta}J_L P_D$$

For worst-case design, using expected limits of I_Z, limits of P_D and the extremes of $T_J(\Delta T_J)$ may be estimated. Changes in voltage, V_Z, can then be found from:

$$\Delta V = {}_{\theta}V_Z \Delta T_J$$

${}_{\theta}V_Z$, the zener voltage temperature coefficient, is found from Figures 5 and 6.

Under high power-pulse operation, the zener voltage will vary with time and may also be affected significantly by the zener resistance. For best regulation, keep current excursions as low as possible.

Data of Figure 3 should not be used to compute surge capa-bility. Surge limitations are given in Figure 2. They are lower than would be expected by considering only junction temperature, as current crowding effects cause temperatures to be extremely high in small spots resulting in device degradation should the limits of Figure 2 be exceeded.

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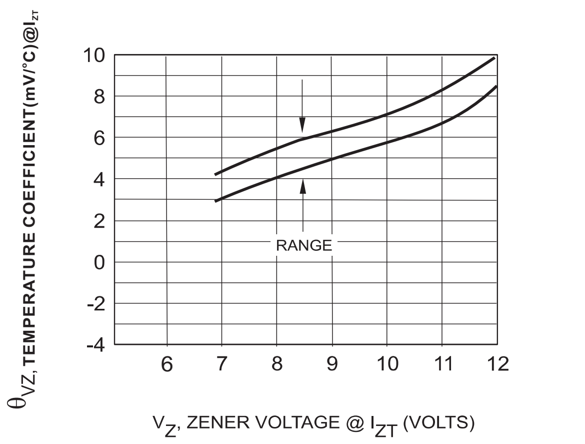

FIGURE 4. UNITS 6.8 TO 12 VOLTS

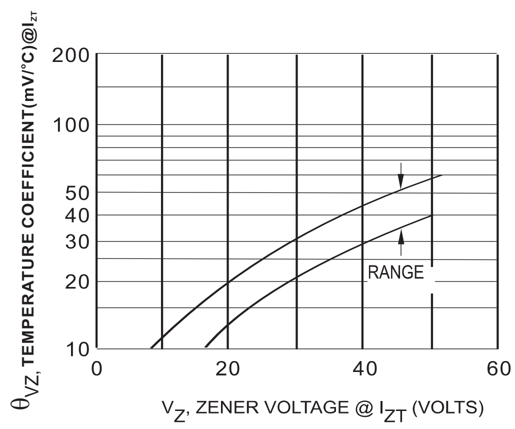

FIGURE 5. UNITS 10 TO 51 VOLTS

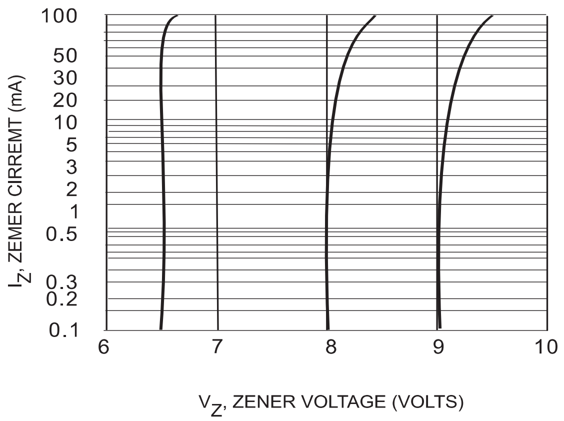

FIGURE 6. VZ=6.8 THRU 10 VOLTS

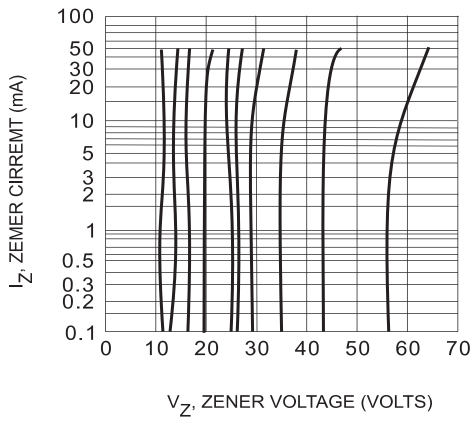

FIGURE 7. VZ=12 THRU 51 VOLTS

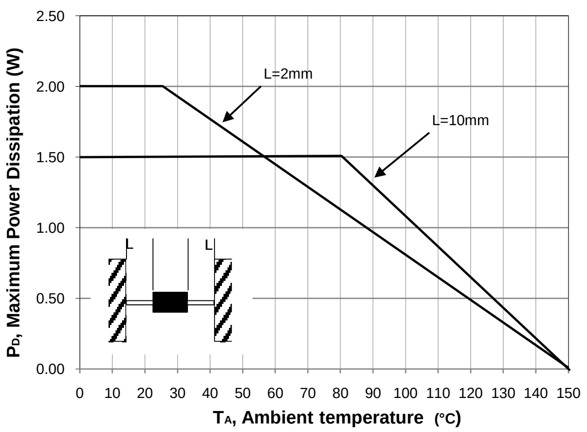

FIGURE 8.TYPICAL THERMAL RESISTANCE