ZBMCC

ZIBO MICRO COMMERCIAL COMPONENTS CORP.

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1N5348BE THRU 1N5388BE

5 Watt Zener Diode 11 to 200 Volts

Features

- Built Strain Relief
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- For Available Tolerances—See Note 1
- Marking : 1N5348~1N5388 part number and Cathode Band

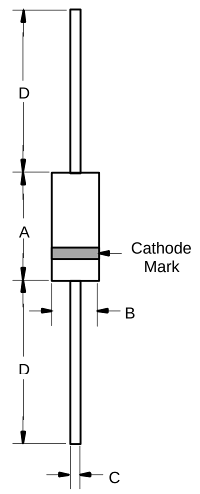
Maximum Ratings:

- Operating Temperature: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- 5 Watt DC Power Dissipation
- Maximum Forward Voltage @ 1A: 1.2 Volts
- Power Derating: 40 mW/℃ Above 75℃

Mechanical Characteristics

Case: JEDEC DO-201AE.
Terminals: Solder plated , solderable per MIL-STD-750, Method 2026.
Standard Packaging: 52mm tape
Weight: 0.04 ounces , 1.1 gram (approx)

DO-201AE



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.285	0.375	7.20	9.50	
B	0.190	0.210	4.80	5.30	
C	0.037	0.043	0.94	1.07	
D	1.000	-----	25.40	-----	

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ELECTRICAL CHARACTERISTICS (T_A=25℃unless otherwise noted, V_F=1.2 Max @ I_F=1A for all types).

Type No. (Note 1.)	Nominal Zener Voltage Vz @ I_{ZT} volts (Note 2.)	Test current I_{ZT} mA	Maximum Zener Impedance		Max reverse Leakage Current		Max Surge Current Ir Amps (Note 3.)	Max Voltage Regulation Vz, Volts (Note 4.)	Maximum Regulator Current I_{ZM} mA (Note 5.)
			Z_{ZT} @ I_{ZT} Ohms (Note 2.)	Z_{ZK} @ I_{ZK} = 1 mA Ohms (Note 2.)	I_R uA	V_R Volts			
1N5348BE	11	125	2.5	125	5	8.4	8	0.25	430
1N5349BE	12	100	2.5	125	2	9.1	7.5	0.25	395
1N5350BE	13	100	2.5	100	1	9.9	7	0.25	365
1N5351BE	14	100	2.5	75	1	10.6	6.7	0.25	340
1N5352BE	15	75	2.5	75	1	11.5	6.3	0.25	315
1N5353BE	16	75	2.5	75	1	12.2	6	0.3	295
1N5354BE	17	70	2.5	75	0.5	12.9	5.8	0.35	280
1N5355BE	18	65	2.5	75	0.5	13.7	5.5	0.4	265
1N5356BE	19	65	3	75	0.5	14.4	5.3	0.4	250
1N5357BE	20	65	3	75	0.5	15.2	5.1	0.4	237
1N5358BE	22	50	3.5	75	0.5	16.7	4.7	0.45	216
1N5359BE	24	50	3.5	100	0.5	18.2	4.4	0.55	198
1N5360BE	25	50	4	110	0.5	19	4.3	0.55	190
1N5361BE	27	50	5	120	0.5	20.6	4.1	0.6	176
1N5362BE	28	50	6	130	0.5	21.2	3.9	0.6	170
1N5363BE	30	40	8	140	0.5	22.8	3.7	0.6	158
1N5364BE	33	40	10	150	0.5	25.1	3.5	0.6	144
1N5365BE	36	30	11	160	0.5	27.4	3.3	0.65	132
1N5366BE	39	30	14	170	0.5	29.7	3.1	0.65	122
1N5367BE	43	30	20	190	0.5	32.7	2.8	0.7	110
1N5368BE	47	25	25	210	0.5	35.8	2.7	0.8	100
1N5369BE	51	25	27	230	0.5	38.8	2.5	0.9	93
1N5370BE	56	20	35	280	0.5	42.6	2.3	1	86
1N5371BE	60	20	40	350	0.5	45.5	2.2	1.2	79
1N5372BE	62	20	42	400	0.5	47.1	2.1	1.35	76
1N5373BE	68	20	44	500	0.5	51.7	2	1.5	70
1N5374BE	75	20	45	620	0.5	56	1.9	1.6	63
1N5375BE	82	15	65	720	0.5	62.2	1.8	1.8	58
1N5376BE	87	15	75	760	0.5	66	1.7	2	54.5
1N5377BE	91	15	75	760	0.5	69.2	1.6	2.2	52.5
1N5378BE	100	12	90	800	0.5	76	1.5	2.5	47.5
1N5379BE	110	12	125	1000	0.5	83.6	1.4	2.5	43
1N5380BE	120	10	170	1150	0.5	91.2	1.3	2.5	39.5
1N5381BE	130	10	190	1250	0.5	98.8	1.2	2.5	36.6
1N5382BE	140	8	230	1500	0.5	106	1.2	2.5	34
1N5383BE	150	8	330	1500	0.5	114	1.1	3	31.6
1N5384BE	160	8	35 0	1650	0.5	122	1.1	3	29.4
1N5385BE	170	8	380	1750	0.5	129	1	3	28
1N5386BE	180	5	430	1750	0.5	137	1	4	26.4
1N5387BE	190	5	450	1850	0.5	144	0.9	5	25
1N5388BE	200	5	480	1850	0.5	152	0.9	5	23.6

NOTE:

1. TOLERANCE AND VOLTAGE DESIGNATION - The JEDEC type numbers shown indicate a tolerance of+/-10% with guaranteed limits on only Vz, I_R, I_r, and V_F as shown in the electrical characteristics table. Units with guaranteed limits on all seven parameters are indicated by suffix “B” for+/-5% tolerance.
2. ZENER VOLTAGE (Vz) AND IMPEDANCE (Z_{ZT} & Z_{ZK}) - Test conditions for Zener voltage and impedance are as follows; Iz is applied 40℃10 ms prior to reading. Mounting contacts are located from the inside edge of mounting clips to the body of the diode.(T_A=25℃).

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3. SURGE CURRENT (Ir) - Surge current is specified as the maximum allowable peak, non-recurrent square-wave current with a pulse width, PW, of 8.3 ms. The data given in Figure 5 may be used to find the maximum surge current for a quare wave of any pulse width between 1 ms and 1000ms by plotting the applicable points on logarithmic paper. Examples of this, using the 6.8v and 200V zeners, are shown in Figure 6. Mounting contact located as specified in Note 3. (T_A=25 ℃).
4. VOLTAGE REGULATION (Vz) - Test conditions for voltage regulation are as follows: Vz measurements are made at 10% and then at 50% of the Iz max value listed in the electrical characteristics table. The test currents are the same for the 5% and 10% tolerance devices. The test current time druation for each Vz measurement is 40 10 ms. (T_A=25). Mounting contact located as specified in Note2.
5. MAXIMUM REGULATOR CURRENT (I_{ZM}) - The maximum current shown is based on the maximum voltage of a 5% type unit. Therefore, it applies only to the B-suffix device. The actual I_{ZM} for any device may not exceed the value of 5 watts divided by the actual Vz of the device. T_L=75 at maximum from the device body.

APPLICATION NOTE:

Since the actual voltage available from a given zener diode is temperature dependent, it is necessary to determine junction 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:

$$T_L = th_{LA} P_D + T_A$$

th_{LA} is the lead-to-ambient thermal resistance (/W) and P_D is the power dissipation.

Junction Temperature, T_J , may be found from:

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

T_{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 4 for dc power.

$$T_{JL} = {}_{JL} P_D$$

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

, the zener voltage temperature coefficient, is fount from Figures 2.

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

Data of Figure 3 should not be used to compute surge capability. Surge limitations are given in Figure 5. 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. 5 be exceeded.

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TEMPERATURE COEFFICIENTS

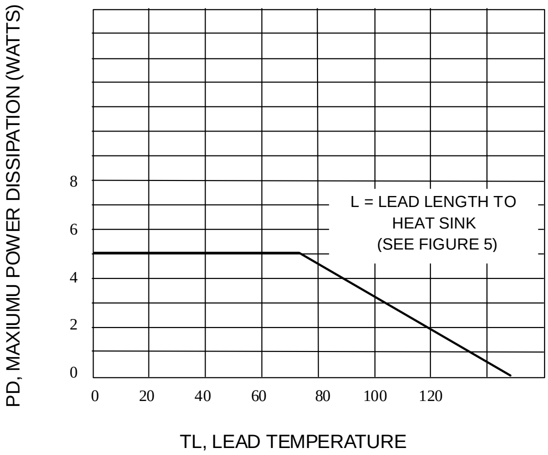

Fig. 1-POWER TEMPERATURE DERATING CURVE

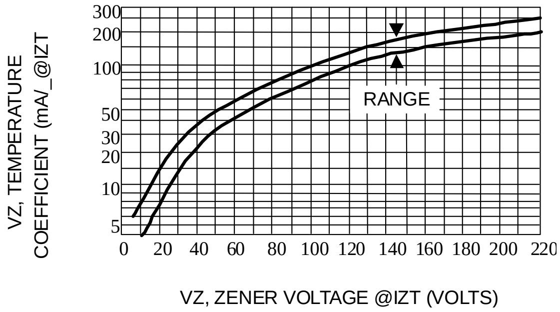

Fig. 2-TEMPERATURE COEFFICIENT-RANGE FOR UNITS 6 TO 220 VOLTS

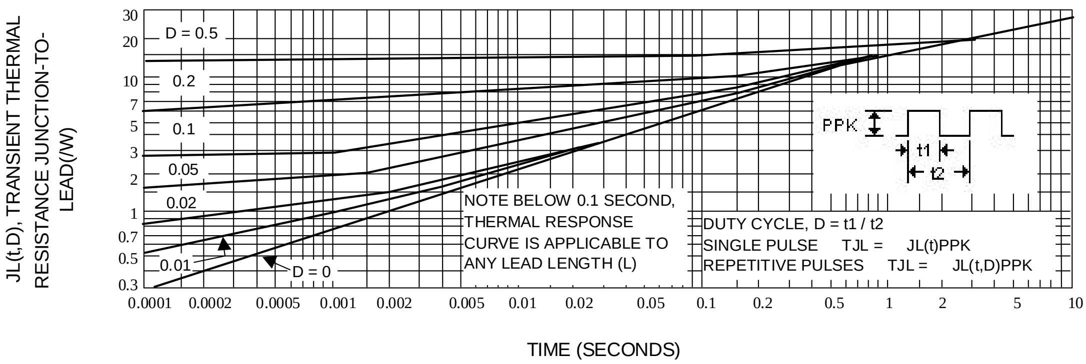

Fig. 3-TYPICAL THERMAL RESPONSE

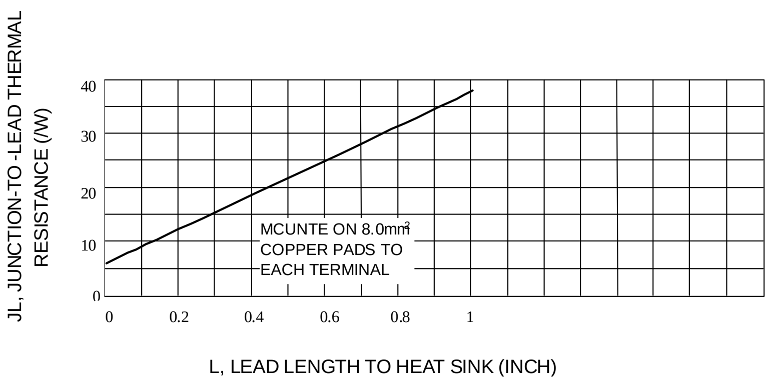

Fig. 4-TYPICAL THERMAL RESISTANCE

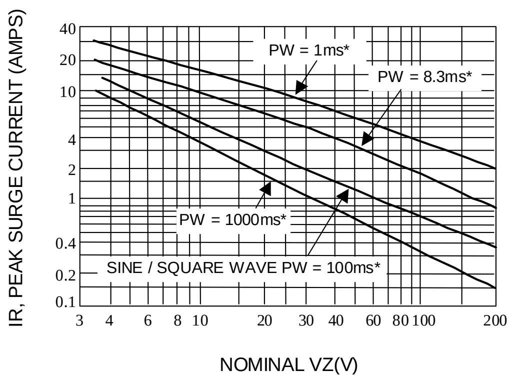

Fig. 5-MAXIMUM NON-REPETITIVE SURGE CURRENT VERSUS NOMINAL ZENER VOLTAGE (SEE NOTE 3)

RATING AND CHARACTERISTICS CURVES
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ZENER VOLTAGE VERSUS ZENER CURRENT
(FIGURES 7,8, AND 9)

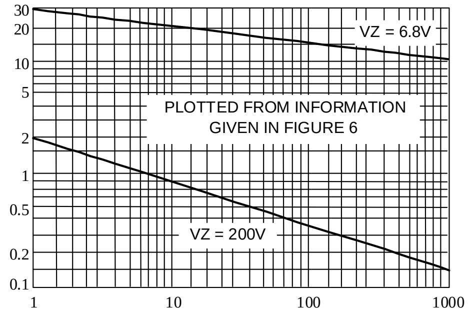

Fig. 6-PEAK SURGE CURRENT VERSUS PULSE WIDTH(SEE NOTE 3)

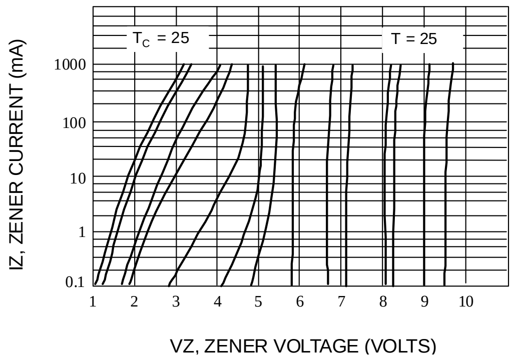

Fig. 7-ZENER VOLTAGE VERSUS ZENER CURRENT VZ = 6.8 THRU 10 VOLTS

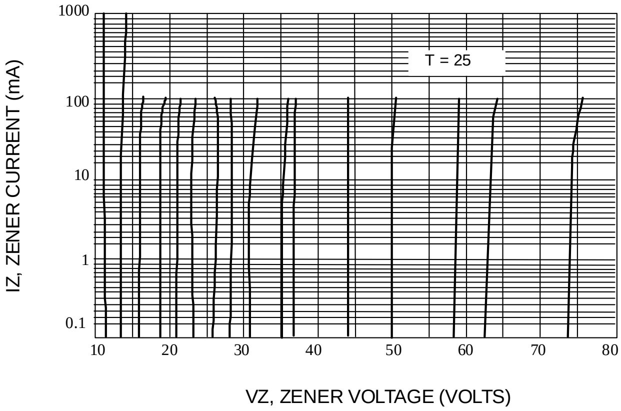

Fig. 8-ZENER VOLTAGE VERSUS ZENER CURRENT VZ = 11 THRU 75 VOLTS

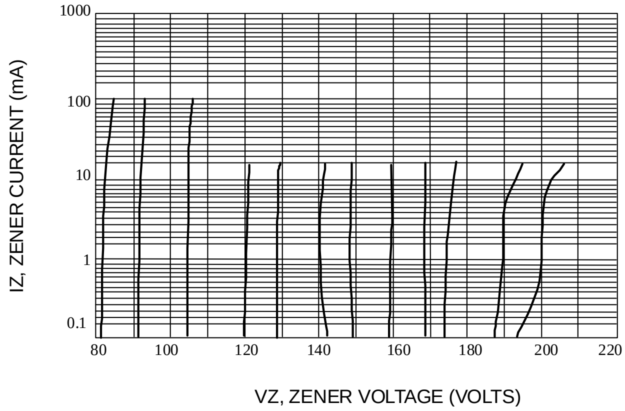

Fig. 9-ZENER VOLTAGE VERSUS ZENER CURRENT VZ = 82 THRU 200 VOLTS

*** Data of Figure 3 should not be used to compute surge capability. Surge limitations are given in Figure 5. 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. 5 be exceeded

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