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# MMBZ5221B THRU MMBZ5259B

## Features

- Wide Voltage Range Available
- Small Outline Package For Space Savings
- High Temp Soldering: 250°C for 10 Seconds At Terminals
- Surface Mount Package

**410 mW  
 Zener Diode  
 2.4 to 39 Volts**

## Maximum Ratings

- Operating Junction Temperature: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- 500 mWatt DC Power Dissipation

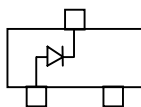
Maximum Ratings @ 25°C Unless Otherwise Specified

<b>Zener Current</b>	<b>I<sub>F</sub></b>	<b>100</b>	<b>mA</b>
<b>Maximum Forward Voltage</b>	<b>V<sub>F</sub></b>	<b>1.2</b>	<b>V</b>
<b>Power Dissipation (Notes A)</b>	<b>P<sub>(AV)</sub></b>	<b>410</b>	<b>mWatt</b>
<b>Peak Forward Surge Current (Notes B)</b>	<b>I<sub>FSM</sub></b>	<b>4.0</b>	<b>Amps</b>

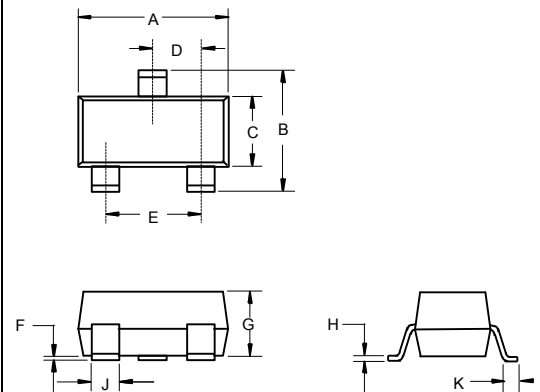
### NOTES:

- A. Mounted on 5.0mm<sup>2</sup>(.013mm thick) land areas.  
 B. Measured on 8.3ms, single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

\*Pin Configuration - Top View

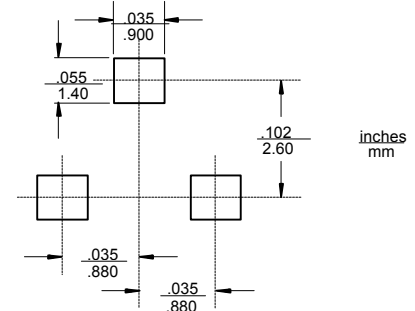


## SOT-23



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.119	2.80	3.00	
B	.086	.103	2.20	2.60	
C	.047	.056	1.20	1.40	
D	.033	.041	.85	1.05	
E	.066	.083	1.70	2.10	
F	---	.006	---	.15	
G	.035	.044	.90	1.10	
H	.002	.006	.05	.15	
J	.013	.020	.35	.50	
K	.007	---	.20	---	

### Suggested Solder Pad Layout



# MMBZ5221B thru MMBZ5259B

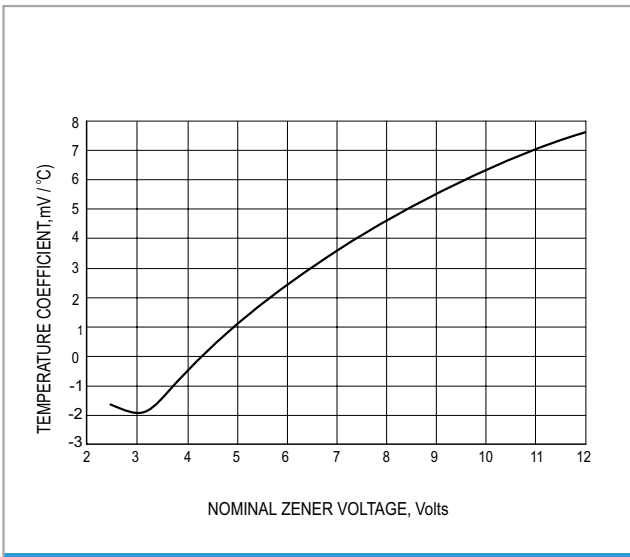
Electrical Characteristics @ 25°C Unless Otherwise Specified

MCC PART NUMBER	Marking	NORMAL ZENER VOLTAGE Vz @ Izt	TEST CURRENT Izt	MAXIMUM ZENER IMPEDANCE 'B' SUFFIX ONLY		MAXIMUM REVERSE LEAKAGE CURRENT Ir @ Vr		MAXIMUM ZENER VOLTAGE TEMP COEFFICIENT 'B' SUFFIX ONLY
				Zzt @ Izt	Zzk @ Izk=0.25mA	uA	VOLTS	
		VOLTS	mA	OHMS	OHMS			
MMBZ5221B	C1	2.4	20	30	1200	100	1.0	-0.085
MMBZ5222B	C2	2.5	20	30	1250	100	1.0	-0.085
MMBZ5223B	C3	2.7	20	30	1300	75	1.0	-0.080
MMBZ5225B	C5	3.0	20	29	1600	50	1.0	-0.075
MMBZ5226B	D1	3.3	20	28	1600	25	1.0	-0.070
MMBZ5227B	D2	3.6	20	24	1700	15	1.0	-0.065
MMBZ5228B	D3	3.9	20	23	1900	10	1.0	-0.060
MMBZ5229B	D4	4.3	20	22	2000	5.0	1.0	±0.055
MMBZ5230B	D5	4.7	20	19	1900	5.0	2.0	±0.030
MMBZ5231B	E1	5.1	20	17	1600	5.0	2.0	±0.030
MMBZ5232B	E2	5.6	20	11	1600	5.0	3.0	+0.038
MMBZ5234B	E4	6.2	20	7.0	1000	5.0	4.0	+0.045
MMBZ5235B	E5	6.8	20	5.0	750	3.0	5.0	+0.050
MMBZ5236B	F1	7.5	20	6.0	500	3.0	6.0	+0.058
MMBZ5237B	F2	8.2	20	8.0	500	3.0	6.5	+0.062
MMBZ5239B	F4	9.1	20	10	600	3.0	7.0	+0.068
MMBZ5240B	F5	10	20	17	600	3.0	8.0	+0.075
MMBZ5241B	H1	11	20	22	600	2.0	8.4	+0.076
MMBZ5242B	H2	12	20	30	600	1.0	9.1	+0.077
MMBZ5243B	H3	13	9.5	13	600	0.5	9.9	+0.079
MMBZ5245B	H5	15	8.5	16	600	0.1	11	+0.082
MMBZ5246B	J1	16	7.8	17	600	0.1	12	+0.083
MMBZ5248B	J3	18	7.0	21	600	0.1	14	+0.085
MMBZ5250B	J5	20	6.2	25	600	0.1	15	+0.086
MMBZ5251B	K1	22	5.6	29	600	0.1	17	+0.087
MMBZ5252B	K2	24	5.2	33	600	0.1	18	+0.088
MMBZ5254B	K4	27	4.6	41	600	0.1	21	+0.090
MMBZ5255B	K5	28	4.5	44	600	0.1	21	+0.091
MMBZ5256B	M1	30	4.2	49	600	0.1	23	+0.091
MMBZ5257B	M2	33	3.8	58	700	0.1	25	+0.092
MMBZ5258B	M3	36	3.4	70	700	0.1	27	+0.093
MMBZ5259B	M4	39	3.2	80	800	0.1	30	+0.094

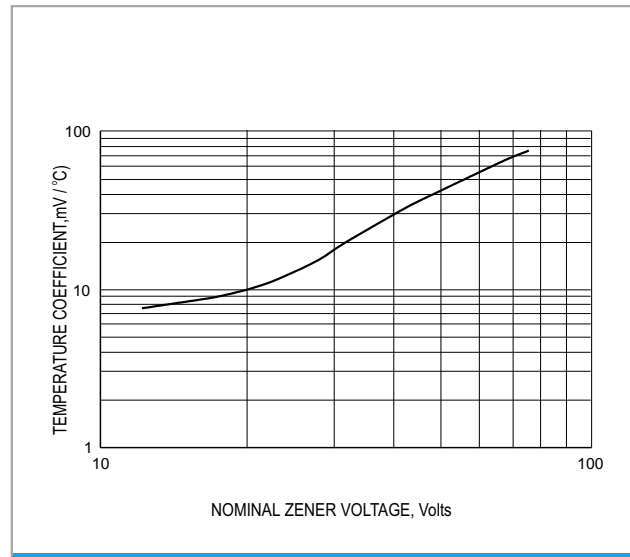
NOTE:

1. Tolerance and Type Number Designation. The type numbers listed have a standard tolerance on the nominal zener voltage of ±5%.
2. Specials Available Include:
  - A. Nominal zener voltages between the voltages shown and tighter voltage tolerances.
  - B. Matched sets.
3. Zener Voltage (Vz) Measurement. Guarantees the zener voltage when measured at 90 seconds while maintaining the lead temperature (Tl) at 30°C, from the diode body.
4. Zener Impedance (Zz) Derivation. The zener impedance is derived from the 60 cycle ac voltage, which results when an AC current having an rms value equal to 10% of the dc zener current (Izt or Izk) is superimposed on Izt or Izk.
5. Surge Current (Ir) Non-Repetitive. The rating listed in the electrical characteristics table is maximum peak, non-repetitive, reverse surge current of 1/2 square wave or equivalent sine wave pulse of 1/120 second duration superimposed on the test current, Izt, per JEDEC registration; however, actual device capability is as described in Figure 5.

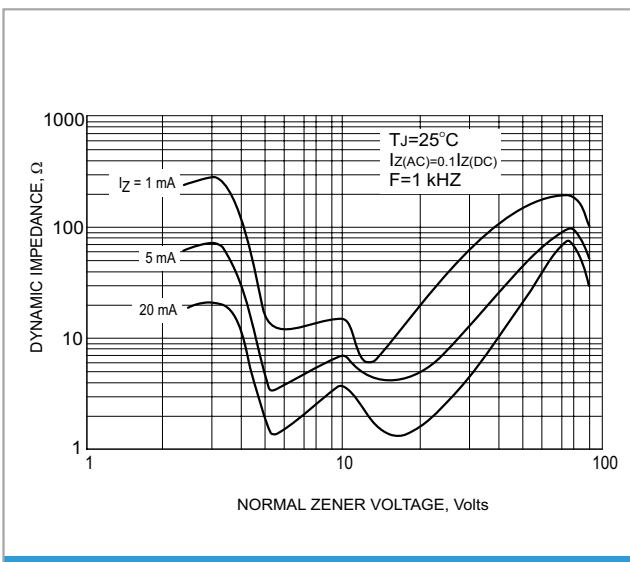
# MMBZ5221B thru MMBZ5259B



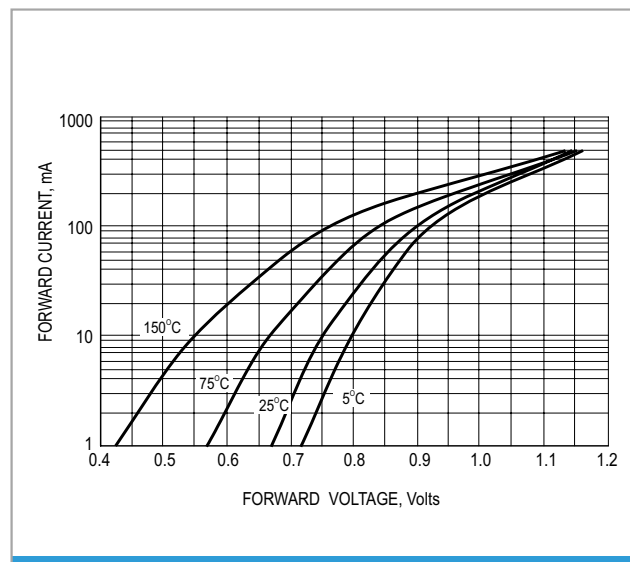
**TYPICAL REVERSE CURRENT**



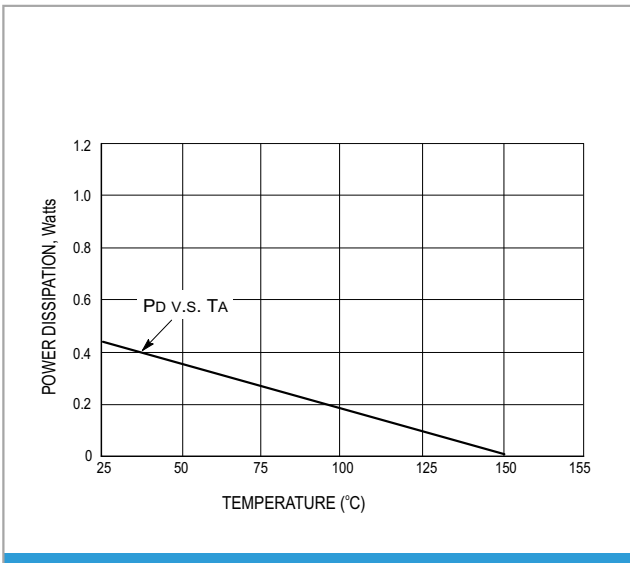
**STEADY STATE POWER DERATING**



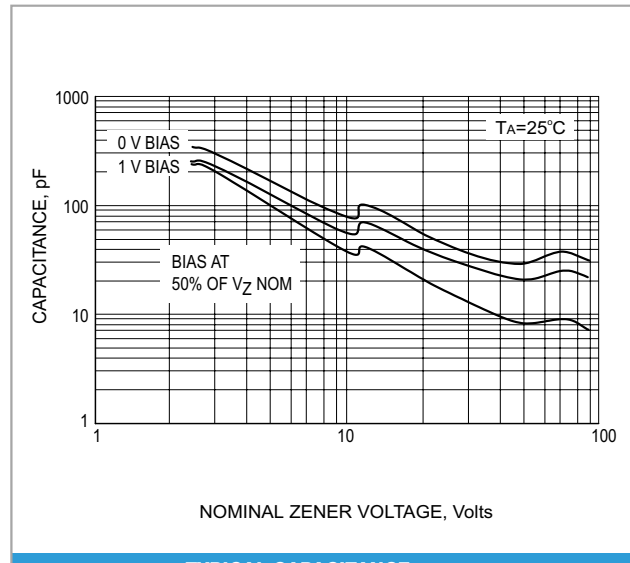
**EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE**



**TYPICAL FORWARD VOLTAGE**



**STEADY STATE POWER DERATING**



**TYPICAL CAPACITANCE**

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