



**THE DATASHEET OF  
MMBZ5251B-TP**



## Features

- Surface Mount Package
- ESD Protected up to 16KV (HBM)
- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

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

## Maximum Ratings

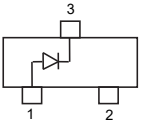
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Maximum Thermal Resistance: 357°C/W Junction to Ambient

Parameter	Symbol	Rating	Conditions
Power Dissipation	$P_D$	350mW	Note 2
Peak Forward Surge Current	$I_{FSM}$	4.0A	Note 3
Maximum Forward Voltage	$V_F$	0.9V	$I_F=10mA$

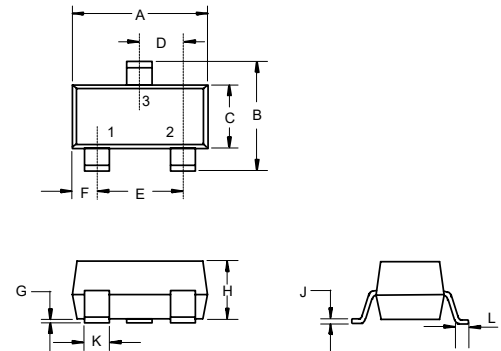
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

2. Mounted on FR4 PC Board With Our Suggested Solder Pad Layout
3. Measured on 8.3ms, Single Half Sine-wave or Equivalent Square Wave, Duty Cycle=4 Pulses Per Minute Maximum.

## Internal Structure

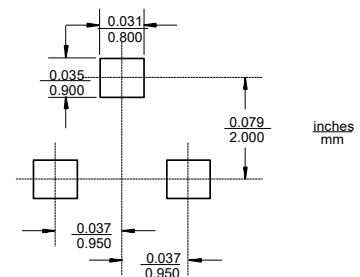


## SOT-23



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.083	0.104	2.10	2.64	
C	0.047	0.055	1.20	1.40	
D	0.034	0.041	0.85	1.05	
E	0.067	0.083	1.70	2.10	
F	0.018	0.024	0.45	0.60	
G	0.0004	0.006	0.01	0.15	
H	0.035	0.043	0.90	1.10	
J	0.003	0.007	0.08	0.18	
K	0.012	0.020	0.30	0.51	
L	0.007	0.020	0.20	0.50	

## Suggested Solder Pad Layout



**Electrical Characteristics @ 25°C Unless Otherwise Specified**

MCC Part Number	Nominal Zener Voltage <sup>(4,5)</sup>		Maximum Zener Impedance <sup>(6)</sup>			Maximum Reverse Leakage Current		Zener Voltage Temperature Coefficient	Marking Code
	$V_Z @ I_{ZT}$	$I_{ZT}$	$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ I_{ZK}$	$I_{ZK}$	$I_R$	$V_R$		
	V	mA	$\Omega$	$\Omega$	mA	$\mu A$	V	%/°C	
MMBZ5221B	2.4	20	30	1200	0.25	100	1.0	-0.085	KC1
MMBZ5222B	2.5	20	30	1250	0.25	100	1.0	-0.085	KC2
MMBZ5223B	2.7	20	30	1300	0.25	75	1.0	-0.080	KC3
MMBZ5225B	3.0	20	29	1600	0.25	50	1.0	-0.075	KC5
MMBZ5226B	3.3	20	28	1600	0.25	25	1.0	-0.070	KG1
MMBZ5227B	3.6	20	24	1700	0.25	15	1.0	-0.065	KG2
MMBZ5228B	3.9	20	23	1900	0.25	10	1.0	-0.060	KG3
MMBZ5229B	4.3	20	22	2000	0.25	5.0	1.0	$\pm 0.055$	KG4
MMBZ5230B	4.7	20	19	1900	0.25	5.0	2.0	$\pm 0.030$	KG5
MMBZ5231B	5.1	20	17	1600	0.25	5.0	2.0	$\pm 0.030$	KE1
MMBZ5232B	5.6	20	11	1600	0.25	5.0	3.0	+0.038	KE2
MMBZ5233B	6.0	20	7.0	1600	0.25	5.0	3.5	+0.040	KE3
MMBZ5234B	6.2	20	7.0	1000	0.25	5.0	4.0	+0.045	KE4
MMBZ5235B	6.8	20	5.0	750	0.25	3.0	5.0	+0.050	KE5
MMBZ5236B	7.5	20	6.0	500	0.25	3.0	6.0	+0.058	KF1
MMBZ5237B	8.2	20	8.0	500	0.25	3.0	6.5	+0.062	KF2
MMBZ5238B	8.7	20	8.0	600	0.25	3.0	6.5	+0.065	KF3
MMBZ5239B	9.1	20	10	600	0.25	3.0	7.0	+0.068	KF4
MMBZ5240B	10	20	17	600	0.25	3.0	8.0	+0.075	KF5
MMBZ5241B	11	20	22	600	0.25	2.0	8.4	+0.076	KH1
MMBZ5242B	12	20	30	600	0.25	1.0	9.1	+0.077	KH2
MMBZ5243B	13	9.5	13	600	0.25	0.5	9.9	+0.079	KH3
MMBZ5244B	14	9.0	15	600	0.25	0.1	10	+0.081	KH4
MMBZ5245B	15	8.5	16	600	0.25	0.1	11	+0.082	KH5
MMBZ5246B	16	7.8	17	600	0.25	0.1	12	+0.083	KJ1
MMBZ5248B	18	7.0	21	600	0.25	0.1	14	+0.085	KJ3
MMBZ5250B	20	6.2	25	600	0.25	0.1	15	+0.086	KJ5
MMBZ5251B	22	5.6	29	600	0.25	0.1	17	+0.087	KK1
MMBZ5252B	24	5.2	33	600	0.25	0.1	18	+0.088	KK2
MMBZ5254B	27	5.0	41	600	0.25	0.1	21	+0.090	KK4
MMBZ5255B	28	4.5	44	600	0.25	0.1	21	+0.091	KK5
MMBZ5256B	30	4.2	49	600	0.25	0.1	23	+0.091	KM1
MMBZ5257B	33	3.8	58	700	0.25	0.1	25	+0.092	KM2
MMBZ5258B	36	3.4	70	700	0.25	0.1	27	+0.093	KM3
MMBZ5259B	39	3.2	80	800	0.25	0.1	30	+0.094	KM4

Note:

4. Tolerance and Type Number Designation. The Type Numbers Listed Have a Standard Tolerance on The Nominal Zener Voltage of  $\pm 5\%$ .
5. Zener Voltage ( $V_Z$ ) Measurement. Guarantess The Zener Voltage When Measured at 90 Seconds While Maintaining The Lead Temperature ( $T_L$ ) at 25°C from The Diode Body.
6. Zener Impedance ( $Z_Z$ ) 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 ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed on  $I_{ZT}$  or  $I_{ZK}$ .

**Curve Characteristics**

Fig. 1 - Power Derating Curve

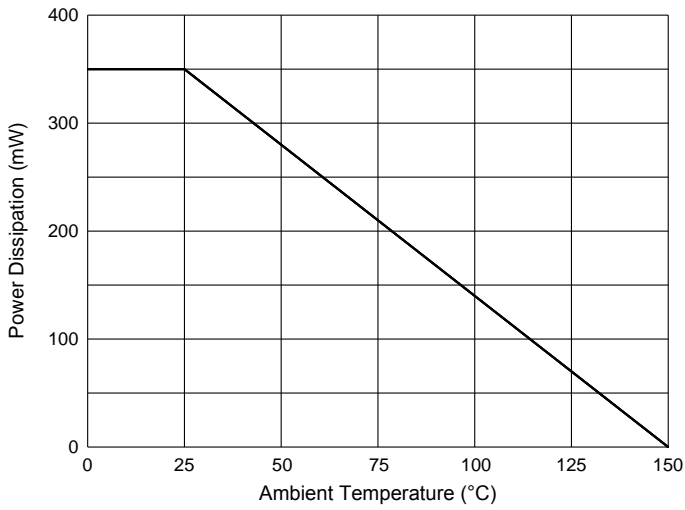


Fig. 2 - Typical Zener Breakdown Characteristics

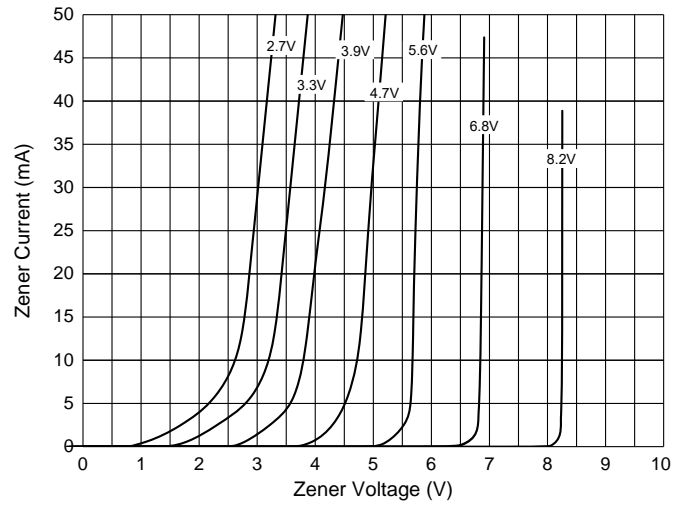
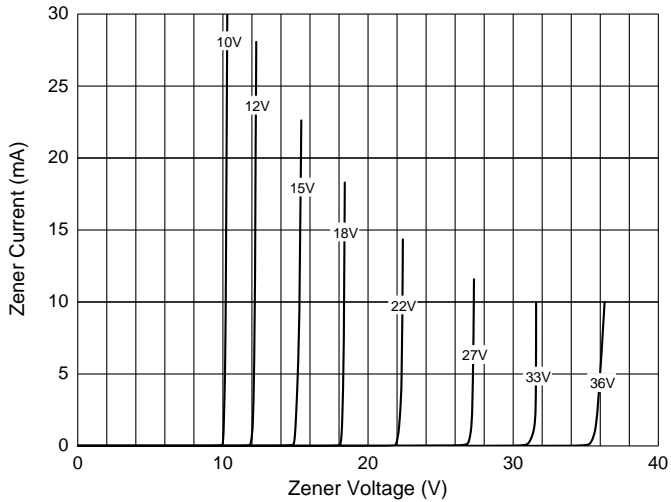


Fig. 3 - Typical Zener Breakdown Characteristics



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:3Kpcs/Reel

**\*\*\*IMPORTANT NOTICE\*\*\***

*Micro Commercial Components Corp.* reserves the right to make changes without further notice to any product herein to make corrections, modifications, enhancements, improvements, or other changes. *Micro Commercial Components Corp.* does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold *Micro Commercial Components Corp.* and all the companies whose products are represented on our website, harmless against all damages.

**\*\*\*LIFE SUPPORT\*\*\***



MCC's products are not authorized for use as critical components in life support devices or systems without the express written approval of Micro Commercial Components Corporation.

**\*\*\*CUSTOMER AWARENESS\*\*\***

Counterfeiting of semiconductor parts is a growing problem in the industry. Micro Commercial Components (MCC) is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. MCC strongly encourages customers to purchase MCC parts either directly from MCC or from Authorized MCC Distributors who are listed by country on our web page cited below. Products customers buy either from MCC directly or from Authorized MCC Distributors are genuine parts, have full traceability, meet MCC's quality standards for handling and storage. **MCC will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources.** MCC is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View MMBZ5251B-TP on WIN SOURCE](#)
-  [Micro Commercial Co](#) Information

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management