MMBZ5221BS - MMBZ5259BS

200mW SURFACE MOUNT ZENER DIODE

Features

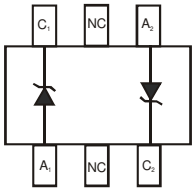
- Planar Die Construction
- Dual Isolated Zeners in Ultra-Small Surface Mount Package
- Ideally Suited for Automated Assembly Processes
- **Lead Free/RoHS Compliant (Note 2)**
- **"Green" Device (Note 3 and 4)**

Mechanical Data

- Case: SOT-363
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Polarity: See Diagram
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.006 grams (approximate)



Top View



Device Schematic

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Forward Voltage	@ I_F = 10mA	V_F	0.9	V

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 1)	P_D	200	mW
Thermal Resistance, Junction to Ambient Air	(Note 1)	$R_{\theta JA}$	625	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-65 to +150	°C

Notes:
1. Mounted on FR4 PC Board with recommended pad layout which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
2. No purposefully added lead.
3. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
4. Product manufactured with Date Code UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

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Electrical Characteristics @T_A = 25°C unless otherwise specified

Type Number	Marking Code	Zener Voltage Range (Note 5)				Maximum Zener Impedance (Note 6)		Maximum Reverse Leakage Current (Note 5)	
		V_Z @ I_{ZT}			I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK} = 0.25mA	I_R	@ V_R
		Nom (V)	Min (V)	Max (V)	mA	Ω		μA	V
MMBZ5221BS	KC1	2.4	2.28	2.52	20	30	1200	100	1.0
MMBZ5223BS	KC3	2.7	2.57	2.84	20	30	1300	75	1.0
MMBZ5225BS	KC5	3.0	2.85	3.15	20	30	1600	50	1.0
MMBZ5226BS	KG1	3.3	3.14	3.47	20	28	1600	25	1.0
MMBZ5227BS	KG2	3.6	3.42	3.78	20	24	1700	15	1.0
MMBZ5228BS	KG3	3.9	3.71	4.10	20	23	1900	10	1.0
MMBZ5229BS	KG4	4.3	4.09	4.52	20	22	2000	5.0	1.0
MMBZ5230BS	KG5	4.7	4.47	4.94	20	19	1900	5.0	2.0
MMBZ5231BS	KE1	5.1	4.85	5.36	20	17	1600	5.0	2.0
MMBZ5232BS	KE2	5.6	5.32	5.88	20	11	1600	5.0	3.0
MMBZ5233BS	KE3	6.0	5.70	6.30	20	7	1600	5.0	3.5
MMBZ5234BS	KE4	6.2	5.89	6.51	20	7	1000	5.0	4.0
MMBZ5235BS	KE5	6.8	6.46	7.14	20	5	750	3.0	5.0
MMBZ5236BS	KF1	7.5	7.13	7.88	20	6	500	3.0	6.0
MMBZ5237BS	KF2	8.2	7.79	8.61	20	8	500	3.0	6.5
MMBZ5238BS	KF3	8.7	8.27	9.14	20	8	600	3.0	6.5
MMBZ5239BS	KF4	9.1	8.65	9.56	20	10	600	3.0	7.0
MMBZ5240BS	KF5	10	9.50	10.50	20	17	600	3.0	8.0
MMBZ5241BS	KH1	11	10.45	11.55	20	22	600	2.0	8.4
MMBZ5242BS	KH2	12	11.40	12.60	20	30	600	1.0	9.1
MMBZ5243BS	KH3	13	12.35	13.65	9.5	13	600	0.5	9.9
MMBZ5245BS	KH5	15	14.25	15.75	8.5	16	600	0.1	11
MMBZ5246BS	KJ1	16	15.20	16.80	7.8	17	600	0.1	12
MMBZ5248BS	KJ3	18	17.10	18.90	7.0	21	600	0.1	14
MMBZ5250BS	KJ5	20	19.00	21.00	6.2	25	600	0.1	15
MMBZ5251BS	KK1	22	20.90	23.10	5.6	29	600	0.1	17
MMBZ5252BS	KK2	24	22.80	25.20	5.2	33	600	0.1	18
MMBZ5254BS	KK4	27	25.65	28.35	5.0	41	600	0.1	21
MMBZ5255BS	KK5	28	26.60	29.40	4.5	44	600	0.1	21
MMBZ5256BS	KM1	30	28.50	31.50	4.2	49	600	0.1	23
MMBZ5257BS	KM2	33	31.35	34.65	3.8	58	700	0.1	25
MMBZ5258BS	KM3	36	34.20	37.80	3.4	70	700	0.1	27
MMBZ5259BS	KM4	39	37.05	40.95	3.2	80	800	0.1	30

Notes: 5. Short duration pulse test used to minimize self-heating effect.
6. f = 1KHz.

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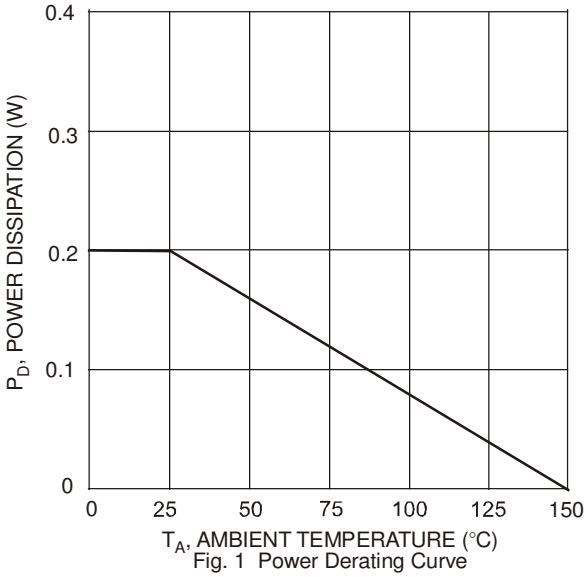


Fig. 1 Power Derating Curve

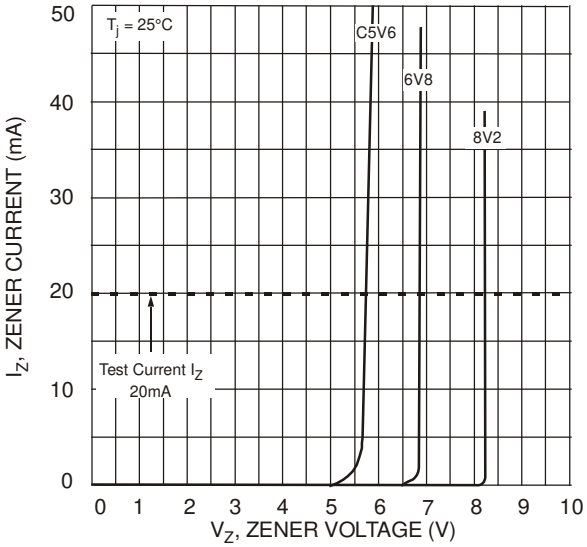


Fig. 2 Typical Zener Breakdown Characteristics

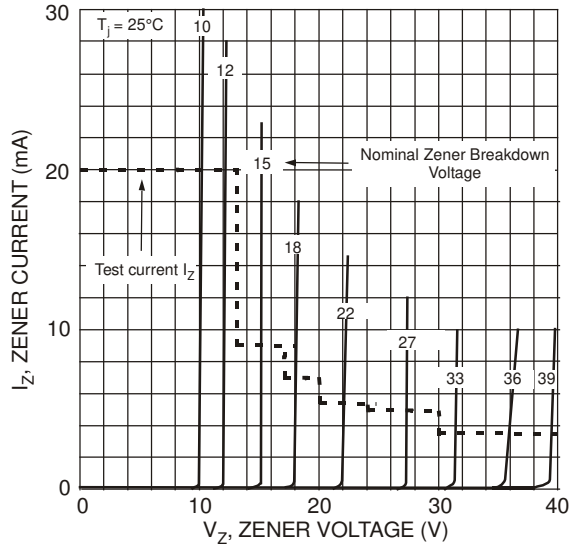


Fig. 3 Typical Zener Breakdown Characteristics

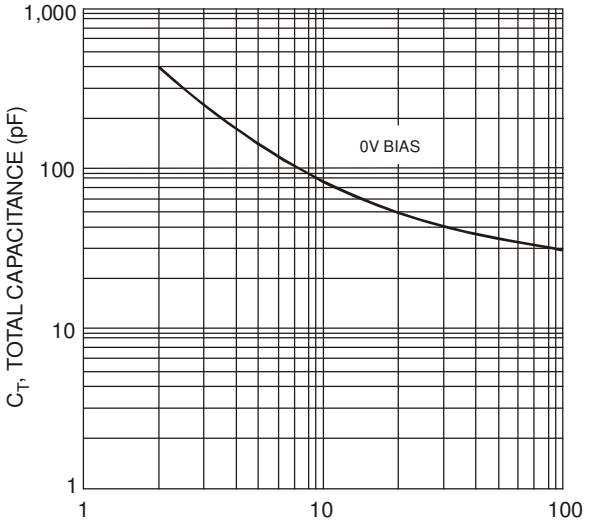


Fig. 4 Typical Total Capacitance vs. Nominal Zener Voltage

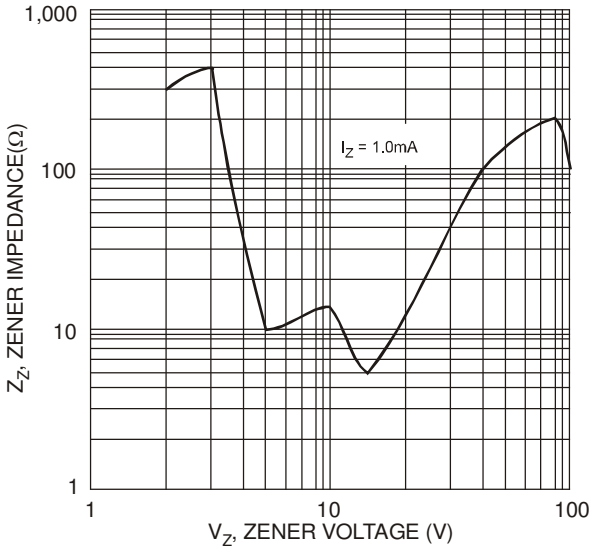


Fig. 5 Typical Zener Impedance Characteristics

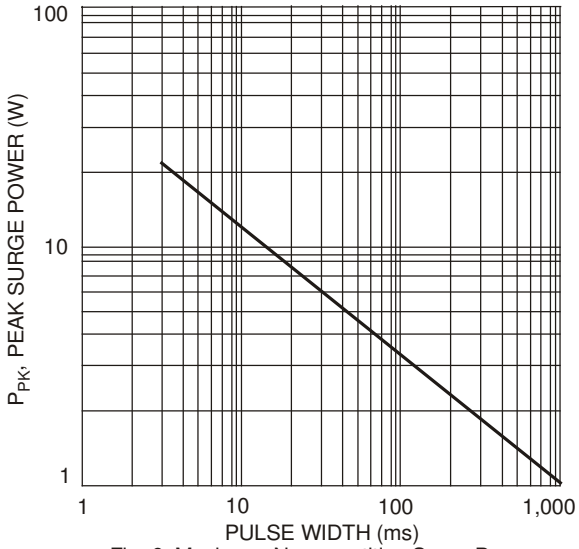


Fig. 6 Maximum Non-repetitive Surge Power

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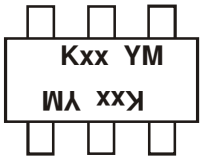
Ordering Information (Note 7)

Device	Packaging	Shipping
(Type Number)-7-F	SOT-363	3000/Tape & Reel

*Add "-7" to the appropriate type number in Electrical Characteristics Table on Page 2. Example: 6.2V Zener = MMBZ5234BS-7-F.

Notes: 7. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



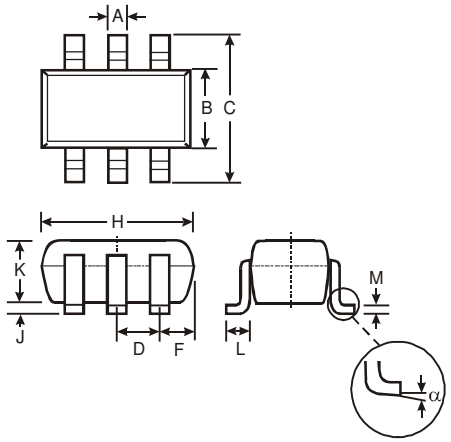
Kxx = Product Type Marking Code
(See Electrical Characteristics Table)
YM = Date Code Marking
Y = Year (ex: N = 2002)
M = Month (ex: 9 = September)

Date Code Key

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Code	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C

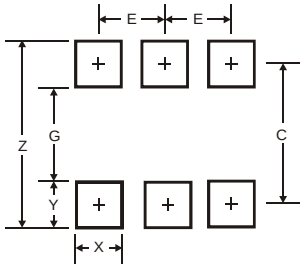
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Package Outline Dimensions



SOT-363		
Dim	Min	Max
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
F	0.40	0.45
H	1.80	2.20
J	0	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.22
α	0°	8°
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.5
G	1.3
X	0.42
Y	0.6
C	1.9
E	0.65

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