MMBZ5221BTS - MMBZ5259BTS

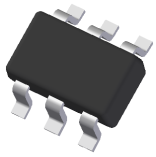
TRIPLE SURFACE MOUNT ZENER DIODE ARRAY

Features

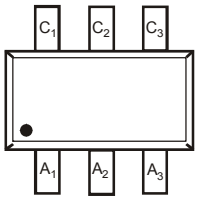
- Three Isolated Zeners in Ultra-Small Surface Mount Package
- Ideally Suited for Automated Assembly Processes
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOT363
- 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 e3
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Orientation: See Diagram
- Weight: 0.006 grams (approximate)



Top View



Package Pin Configuration

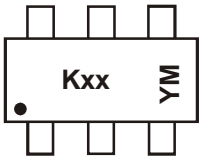
Ordering Information (Note 4)

Device	Packaging	Shipping
(Type Number)-7-F*	SOT363	3000/Tape & Reel

* Add "-7-F" to the appropriate type number in Electrical Characteristics Table, example: 6.2V Zener = MMBZ5234BTS-7-F.

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



Kxx = Product Type Marking Code
(See Electrical Characteristic Table)
YM = Date Code Marking
Y = Year (ex: A = 2013)
M = Month (ex: 9 = September)

Date Code Key

Year	2005	2006	2007	2008	2009	2010	2111	2012	2013	2014	2015
Code	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

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Forward Voltage	(Note 5) @ I_F = 10mA	V_F	0.9	V

Note: 5. Short duration pulse test used to minimize self-heating effect.

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 6)	P_D	200	mW
Thermal Resistance, Junction to Ambient Air	(Note 6)	$R_{\theta JA}$	625	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-65 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Type Number	Marking Code	Zener Voltage Range (Note 7)				Maximum Zener Impedance (Note 8)		Maximum Reverse Leakage Current (Note 7)	
		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
MMBZ5221BTS	KSB	2.4	2.28	2.52	20	30	1200	100	1.0
MMBZ5223BTS	KSC	2.7	2.57	2.84	20	30	1300	75	1.0
MMBZ5225BTS	KSD	3.0	2.85	3.15	20	30	1600	50	1.0
MMBZ5226BTS	KSE	3.3	3.14	3.47	20	28	1600	25	1.0
MMBZ5227BTS	KSF	3.6	3.42	3.78	20	24	1700	15	1.0
MMBZ5228BTS	KSG	3.9	3.71	4.10	20	23	1900	10	1.0
MMBZ5229BTS	KSH	4.3	4.09	4.52	20	22	2000	5.0	1.0
MMBZ5230BTS	KS1	4.7	4.47	4.94	20	19	1900	5.0	2.0
MMBZ5231BTS	KS2	5.1	4.85	5.36	20	17	1600	5.0	2.0
MMBZ5232BTS	KS3	5.6	5.32	5.88	20	11	1600	5.0	3.0
MMBZ5233BTS	KRF	6.0	5.70	6.30	20	7	1600	5.0	3.5
MMBZ5234BTS	KS4	6.2	5.89	6.51	20	7	1000	5.0	4.0
MMBZ5235BTS	KS5	6.8	6.46	7.14	20	5	750	3.0	5.0
MMBZ5236BTS	KS6	7.5	7.13	7.88	20	6	500	3.0	6.0
MMBZ5237BTS	KS7	8.2	7.79	8.61	20	8	500	3.0	6.5
MMBZ5238BTS	KRG	8.7	8.27	9.14	20	8	600	3.0	6.5
MMBZ5239BTS	KS8	9.1	8.65	9.56	20	10	600	3.0	7.0
MMBZ5240BTS	KS9	10	9.50	10.50	20	17	600	3.0	8.0
MMBZ5241BTS	KR1	11	10.45	11.55	20	22	600	2.0	8.4
MMBZ5242BTS	KR2	12	11.40	12.60	20	30	600	1.0	9.1
MMBZ5243BTS	KR3	13	12.35	13.65	9.5	13	600	0.5	9.9
MMBZ5245BTS	KR4	15	14.25	15.75	8.5	16	600	0.1	11
MMBZ5246BTS	KR5	16	15.20	16.80	7.8	17	600	0.1	12
MMBZ5248BTS	KR6	18	17.10	18.90	7.0	21	600	0.1	14
MMBZ5250BTS	KR7	20	19.00	21.00	6.2	25	600	0.1	15
MMBZ5251BTS	KR8	22	20.90	23.10	5.6	29	600	0.1	17
MMBZ5252BTS	KR9	24	22.80	25.20	5.2	33	600	0.1	18
MMBZ5254BTS	KRA	27	25.65	28.35	5.0	41	600	0.1	21
MMBZ5255BTS	KRH	28	26.60	29.40	4.5	44	600	0.1	21
MMBZ5256BTS	KRB	30	28.50	31.50	4.2	49	600	0.1	23
MMBZ5257BTS	KRC	33	31.35	34.65	3.8	58	700	0.1	25
MMBZ5258BTS	KRD	36	34.20	37.80	3.4	70	700	0.1	27
MMBZ5259BTS	KRE	39	37.05	40.95	3.2	80	800	0.1	30

Notes:
6. Mounted on FR4 PC Board with recommended pad layout which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
7. Short duration pulse test used to minimize self-heating effect.
8. f = 1KHz.

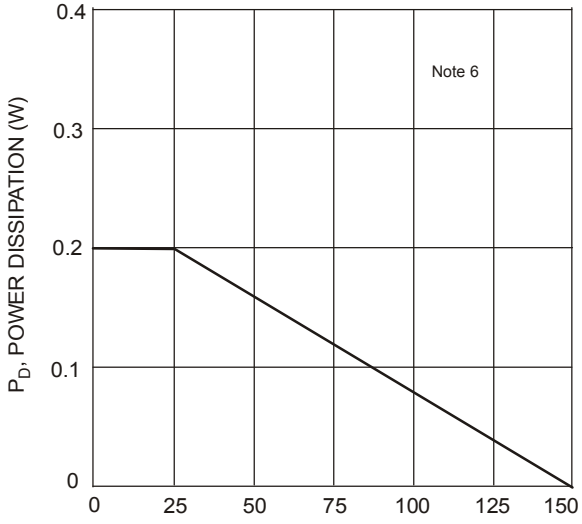


Fig. 1 Power Derating Curve

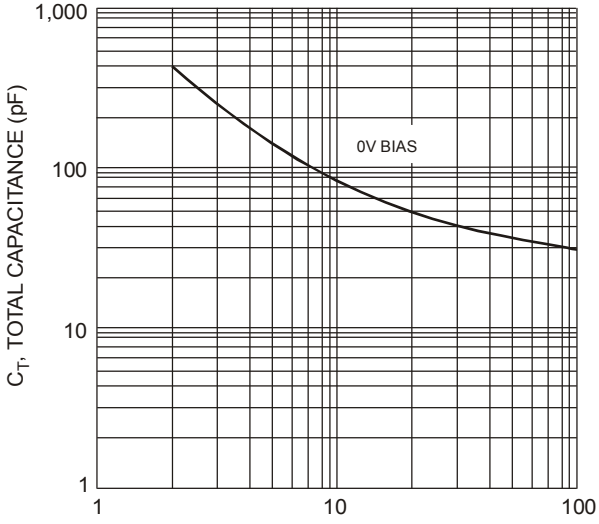


Fig. 2 Typical Total Capacitance vs. Nominal Zener Voltage

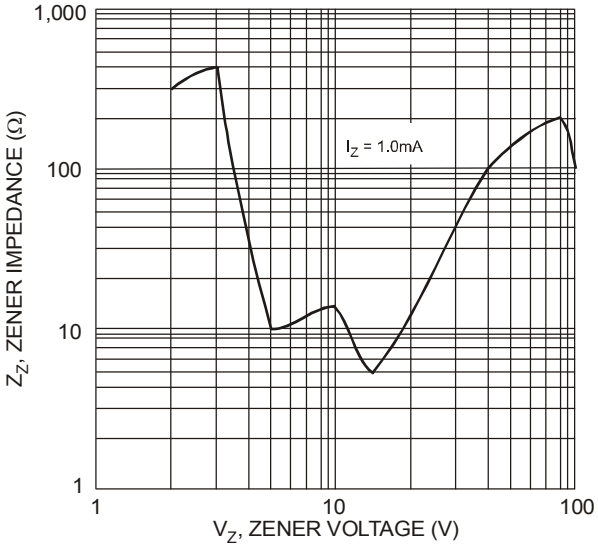


Fig. 3 Typical Zener Impedance Characteristics

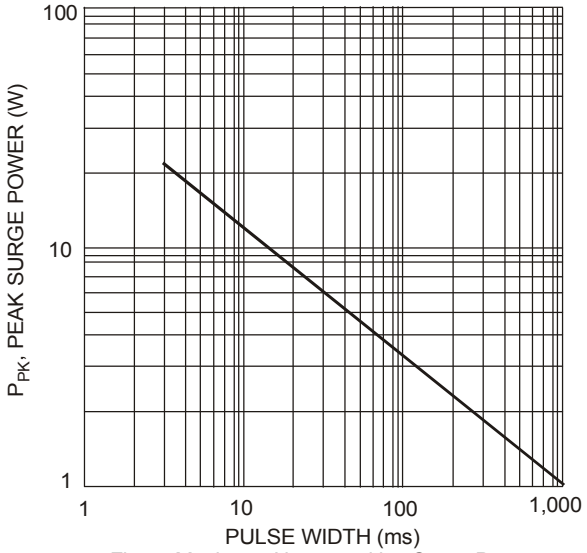
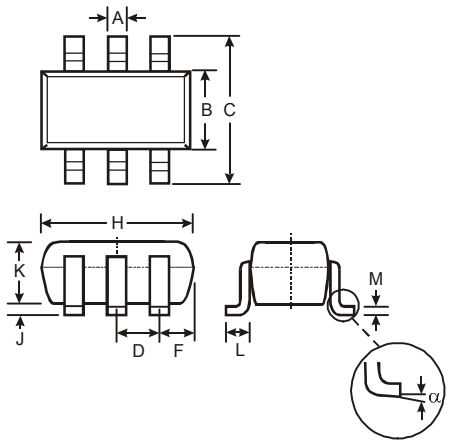


Fig. 4 Maximum Non-repetitive Surge Power

Package Outline Dimensions

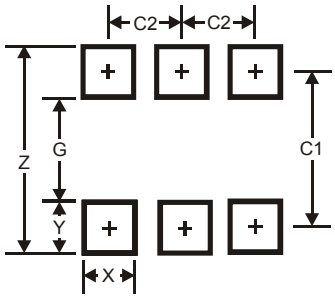
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT363			
Dim	**Min**	**Max**	**Typ**
A	0.10	0.30	0.25
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	0.65 Typ		
F	0.40	0.45	0.425
H	1.80	2.20	2.15
J	0	0.10	0.05
K	0.90	1.00	1.00
L	0.25	0.40	0.30
M	0.10	0.22	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for latest version.



Dimensions	Value (in mm)
Z	2.5
G	1.3
X	0.42
Y	0.6
C1	1.9
C2	0.65