



### MMBZ5221BW - MMBZ5259BW

#### 200mW SURFACE MOUNT ZENER DIODE

### Features

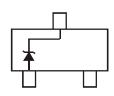
- Planar Die Construction
- Ultra-Small Surface Mount Package
- General Purpose
- Ideally Suited for Automated Assembly Processes
- Lead Free/RoHS Compliant (Note 2)
- Qualified to AEC-Q101 Standards for High Reliability
- "Green" Device (Notes 3 and 4)

### **Mechanical Data**

- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound (Note 4). UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Matte Tin Finish annealed over Alloy 42 leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.006 grams (approximate)



Top View



Device Schematic

#### Maximum Ratings @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit	
Forward Voltage	@ I <sub>F</sub> = 10mA	V <sub>F</sub>	0.9	V	

## **Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 1)	PD	200	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	R <sub>θJA</sub>	625	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-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.

Product manufactured with date code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to date code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

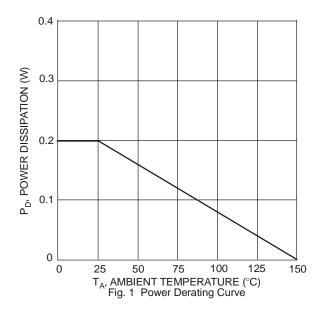


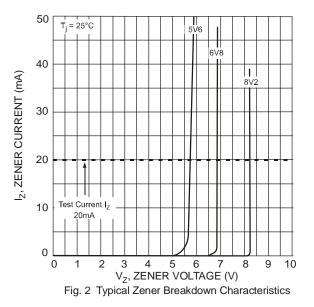
# Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise specified

	Zener Voltage Range (Note 5)			Test Current	Maximum Zen (Not				
Type Number	Marking Code		Vz @ I <sub>ZT</sub>		I <sub>ZT</sub>	Z <sub>ZT</sub> @ I <sub>ZT</sub>	<b>Z<sub>ZT</sub> @ I<sub>ZT</sub> Z</b> <sub>ZK</sub> @ I <sub>ZK</sub> = 0.25mA		@ V <sub>R</sub>
		Nom (V)	Min (V)	Max (V)	mA	2		μΑ	v
MMBZ5221BW	KC1	2.4	2.28	2.52	20	30	1200	100	1.0
MMBZ5223BW	KC3	2.7	2.57	2.84	20	30	1300	75	1.0
MMBZ5225BW	KC5	3.0	2.85	3.15	20	30	1600	50	1.0
MMBZ5226BW	KG1	3.3	3.14	3.47	20	28	1600	25	1.0
MMBZ5227BW	KG2	3.6	3.42	3.78	20	24	1700	15	1.0
MMBZ5228BW	KG3	3.9	3.71	4.10	20	23	1900	10	1.0
MMBZ5229BW	KG4	4.3	4.09	4.52	20	22	2000	5.0	1.0
MMBZ5230BW	KG5	4.7	4.47	4.94	20	19	1900	5.0	2.0
MMBZ5231BW	KE1	5.1	4.85	5.36	20	17	1600	5.0	2.0
MMBZ5232BW	KE2	5.6	5.32	5.88	20	11	1600	5.0	3.0
MMBZ5233BW	KE3	6	5.70	6.30	20	7.0	1600	5.0	3.5
MMBZ5234BW	KE4	6.2	5.89	6.51	20	7.0	1000	5.0	4.0
MMBZ5235BW	KE5	6.8	6.46	7.14	20	5.0	750	3.0	5.0
MMBZ5236BW	KF1	7.5	7.13	7.88	20	6.0	500	3.0	6.0
MMBZ5237BW	KF2	8.2	7.79	8.61	20	8.0	500	3.0	6.5
MMBZ5239BW	KF4	9.1	8.65	9.56	20	10	600	3.0	7.0
MMBZ5240BW	KF5	10	9.50	10.50	20	17	600	3.0	8.0
MMBZ5241BW	KH1	11	10.45	11.55	20	22	600	2.0	8.4
MMBZ5242BW	KH2	12	11.40	12.60	20	30	600	1.0	9.1
MMBZ5243BW	KH3	13	12.35	13.65	9.5	13	600	0.5	9.9
MMBZ5245BW	KH5	15	14.25	15.75	8.5	16	600	0.1	11
MMBZ5246BW	KJ1	16	15.20	16.80	7.8	17	600	0.1	12
MMBZ5248BW	KJ3	18	17.10	18.90	7.0	21	600	0.1	14
MMBZ5250BW	KJ5	20	19.00	21.00	6.2	25	600	0.1	15
MMBZ5251BW	KK1	22	20.90	23.10	5.6	29	600	0.1	17
MMBZ5252BW	KK2	24	22.80	25.20	5.2	33	600	0.1	18
MMBZ5254BW	KK4	27	25.65	28.35	5.0	41	600	0.1	21
MMBZ5255BW	KK5	28	26.60	29.40	4.5	44	600	0.1	21
MMBZ5256BW	KM1	30	28.50	31.50	4.2	49	600	0.1	23
MMBZ5257BW	KM2	33	31.35	34.65	3.8	58	700	0.1	25
MMBZ5258BW	KM3	36	34.20	37.80	3.4	70	700	0.1	27
MMBZ5259BW	KM4	39	37.05	40.95	3.2	80	800	0.1	30

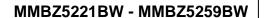
Notes:

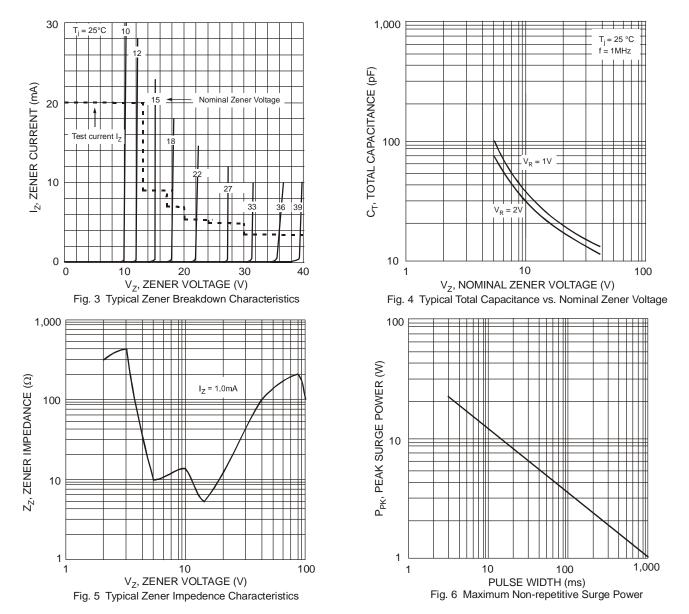
5. Short duration pulse test used to minimize self-heating effect. 6. f = 1KHz.











# Ordering Information (Notes 4 & 7)

Device	Packaging	Shipping
(Type Number)-7-F*	SOT-323	3000/Tape & Reel

\* Add "-7-F" to the appropriate type number in Electrical Characteristics Table from Page 2. Example: 6.2V Zener = MMBZ5234BW-7-F.

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

## **Marking Information**

Date Code Key					xxx	ΥM	(Se YM Y =	ee Elec I = Dat - Year	duct Type etrical Char e Code Ma (ex: N = 20 h (ex: 9 = 3	acteristics arking 002)	s Table)				
Year	1998	1999	2000	2001	2002	2003	2004	2005	5 2006	2007	2008	2009	201	0 2011	2012
Code	J	K	L	М	Ν	Р	R	S	Т	U	V	W	Х	Y	Z
		-					_		_		_	_	-		
Month	Jan		Feb	Mar	Apr	May	/ J	un	Jul	Aug	Sep	00	t	Nov	Dec
Code	1		2	3	4	5		6	7	8	9	0	)	Ν	D

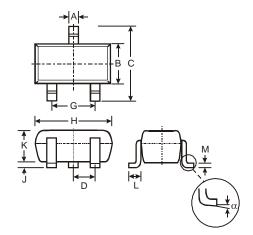
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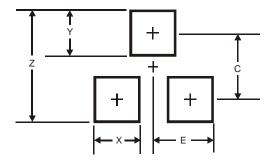


# **Package Outline Dimensions**



SOT-323							
Dim	Min	Min Max Typ					
Α	0.25 0.40 0.30						
В	1.15	1.15 1.35 1.30					
С	2.00	2.20	2.10				
D	-	-	0.65				
G	1.20	1.20 1.40 1.3					
Н	1.80 2.20 2.15						
J	0.0 0.10 0.05						
К	0.90	0.90 1.00 1.00					
L	0.25	0.40	0.30				
Μ	0.10	0.18	0.11				
α	0° 8° -						
All	All Dimensions in mm						

# Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.8
Х	0.7
Y	0.9
С	1.9
E	1.0



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