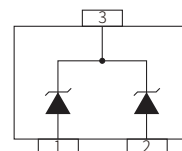


FEATURES

- | Pb-free Package are Available
- | SOT-323 Package Allows Either Two Separate Unidirectional Configurations or a Single Bidirectional Configuration
- | Working Peak Reverse Voltage Range 3V to 26V
- | Standard Zener Breakdown Voltage Range 5.6V to 33V
- | Peak Power 24 or 40 Watts @ 1.0ms(Unidirectional), per Figure 5 Waveform
- | ESD Rating of Class N (exceeding 16KV) per the Human Body Model
- | Maximum Clamping Voltage @ Peak Pulse Current



SOT-323



Schematic Symbol

MECHANICAL DATA

- | SOT-323 Package
- | Flammability Rating: UL 94V-0

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$)

Parameter		Symbol	Value	Unit
Peak Power Dissipation @ 1.0ms (Note 1) $T_L \leq 25^{\circ}\text{C}$	MMBZ5V6CW to MMBZ10VCW	P_{PK}	24	W
	MMBZ12VCW to MMBZ33VCW		40	W
Total Power Dissipation on FR-5 Board (Note 2) @ $T_A=25^{\circ}\text{C}$ Derate above 25°C		P_D	225	mW
			1.8	mW/ $^{\circ}\text{C}$
Thermal Resistance Junction-to-Ambient		$R_{\theta JA}$	556	$^{\circ}\text{C}/\text{W}$
Total Power Dissipation on Alumina Substrate (Note 3) @ $T_A=25^{\circ}\text{C}$ Derate above 25°C		P_D	300	mW
			2.4	mW/ $^{\circ}\text{C}$
Thermal Resistance Junction-to-Ambient		$R_{\theta JA}$	417	$^{\circ}\text{C}/\text{W}$
Storage Temperature		T_{STG}	-55 to +150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS

Part Number	Device Marking Code	V_{RWM}	$I_R @ V_{RWM}$	Breakdown Voltage(Note 4)				Max Zener Impedance (Note 5)			$V_C @ I_{PP}$ (Note 6)		θV_{BR} mV/°C
		(V)	(μA)	Min	Nom	Max	@ I_T	$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ I_{ZK}$		V_C	I_{PP}	
				(V)	(V)	(V)	(mA)	(Ω)	(Ω)	(mA)	(V)	(A)	
24 WATTS													
MMBZ5V6CW	5C6	3.0	5.0	5.32	5.6	5.88	20	11	1600	0.25	8.0	3.0	1.26
MMBZ6V2CW	6C2	3.0	0.5	5.89	6.2	6.51	1.0	-	-	-	8.7	2.76	2.80
MMBZ6V8CW	6C8	4.5	0.5	6.46	6.8	7.14	1.0	-	-	-	9.6	2.5	3.4
MMBZ9V1CW	9C1	6.0	0.3	8.65	9.1	9.56	1.0	-	-	-	14	1.7	7.5
MMBZ10VCW	10C	6.5	0.3	9.50	10	10.5	1.0	-	-	-	14.2	1.7	7.5

Part Number	Device Marking Code	V _{RWM}	I _R @ V _{RWM}	Breakdown Voltage(Note 4)				V _C @I _{PP} (Note 6)		θV _{BR}
		(V)	(nA)	Min	Nom	Max	@ I _T	V _C	I _{PP}	
				(V)	(V)	(V)	(mA)	(V)	(A)	mV/°C
40 WATTS										
MMBZ12VCW	12C	8.5	200	11.40	12	12.60	1	17	2.35	7.5
MMBZ15VCW	15C	12.0	50	14.25	15	15.75	1	21	1.90	12.3
MMBZ18VCW	18C	14.5	50	17.10	18	18.90	1	25	1.60	15.3
MMBZ20VCW	20C	17.0	50	19	20	21	1	28	1.4	17.2
MMBZ27VCW	27C	22.0	50	25.65	27	28.35	1	40	1.0	24.3
MMBZ33VCW	33C	26.0	50	31.35	33	34.65	1	46	0.87	30.4

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1: Non-repetitive current pulse per Figure 5 and derate above $T_A = 25^\circ\text{C}$ per Figure 6;

2: FR-5 = 1.0 x 0.75 x 0.62 in;

3: Alumina = 0.4 x 0.3 x 0.024 in, 99.5% alumina

* Other voltages may be available upon request.

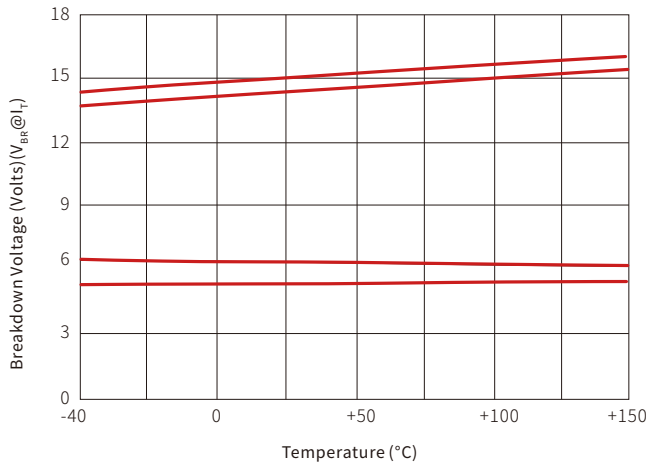
4: V_{BR} measured at pulse test current I_T at an ambient temperature of 25°C

5: Z_{ZT} and Z_{ZK} are measured by dividing the AC voltage drop across the device by the AC current applied. The specified limits are for $I_Z(\text{AC}) = 0.1 I_Z(\text{DC})$, with the AC frequency = 1.0kHz.

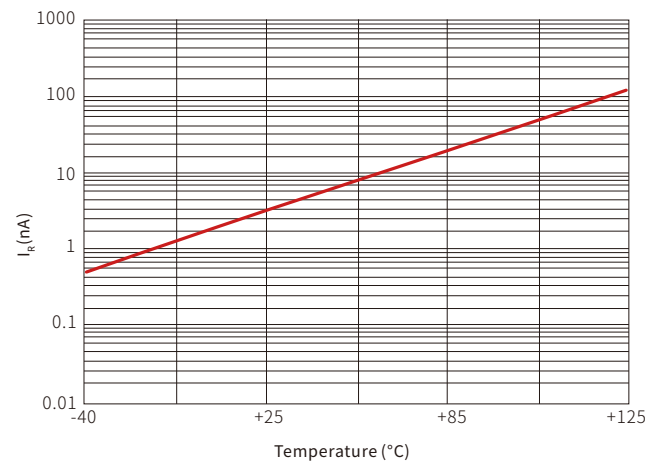
6: Surge current waveform per Figure 5 and derate Figure 6

CHARACTERISTIC CURVES

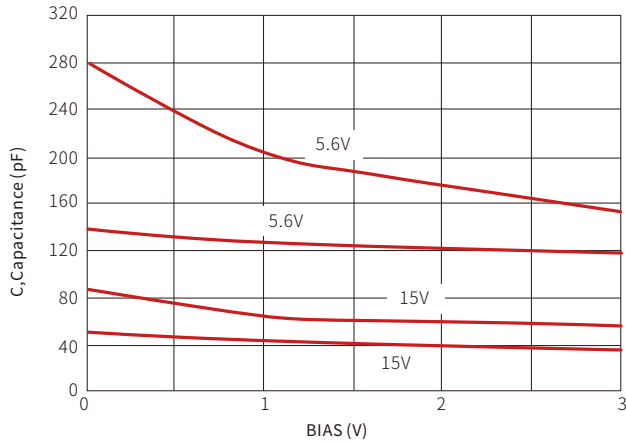
Typical Breakdown Voltage Versus Temperature



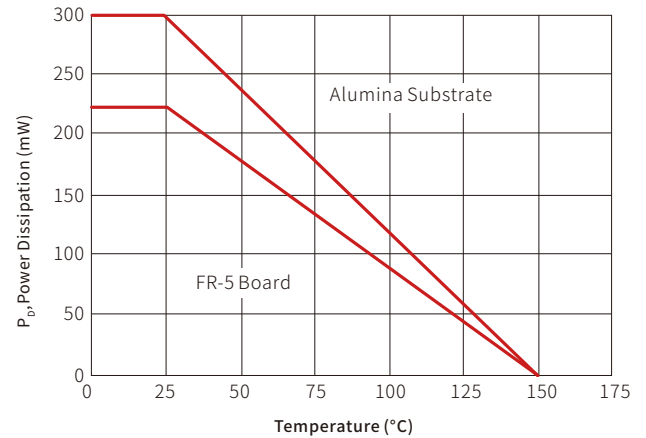
Typical Leakage Current Versus Temperature

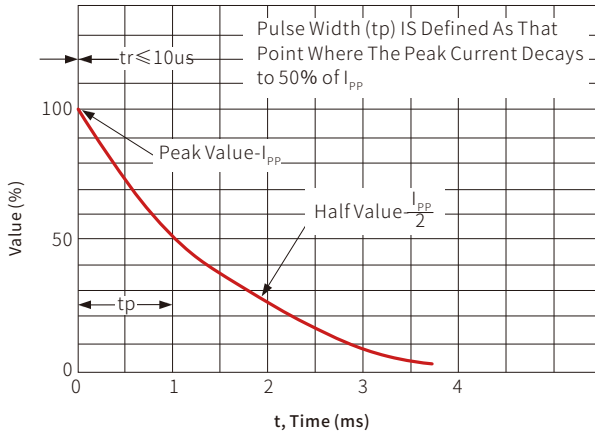
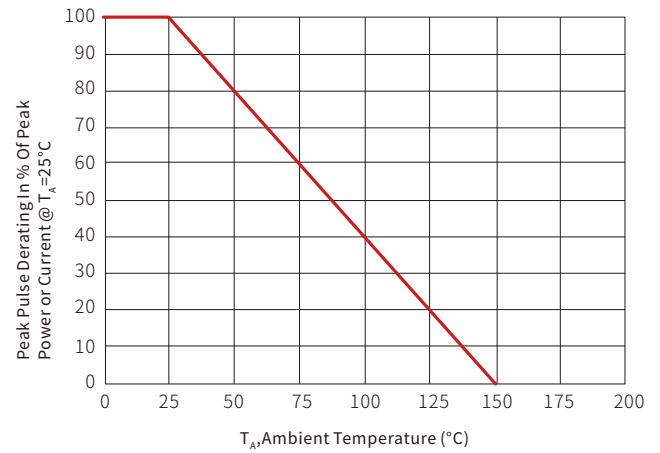
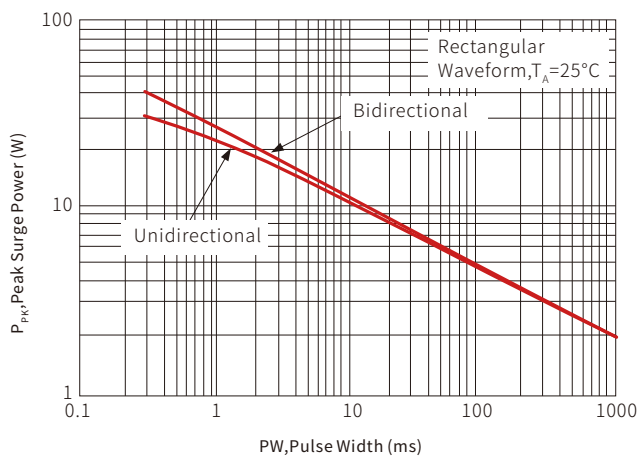
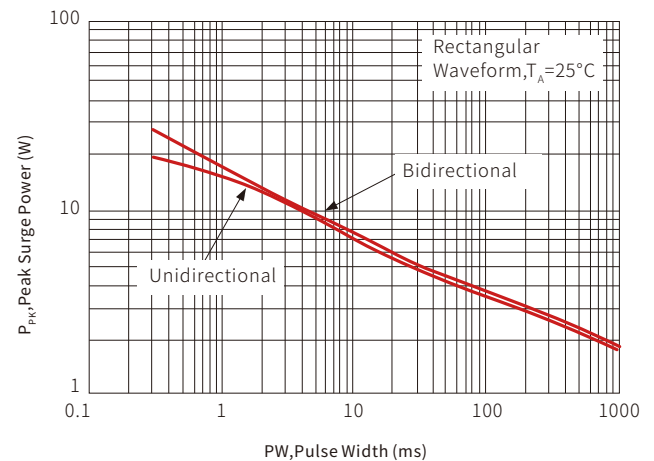


Typical Capacitance Versus Bias Voltage



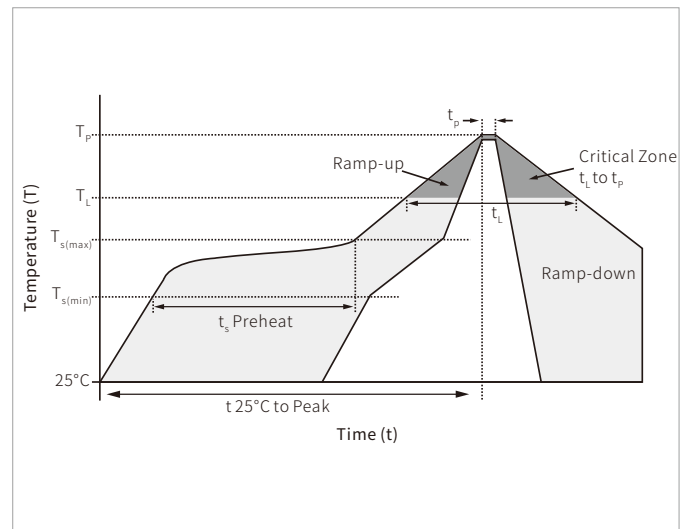
Steady State Power Derating Curve



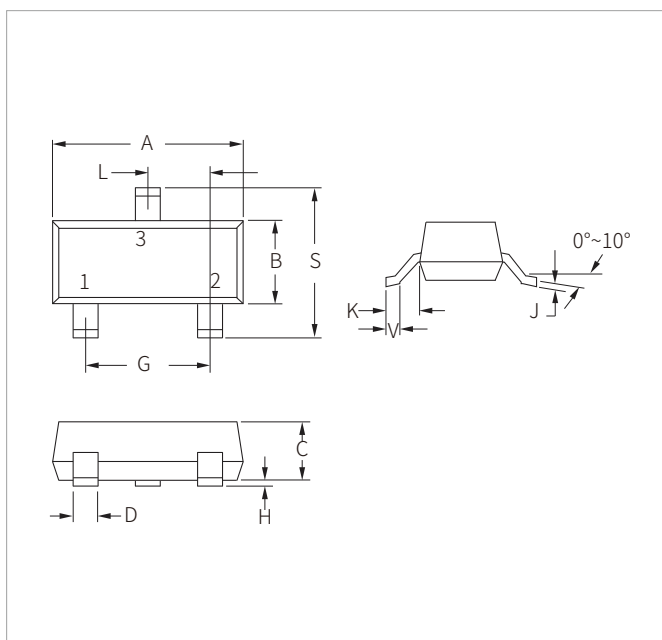
Pulse Waveform

Pulse Derating Curve

Maximum Non-Repetitive Surge Power, P_{PK} Versus PW

Maximum Non-Repetitive Surge Power, $P_{PK(NOM)}$ Versus PW


SOLDERING PARAMETERS

Reflow Condition		Lead-free assembly
Pre Heat	Temperature Max ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak		3°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Time (min to max) (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

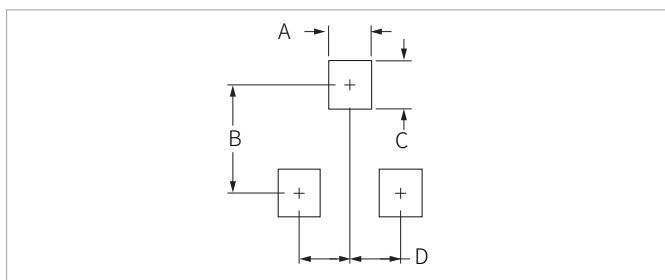


SOT-323 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.00	2.20	0.079	0.087
B	1.15	1.35	0.045	0.053
C	0.80	1.10	0.031	0.043
D	0.20	0.40	0.008	0.016
G	1.20	1.40	0.047	0.055
H	0.00	0.10	0.000	0.004
J	0.08	0.15	0.003	0.006
K	0.525REF		0.021REF	
L	0.650TYP		0.026TYP	
S	2.15	2.45	0.085	0.096
V	0.26	0.46	0.010	0.018

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters	Inches
	NOR	NOR
A	0.50	0.020
B	2.20	0.087
C	0.80	0.031
D	1.30	0.051

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
MMBZxxxCW	SOT-323	3000PCS	7"

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Website



Wechat

To find your local partner within Semiware's global website: www.semiware.com

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