

FEATURES

- | Working peak reverse voltage 3V to 26V

- | Standard Zener breakdown voltage 5.6V to 33V

- | Peak power 24 or 40 Watts @ 1.0ms (unidirectional) per Figure 6
Wave form

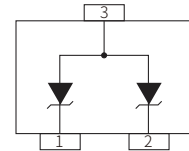
- | ESD Rating: Class 3B (>16kV) per the Human Body Model
Class C (>400V) per Machine Model

- | ESD Rating of IEC61000-4-2 level 4, ±30kV contact Discharge

- | Low leakage < 5.0µA



SOT-23



Schematic Symbol

APPLICATIONS

- | Computers

- | Printers

- | Business Machines

- | Communication systems

- | Medical equipment

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	MMBZ5V6AL thru MMBZ10AL	P_{PK}	24	W
	MMBZ12VAL thru MMBZ33VAL		40	W
Total Power Dissipation		P_D	200	mW
Operating Temperature		T_{OPT}	-55 to +150	°C
Storage Temperature		T_{STG}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS

Part Number	Device Marking Code	V_{RWM}	I_R	V_{BR}				Z_{ZT}	Z_{ZK}		V_C		$\theta_{V_{BR}}$ mV/°C
		(V)	@ V_{RWM}	Min	Nom	Max	@ I_T	Max@ I_{ZT}	Max	@ I_{ZK}	Max	@ I_{PP}	
			(μ A)	(V)	(V)	(V)	(mA)	(Ω)	(Ω)	(mA)	(V)	(A)	
24 WATTS													
MMBZ5V6AL	5A6	3.0	5.0	5.32	5.6	5.88	20	11	1600	0.25	8.0	3.0	1.26
MMBZ6V2AL	6A2	3.0	0.5	5.89	6.2	6.51	1.0	-	-	-	8.7	2.76	2.80
MMBZ6V8AL	6A8	4.5	0.5	6.46	6.8	7.14	1.0	-	-	-	9.6	2.5	3.4
MMBZ9V1AL	9A1	6.0	0.3	8.65	9.1	9.56	1.0	-	-	-	14	1.7	7.5
MMBZ10VAL	10A	6.5	0.3	9.50	10	10.5	1.0	-	-	-	14	1.7	7.5

$V_F=0.9V$ Max @ $I_F=10mA$

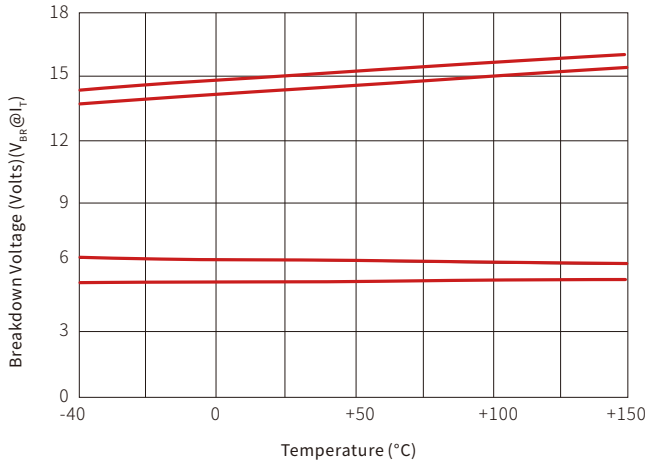
Part Number	Device Marking Code	V_{RWM}	I_R	V_{BR}				V_C (note1)		$\theta_{V_{BR}}$ mV/°C
		(V)	@ V_{RWM}	Min	Nom	Max	@ I_T	Max	@ I_{PP}	
			(μ A)	(V)	(V)	(V)	(mA)	(V)	(A)	
40 WATTS										
MMBZ12VAL	12A	8.5	200	11.40	12	12.60	1	17	2.35	7.5
MMBZ15VAL	15A	12.0	50	14.25	15	15.75	1	21	1.90	12.3
MMBZ18VAL	18A	14.5	50	17.10	18	18.90	1	25	1.60	15.3
MMBZ20VAL	20A	16.0	50	19	20	21	1	38	1.0	17.2
MMBZ27VAL	27A	22.0	50	25.65	27	28.35	1	40	1.0	24.3
MMBZ33VAL	33A	26.0	50	31.35	33	34.65	1	46	0.87	30.4

$V_F=0.9V$ Max @ $I_F=10mA$

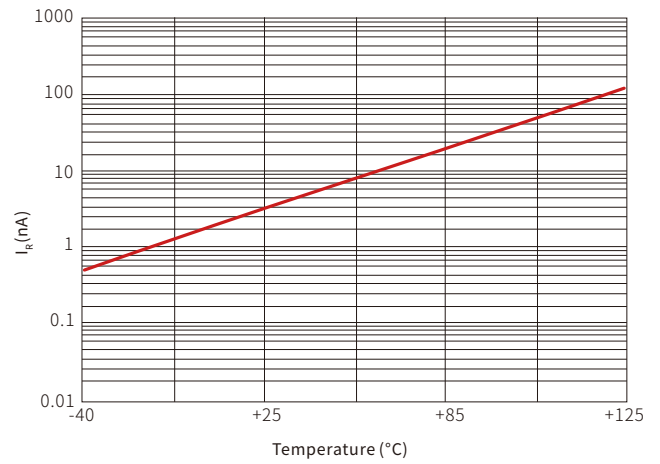
Note 1: Surge Current waveform per Figure 5

CHARACTERISTIC CURVES

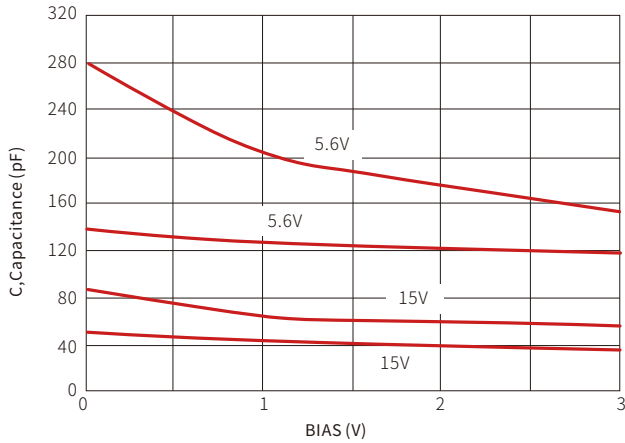
Typical Breakdown Voltage Versus Temperature



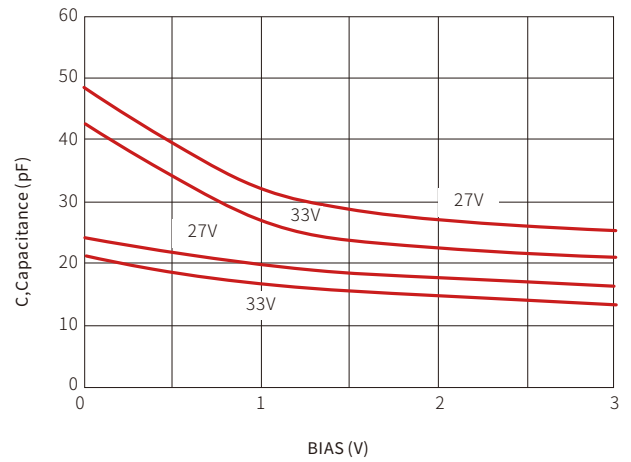
Typical Leakage Current Versus Temperature

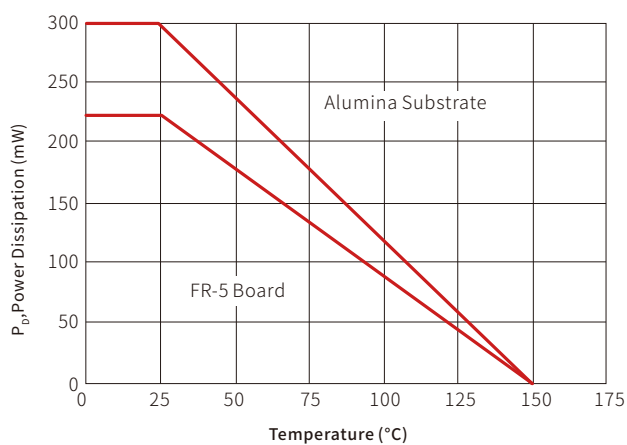
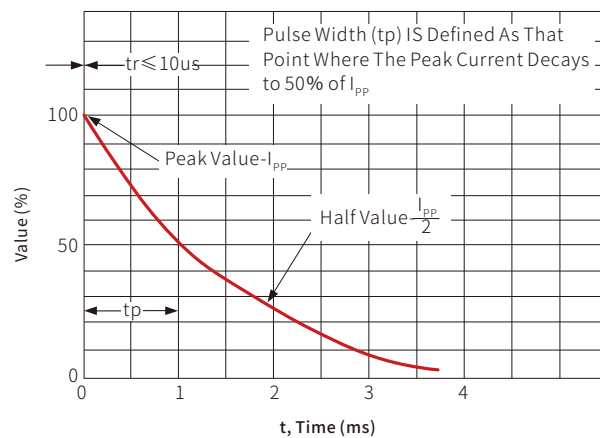
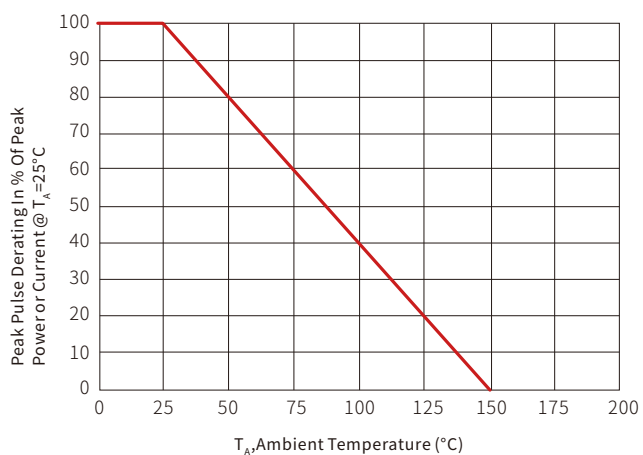
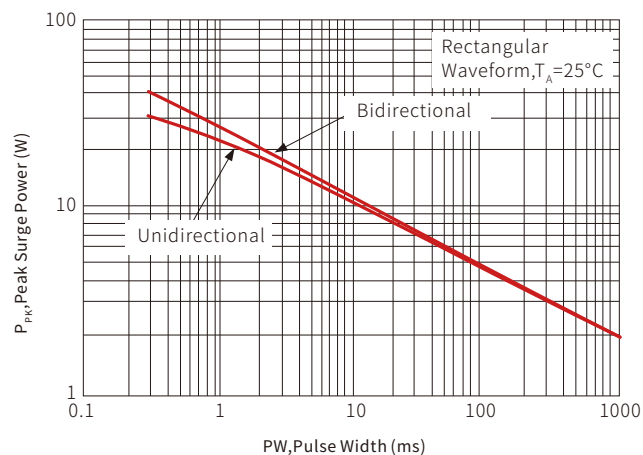


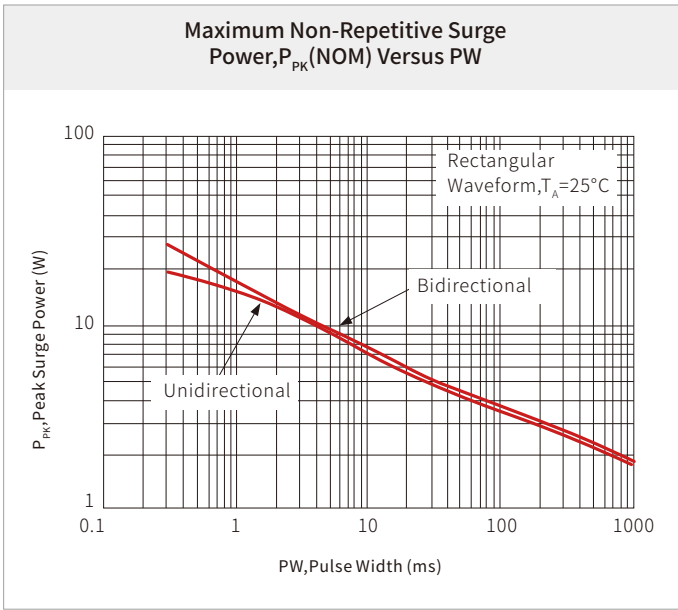
Typical Capacitance Versus Bias Voltage



Typical Capacitance Versus Bias Voltage

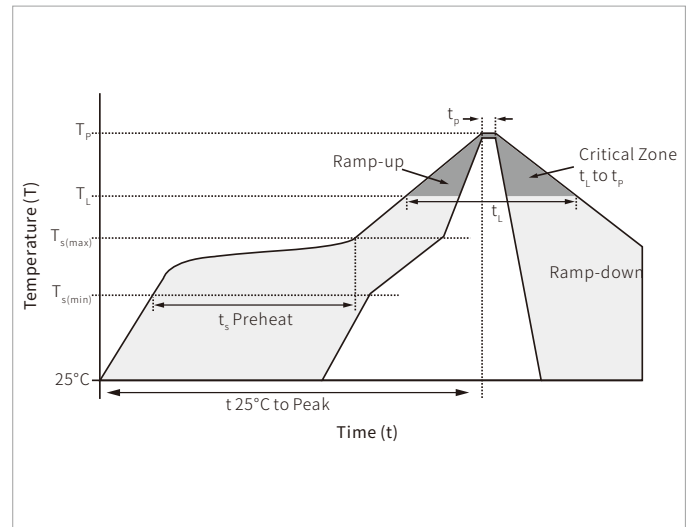


Steady State Power Derating Curve

Pulse Waveform

Pulse Derating Curve

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


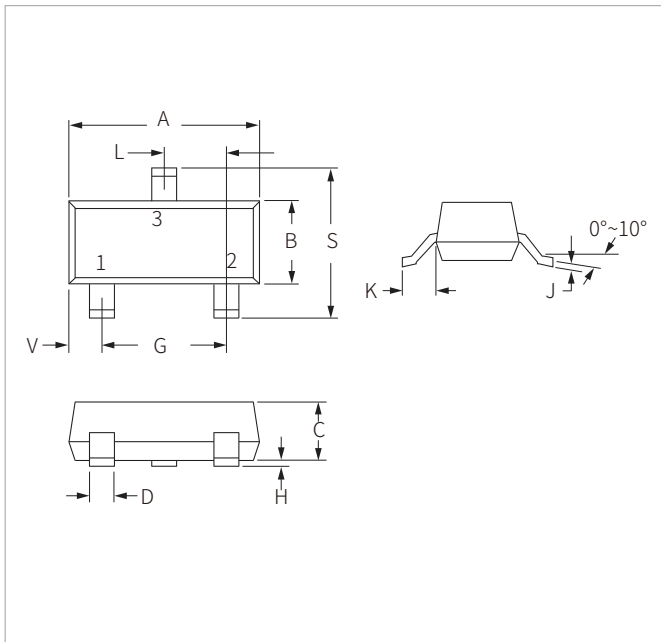


SOLDERING PARAMETERS

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

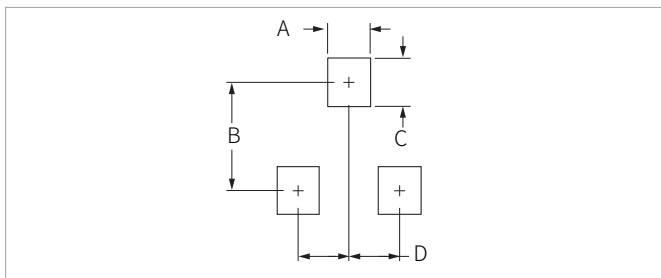


SOT-23 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.05	0.110	0.120
B	1.20	1.40	0.047	0.055
C	0.90	1.15	0.035	0.045
D	0.37	0.50	0.015	0.020
G	1.75	2.05	0.069	0.081
H	0.01	0.100	0.001	0.004
J	0.085	0.180	0.003	0.007
K	0.35	0.69	0.014	0.029
L	0.89	1.02	0.035	0.040
S	2.10	2.65	0.083	0.104
V	0.45	0.60	0.018	0.024

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.71	0.97	0.028	0.038
B	1.88	2.13	0.074	0.084
C	0.71	0.97	0.028	0.038
D	0.81	1.07	0.032	0.042

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
MMBZxxxAL	SOT-23	3000PCS	7"

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