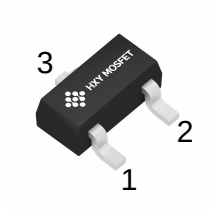
Discription

The MMBZ5V6ALT1G protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events. Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD.

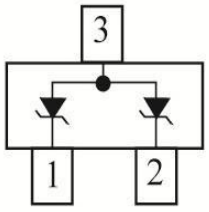
It gives designer the flexibility to protect 2 unidirectional line in applications where arrays are not practical.



SOT-23

Features

- ✧ SOT-23 package allows either two separate unidirectional configurations or a single bidirectional configuration.
- ✧ Working peak reverse voltage 3V
- ✧ Standard Zener breakdown voltage 5.6V
- ✧Peak power 24 or Watts @ 1.0ms (unidirectional) per Figure 6 Waveform
- ✧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



Circuit Diagram

Ordering Information

Product ID	Pack	Qty(PCS)
MMBZ5V6ALT1G	SOT-23	3000

Absolute Ratings (T_{amb}=25°C)

Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (t_p = 8/20μs)	24	W
T_L	Maximum lead temperature for soldering during 10s	260	°C
T_{stg}	Storage Temperature Range	-55 to +150	°C
T_{op}	Operating Temperature Range	-40 to +125	°C
T_j	Maximum junction temperature	150	°C
	IEC61000-4-2 (ESD) air discharge contact discharge	±30 ±30	KV

ELECTRICAL CHARACTERISTICS (Tamb=25°C)

UNIDIRECTIONAL (Circuit tied to Pins 1 and 3 or Pins 2 to 3)

Part Number	Device Marking	V_{RWM}	I_R	V_{BR}				Z_{ZT}	Z_{ZK}		V_C	
		(V)	(μA)	(V)			(mA)	(Ω)	(Ω)	(mA)	(V)	(A)
			@ V_{RWM}	Min	Nom	Max	@ I_T	Max @I_{ZT}	Max	@ I_{ZK}	Max	@ I_{PP}
MMBZ5V6ALT1G	5A6	3.0	5.0	5.32	5.6	5.88	20	11	1600	0.25	8.0	3.0

ELECTRICAL CHARACTERISTICS CURVE

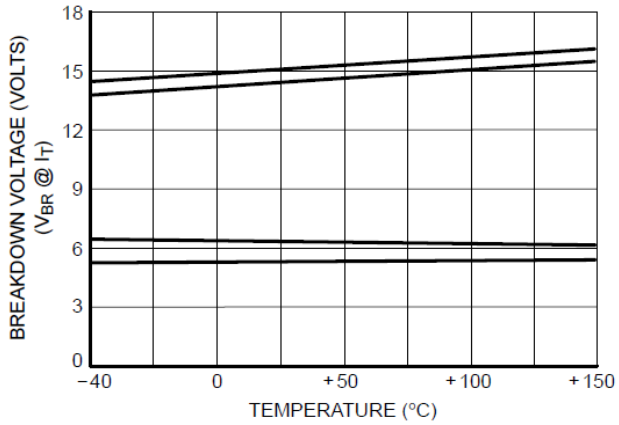


Figure 1. Typical Breakdown Voltage versus Temperature
(Upper curve for each voltage is bidirectional mode, lower curve is unidirectional mode)

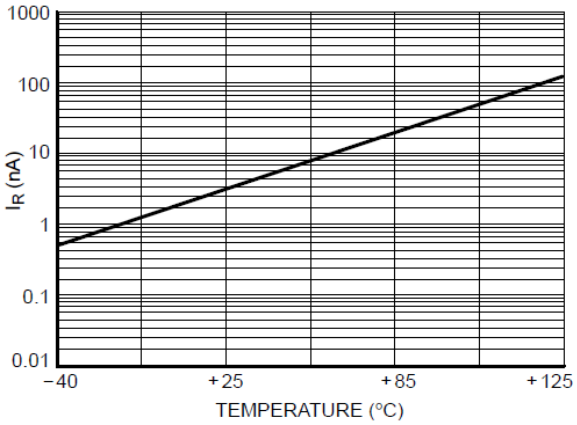


Figure 2. Typical Leakage Current versus Temperature

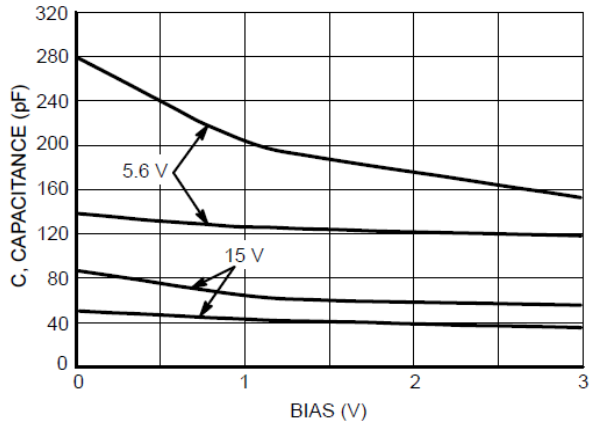


Figure 3. Typical Capacitance versus Bias Voltage
(Upper curve for each voltage is unidirectional mode, lower curve is bidirectional mode)

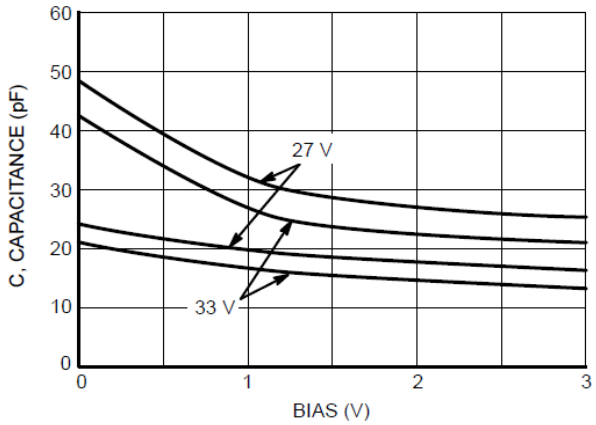


Figure 4. Typical Capacitance versus Bias Voltage
(Upper curve for each voltage is unidirectional mode, lower curve is bidirectional mode)

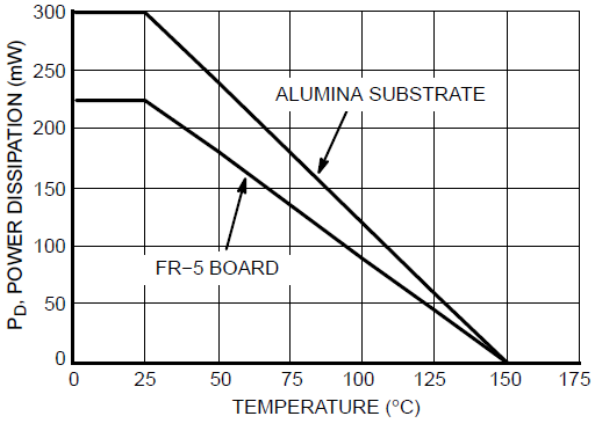


Figure 5. Steady State Power Derating Curve

ELECTRICAL CHARACTERISTICS CURVE

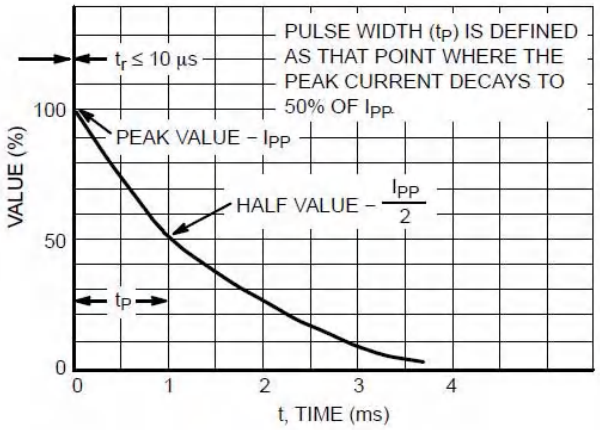


Figure 6. Pulse Waveform

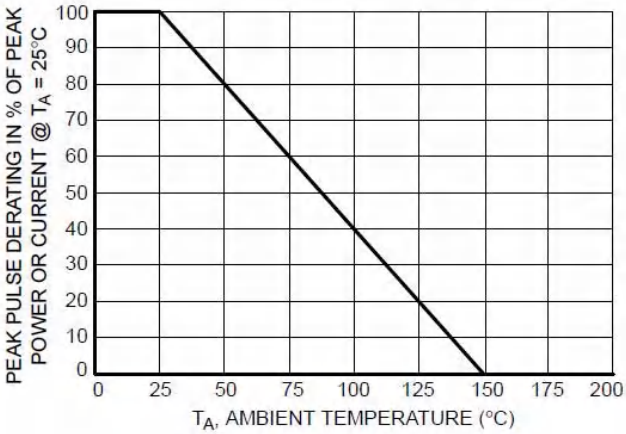


Figure 7. Pulse Derating Curve

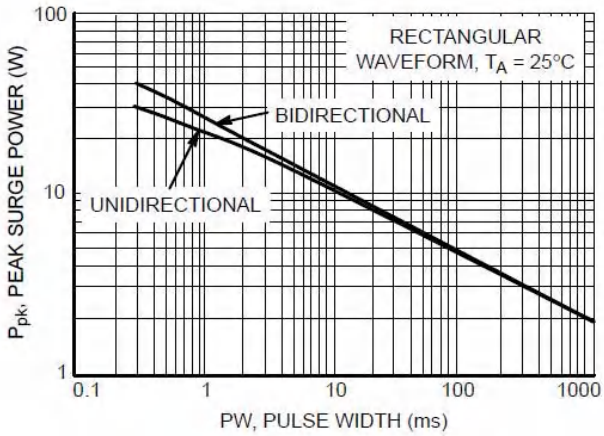


Figure 8. Maximum Non−repetitive Surge Power, P_{pk} versus PW

Power is defined as V_{RSM} x I_Z(pk) where V_{RSM} is the clamping voltage at I_Z(pk).

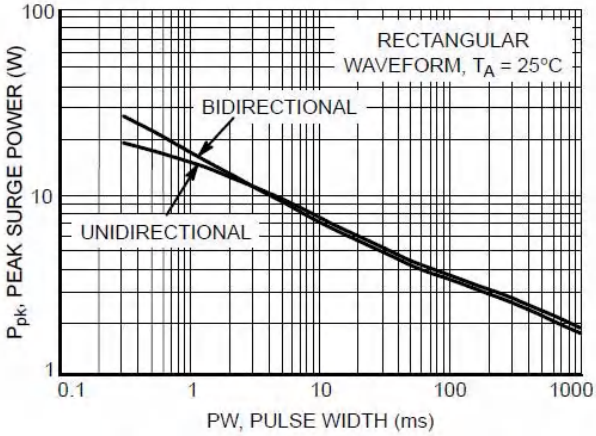
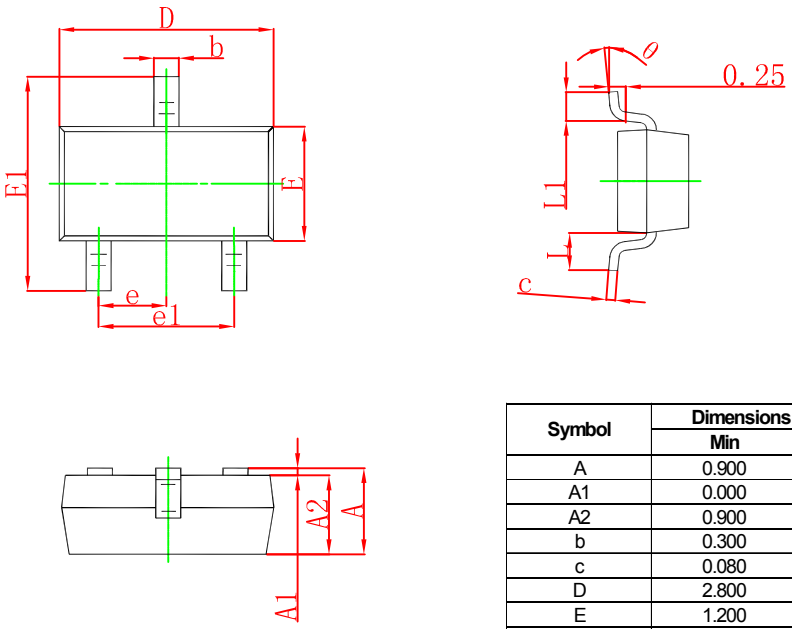


Figure 9. Maximum Non−repetitive Surge Power, P_{pk}(NOM) versus PW

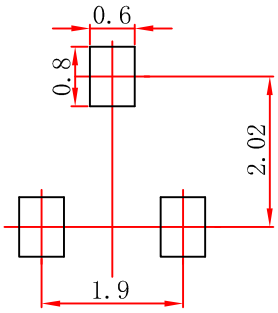
Power is defined as V_Z(NOM) x I_Z(pk) where V_Z(NOM) is the nominal Zener voltage measured at the low test current used for voltage classification.

SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

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