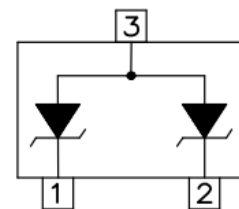


### FEATURES

- ✧ SOT-23 package allows either two separate unidirectional configurations or a single bidirectional configuration.
- ✧ Working peak reverse voltage 6.0 V
- ✧ Standard Zener breakdown voltage 9.1V
- ✧ 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,  $\pm 30$ kV contact Discharge
- ✧ Low leakage < 5.0 $\mu$ A



SOT-23



PIN Configuration

### MACHANICAL DATA

- ✧ SOT-23 package
- ✧ Flammability Rating: UL 94V-0
- ✧ Packaging: Tape and Reel
- ✧ High temperature soldering guaranteed: 260°C/10s
- ✧ Reel size: 7 inch

### ABSOLUTE MAXIMUM RATING

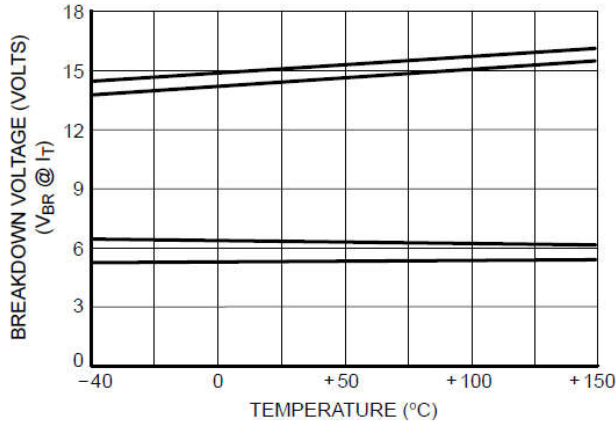
Symbol	Parameter	Value	Units
$P_{PK}$	Peak Power Dissipation @1.0ms	24	W
$P_D$	Total Power Dissipation	200	mW
$T_{OPT}$	Operating Temperature	-55/+150	°C
$T_{STG}$	Storage Temperature	-55/+150	°C

### ELECTRICAL CHARACTERISTICS (Tamb=25°C)

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

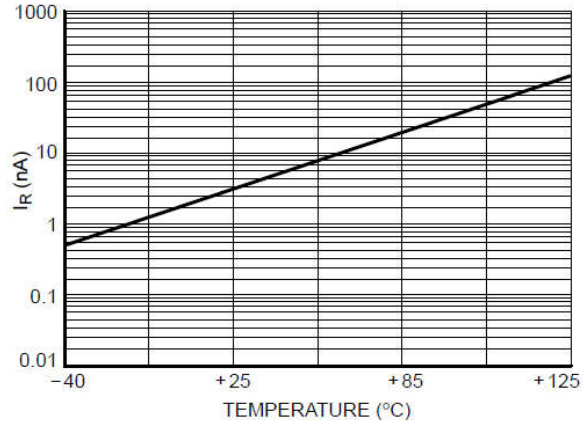
Part Number	Device Marking	$V_{RWM}$	$I_R$	$V_{BR}$			$Z_{ZT}$	$Z_{ZK}$		$V_C$		
		(V)	( $\mu$ A)	(V)			( $\Omega$ )	( $\Omega$ )	(mA)	(V)	(A)	
			@ $V_{RWM}$	Min	Nom	Max	@ $I_T$	Max @ $I_{ZT}$	Max	@ $I_{ZK}$	Max	@ $I_{PP}$
MMBZ9V1AL	9A1	6.0	0.3	8.65	9.1	9.56	1.0	--	--	--	14	1.7

## Typical Characteristics

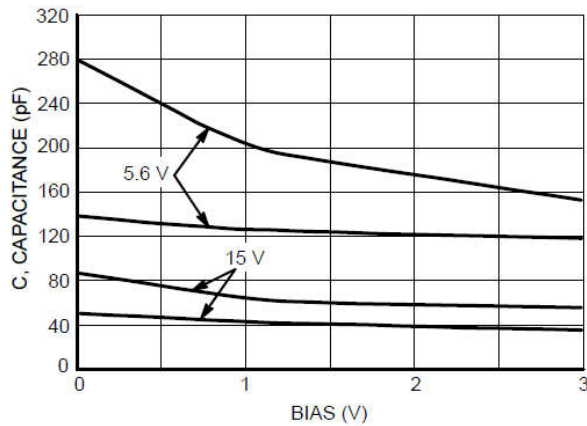


**Figure 1. Typical Breakdown Voltage versus Temperature**

(Upper curve for each voltage is bidirectional mode, lower curve is unidirectional mode)

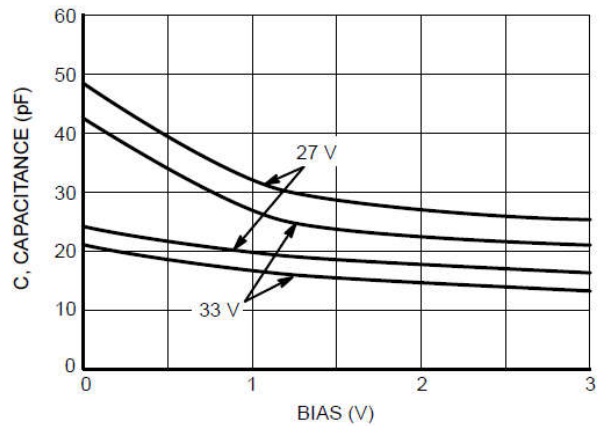


**Figure 2. Typical Leakage Current versus Temperature**



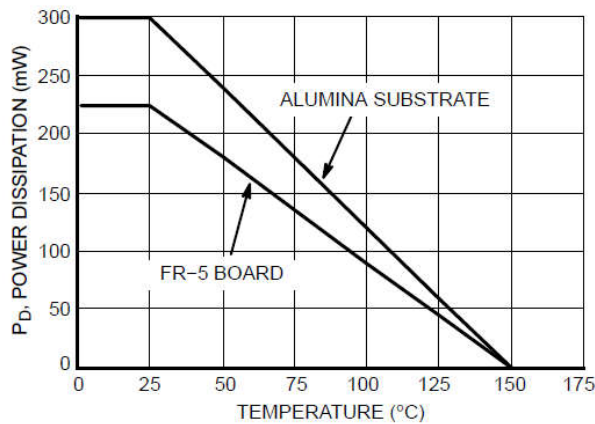
**Figure 3. Typical Capacitance versus Bias Voltage**

(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**

## Typical Characteristics

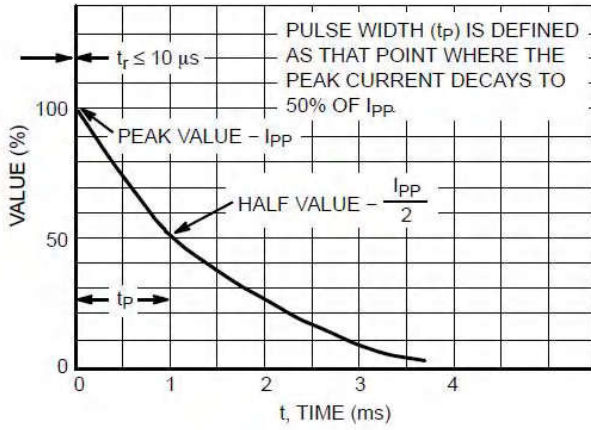


Figure 6. Pulse Waveform

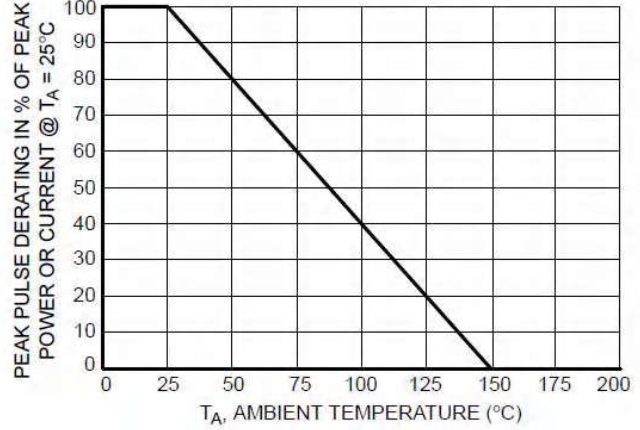


Figure 7. Pulse Derating Curve

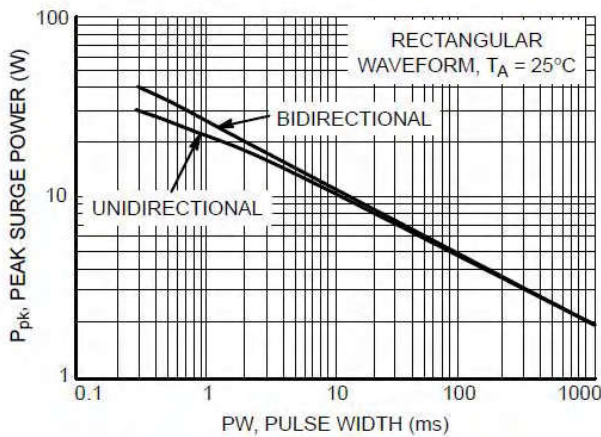


Figure 8. Maximum Non-repetitive Surge Power,  $P_{pk}$  versus PW

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

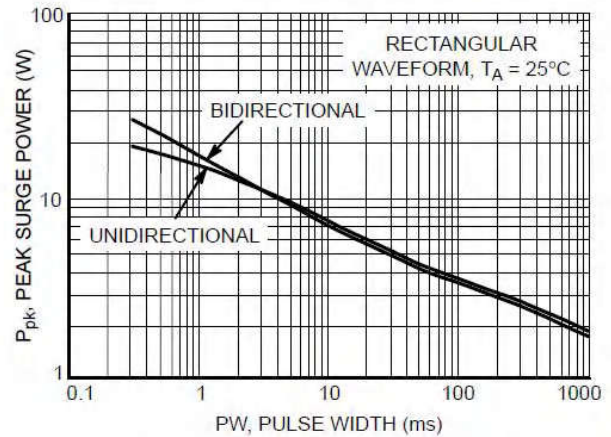
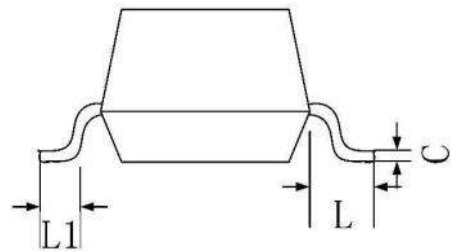
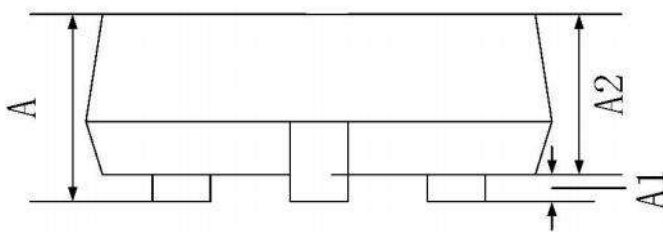
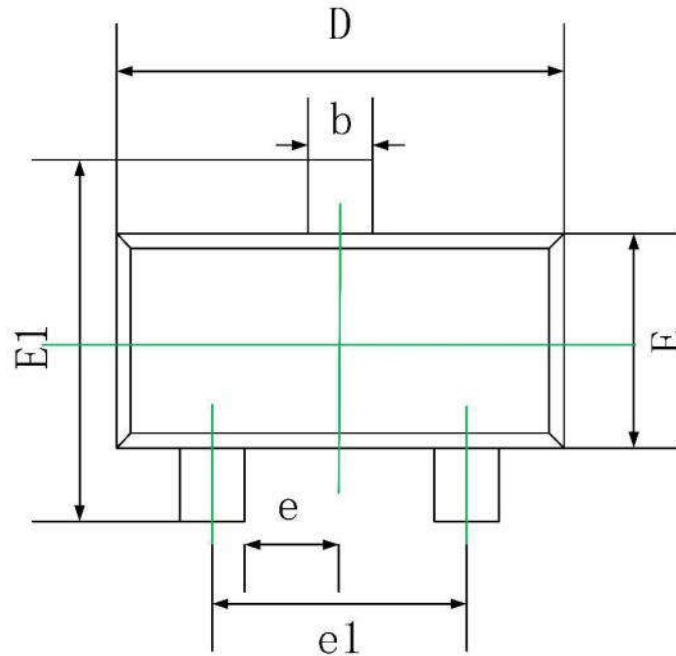


Figure 9. Maximum Non-repetitive Surge Power,  $P_{pk}(NOM)$  versus PW

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

## SOT-23 Package Information



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