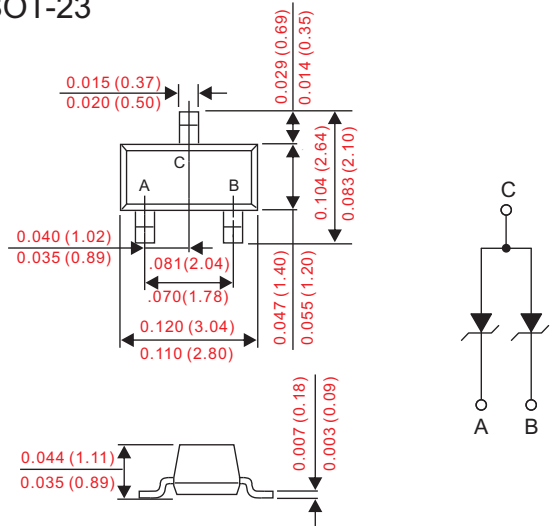


MMBZ5V6A Series

300W Surface Mount Transient Voltage Suppressors
VOLTAGE : 3.0 TO 26Volts

Features	Outline
- Allows Either Two Separate Unidirectional Configurations or Signal Bidirectional Configurations. - Low Leakage Current. 24-40 Watts Peak Power Protection . - Excellent Clamping Capability. - Suffix "G" indicates Halogen-free part, ex.MMBZ5V6AG. - ESD Rating of Class N(exceeding 16KV)per the Human Body Model. - Transient Voltage Suppressors Encapsulated in SOT-23 Package.	SOT-23  Dimensions in inches and (millimeters)
Mechanical data	
- Epoxy:UL94-V0 rated flame retardant - Case : Molded plastic, SOT-23 - Terminals : Solder plated, solderable per MIL-STD-750, Method 2026 - Mounting Position : Any - Weight : Approximated 0.008 gram	

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified. Single phase, half wave, 60Hz, resistive or inductive load.
 For capacitive load, derate current by 20%.

Characteristics	Conditions	Symbol	Value	UNIT
Peak Power Dissipation @1.0ms@T _L ≤ 25°C MMBZ5V6A thru MMBZ10VA MMBZ12VA thru MMBZ33VA		P _{PK}	24 40	W
Peak Power Dissipation on FR-5 Board @T _A = 25°C Derate above 25°C Thermal Resistance Junction-to-Ambient		P _D R _{θJA}	225 1.8 556	mW mW/°C °C/W
Peak Power Dissipation on FR-5 Board @T _A = 25°C Derate above 25°C Thermal Resistance Junction-to-Ambient		P _D R _{θJA}	300 2.4 417	mW mW/°C °C/W
Junction and Storage Temperature Range		T _J , T _{STG}	-55 ~ +150	°C
Lead Solder Temperature-Maximum(10 Second Duration)		T _L	260	°C

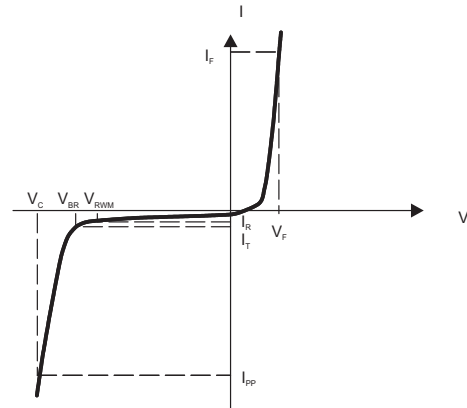
Note 1. Non-repetitive current pulse, per Fig. 5 and derated above T_A=25°C per Fig. 6
 2. FR-5=1.0×0.75×0.62 in.
 3. Alumina=0.4×0.3×0.024m,99.5% alumina.

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ELECTRICAL CHARACTERISTICS

Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage@ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current@ V_{RWM}
V_{BR}	Breakdown Voltage@ I_T
I_T	Test Current
V_{BR}	Maximum Temperature Coefficient of V_{BR}
I_F	Forward Current
V_F	Forward Voltage@ I_F
Z_{ZT}	Maximum Zener Impedance@ I_{ZT}
I_{ZK}	Reverse Current
Z_{ZK}	Maximum Zener Impedance@ I_{ZK}



Uni-Directional TVS

($V_F = 0.9V_{Max}@I_F = 10mA$)

24 WATTS

Device	Device Marking	V _{RWM}	I _R @V _{RWM}	Breakdown Voltage				Max Zener Impedance			V _C @I _{PP}		θV _{BR}
				V _{BR}			@I _T	Z _{TT} @I _{ZT}	Z _{ZK} @I _{ZK}	V _C	I _{PP}		
		Volts	uA	Min	Nom	Max	mA	Ω	Ω	mA	V	A	mW/°C
MMBZ5V6A	5A6	3.0	5.0	5.32	5.6	5.88	20	11	1600	0.25	8.0	3.0	1.26
MMBZ6V2A	6A2	3.0	0.5	5.89	6.2	6.51	1.0	-	-	-	8.7	2.76	2.80
MMBZ6V8A	6A8	4.5	0.5	6.46	6.8	7.14	1.0	-	-	-	9.6	2.5	3.4
MMBZ9V1A	9A1	6.0	0.3	8.65	9.1	9.56	1.0	-	-	-	14	1.7	7.5
MMBZ10VA	10A	6.5	0.3	9.50	10	10.5	1.0	-	-	-	14.2	1.7	7.5

($V_F = 0.9V_{Max}@I_F = 10mA$)

40 WATTS

Device	Device Marking	V _{RWM}	I _R @V _{RWM}	Breakdown Voltage				V _C @I _{PP}		θV _{BR}
				V _{BR}			@I _T	V _C	I _{PP}	
		Volts	nA	Min	Nom	Max	mA	V	A	mW/°C
MMBZ12VA	12A	8.5	200	11.40	12	12.60	1.0	17	2.35	7.5
MMBZ15VA	15A	12	50	14.25	15	15.75	1.0	21	1.9	12.3
MMBZ18VA	18A	14.5	50	17.10	18	18.90	1.0	25	1.6	15.3
MMBZ20VA	20A	17	50	19.00	20	21.00	1.0	28	1.4	17.2
MMBZ27VA	27A	22	50	26.25	27	28.35	1.0	40	1.0	24.3
MMBZ33VA	33A	26	50	31.35	33	34.65	1.0	46	0.87	30.4

Note : 1. V_{BR} measured at pulse test current I_T at an ambient temperature of 25°C

2. 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 $I_{Z(AC)} = 0.1 I_{Z(OC)}$ with the AC frequency = 1.0KHZ

3. Surge current waveform per Fig 5 and derate per Fig 6



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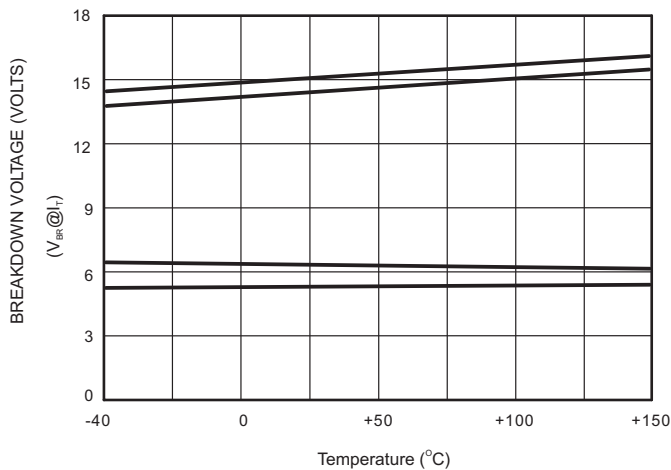


Figure 1. Typical Breakdown Voltage Versus Temperature
(Upper curve for each voltage is bidirectional mode, lower curve is unidirectional mode)

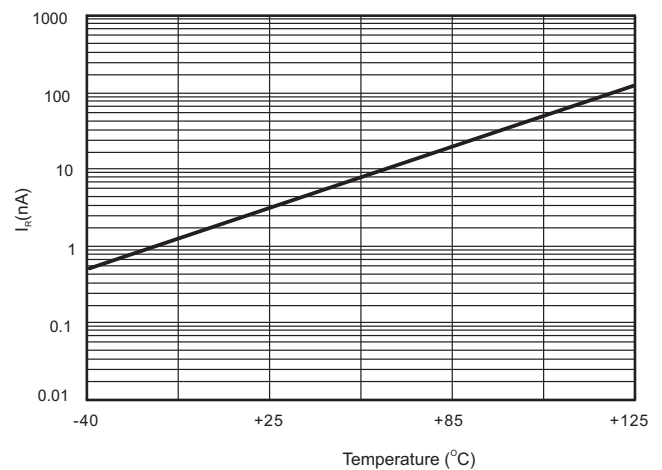


Figure 2. Typical Leakage Current Versus Temperature

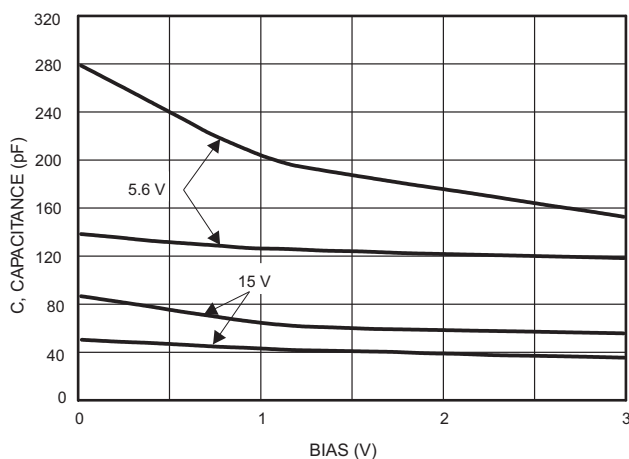


Figure 3. Typical Capacitance versus Bias Voltage
(Upper curve for each voltage is unidirectional mode, lower curve is unidirectional mode)

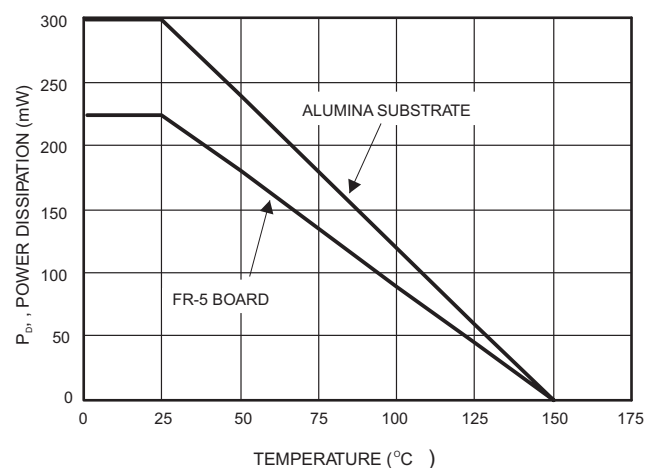


Figure 4. Steady State Power Derating Curve

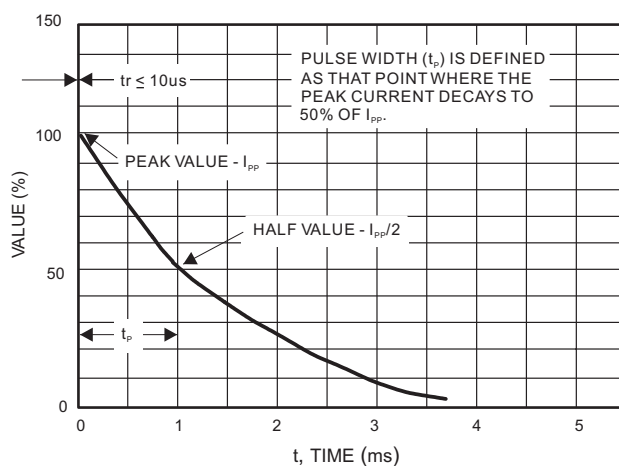


Figure 5. Pulse Waveform

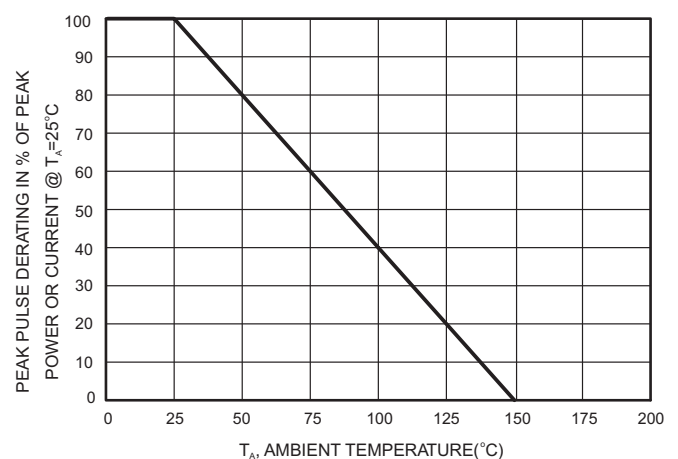


Figure 6. Pulse Derating Curve

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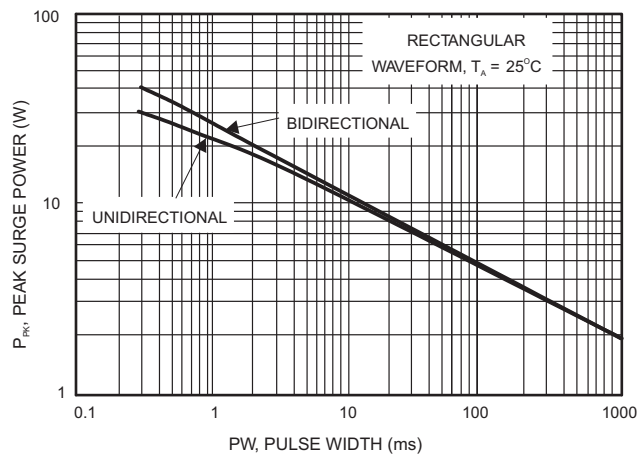


Figure 7. Maximum Non-repetitive Surge Power, P_{PK} Versus PW

Power is defined as $V_{RSM} \times I_{Z(PK)}$ where V_{RSM} is the clamping voltage at $I_{Z(PK)}$.

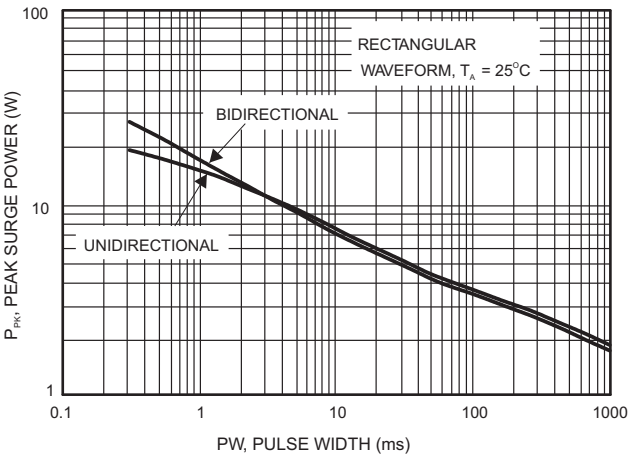


Figure 8. Maximum Non-repetitive Surge Power, P_{PK} Versus PW

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.

