

MMBZxxxAL Series ESD Protection Diode

Feature

- Uni-directional ESD protection of two lines
- Working voltage: 2V to 26V
- ESD Rating:
Class 3B (>16kV) per the Human Body Model
Class C (>400V) per Machine Model
- ESD Rating of IEC61000-4-2 level 4
- Low leakage < 5.0μA

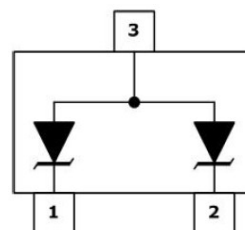
Application

- Computers
- Printers
- Business Machines
- Communication systems
- Medical equipment

Mechanical Data

- Package: SOT-23
- Molding compound flammability rating: UL 94V-0
- RoHS/WEEE Compliant

Schematic & PIN Configuration



Ordering Information

Part Number	Package	Packing	Reel Size
MMBZxxxAL Series	SOT-23	3000 Tape & Reel	7 inches

Absolute Maximum Rating			
Symbol	Parameter	Value	Units
P_{PK}	Peak Power Dissipation @1.0ms MMBZ5V1AL thru MMBZ9V1AL MMBZ12VAL thru MMBZ33VAL	24 40	W
P_D	Total Power Dissipation	200	Mw
T_{OPT}	Operating Temperature	-55/+150	°C
T_{STG}	Storage Temperature	-55/+150	°C

24 Watts

Electrical Characteristics ($T_{amb}=25^{\circ}C$) 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}
MMBZ5V1AL	5A1+code	2.0	5.0	4.8	5.1	5.4	5.0	60	500	1.0	13	2
MMBZ5V6AL	5A6+code	3.0	5.0	5.32	5.6	5.88	20	11	1600	0.25	8.0	3.0
MMBZ6V2AL	6A2+code	3.0	0.5	5.89	6.2	6.51	1.0	--	--	--	8.7	2.76
MMBZ6V8AL	6A8+code	4.5	0.5	6.46	6.8	7.14	1.0	--	--	--	9.6	2.5
MMBZ9V1AL	9A1+code	6.0	0.3	8.65	9.1	9.56	1.0	--	--	--	14	1.7

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

40 Watts

Electrical Characteristics ($T_{amb}=25^{\circ}C$) Unidirectional (Circuit tied to Pins 1 and 3 or Pins 2 to 3)									
Part Number	Device Marking	V_{RWM}	I_R	V_{BR}				V_C (note1)	
		(V)	(nA)	(V)			(mA)	(V)	(A)
			@ V_{RWM}	Min	Nom	Max	@ I_T	Max	@ I_{PP}
MMBZ12VAL	12A+code	8.5	200	11.40	12	12.60	1	17	2.35
MMBZ15VAL	15A+code	12.0	50	14.25	15	15.75	1	21	1.90
MMBZ18VAL	18A+code	14.5	50	17.10	18	18.90	1	25	1.60
MMBZ20VAL	20A+code	16.0	50	19	20	21	1	38	1.0
MMBZ27VAL	27A+code	22.0	50	25.65	27	28.35	1	40	1.0
MMBZ33VAL	33A+code	26.0	50	31.35	33	34.65	1	46	0.87

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

Note 1: Surge Current waveform per Figure 5



Typical Characteristic ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig 1 8/20 μs Waveform per IEC61000-4-5

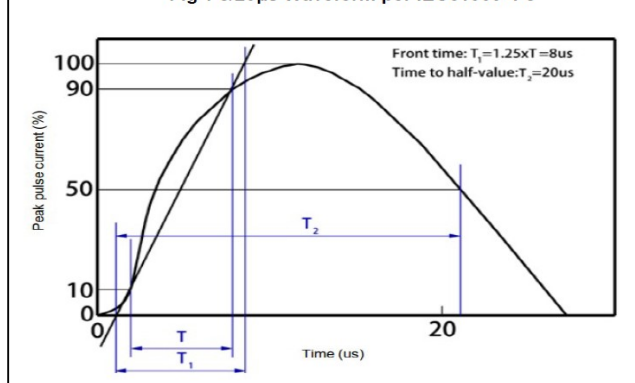


Fig 2 Contact Discharge Current Waveform per IEC 61000-4-2)

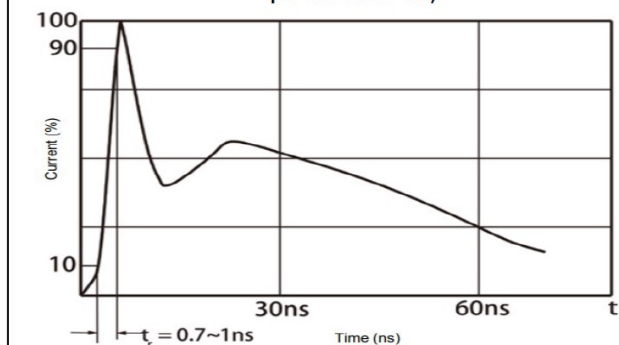


Fig 3 Voltage vs Capacitance

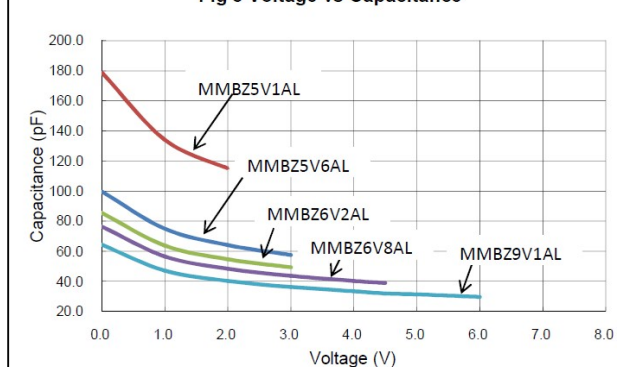


Fig 4 Voltage vs Capacitance

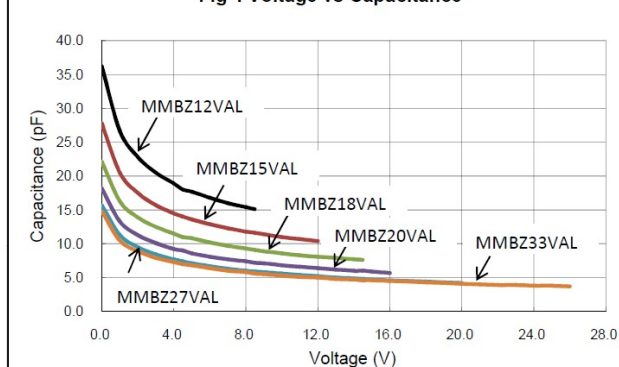


Fig 5 Clamping Voltage vs Peak Pulse Current

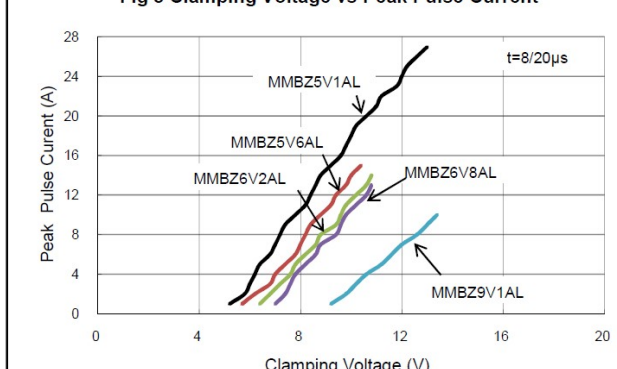
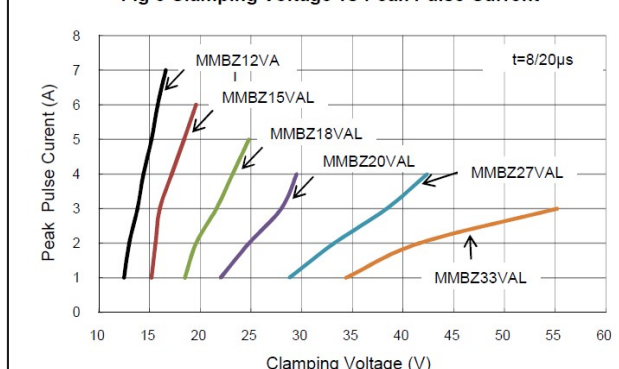
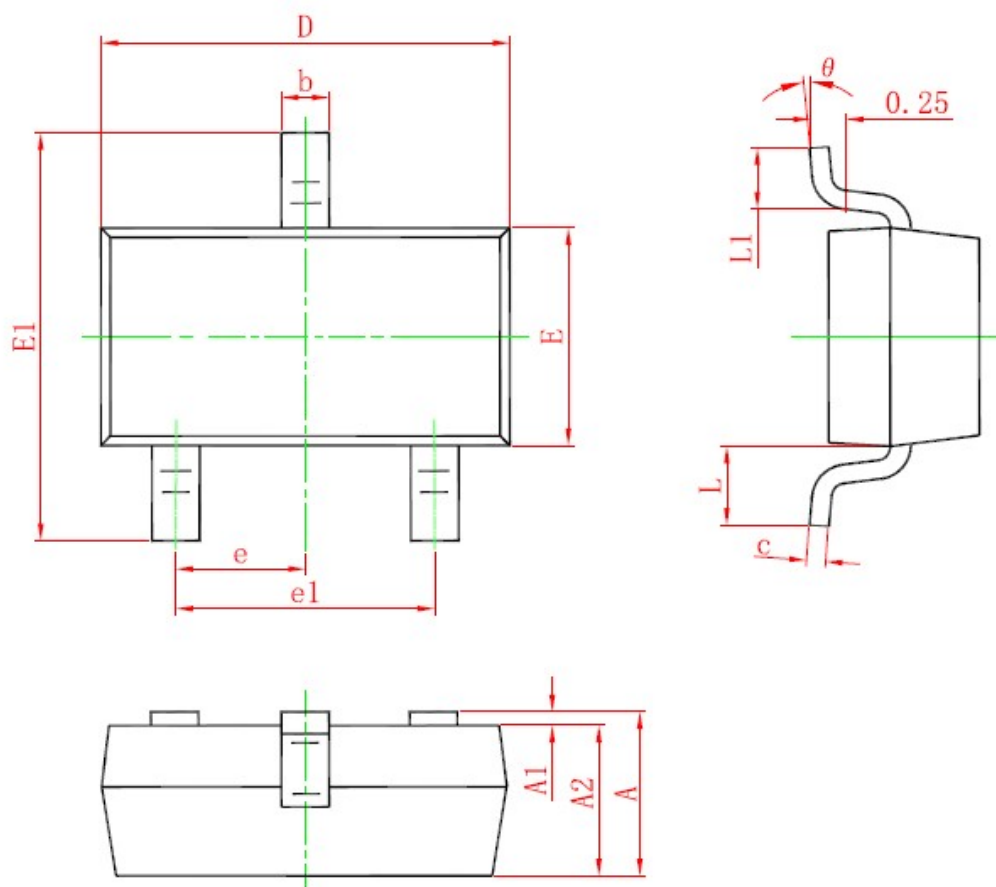


Fig 6 Clamping Voltage vs Peak Pulse Current





Outline Drawing –SOT-23



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°