



# MMBZ15VDL, MMBZ27VCL

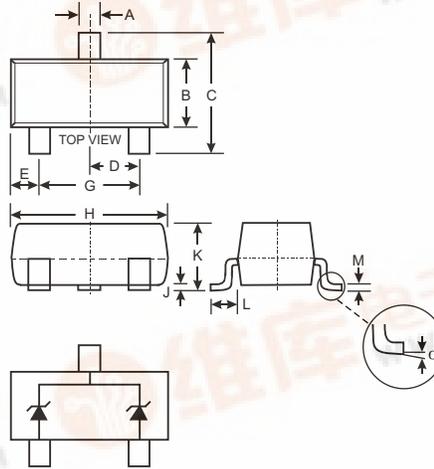
## 40W PEAK POWER DUAL SURFACE MOUNT TVS

### Features

- Dual TVS in Common Cathode Configuration for ESD Protection
- 40 Watt Peak Power Dissipation @ 1.0ms (Unidirectional)
- 225 mW Power Dissipation
- Ideally Suited for Automatic Insertion
- Low Leakage
- Lead Free/RoHS Compliant (Note 4)
- Qualified to AEC-Q101 Standards for High Reliability

### Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Rating Classification 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Polarity: See Diagram
- Date Code: See Page 3
- Marking Code: See Table Below
- Weight: 0.008 grams (approximate)



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
	0	8
All Dimensions in mm		

### Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 1)	P <sub>d</sub>	225	mW
Peak Power Dissipation (Note 2)	P <sub>PK</sub>	40	W
Thermal Resistance, Junction to Ambient Air (Note 1)	R <sub>JA</sub>	556	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

### Electrical Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified

V<sub>F</sub> = 0.9V max @ I<sub>F</sub> = 10mA (Note 3)

Type Number	Marking Code	V <sub>RWM</sub>	I <sub>R</sub> @ V <sub>RWM</sub>	Breakdown Voltage			V <sub>C</sub> @ I <sub>PP</sub> (Note 2)		Typical Temperature Coefficient	
				V <sub>BR</sub> (Note 3) (V)			@ I <sub>T</sub>	V <sub>C</sub>		I <sub>PP</sub>
				Min	Nom	Max	mA	V		A
MMBZ15VDL	KVJ	12.8	100	14.3	15	15.8	1.0	21.2	1.9	+0.080

V<sub>F</sub> = 1.1V max @ I<sub>F</sub> = 200mA (Note 3)

Type Number	Marking Code	V <sub>RWM</sub>	I <sub>R</sub> @ V <sub>RWM</sub>	Breakdown Voltage			V <sub>C</sub> @ I <sub>PP</sub> (Note 2)		Typical Temperature Coefficient	
				V <sub>BR</sub> (Note 3) (V)			@ I <sub>T</sub>	V <sub>C</sub>		I <sub>PP</sub>
				Min	Nom	Max	mA	V		A
MMBZ27VCL	KVP	22	50	25.65	27	28.35	1.0	38	1.0	+0.090

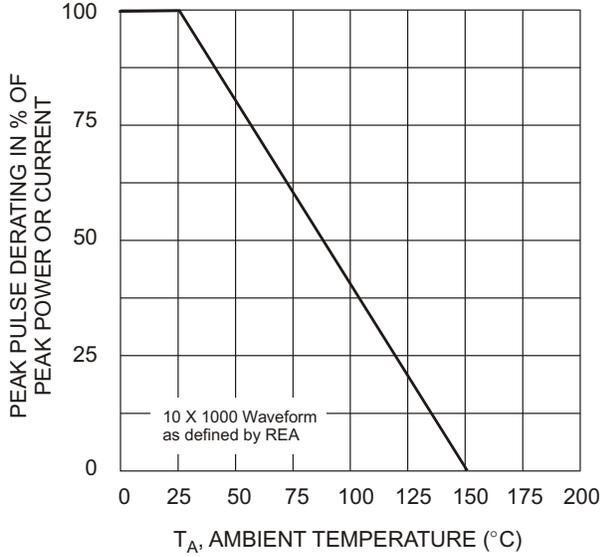
Note: 1. Device mounted on FR-5 PCB 1.0 x 0.75 x 0.062 inch pad layout as shown on Diodes Inc. suggested pad layout AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>. 200mW per element must not be exceeded.

2. Non-repetitive current pulse per Figure 2 and derate above T<sub>A</sub> = 25°C per Figure 1.

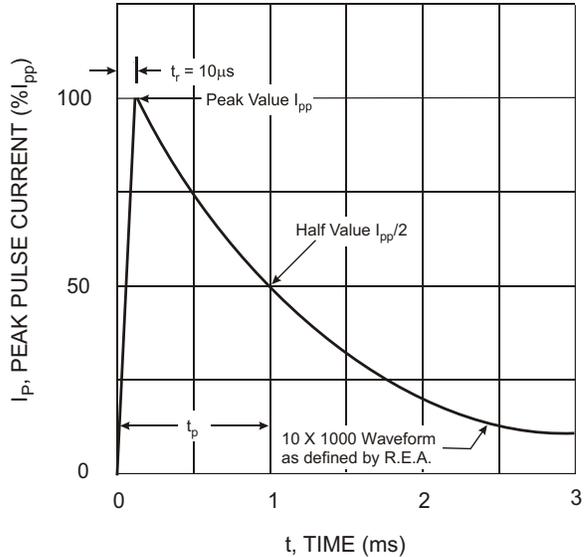
3. Short duration test pulse used to minimize self-heating effect.

4. No purposefully added lead.

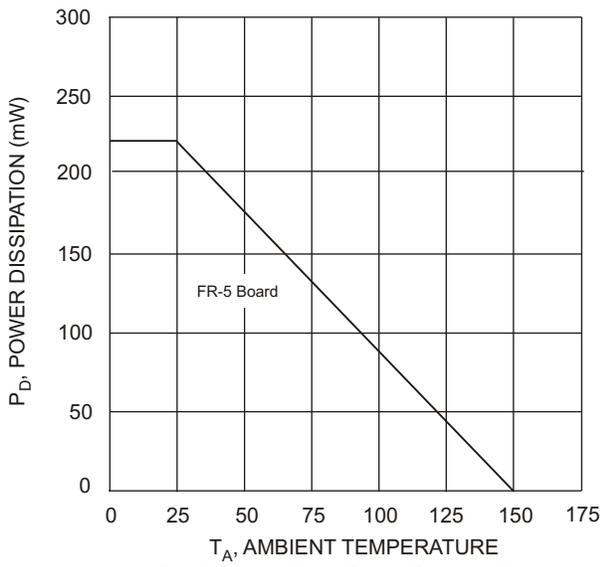




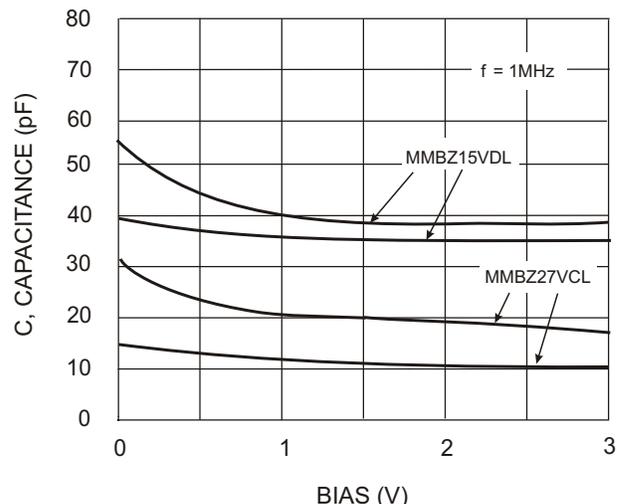
$T_A$ , AMBIENT TEMPERATURE (°C)  
Fig. 1 Pulse Derating Curve



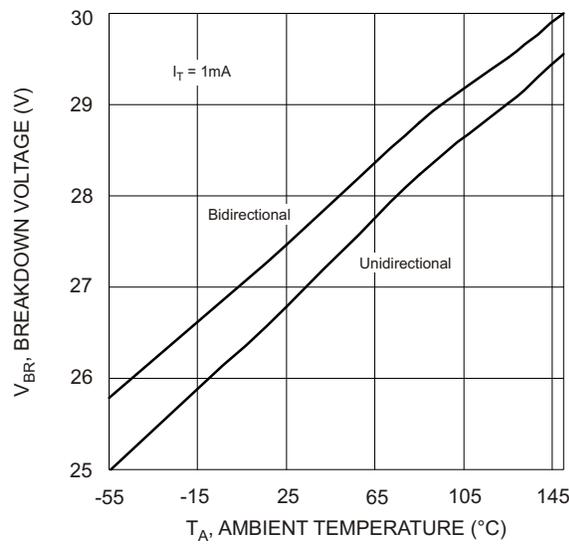
t, TIME (ms)  
Fig. 2 Pulse Waveform



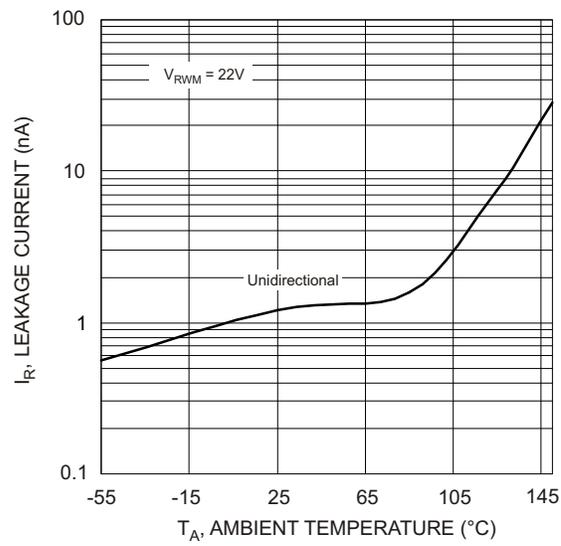
$T_A$ , AMBIENT TEMPERATURE  
Fig. 3 Steady State Power Derating Curve



BIAS (V)  
Fig. 4 Typical Capacitance vs. Bias Voltage  
(Lower curve is Bidirectional mode, Upper curve is Unidirectional mode)



$T_A$ , AMBIENT TEMPERATURE (°C)  
Fig. 5 Typical Breakdown Voltage vs. Temperature (MMBZ27VCL)



$T_A$ , AMBIENT TEMPERATURE (°C)  
Fig. 6 Typical Leakage Current vs. Temperature (MMBZ27VCL)

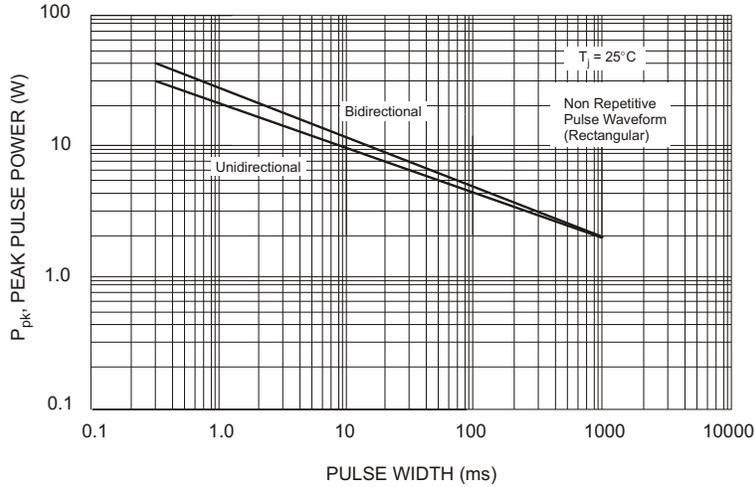


Fig. 7 Pulse Rating Curve,  
 $P_{pk}$  (W) vs. Pulse Width (ms)

Power is defined as  $P_{pk} = V_c \times I_{pp}$

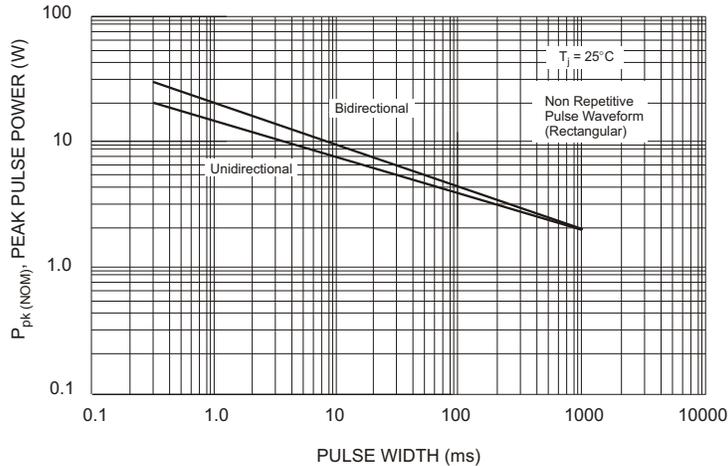


Fig. 8 Pulse Rating Curve,  
 $P_{pk(NOM)}$  (W) vs. Pulse Width (ms)

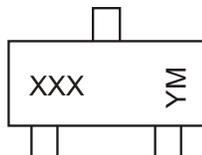
Power is defined as  $P_{pk(NOM)} = V_{BR(NOM)} \times I_{pp}$   
where  $V_{BR(NOM)}$  is the nominal breakdown voltage

**Ordering Information** (Note 5)

Device	Packaging	Shipping
MMBZ15VDL-7-F MMBZ27VCL-7-F	SOT-23	3000/Tape & Reel

Notes: 5. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



XXX = Product Type Marking Code, ex: KVP = MMBZ27VCL  
YM = Date Code Marking  
Y = Year ex: N = 2002  
M = Month ex: 9 = September

Date Code Key

Year	2001	2002	2003	2004	2005	2006	2007	2008
Code	M	N	P	R	S	T	U	V

Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D



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