

Features

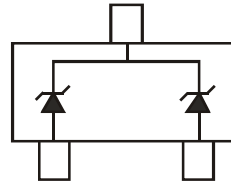
- Dual TVS in Common Cathode Configuration for ESD Protection
- 40 Watt Peak Power Dissipation @1.0ms (Unidirectional)
- 225 mW Power Dissipation
- Ideally Suited for Automated Insertion
- Low Leakage
- **Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 4 and 5)**
- **Qualified to 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-020D
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Polarity: See Diagram
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.008 grams (approximate)



Top View



Device Schematic

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Peak Power Dissipation (Note 2)	P_{PK}	40	W

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 1)	P_D	225	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	$R_{\theta JA}$	556	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	$^\circ\text{C}$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

$V_F = 0.9\text{V max @ } I_F = 10\text{mA (Note 3)}$

Type Number	Marking Code	V_{RWM} Volts	$I_R @$ V_{RWM} nA	Breakdown Voltage			$V_C @ I_T$ mA	$V_C @ I_{PP}$ (Note 2)		Typical Temperature Coefficient T_C (%/ $^\circ\text{C}$)
				V_{BR} (Note 3) (V)				V_C V	I_{PP} A	
				Min	Nom	Max				
MMBZ15VDL	KVJ	12.8	100	14.3	15	15.8	1.0	21.2	1.9	+0.080

$V_F = 1.1\text{V max @ } I_F = 200\text{mA (Note 3)}$

Type Number	Marking Code	V_{RWM} Volts	$I_R @$ V_{RWM} nA	Breakdown Voltage			$V_C @ I_T$ mA	$V_C @ I_{PP}$ (Note 2)		Typical Temperature Coefficient T_C (%/ $^\circ\text{C}$)
				V_{BR} (Note 3) (V)				V_C V	I_{PP} A	
				Min	Nom	Max				
MMBZ27VCL	KVP	22	50	25.65	27	28.35	1.0	38	1.0	+0.090

- Notes:
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 $T_A = 25^\circ\text{C}$ per Figure 1.
 3. Short duration pulse test used to minimize self-heating effect.
 4. No purposefully added lead. Halogen and Antimony Free.
 5. Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb_2O_3 Fire Retardants.

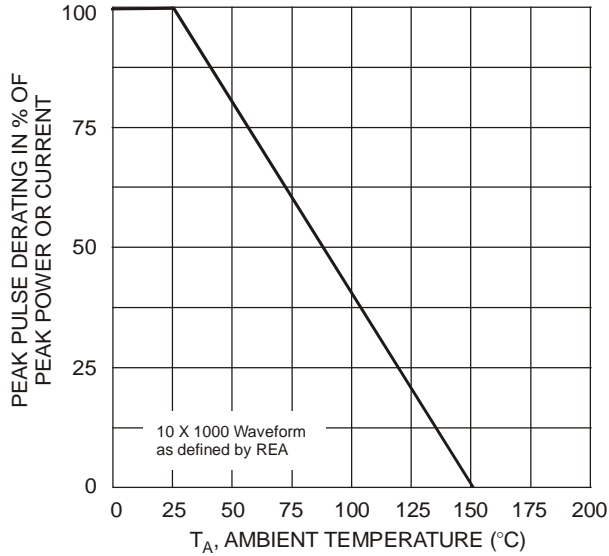


Fig. 1 Pulse Derating Curve

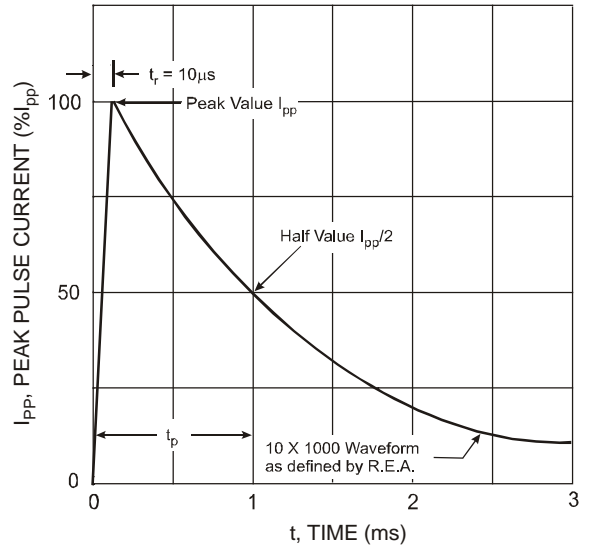


Fig. 2 Pulse Waveform

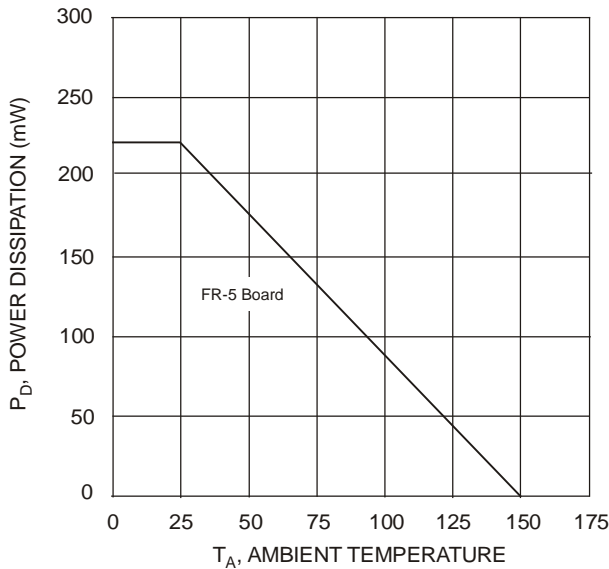


Fig. 3 Steady State Power Derating Curve

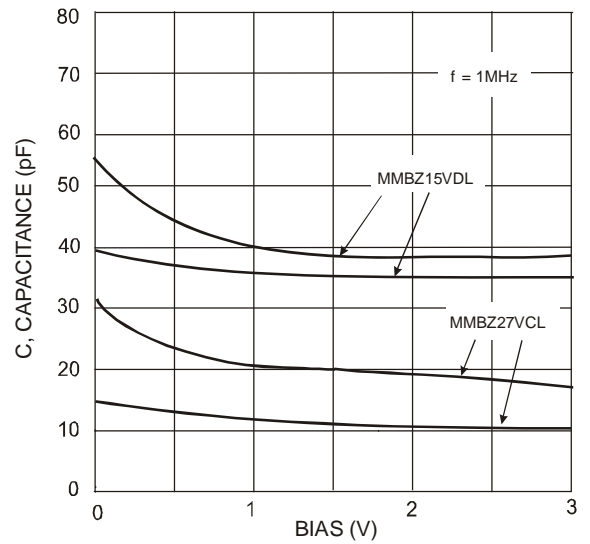


Fig. 4 Typical Capacitance vs. Bias Voltage (Lower curve is Bidirectional mode, Upper curve is Unidirectional mode)

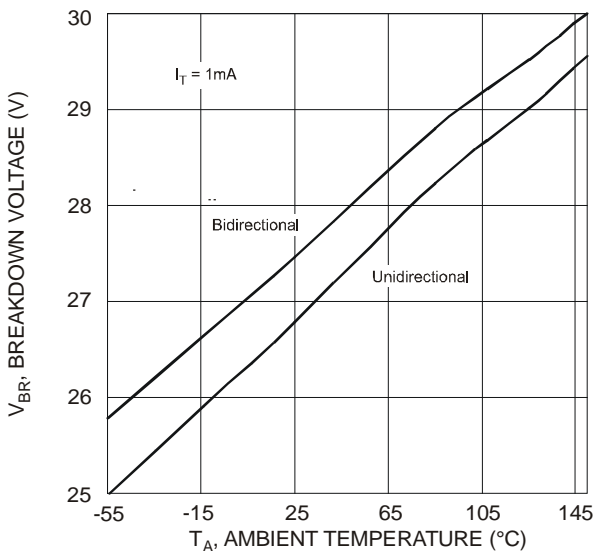


Fig. 5 Typical Breakdown Voltage vs. Temperature (MMBZ27VCL)

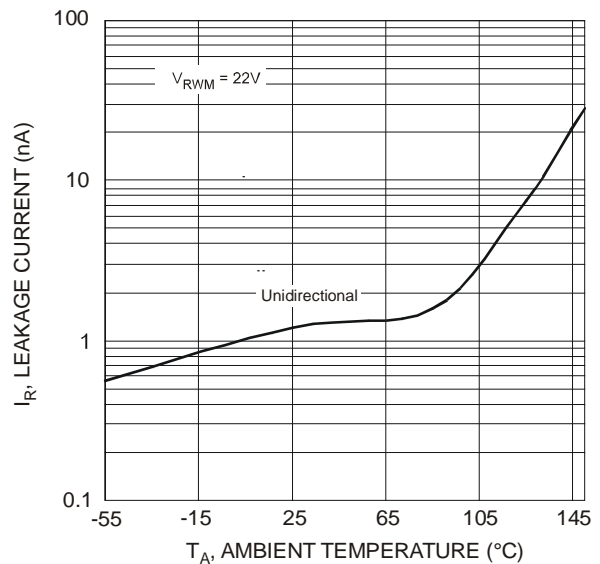


Fig. 6 Typical Leakage Current vs. Temperature (MMBZ27VCL)

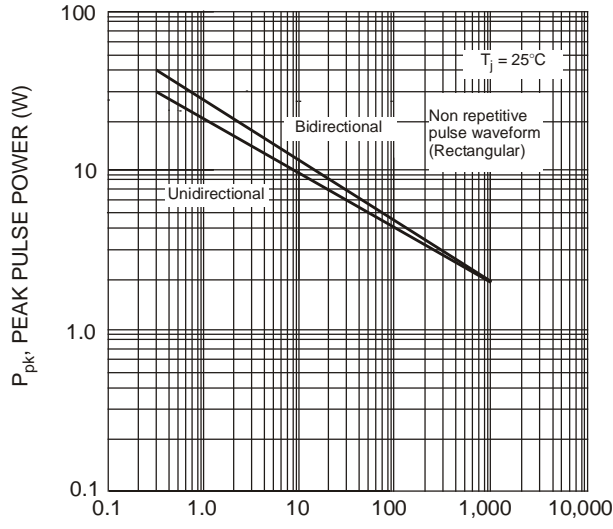


Fig. 7 Pulse Rating Curve,
 P_{pk} (W) vs. Pulse Width (ms)
 Power is defined as $P_{pk} = V_C \times I_{pp}$

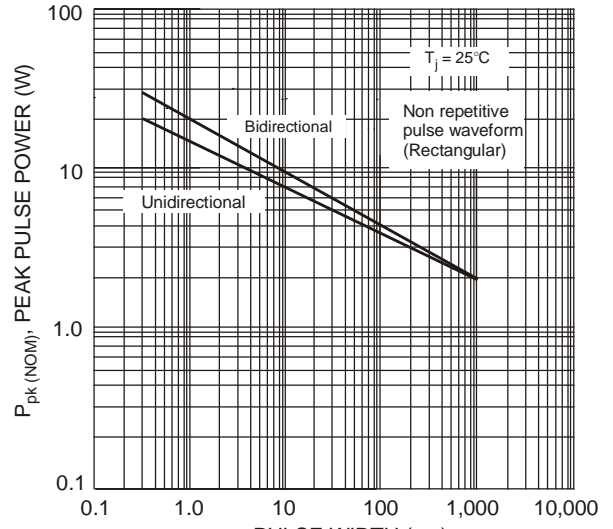


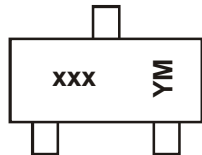
Fig. 8 Pulse Rating Curve,
 $P_{pk(NOM)}$ (W) vs. Pulse Width (ms)
 Power is defined as $P_{pk(NOM)} = V_{BR(NOM)} \times I_{pp}$
 where $V_{BR(NOM)}$ is the nominal breakdown voltage

Ordering Information (Note 6)

Part Number	Case	Packaging
MMBZ15VDL-7-F	SOT-23	3000/Tape & Reel
MMBZ27VCL-7-F	SOT-23	3000/Tape & Reel

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



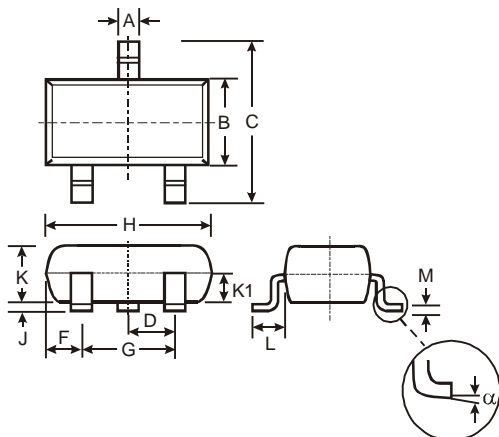
xxx = Product Type Marking Code,
 KVJ = MMBZ15VDL
 KVP = MMBZ27VCL
 YM = Date Code Marking
 Y = Year (ex: T = 2006)
 M = Month (ex: 9 = September)

Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Code	T	U	V	W	X	Y	Z	A	B	C

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

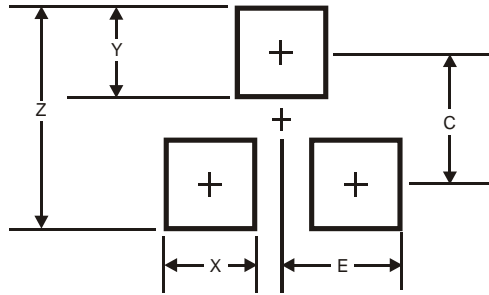
Package Outline Dimensions



SOT-23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
α	0°	8°	-

All Dimensions in mm

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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