

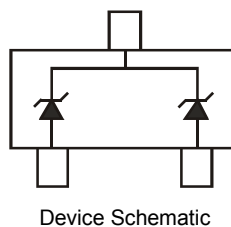
Features

- Dual TVS in Common Cathode Configuration for ESD Protection
- 40 Watt Peak Power Dissipation @1.0ms (Unidirectional)
- 225mW Power Dissipation
- Ideally Suited for Automated Insertion
- Low Leakage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3 & 4)**
- **The MMBZ27VCLQ-7-F is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic.
UL Flammability Rating Classification 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208 [Ⓔ]
Lead-Free Plating (Matte Tin Finish Annealed over Alloy 42 Leadframe)
- Polarity: See Diagram
- Weight: 0.008 grams (Approximate)

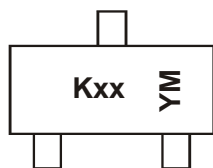


Ordering Information (Note 4)

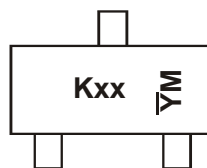
Part Number	Compliance	Case	Packaging
MMBZ27VCL-7-F	Standard	SOT23	3000/Tape & Reel
MMBZ27VCLQ-7-F	Automotive	SOT23	3000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



xx = Product Type Marking Code
 YM = Date Code Marking for Shanghai
 Assembly / Test site
 Y = Year (ex: I = 2021)
 M = Month (ex: 9 = September)



xx = Product Type Marking Code
 YM = Date Code Marking for Chengdu
 Assembly / Test site
 Y = Year (ex: I = 2021)
 M = Month (ex: 9 = September)

Date Code Key

Year	2006	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	T	I	J	K	L	M	N	O	P	R	S

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

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Power Dissipation (Note 5)	P_{PK}	40	W

Thermal Characteristics

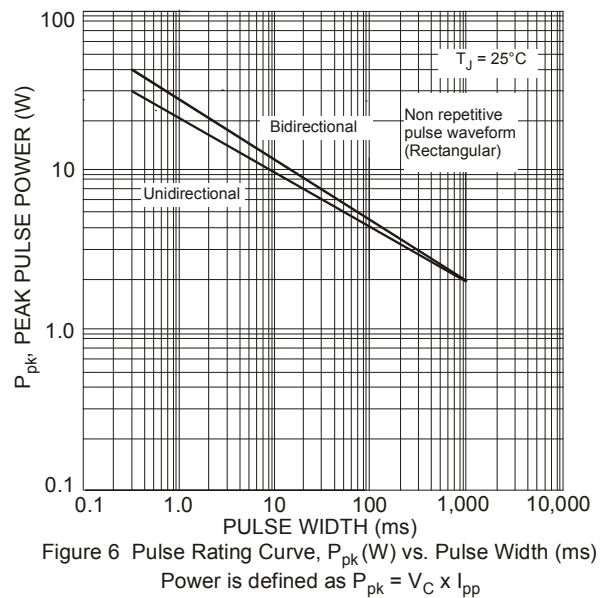
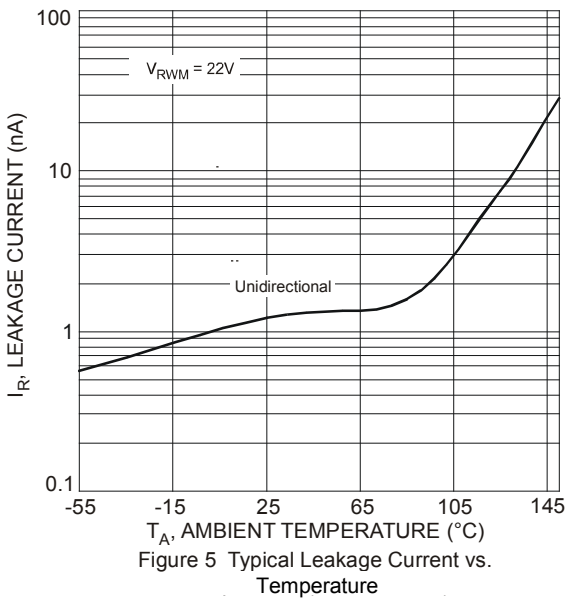
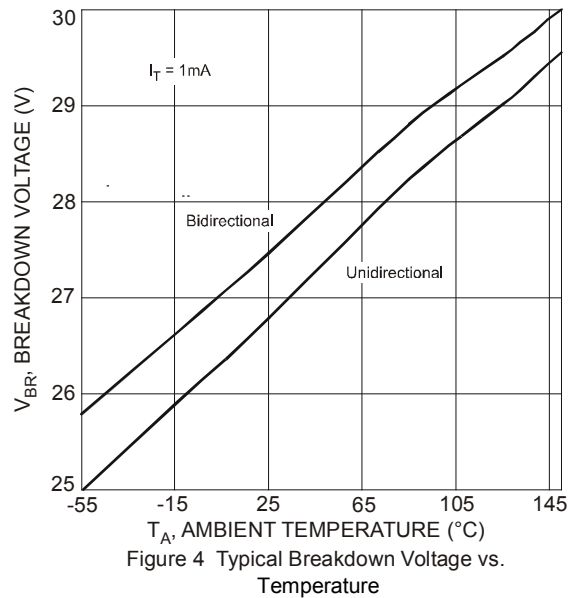
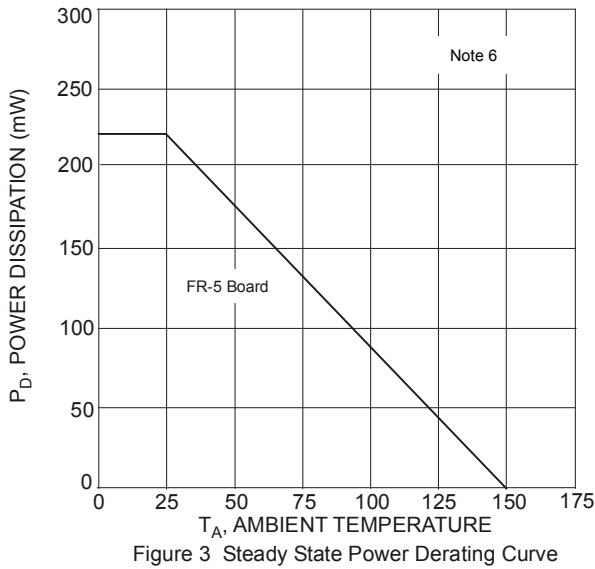
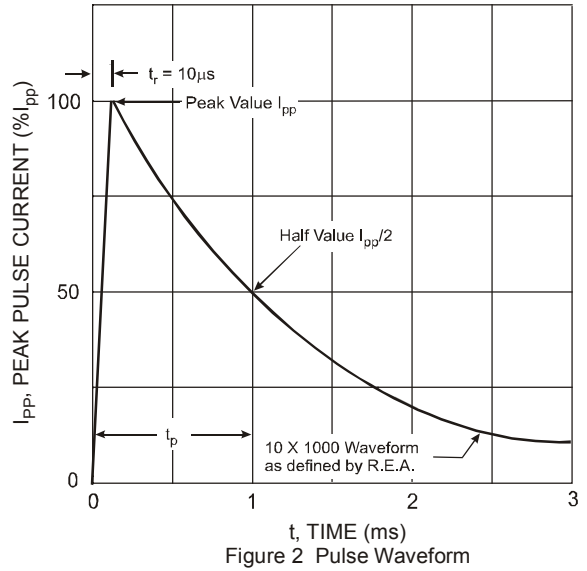
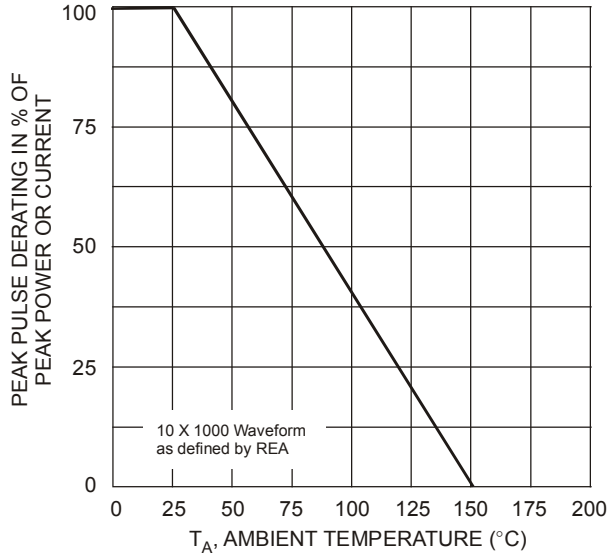
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_D	225	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

 $V_F = 1.1\text{V max @ } I_F = 200\text{mA}$

Type Number	Marking Code	V_{RWM}	Max Reverse Leakage I_R @ V_{RWM} (Note 7)	Breakdown Voltage				Max. Clamping Voltage V_C @ I_{PP} (Note 5)		Typical Temperature Coefficient
				V_{BR} (Note 7) (V)			@ I_T	V_C	I_{PP}	
				Min	Nom	Max	mA	V	A	
MMBZ27VCL	KVP	22	50	25.65	27	28.35	1.0	38	1.0	+0.090

- Notes:
5. Non-repetitive current pulse per Figure 2 and derate above $T_A = +25^\circ\text{C}$ per Figure 1.
 6. Device mounted on FR-5 PCB $1.0 \times 0.75 \times 0.062$ inch pad layout. 200mW per element must not be exceeded.
 7. Short duration pulse test used to minimize self-heating effect.



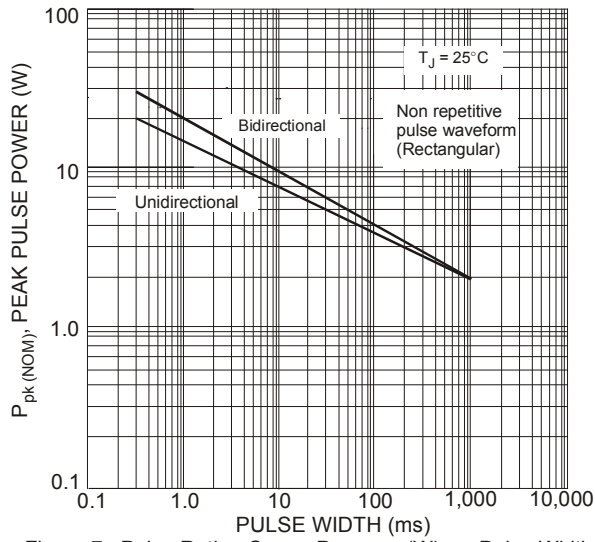


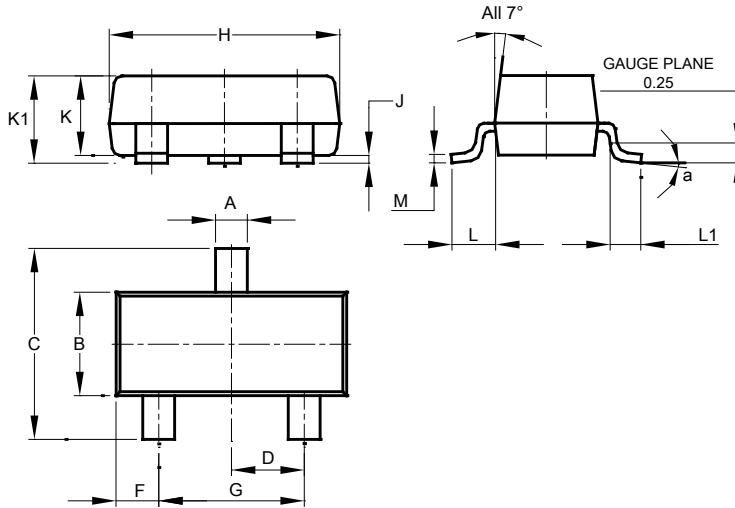
Figure 7 Pulse Rating Curve, $P_{pk(NOM)}$ (W) vs. Pulse Width (ms)

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

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23

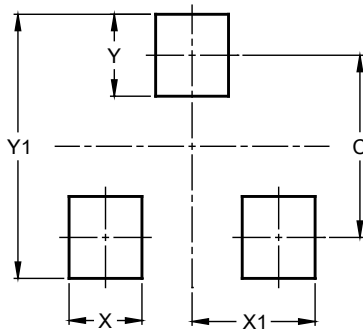


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	—
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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