Product Summary

$V_{BR\ Min}$	$I_{PP\ Max}$	$C_{T\ Max}$
6.0V	7.0A	40pF

Description

Designed to replace multilayer varistors (MLVs) in portable applications where low operating voltage is vital. They offer superior electrical characteristics such as lower clamping voltage and no device degradation when compared to MLVs. They are designed to protect sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD), lightning, electrical fast transients (EFT), and cable discharge events (CDE).

Applications

- Cellular handsets & accessories
- Cordless phones
- Notebooks & handhelds & keyboards
- Portable instrumentation
- Digital cameras
- Peripherals
- I/O ports

Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±30kV, Contact ±30kV
- 6 Channel of ESD Protection
- Protects One Power or I/O Line
- Max Peak Pulse Power: P_{PP} = 100W at t_p = 8/20µs
- Low Clamping Voltage
- **Totally Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at https://www.diodes.com/products/automotive/automotive-products/.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. https://www.diodes.com/quality/product-definitions/**

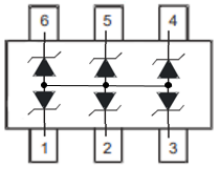
Mechanical Data

- Package: SOT666
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead-Free Plating). Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.004 grams (Approximate)

SOT666

Top View

Bottom View



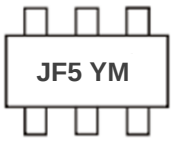
Device Schematic

Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
D5V0M6B6V-7	SOT666	JF5	7	8	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



JF5 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: L = 2024)
M = Month (ex: 3 = March)

Date Code Key

Year	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Code	L	M	N	P	R	S	T	U	V	W	X	Y

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°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P_{PP}	100	W	8/20μs, Per Figure 3
Peak Pulse Current	I_{PP}	7.0	A	8/20μs, Per Figure 3
ESD Protection – Contact Discharge	$V_{ESD\_Contact}$	±30	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V_{ESD_Air}	±30	kV	Standard IEC 61000-4-2

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 5)	P_D	410	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\Theta JA}$	300	°C/W
Operating Temperature Range	T_J	-55 to +125	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Soldering Temperature, t max = 10s	T_L	+260	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	V_{RWM}	—	—	5.0	V	—
Reverse Current (Note 6)	I_{RM}	—	—	1.0	μA	$V_{DRM} = V_{RWM}$ = 5.0V
		—	—	0.5		$V_{DRM} = V_{RWM}$ = 3.0V
Punch Through Voltage	V_{BR}	6.0	—	9.0	V	I_R = 1mA
Reverse Clamping Voltage	V_{CL}	—	—	9.0	V	I_{PP} = 1A, t_p = 8/20μs
		—	—	12.0		I_{PP} = 7A, t_p = 8/20μs
Capacitance	C_T	—	—	40	pF	V_R = 0, f = 1MHz

Notes: 5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown in Diodes Incorporated's package outline PDFs, which can be found on our website at http://www.diodes.com/package-outlines.html.
6. Short duration pulse test used to minimize self-heating effect.

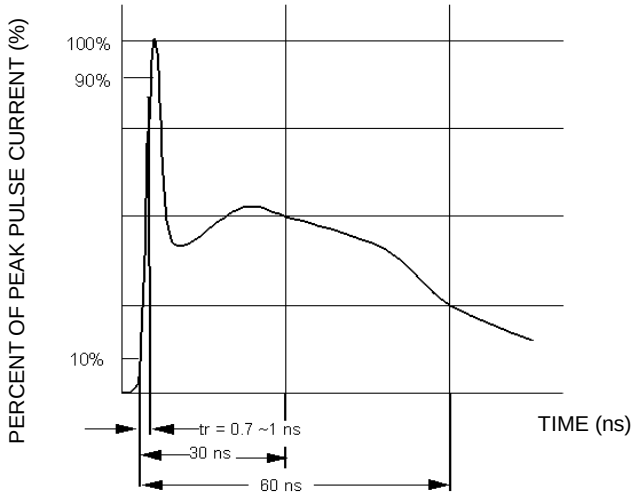


Figure 1. ESD Pulse Waveform According to IEC 61000-4-2

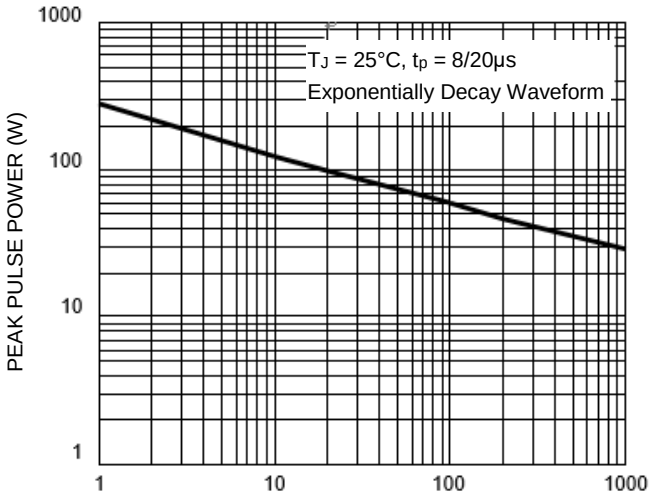


Figure 2. Power Dissipation Versus Pulse Time

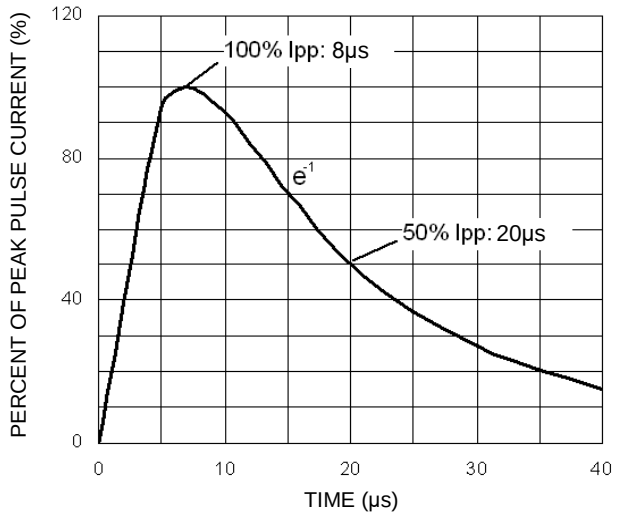


Figure 3. Typical 8 × 20µs Pulse Waveform

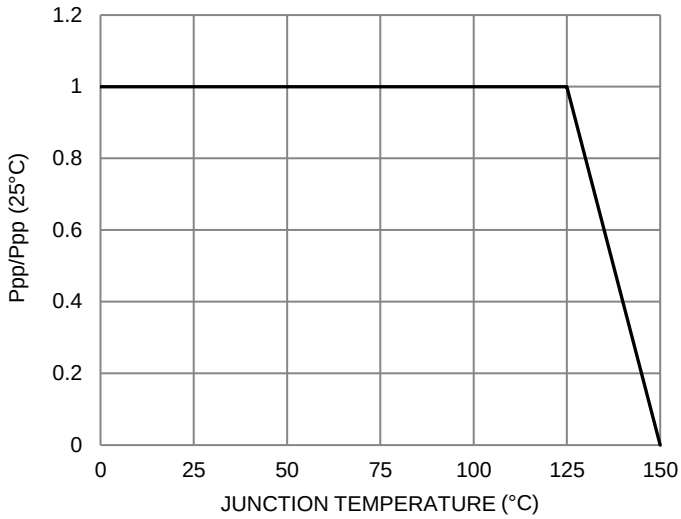


Figure 4. Peak Pulse Power Versus T_J

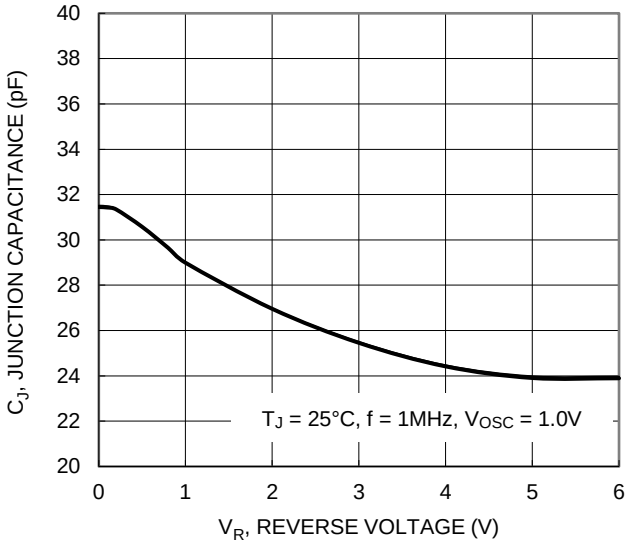


Figure 5. Typical Junction Capacitance

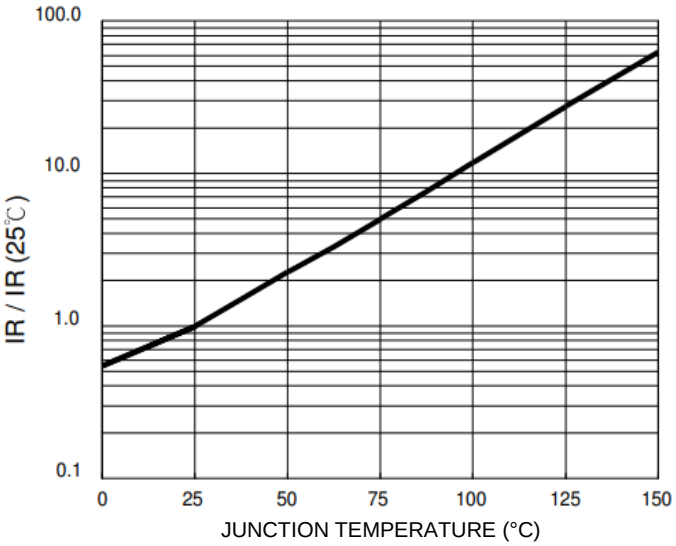


Figure 6. Reverse Leakage Current Versus T_J

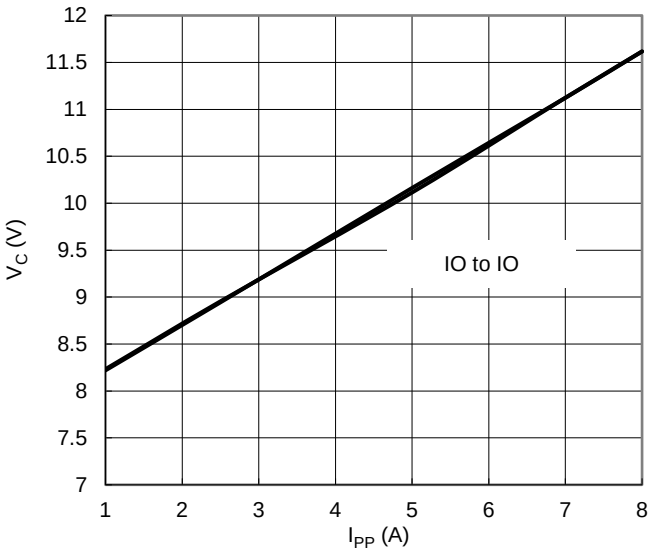


Figure 7. Typical Peak Clamping Voltage V_C vs. Peak Pulse Current I_{PP}

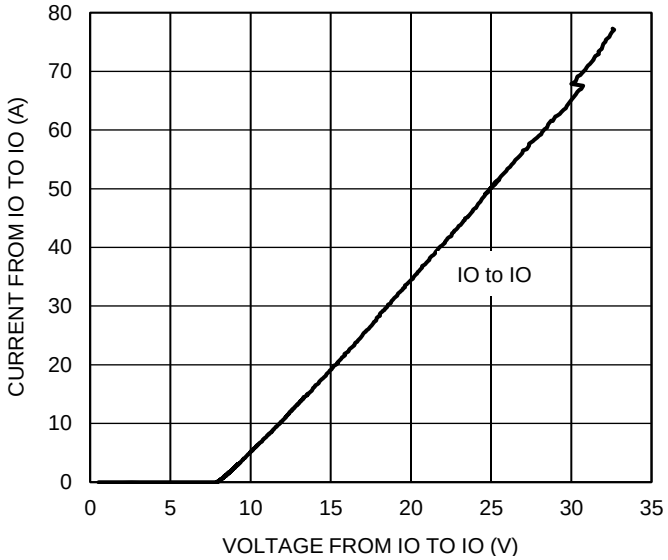
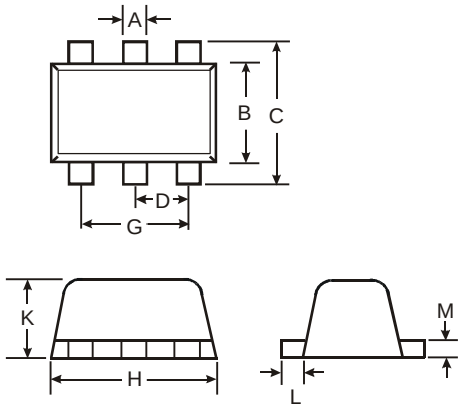


Figure 8. TLP Curve

Package Outline Dimensions

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

SOT666

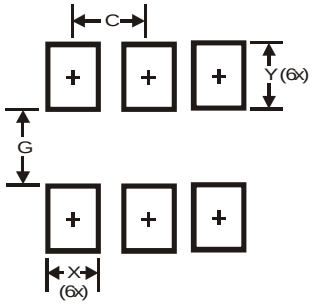


SOT666			
Dim	**Min**	**Max**	**Typ**
A	0.15	0.30	0.20
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	-	0.50	-
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.55	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	0.15
All Dimensions in mm			

Suggested Pad Layout

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

SOT666



Dimensions	Value (in mm)
C	0.50
G	0.80
X	0.35
Y	0.50

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