

**Product Summary** (@T<sub>A</sub> = +25°C)

V <sub>BR</sub> (MIN)	I <sub>PP</sub> (MAX)	V <sub>C</sub> (MAX)
14.4	10.5	21.5

**Description**

This new generation TVS is designed for transient overvoltage protection. The combination of small size and high ESD surge capability makes it ideal for use in power management and battery contact.

**Applications**

It is ideally suited for use in applications such as the following:

- Power Management
- Automotive
- Battery Contacts

**Features**

- 225W Peak Pulse Power Dissipation (10µs x 1000µs Waveform)
- 13V Standoff Voltages
- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±30kV, Contact ±30kV
- Excellent Clamping Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

**Mechanical Data**

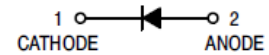
- Case: SOD123F (Type B)
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Bar
- Terminals: Matte Tin Finish Annealed over Copper Alloy Leadframe. Solderable per MIL-STD-202, Method 208 Ⓔ
- Weight: 0.018 grams (Approximate)

**SOD123F (Type B)**


Top View



Bottom View


**Ordering Information** (Note 4)

Product	Compliance	Marking	Reel Size(inches)	Tape Width(mm)	Quantity per Reel
DPD13AWF-7	Commercial	TBG	7	8	3,000/Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) 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 <http://www.diodes.com/products/packages.html>.

**Marking Information**


TBG = Product Type Marking Code,  
 YM = Date Code Marking  
 Y = Year (ex: D = 2016)  
 M = Month (ex: 9 = September)  
 Bar Denotes Cathode Side

## Date Code Key

Year	2016	2017	2018	2019	2020	2021	2022
Code	D	E	F	G	H	I	J

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<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Pulse Power Dissipation (Note 5) 10/1000µs (Note 6) 8/20µs	P <sub>PK</sub>	225 1125	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave	I <sub>FSM</sub>	35	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
DC Steady-State Power Dissipation (Note 8)	P <sub>D</sub>	1.0	W
Thermal Resistance, Junction to Ambient (Note 8)	R <sub>θJA</sub>	330	°C/W
Thermal Resistance, Junction to Soldering Point (Note 9)	R <sub>θJS</sub>	70	°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.)

Part Number	Reverse Standoff Voltage	Breakdown Voltage V <sub>BR</sub> @ I <sub>T</sub> (Note 10)		Test Current	Max. Reverse Leakage @ V <sub>RWM</sub>	Max. Clamping Voltage @ I <sub>PP</sub>	Max. Peak Pulse Current (Note 5)	Marking Code
	V <sub>RWM</sub> (V)	Min (V)	Max (V)	I <sub>T</sub> (mA)	I <sub>R</sub> (µA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)	
DPD13AWF	13	14.4	15.9	1.0	1.0	21.5	10.5	TBG

- Notes:
5. Non-Repetitive current pulse as shown in figure 2 and derated above T<sub>A</sub> = +25°C as per figure 2.
  6. Non-Repetitive current pulse as shown in figure 3 and derated above T<sub>A</sub> = +25°C as per figure 3.
  7. 1/2 sine wave (or eTuivalent sTuare wave), pulse width = 8.3ms, duty cycle = 4 pulses/minute maximum.
  8. Device mounted on 1"x1", FR-4 PCB; 2 oz. Cu pad layout. Cathode pad dimensions 5.5mm x 3.5mm. Anode pad dimensions 2.25mm x 3.5mm.
  9. Theoretical R<sub>θJS</sub> calculated from the top center of the die straight down to the PCB/cathode tab solder junction.
  10. V<sub>BR</sub> measured at pulse test current I<sub>T</sub> with tp ≤ 5.0ms at T<sub>A</sub> = +25°C.

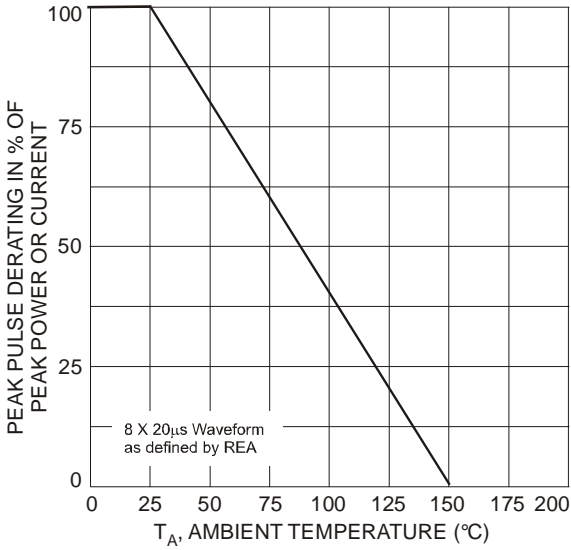


Fig. 1 Pulse Derating Curve

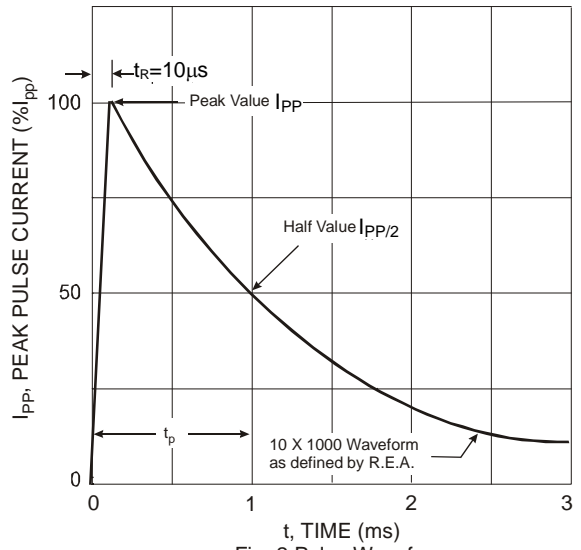


Fig. 2 Pulse Waveform

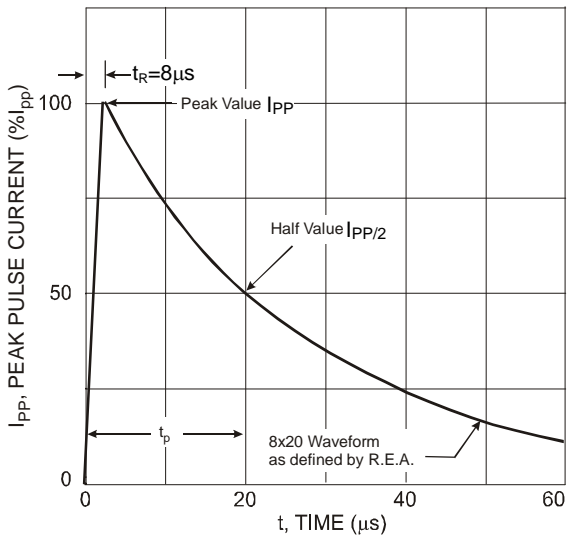


Fig. 3 Pulse Waveform

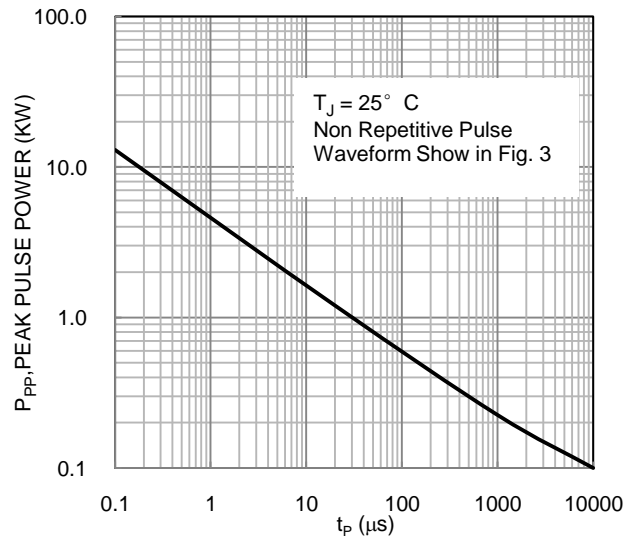


Fig. 4 Peak pulse power versus exponential pulse duration

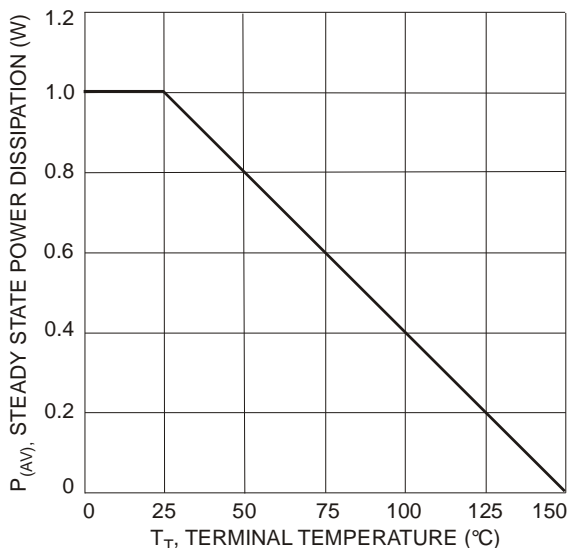


Fig. 5 Steady State Power Derating Curve

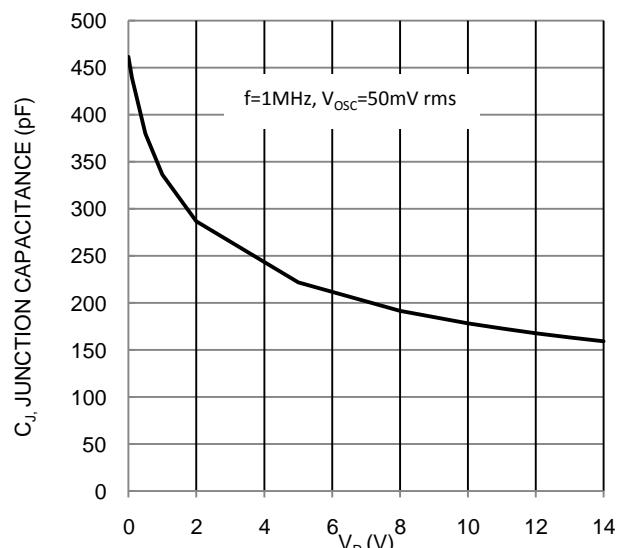
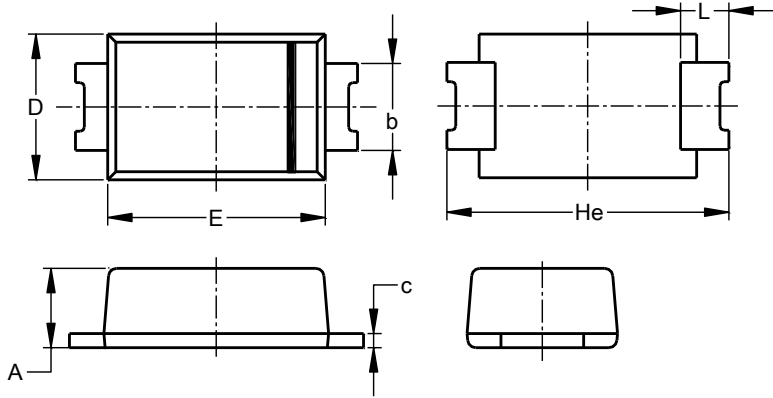


Fig. 6 Junction Capacitance versus Reverse Voltage

## Package Outline Dimensions

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

SOD123F (Type B)

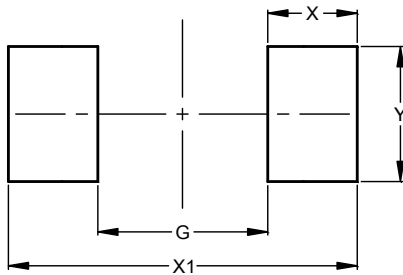


SOD123F (Type B)			
Dim	Min	Max	Typ
A	0.81	1.15	—
b	0.80	1.35	—
c	0.05	0.30	—
D	1.70	1.90	1.80
E	2.60	2.80	2.70
He	3.30	3.70	3.50
L	0.35	0.85	—
All Dimensions in mm			

## Suggested Pad Layout

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

SOD123F (Type B)



Dimensions	Value (in mm)
G	1.90
X	1.00
X1	3.90
Y	1.50

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