SURFACE MOUNT DATALINE PROTECTION DEVICE

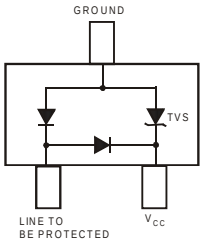
Features

- 300 Watts Peak Pulse Power (t_P = 8 × 20µs)
- Transient Protection for Data Line to IEC61000-4-2 Level 4 (ESD), 8kV HBM
  - Contact: Discharge – ±30kV
  - Air: Discharge – ±30kV
- IEC 61000-4-4 (EFT)
- Low Leakage Current
- Surface Mount Package Ideally Suited for Automated Insertion
- **Totally Lead-Free & Fully 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 contact us or your local Diodes representative.**
  https://www.diodes.com/quality/product-definitions/

Mechanical Data

- Package: SOT23
- Package Material: Molded Plastic. UL Flammability Classification Rating 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) (e3)
- Terminal Connections: See Diagram
- Marking Information: See Page 1
- Ordering Information: See Page 1
- Weight: 0.008 grams (Approximate)

Top View



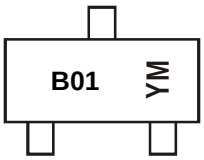
Device Schematic

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DLPT05A-7-F	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/.
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.

Marking Information



B01 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: J = 2022)
M = Month (ex: 9 = September)

Date Code Key

Year	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Code	J	K	L	M	N	O	P	R	S	T	U	V

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
Peak Pulse Power (t_P = 8 × 20µs, per Figure 2)	P_{PK}	300	W
Peak Forward Voltage (I_{PP} = 1A, t_P = 8 × 20µs, per Figure 2)	V_{FP}	2.1	V
Diode Peak Repetitive Reverse Voltage	V_{RRM}	75	V

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Ambient (Note 10)	$R_{\Theta JA}$	417	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

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

Reverse Standoff Voltage	Breakdown Voltage V_{BR} @ I_T		Test Current	Max. Reverse Leakage @ V_{RWM} (Note 9)	Max. Clamping Voltage @ I_{PP} = 1A (Note 8)	Typical Peak Pulse Current (Note 7)	Typical Total Capacitance (Note 6)
V_{RWM} (V)	Min (V)	Max (V)	I_T (mA)	I_R (µA)	V_C (V)	(A)	(pF)
5	6.0	—	1.0	20	9.8	17	1.9

Notes:
6. V_R = 0V, f = 1MHz from line to be protected to ground pin.
7. t_P = 8×20µs.
8. Clamping voltage value is based on an 8×20µs peak pulse current (I_{PP}) waveform.
9. Short duration pulse test used to minimize self-heating effect.
10. Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes Incorporated's suggested pad layout, which can be found on our website at http://www.diodes.com/package-outlines.html.

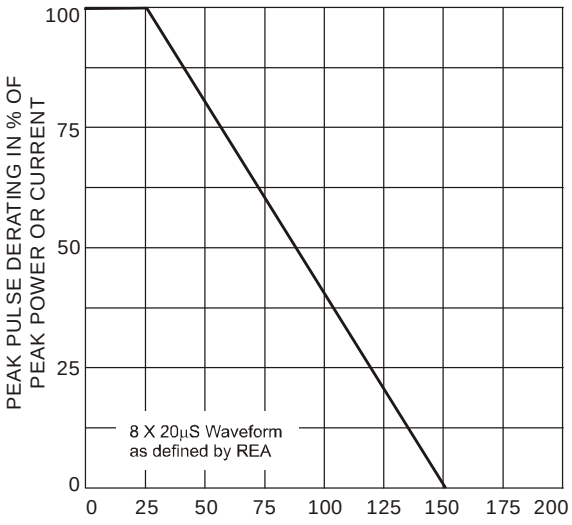


Fig. 1 Pulse Derating Curve

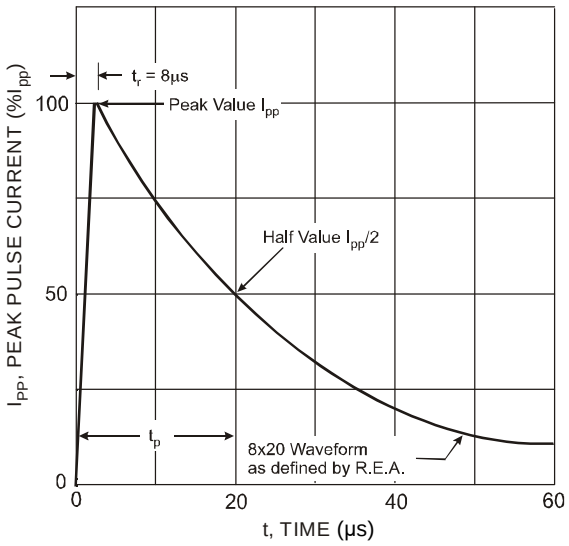


Fig. 2 Pulse Waveform

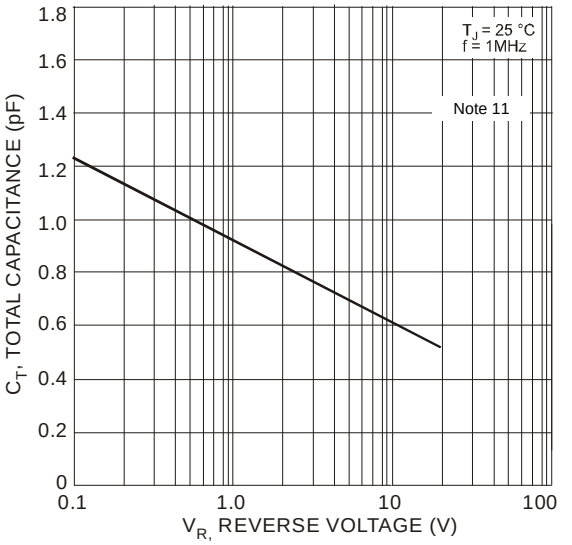


Fig. 3 Typical Total Capacitance vs. Reverse Voltage

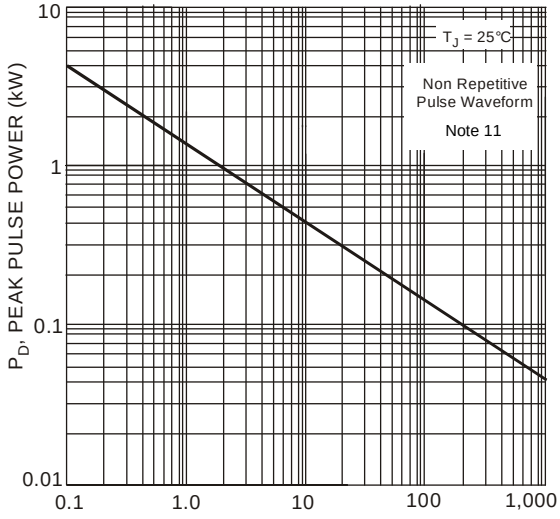


Fig. 4 Pulse Rating Curve

Note: 11. Measured from line to be protected to ground pin.

Typical Application Schematics

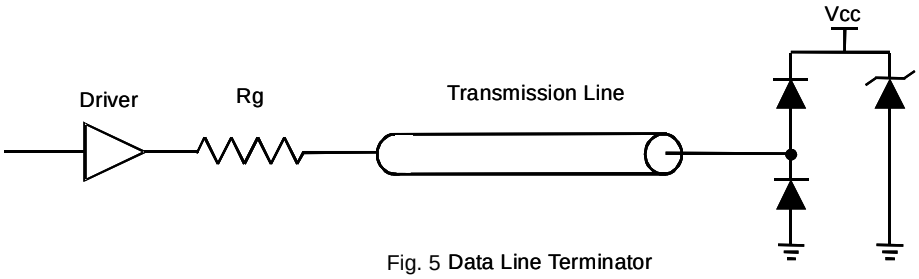


Fig. 5 Data Line Terminator

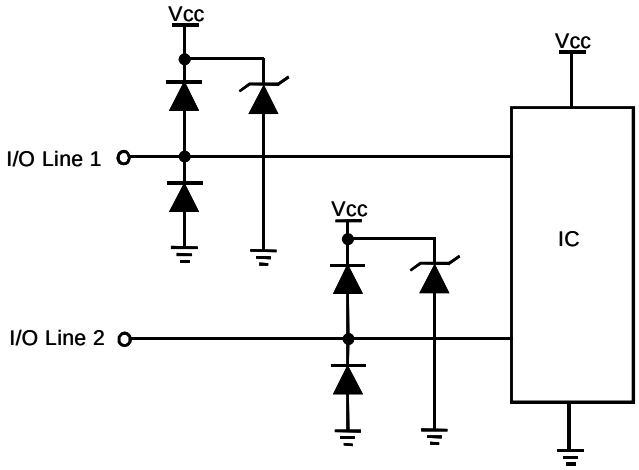
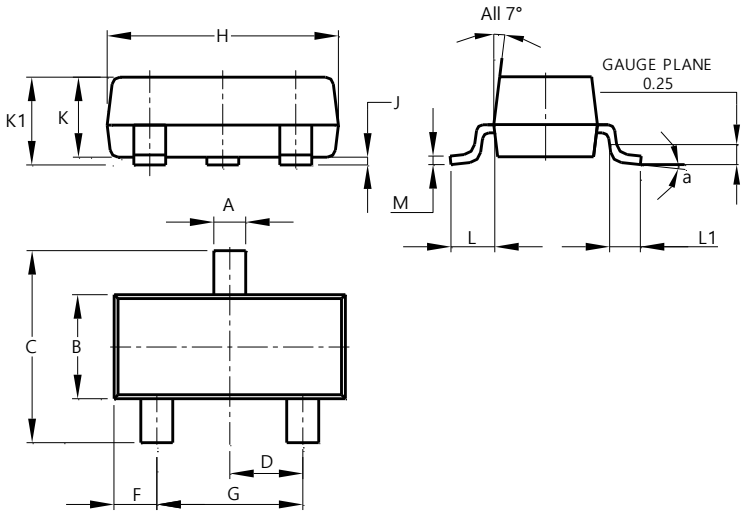


Fig. 6 Data Line Protection

Package Outline Dimensions

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

SOT23

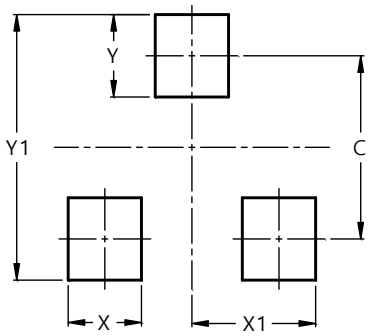


SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

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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