



# THE DATASHEET OF DLPT05-7



## SURFACE MOUNT DATALINE PROTECTION DEVICE

### Features

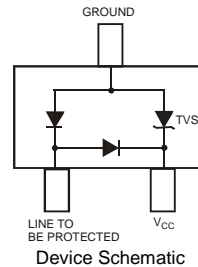
- 300W Peak Pulse Power ( $t_p = 8 \times 20 \mu s$ )
- Transient Protection for Data Line to IEC61000-4-2 Level 4 (ESD), 8kV HBM
  - Contact: Discharge –  $\pm 30kV$
  - Air: Discharge –  $\pm 30kV$
- IEC 61000-4-4 (EFT)
- Low Leakage Current
- Surface Mount Package Ideally Suited for Automated Insertion
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

### Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 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).
- Terminal Connections: See Diagram
- Marking Information: See Page 1
- Ordering Information: See Page 1
- Weight: 0.008 grams (Approximate)



Top View



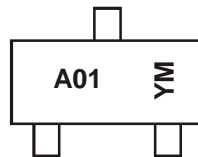
Device Schematic

### Ordering Information (Note 4)

Part Number	Case	Packaging
DLPT05-7-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 <http://www.diodes.com/datasheets/ap02007.pdf>.

### Marking Information



A01 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: G = 2019)  
 M = Month (ex: 9 = September)

#### Date Code Key

Year	1998	1999	2000	2001	...	2019	2020	2021	2022
Code	J	K	L	M	...	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

- Notes:
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.

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

Characteristic	Symbol	Value	Unit
Peak Pulse Power ( $t_p = 8 \times 20 \mu\text{s}$ , per Figure 2)	$P_{PK}$	300	W
Peak Forward Voltage ( $I_{PP} = 1\text{A}$ , $t_p = 8 \times 20 \mu\text{s}$ , 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	$^\circ\text{C/W}$
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

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

- Notes:
6.  $V_R = 0\text{V}$ ,  $f = 1\text{MHz}$  from line to be protected to ground pin.
  7.  $t_p = 8 \times 20 \mu\text{s}$ .
  8. Clamping voltage value is based on an  $8 \times 20 \mu\text{s}$  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, Inc. suggested pad layout AP02001, which can be found on our website at <http://www.diodes.com>.

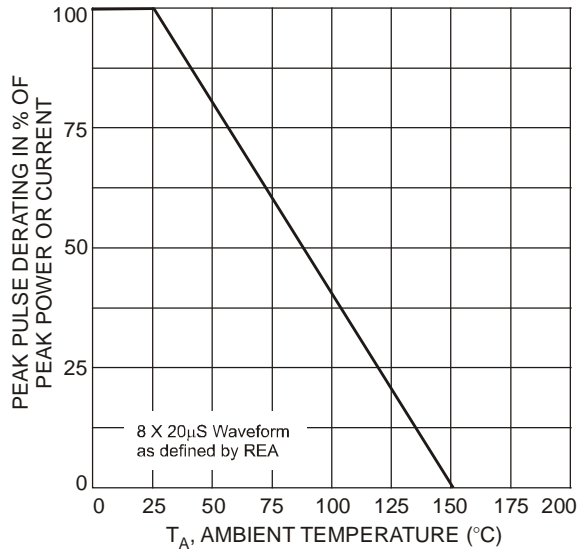


Fig. 1 Pulse Derating Curve

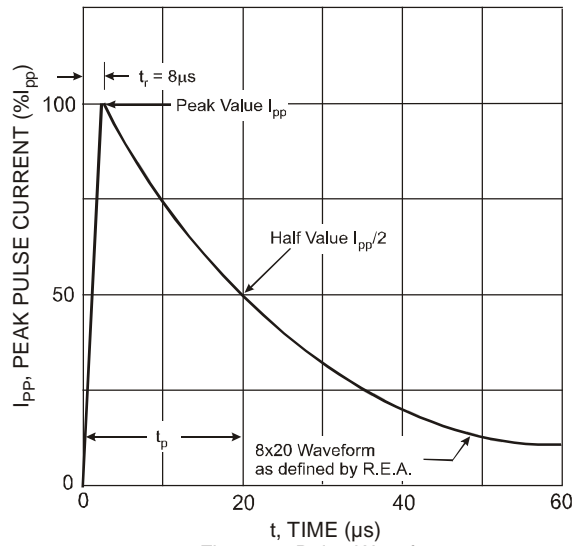


Figure 2. Pulse Waveform

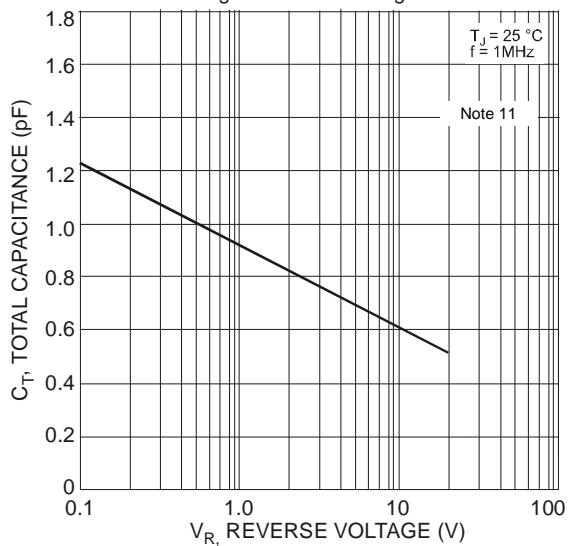


Fig. 3 Typical Total Capacitance vs. Reverse Voltage

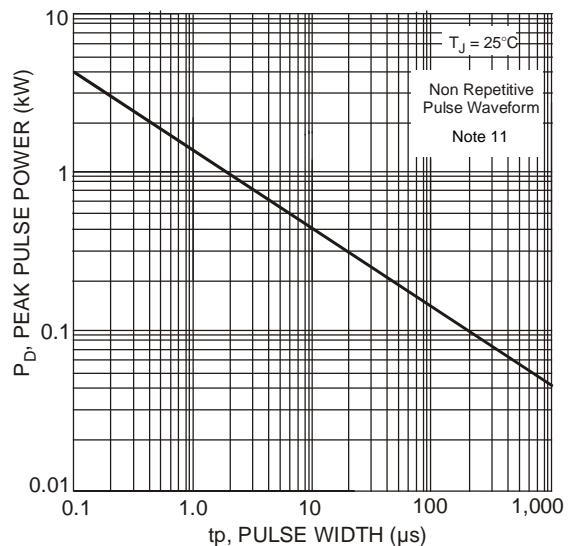


Fig. 4 Pulse Rating Curve

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

**Typical Application Schematics**

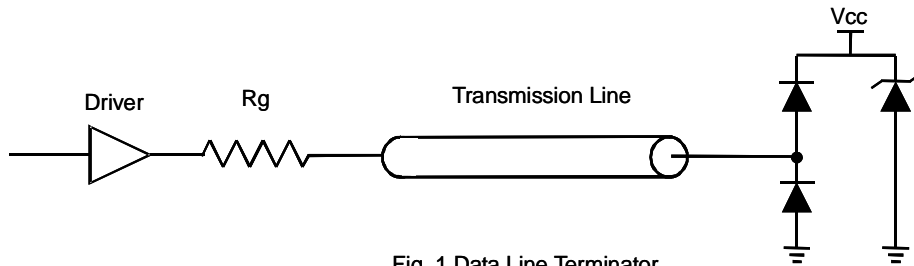


Fig. 1 Data Line Terminator

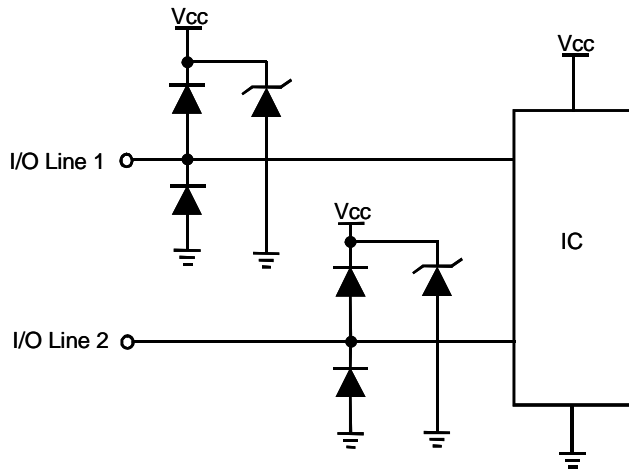
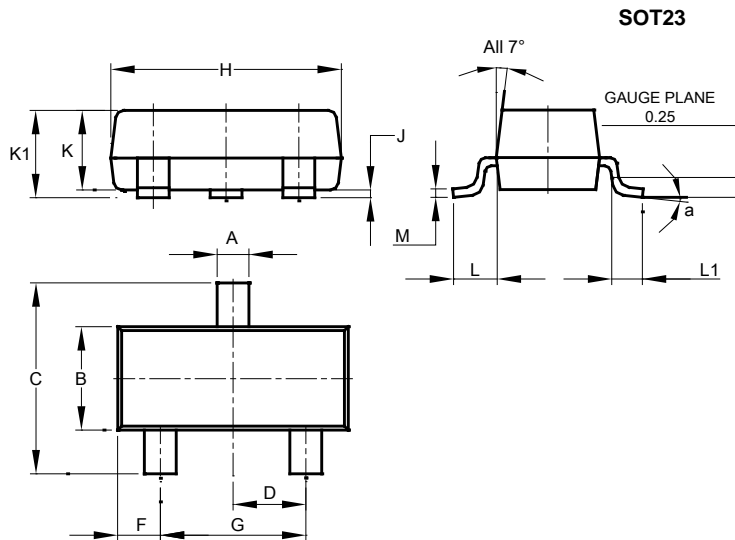


Fig. 2 Data Line Protection

## Package Outline Dimensions

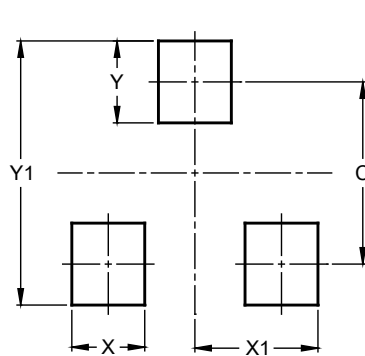
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



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.



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

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