58V UNIDIRECTIONAL TVS DIODE ARRAY

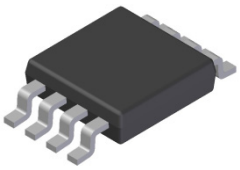
Features

- 2.7kW Peak Pulse Power (tp = 8x20μs)
- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±30kV, Contact ±30kV
- 4 Channels of ESD Protection and 4 Decoupling Capacitances
- Typically Used in Power Over Ethernet PSE Equipment against Line Overvoltages
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

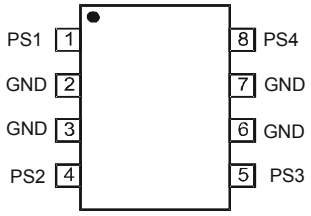
Mechanical Data

- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Copper leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.08 grams (approximate)

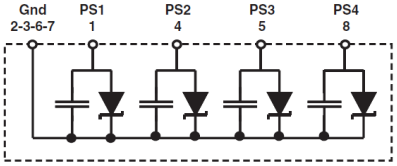
SO-8



Top View



Top View
Pin Configuration



Device Schematic

Ordering Information (Note 4)

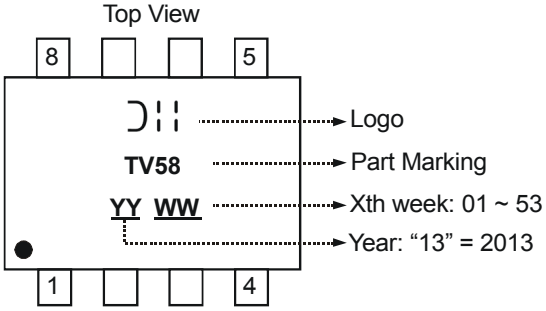
D58V0 M X B X XXX- XX

Voltage	Capacitance	# of Channels	Polarity	# of Pins	Package	Packing
5V0: 5.0 Volts 58V0: 58.0 Volts	X: Extremely Low (<0.5pF) F: Ultra Low (0.5 ~ 1.0pF) P: Very Low (1.1 ~ 10pF) L: Low (10.1 ~ 20pF) M: Medium (>20pF)	1: 1 Channel 2: 2 Channels 4: 4 Channels 6: 6 Channels	B: Bidirectional (Symmetrical) U: Unidirectional A: Bidirectional (Asymmetrical)	2: 2 Pins 3: 3 Pins 5: 5 Pins 6: 6 Pins 8: 8 Pins 10: 10 Pins	LP3: X3-DFN0603-2 LP: X1-DFN1006-2 LP4: X2-DFN1006-2 WS: SOD323 T: SOD523/SOT523 SO: SOT23/SOT25 W: SOD123/SOT323 TS: TSOT25/TSOT26 S: SOT353/SOT363 V:SOT553/SOT563	7: 7" reel 7B: 7" reel (DFN1006 Package Only) 13: 13" reel

Product	Compliance	Marking	Reel size(inches)	Tape width(mm)	Quantity per reel
D58V0M4U8MR-13	Standard	TV58	13	12	2500/Tape & Reel

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See 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



Maximum Ratings (@T_A = +25°C, unless otherwise specified.), Per Element

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P_{PP}	2700	W	8/20µs, Per Figure 1
Peak Pulse Current	I_{PP}	24	A	8/20µs, Per Figure 1
ESD Protection – Contact Discharge	$V_{ESD\_Contact}$	±30	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V_{ESD_Air}	±30	kV	IEC 61000-4-2 Standard

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 5)	P_D	1.0	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	125	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Standoff Voltage	V_{RWM}	—	—	58	V	—
Channel Leakage Current (Note 6)	I_{RM}	—	—	0.2	µA	V_{RWM} = 58V
Breakdown Voltage	V_{BR}	64.4	—	71.2	V	I_R = 1mA
Clamping Voltage	V_{CL}	—	—	100	V	I_{PP} = 24A, t_p = 8/20µS
Channel Input Capacitance	C_T	—	55	—	pF	V_R = 50V, f = 1MHz

Notes: 5. 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.
6. Short duration pulse test used to minimize self-heating effect.

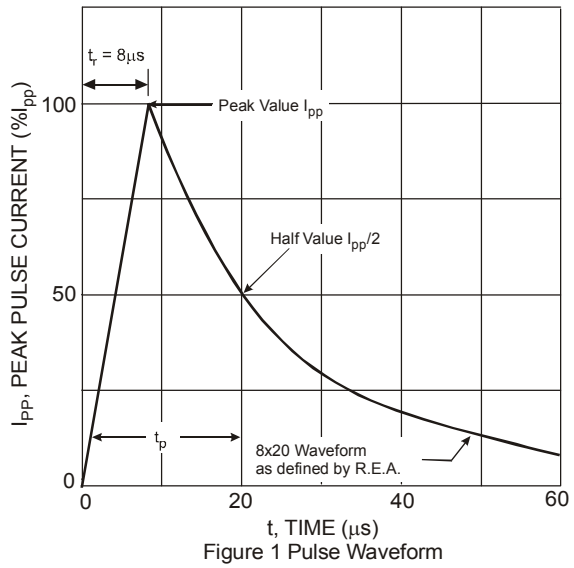


Figure 1 Pulse Waveform

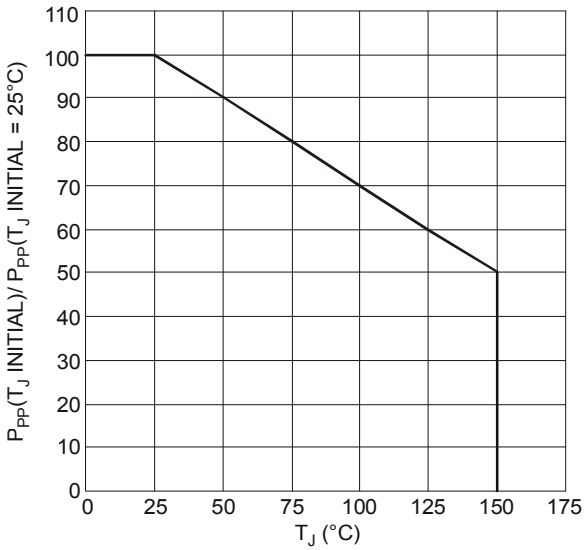


Figure 2 Peak Power Dissipation vs. Initial Junction Temperature

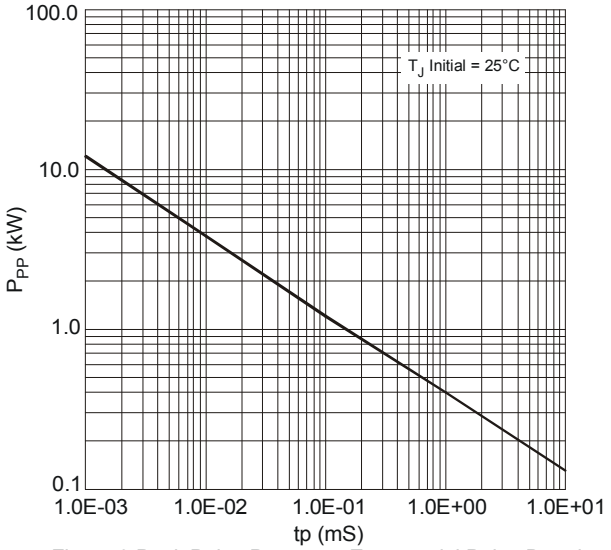


Figure 3 Peak Pulse Power vs. Exponential Pulse Duration (T_J Initial = 25°C)

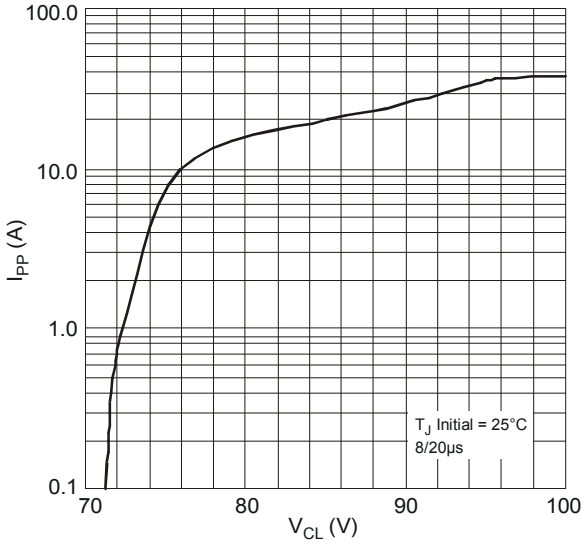


Figure 4 Clamping Voltage vs. Peak Pulse Current (Exponential Waveform, Maximum Values)

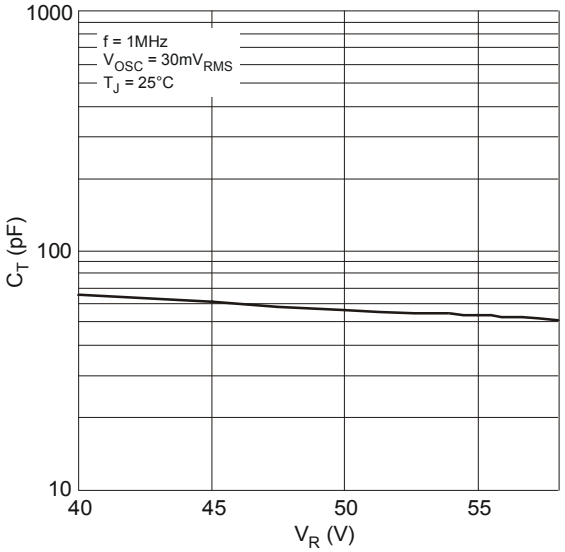


Figure 5 Capacitance vs. Voltage (typical values)

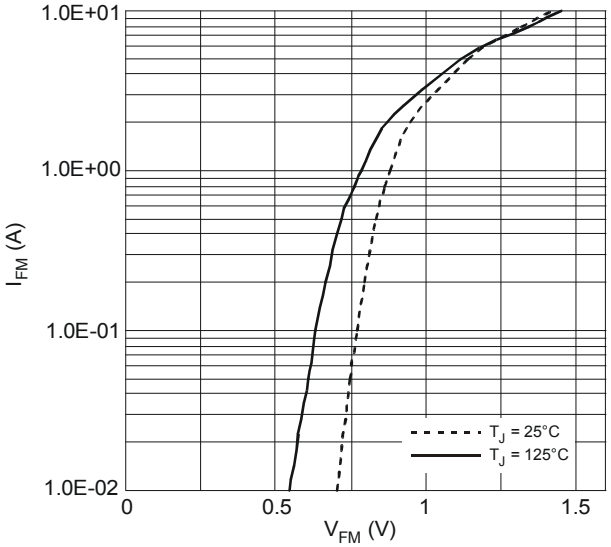


Figure 6 Peak Forward Voltage Drop vs. Peak Forward Current (typical values)

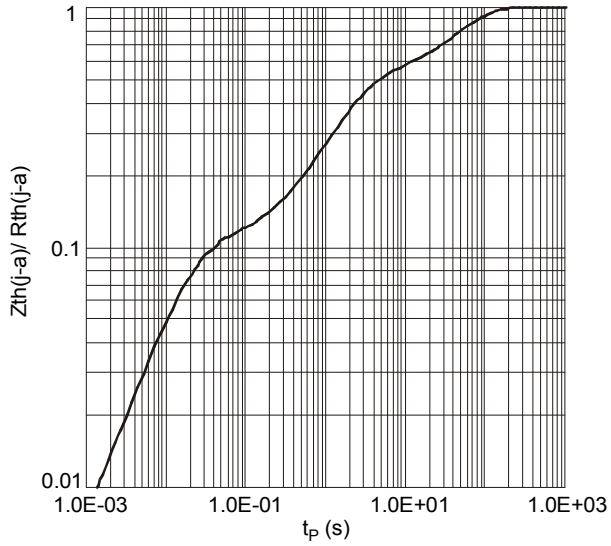


Figure 7 Relative Variation of Thermal Impedance Junction Ambient vs. Pulse Duration

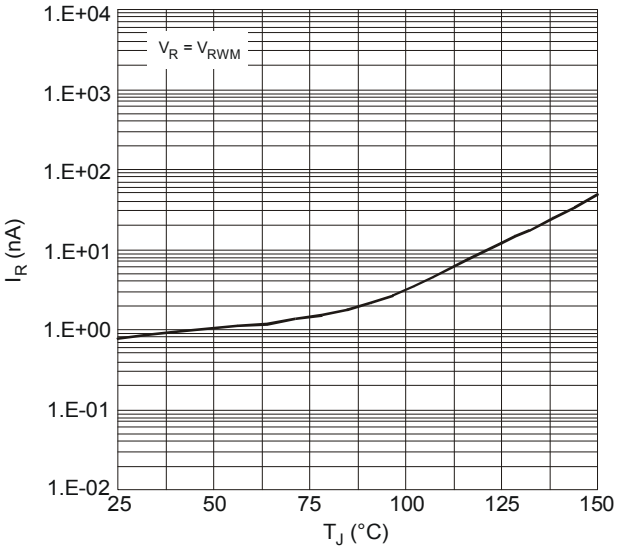
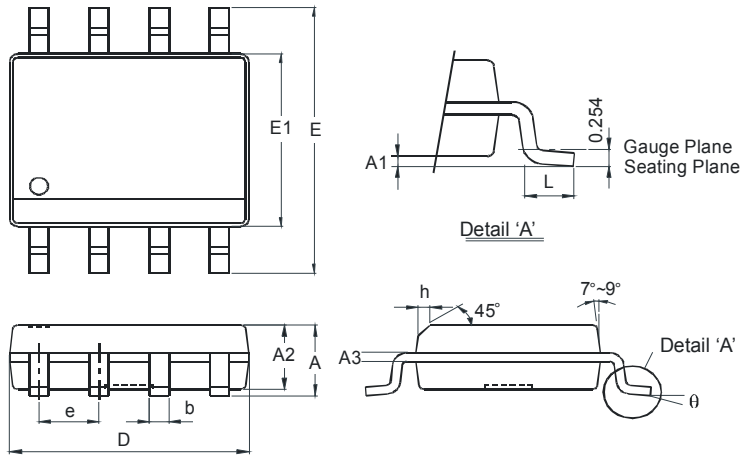


Figure 8 Leakage Current vs. Junction Temperature (typical values)

Package Outline Dimensions

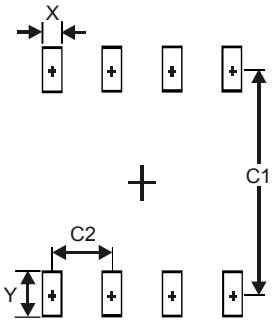
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SO-8		
Dim	**Min**	**Max**
A	-	1.75
A1	0.10	0.20
A2	1.30	1.50
A3	0.15	0.25
b	0.3	0.5
D	4.85	4.95
E	5.90	6.10
E1	3.85	3.95
e	1.27 Typ	
h	-	0.35
L	0.62	0.82
θ	0°	8°
All Dimensions in mm		

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
X	0.60
Y	1.55
C1	5.4
C2	1.27

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