

## Product Summary

<b>V<sub>PT</sub> (Min)</b>	<b>I<sub>PP</sub> (Max)</b>	<b>C<sub>T</sub> (Typ)</b>
3.5V	100A	5pF

## Description

The D3V3L4U8MR transient voltage suppressor is designed to protect components which are connected to high-speed data and telecommunication lines from voltage surges cause by lightning, electrostatic discharge (ESD), and electrical fast transients (EFT).

## Applications

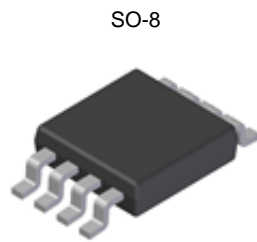
- 10/100/1000 Ethernet
- Set-top boxes
- ISDN interfaces

## Features

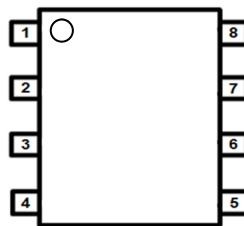
- Protects Two Line Pairs
- Low Operating and Clamping Voltages
- IEC 61000 4-2, Level 4 (ESD), ±30kV (Air); ±30kV (Contact)
- IEC 61000 4-5, Level 4 (Lightning), 100A (8/20µs)
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For 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 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

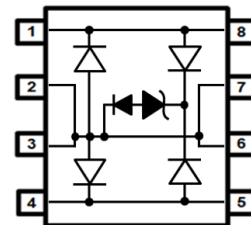
- Package: SO-8
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Copper Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 (e3)
- Weight: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



Top View



Top View  
Pin Configuration



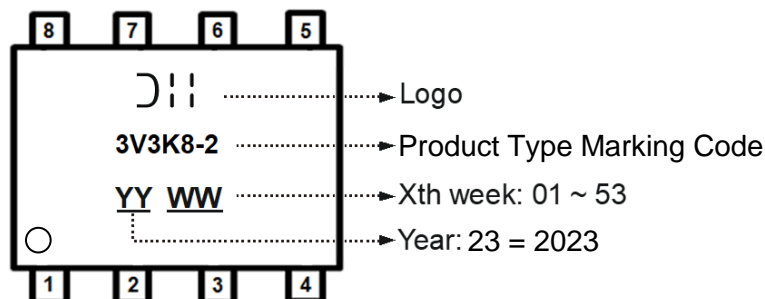
Device Schematic

## Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
D3V3L4U8MR-13	SO-8	3V3K8-2	13	12	2500	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



**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	PPP	2400	W	8/20μs, per Figure 1
Peak Pulse Current	I <sub>PP</sub>	100	A	8/20μs, per Figure 1
ESD Protection – Contact Discharge	V <sub>ESD_Contact</sub>	±30	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V <sub>ESD_Air</sub>	±30	kV	IEC 61000-4-2 Standard

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 5)	P <sub>D</sub>	500	mW
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	250	°C/W
Operating Temperature Range	T <sub>J</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C
Soldering Temperature, t max = 10s	T <sub>L</sub>	+260	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Standoff Voltage	V <sub>RWM</sub>	—	—	3.3	V	—
Channel Leakage Current (Note 6)	I <sub>RM</sub>	—	—	1	μA	V <sub>RWM</sub> = 3.3V
Punch Through Voltage	V <sub>PT</sub>	3.5	—	—	V	I <sub>PT</sub> = 2μA
Snap-Back Voltage	V <sub>SB</sub>	3.3	—	—		I <sub>SB</sub> = 50mA
Clamping Voltage, Positive Transients	V <sub>CL</sub>	—	—	11.5	V	I <sub>PP</sub> = 50A, t <sub>p</sub> = 8/20μs, Any Line to GND
		—	—	16		I <sub>PP</sub> = 100A, t <sub>p</sub> = 8/20μs, Any Line to GND
		—	—	15		I <sub>PP</sub> = 50A, t <sub>p</sub> = 8/20μs, Line to Line
		—	—	24		I <sub>PP</sub> = 100A, t <sub>p</sub> = 8/20μs, Line to Line
Channel Input Capacitance	C <sub>T</sub>	—	5	12	pF	V <sub>R</sub> = 0V, f = 1MHz, Any Line to GND
		—	2.5	6		V <sub>R</sub> = 0V, f = 1MHz, Line to Line

Notes: 5. 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.  
 6. Short duration pulse test used to minimize self-heating effect.

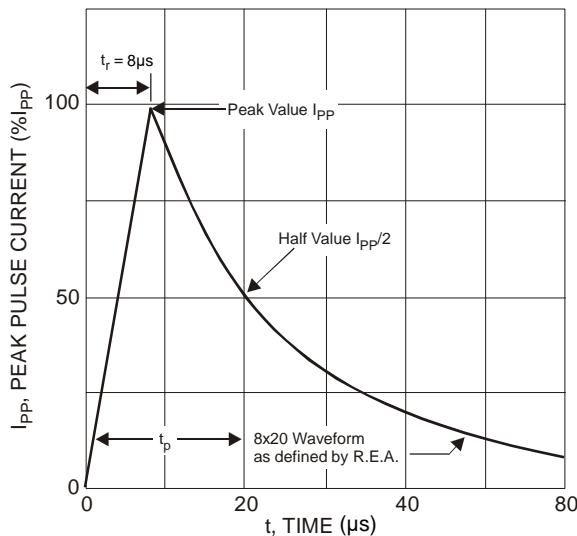


Figure 1. Pulse Waveform

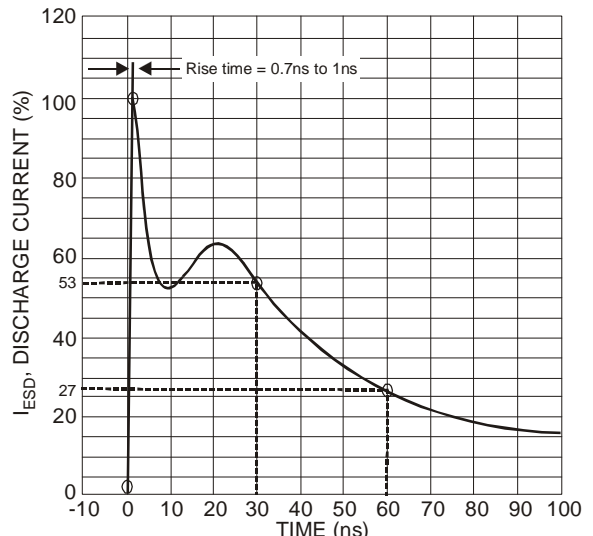


Figure 2. ESD Discharge Current Waveform IEC 61000-4-2 (330Ω/150pF)

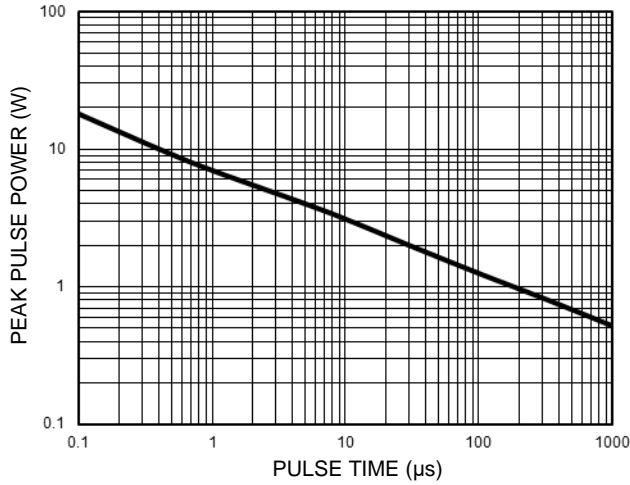


Figure 3. Power Dissipation vs. Pulse Time

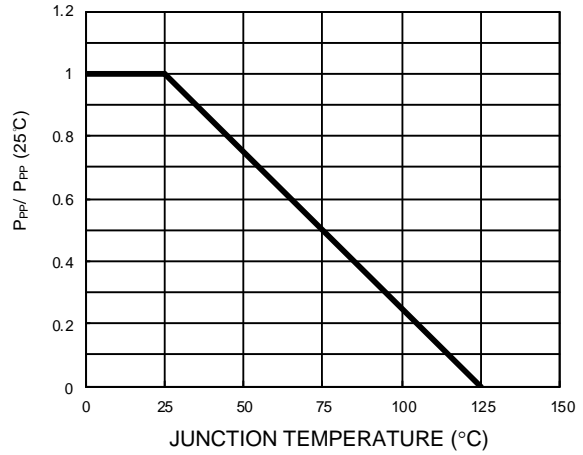


Figure 4. Peak Pulse Power vs.  $T_j$

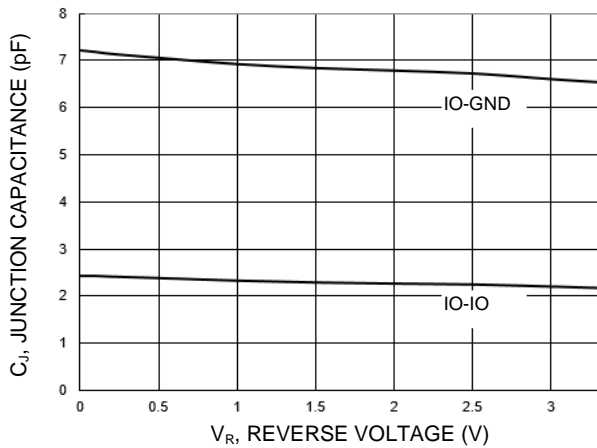


Figure 5. Typical Junction Capacitance

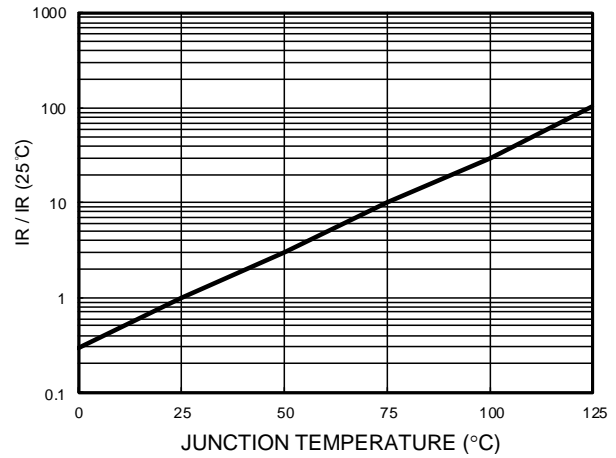


Figure 6. Reverse Leakage Current vs.  $T_j$

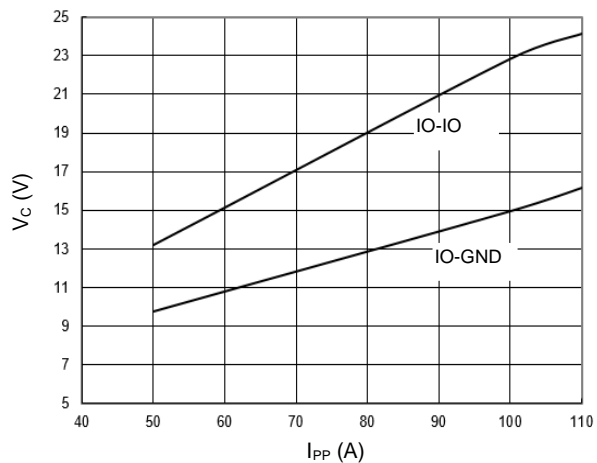


Figure 7. Clamping Voltage Characteristics ( $t_p = 8/20\mu s$ )

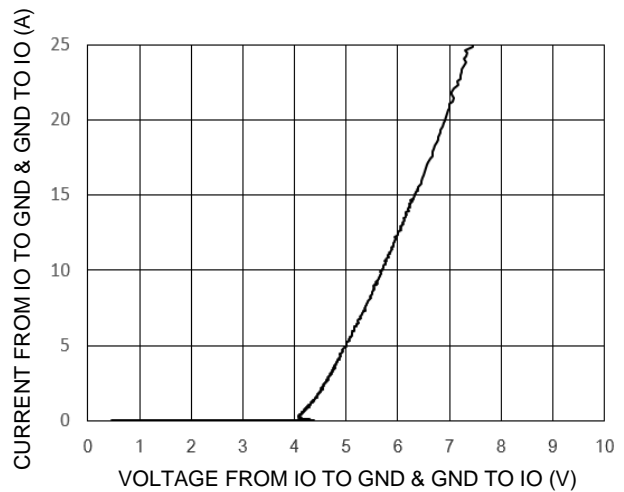
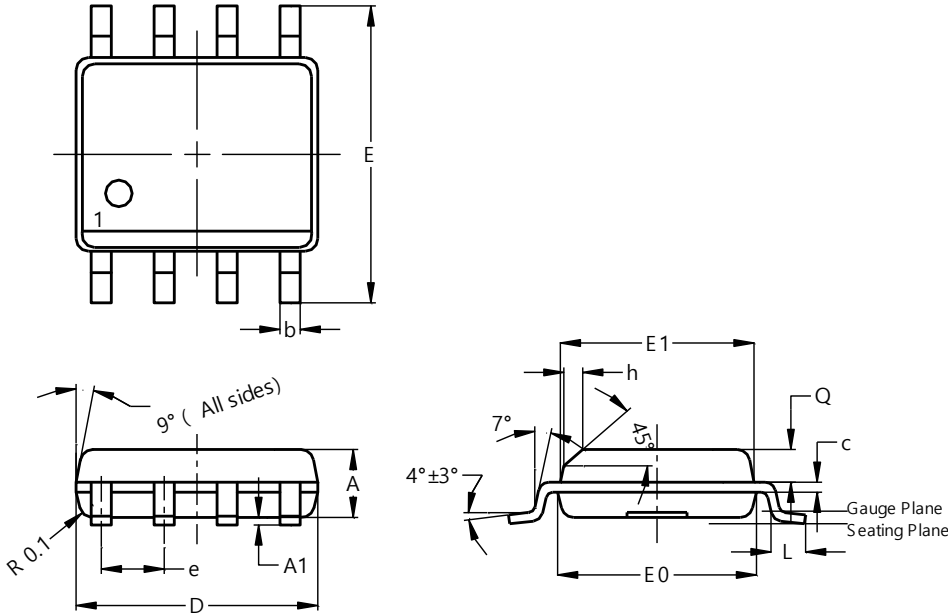


Figure 8. TLP Curve ( $t_p = 100ns$ )

**Package Outline Dimensions**

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

**SO-8**

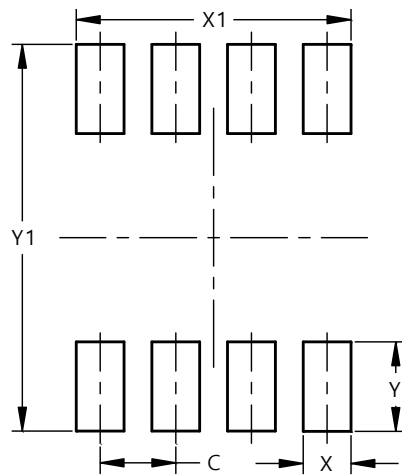


SO-8			
Dim	Min	Max	Typ
A	1.40	1.50	1.45
A1	0.10	0.20	0.15
b	0.30	0.50	0.40
c	0.15	0.25	0.20
D	4.85	4.95	4.90
E	5.90	6.10	6.00
E1	3.80	3.90	3.85
E0	3.85	3.95	3.90
e	--	--	1.27
h	-	--	0.35
L	0.62	0.82	0.72
Q	0.60	0.70	0.65
All Dimensions in mm			

**Suggested Pad Layout**

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

**SO-8**



Dimensions	Value (in mm)
C	1.27
X	0.802
X1	4.612
Y	1.505
Y1	6.50

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