D12V0S1U3LP20 - D26V0S1U3LP20

1 CHANNEL HIGH SURGE TVS DIODE

Product Summary

$V_{BR\ (MIN)}$	$P_{PP\ (MAX)}$	$I_{R\ (MAX)}$
13.3V to 28.9V	4000W	200nA

Description

This new generation TVS is designed to protect sensitive electronics from the damage due to ESD. The combination of small size and high ESD surge capability makes it ideal for use in portable applications such as cellular phones, digital cameras, and MP3 players.

Applications

- Cellular Handsets
- Portable Electronics
- Computers and Peripheral

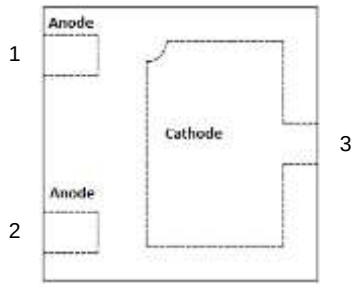
Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±30kV, Contact ±30kV
- One Channel of ESD Protection
- Low Channel Input Capacitance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: U-DFN2020-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e4
- Weight: 0.004 grams (Approximate)

U-DFN2020-3 (Type C)



Top View

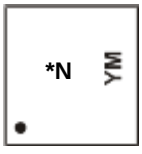
1 and 2 must be electrically connected at the PCB

Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
D12V0S1U3LP20-7	Standard	12N	7	8	3,000/Tape & Reel
D15V0S1U3LP20-7	Standard	2N	7	8	3,000/Tape & Reel
D18V0S1U3LP20-7	Standard	3N	7	8	3,000/Tape & Reel
D20V0S1U3LP20-7	Standard	4N	7	8	3,000/Tape & Reel
D22V0S1U3LP20-7	Standard	5N	7	8	3,000/Tape & Reel
D24V0S1U3LP20-7	Standard	7N	7	8	3,000/Tape & Reel
D26V0S1U3LP20-7	Standard	6N	7	8	3,000/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



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

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P_{PP}	4000	W	8/20µs (Note 6)
Peak Pulse Power Dissipation	P_{PP}	320	W	10/1000µs (Note 6)
ESD Protection – Contact Discharge	$V_{ESD_CONTACT}$	±30	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V_{ESD_AIR}	±30	kV	Standard IEC 61000-4-2

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	500	mW
Thermal Resistance, Junction to Ambient T_A = +25°C	$R_{\theta JA}$	250	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	°C

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

Part Number	Reverse Standoff Voltage V_{RWM} (V)	Breakdown Voltage V_{BR} (V) I_R=1mA			Reverse Leakage Current I_{RM} (nA) at V_{RWM}	Rated Peak Pulse Current I_{PPM} (A) 8/20µs	Rated Peak Pulse Current I_{PPM} (A) 10/1000µs	Clamping Voltage V_{CL} (V) at I_{PPM} 8/20µs	Clamping Voltage V_{CL} (V) at I_{PPM} (A) 10/1000µs
	Max	Min	Typ	Max	Max	Max	Max	Max	Max
D12V0S1U3LP20-7	12	13.3	—	14.7	200	145	13.5	27.5	23.7
D15V0S1U3LP20-7	15	16.7	—	18.5	200	140	13	30.5	24.6
D18V0S1U3LP20-7	18	20.0	—	22.1	200	120	11	33.3	29.1
D20V0S1U3LP20-7	20	22.2	—	24.5	200	110	10	36.4	32.0
D22V0S1U3LP20-7	22	24.4	—	26.9	200	98	9	40.8	35.6
D24V0S1U3LP20-7	24	26.7	—	29.5	200	90	8	44.4	40.0
D26V0S1U3LP20-7	26	28.9	—	31.9	200	80	7	50.0	45.7

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 http://www.diodes.com/package-outlines.html.
6. Measured from any I/O to GND.

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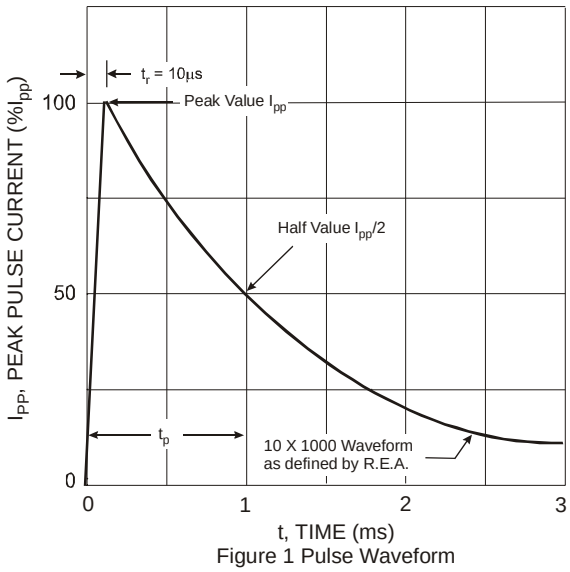

Figure 1 Pulse Waveform

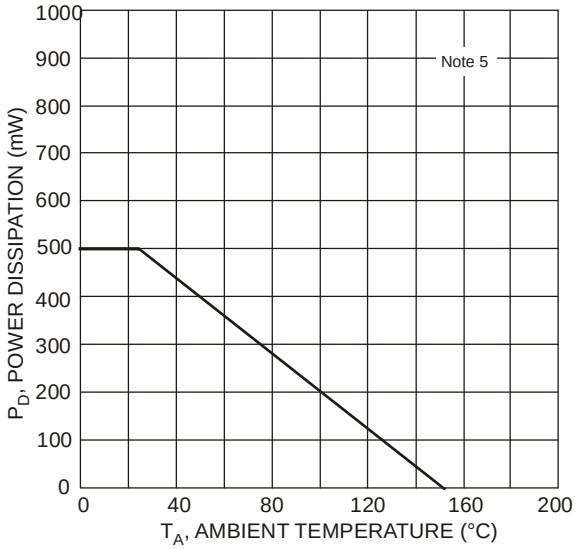

Figure 2 Power Derating Curve

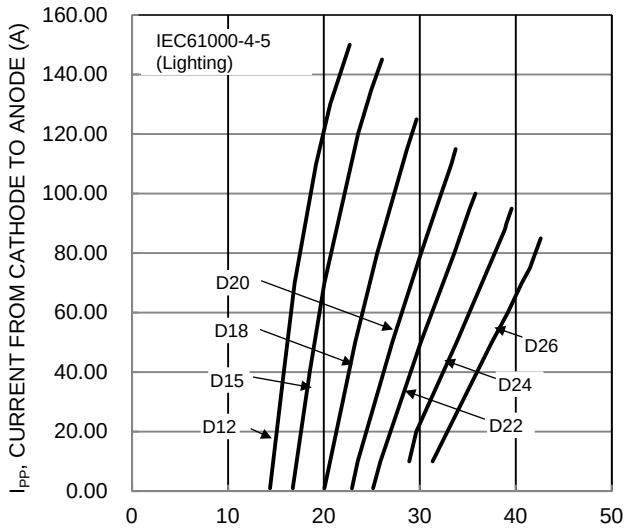

Figure 3 Clamping Voltage Characteristic

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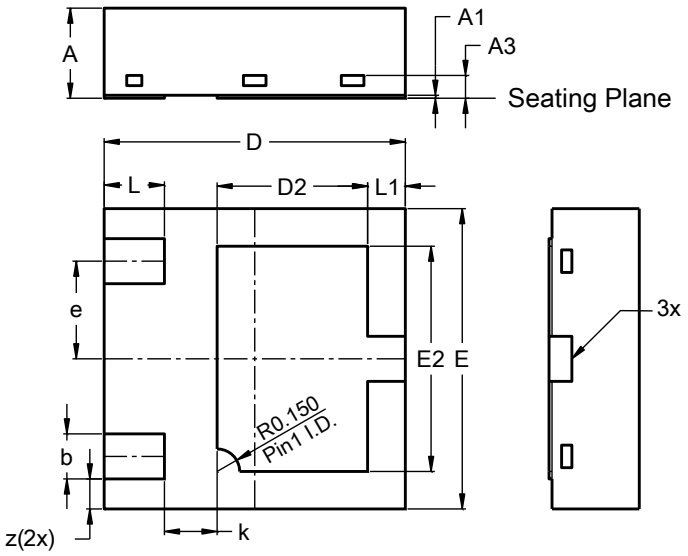
Package Outline Dimensions

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

U-DFN2020-3 (Type C)

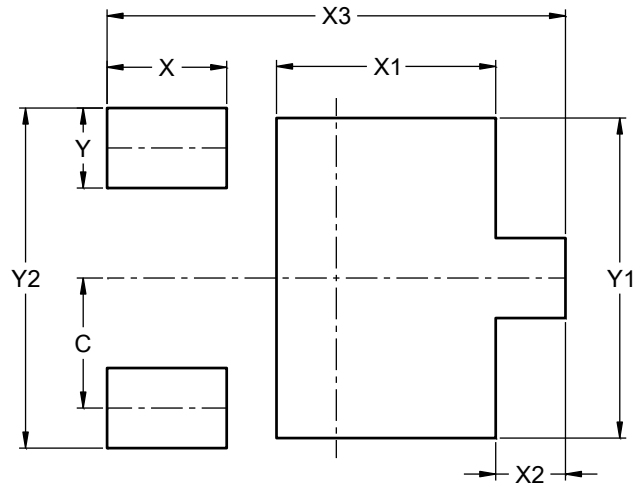


U-DFN2020-3 (Type C)			
Dim	**Min**	**Max**	**Typ**
A	0.55	0.65	0.60
A1	0.00	0.05	0.02
A3	--	--	0.152
b	0.25	0.35	0.30
D	1.95	2.05	2.00
D2	0.90	1.10	1.00
E	1.95	2.05	2.00
E2	1.40	1.60	1.50
e	0.65BSC		
k	--	--	0.35
L	0.35	0.45	0.40
L1	0.20	0.30	0.25
z	--	--	0.20
All Dimensions in mm			

Suggested Pad Layout

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

U-DFN2020-3 (Type C)



Dimensions	Value (in mm)
C	0.650
X	0.600
X1	1.100
X2	0.350
X3	2.300
Y	0.400
Y1	1.600
Y2	1.700

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