

Product Summary

V _{BR} (MIN)	PPP (MAX)	I _R (MAX)
8.33V to 32V	4000W	1000nA

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 peripherals

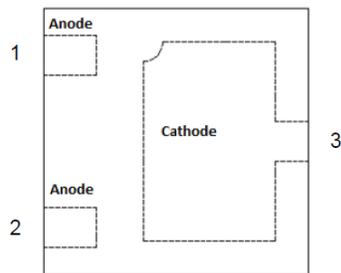
Features

- 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)**
- 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](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

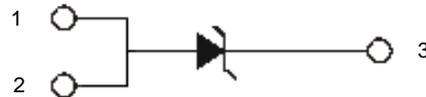
Mechanical Data

- Package: U-DFN2020-3
- Package 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



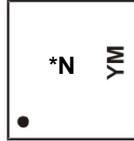
1 and 2 must be electrically connected at the PCB

Ordering Information (Note 4)

Part Number	Package	Marking Code	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
D7V5S1U3LP20-7	U-DFN2020-3 (Type C)	75N	7	8	3,000	Tape & Reel
D10V0S1U3LP20-7	U-DFN2020-3 (Type C)	10N	7	8	3,000	Tape & Reel
D12V0S1U3LP20-7	U-DFN2020-3 (Type C)	12N	7	8	3,000	Tape & Reel
D15V0S1U3LP20-7	U-DFN2020-3 (Type C)	2N	7	8	3,000	Tape & Reel
D18V0S1U3LP20-7	U-DFN2020-3 (Type C)	3N	7	8	3,000	Tape & Reel
D20V0S1U3LP20-7	U-DFN2020-3 (Type C)	4N	7	8	3,000	Tape & Reel
D22V0S1U3LP20-7	U-DFN2020-3 (Type C)	5N	7	8	3,000	Tape & Reel
D24V0S1U3LP20-7	U-DFN2020-3 (Type C)	7N	7	8	3,000	Tape & Reel
D26V0S1U3LP20-7	U-DFN2020-3 (Type C)	6N	7	8	3,000	Tape & Reel
D30V0S1U3LP20-7	U-DFN2020-3 (Type C)	9N	7	8	3,000	Tape & Reel

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 - 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.
 - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 - 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: J = 2022)
 M = Month (ex: 9 = September)

Date Code Key

Year	2018	...	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	F	...	J	K	L	M	N	O	P	R	S	T
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	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 _{θJA}	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} 10/1000μs	Capacitance C _T (pF) V _R = 0V f = 1MHz
		Max	Min	Typ						
D7V5S1U3LP20-7	7.5	8.33	—	9.21	1000	250	27	18.5	12.4	2235
D10V0S1U3LP20-7	10.0	11.1	—	12.8	500	200	18	23.2	18.1	1430
D12V0S1U3LP20-7	12	13.3	—	14.7	200	145	13.5	27.5	23.7	1242
D15V0S1U3LP20-7	15	16.7	—	18.5	200	140	13	30.5	24.6	1054
D18V0S1U3LP20-7	18	20.0	—	22.1	200	120	11	33.3	29.1	880
D20V0S1U3LP20-7	20	22.2	—	24.5	200	110	10	36.4	32.0	785
D22V0S1U3LP20-7	22	24.4	—	26.9	200	98	9	40.8	35.6	727
D24V0S1U3LP20-7	24	26.7	—	29.5	200	90	8	44.4	40.0	667
D26V0S1U3LP20-7	26	28.9	—	31.9	200	80	7	50.0	45.7	625
D30V0S1U3LP20-7	30	32.0	—	42.0	200	62	6	64.5	52.0	387

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. Clamping voltage value is based on an 8x20μs peak pulse current (I_{PP}) waveform, measured from Pin1 and Pin2 to Pin3.

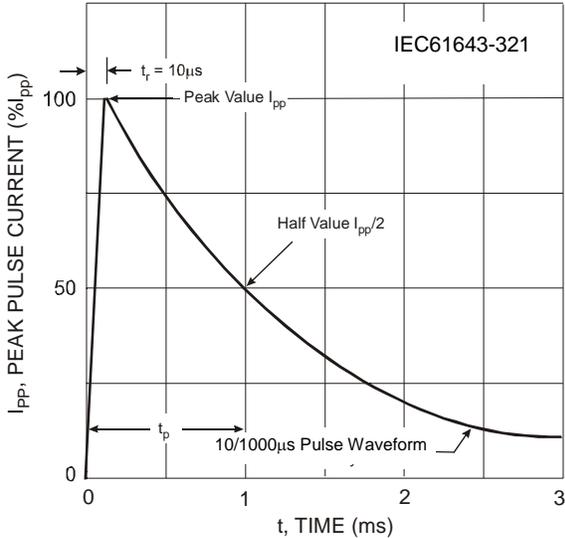


Figure 1 Pulse Waveform

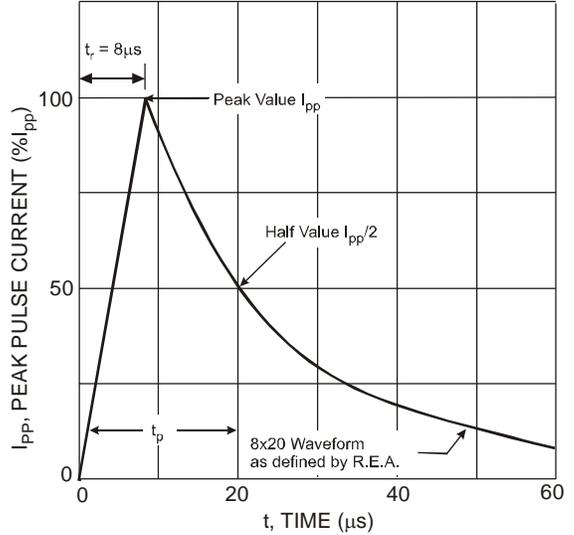


Figure 2 Typical 8 x 20μs Pulse Waveform

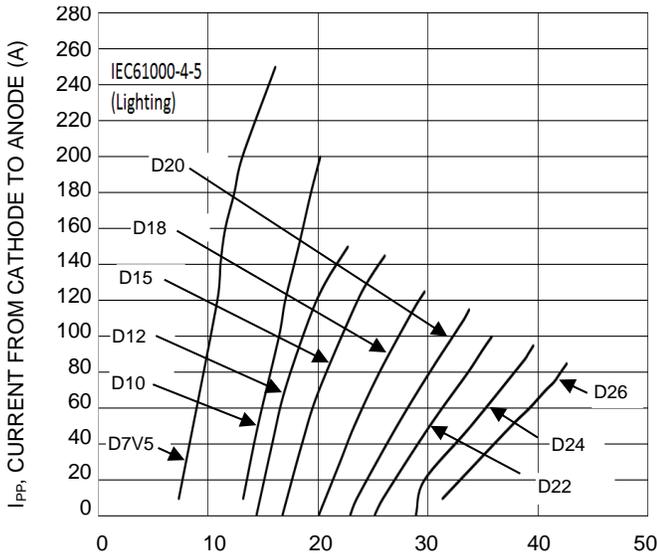


Figure 3 Clamping Voltage Characteristic

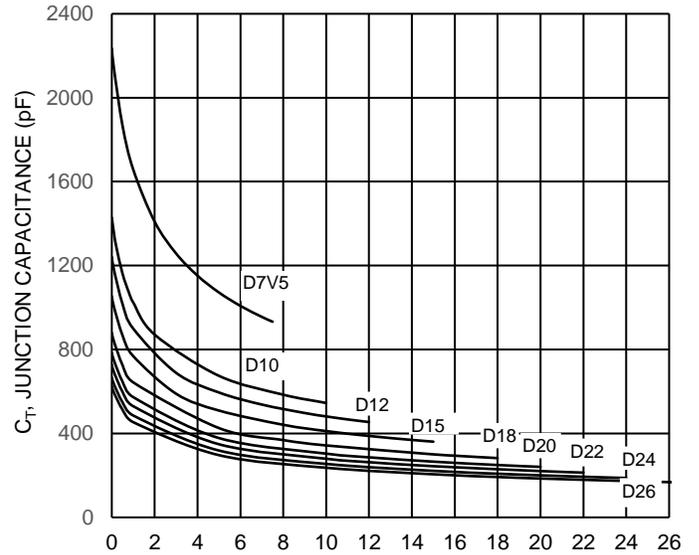


Figure 4 Typical Capacitance

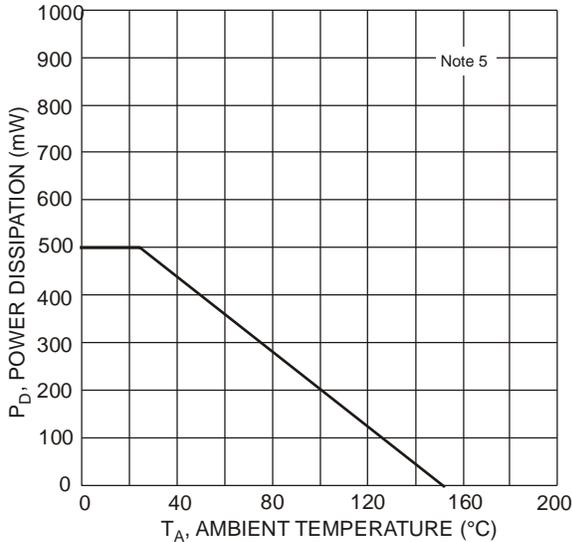
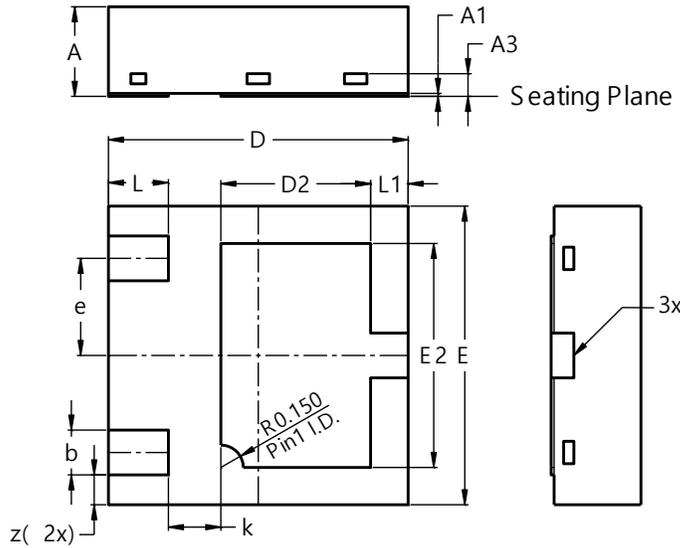


Figure 5 Power Derating Curve

Package Outline Dimensions

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

U-DFN2020-3 (Type C)

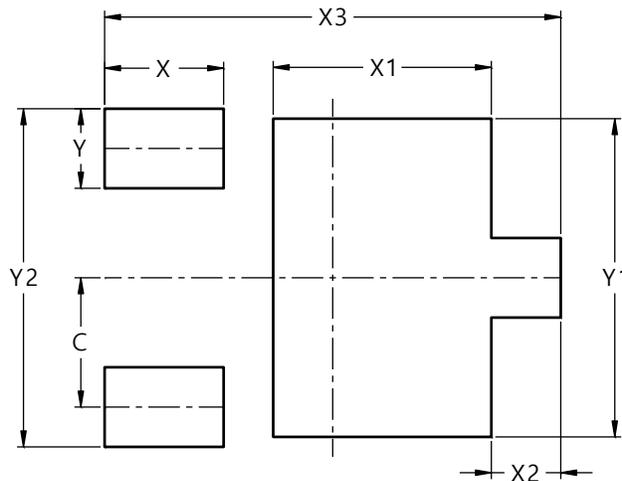


U-DFN2020-3 (Type C)			
Dim	Min	Max	Typ
A	0.55	0.65	0.60
A1	0.00	0.05	0.02
A3	--	--	0.152
b	0.25	0.35	0.30
D	1.95	2.05	2.00
D2	0.90	1.10	1.00
E	1.95	2.05	2.00
E2	1.40	1.60	1.50
e	0.65BSC		
k	--	--	0.35
L	0.35	0.45	0.40
L1	0.20	0.30	0.25
z	--	--	0.20
All Dimensions in mm			

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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