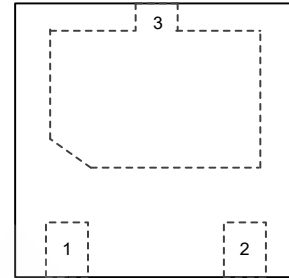


Description

The XU3001P4-3D is a high power TVS, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive lines. The XU3001P4-3D complies with the IEC 61000-4-2 (ESD) with $\sim 30\text{kV}$ air and $\sim 30\text{kV}$ contact discharge. It is assembled into a 3-pin DFN2020-3 lead-free package. Each device will protect one line. The combination of small size, and high surge capability makes them ideal for use in applications such as cellular phones, LCD displays, USB, and multi media card interfaces.



DFN2020-3 Pin configuration

Features

- 5400W peak pulse power (8/20 μs)
- Low leakage: nA level
- Low operating voltage: 30V
- Ultra low clamping voltage
- One power line protects
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC61000-4-5 (Lightning) 175A (8/20 μs)
- RoHS Compliant



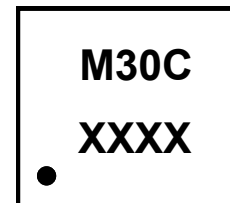
Circuit diagram

Mechanical Characteristics

- Package: DFN2020-3
- Case Material: "Green" Molding Compound
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- Power Management
- Industrial Application
- Power Supply Protection



M30C=Series code

XXXX=Date code

The larger black dot denotes pin 1

Marking (Top View)

Ordering Information

Part Number	Packaging	Reel Size
XU3001P4-3F	3000/Tape & Reel	7 inch

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power ($t_p = 8/20\mu s$) Pin1,2 to Pin3	P_{pp1}	5400	W
Peak pulse power ($t_p = 8/20\mu s$) Pin3 to Pin1,2	P_{pp2}	3000	W
Peak pulse current ($t_p = 8/20\mu s$) Pin1,2 to Pin3	I_{PP1}	175	A
Peak pulse current ($t_p = 8/20\mu s$) Pin3 to Pin1,2	I_{PP2}	150	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	± 30	kV
ESD according to IEC61000-4-2 contact discharge		± 30	
Junction temperature	T_J	125	$^{\circ}C$
Operating temperature	T_{OP}	-40~85	$^{\circ}C$
Lead temperature	T_L	260	$^{\circ}C$
Storage temperature	T_{STG}	-55~150	$^{\circ}C$

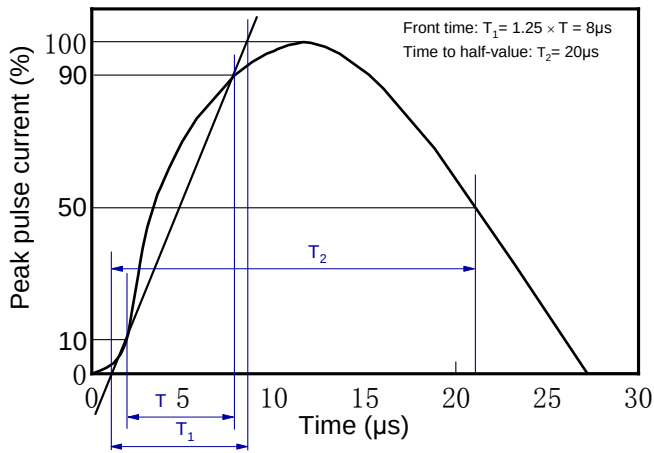
Electrical characteristics ($T_A=25^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				30.0	V
	$V_{HOLD}^{1)}$	$I_R = 10A$	25			
Reverse leakage current	I_R	$V_{RWM} = 30V$			1.0	μA
Reverse breakdown voltage	V_{BR}	$I_{BR} = 1mA$	31.0			V
Clamping voltage ³⁾	V_{CL}	$V_{ESD} = 8kV$		32.0		V
Clamping voltage ⁴⁾	V_{CL}	$I_{PP} = 150A, t_p = 8/20\mu s$		29.0	31.0	V
		$I_{PP} = 175A, t_p = 8/20\mu s$		31.0	34.0	V
Junction capacitance	C_J	$V_R = 0V, f = 1MHz$		350	450	pF
		$V_R = 2V, f = 1MHz$		255	355	pF

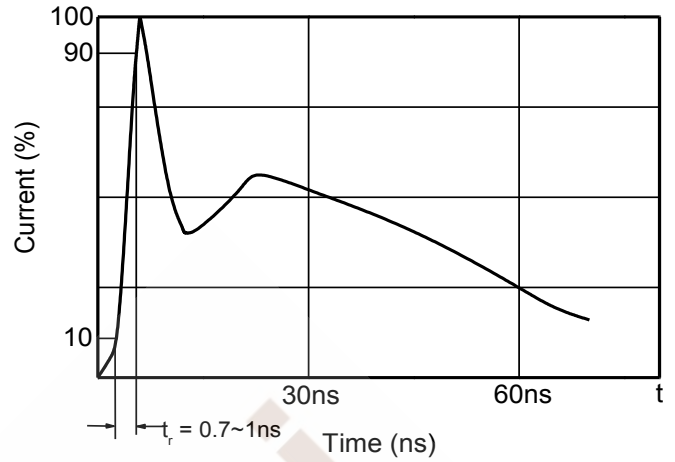
Notes:

- 1) Maximum working voltage needs to be less than V_{HOLD} in actual application.
- 2) Contact discharge mode, according to IEC61000-4-2.
- 3) Non-repetitive current pulse, according to IEC61000-4-5.

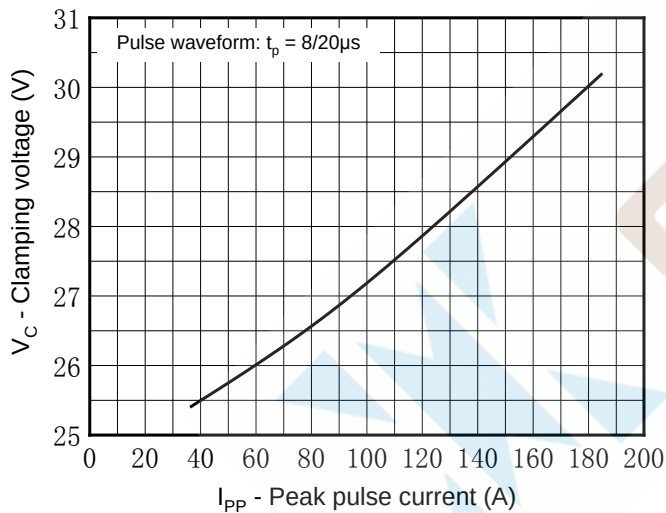
Typical characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)



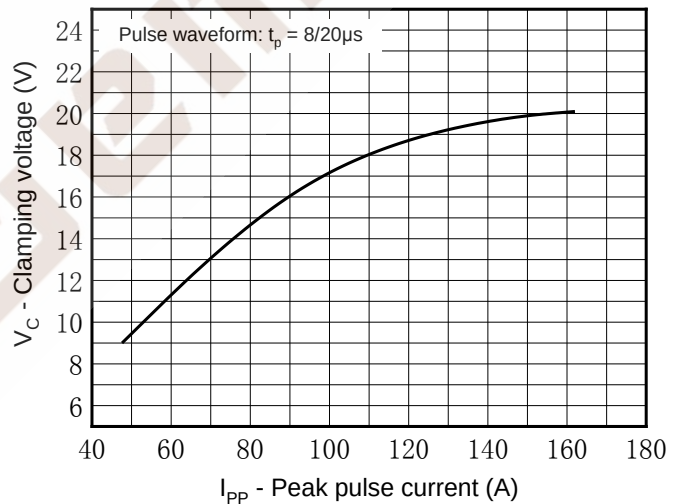
8/20 μs waveform per IEC61000-4-5



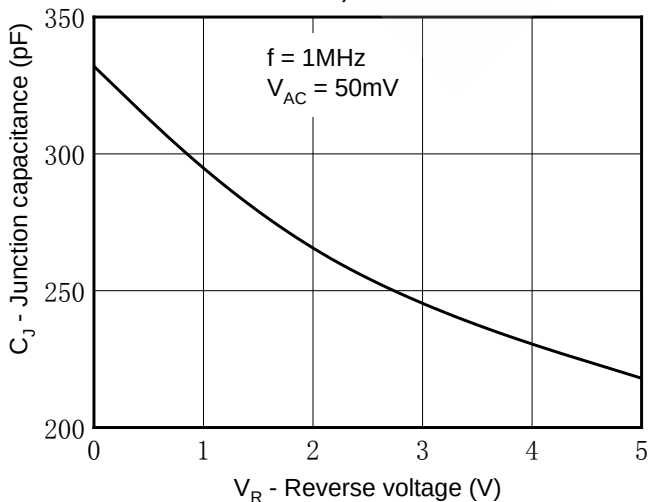
Contact discharge current waveform per IEC61000-4-2



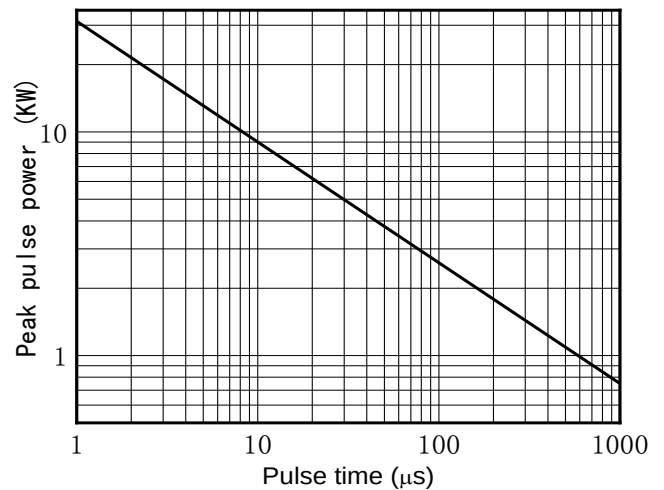
**Clamping voltage vs. Peak pulse current
(Pin1,2 to Pin3)**



**Clamping voltage vs. Peak pulse current
(Pin3 to Pin1,2)**

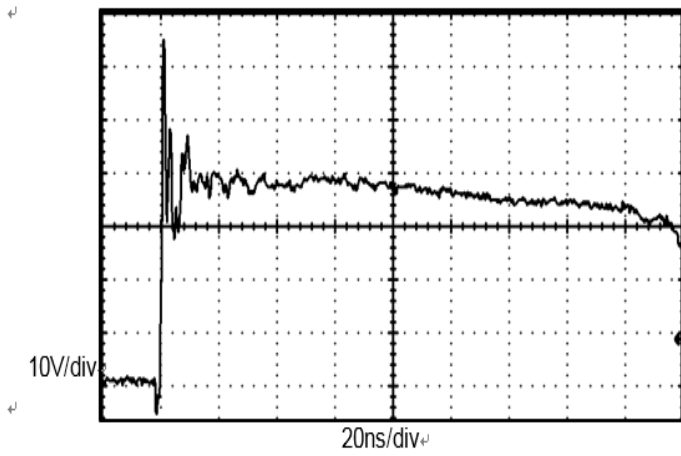


Capacitance vs. Reverse voltage

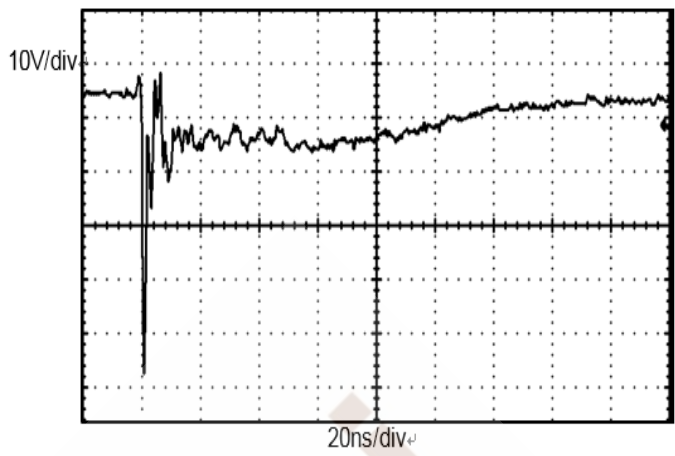


Non-repetitive peak pulse power vs. Pulse time

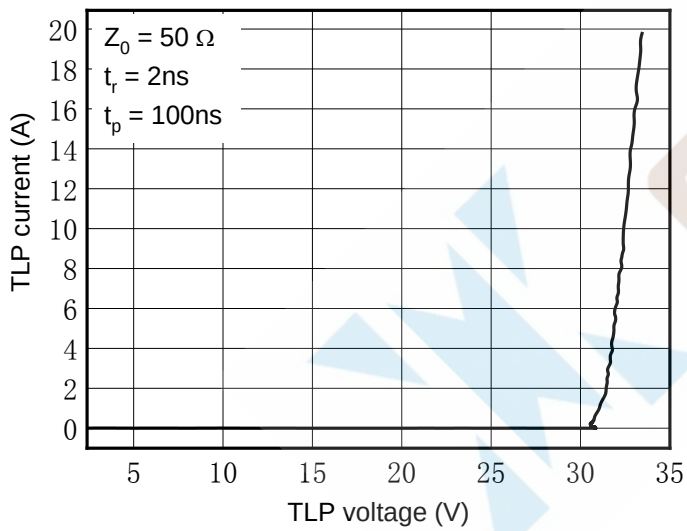
Typical characteristics ($T_A = 25^\circ\text{C}$, unless otherwise noted)



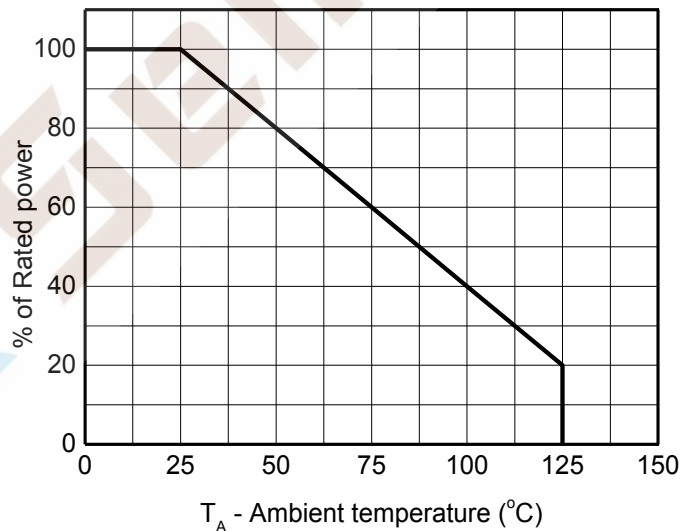
ESD clamping
(+8kV contact discharge per IEC61000-4-2)



ESD clamping
(-8kV contact discharge per IEC61000-4-2)

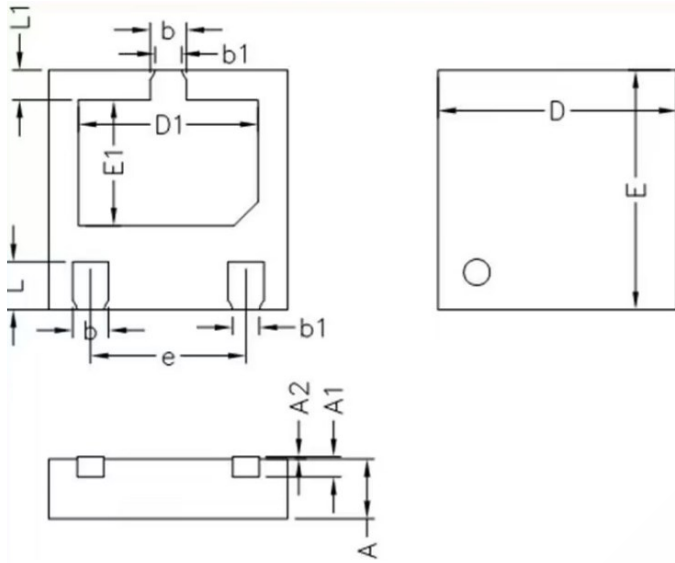


TLP Measurement



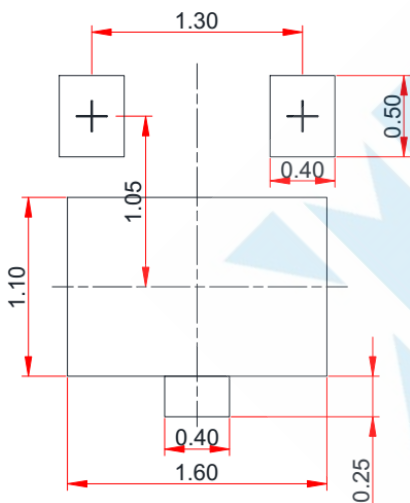
Power derating vs. Ambient temperature

DFN2020-3 Package Outline Drawing



SYM	MILLIMETERS		
	MIN	NOM	MAX
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D1	1.45	1.50	1.55
E1	1.00	1.05	1.10
L1	0.20	0.25	0.30
L	0.35	0.40	0.45
b1	0.22REF		
b	0.25	0.30	0.35
e	1.30BSC		
A1	0.15REF		
A2	0.00	0.02	0.05
A	0.45	0.50	0.55

Suggested Land Pattern



Unit: mm

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