

Description

The DC56161D30 is a Uni-directional TVS (Transient Voltage Suppressor). It is specifically designed to protect sensitive electronic components which are connected to power lines, from over-stress caused by ESD (Electrostatic Discharge), EFT (Electrical Fast Transient) and Lightning. The DC56161D30 may be used to provide ESD protection up to $\pm 30\text{kV}$ (contact and air discharge) according to IEC61000-4-2, and withstand peak pulse current up to 175A (8/20 μs) according to IEC61000-4-5.

Features

- ◆ 6000W peak pulse power (8/20 μs)
- ◆ 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

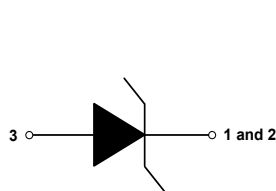
Mechanical Characteristics

- ◆ Package: DFN2020-3
- ◆ Case Material: "Green" Molding Compound.
- ◆ Moisture Sensitivity: Level 3 per J-STD-020
- ◆ Terminal Connections: See Diagram Below
- ◆ Marking Information: See Below

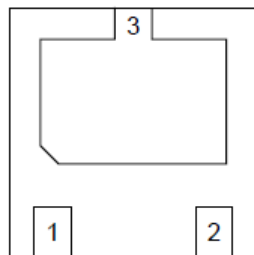
Applications

- ◆ Power lines
- ◆ Cellular handsets
- ◆ Tablets
- ◆ Microprocessors
- ◆ Portable Electronics

Dimensions and Pin Configuration



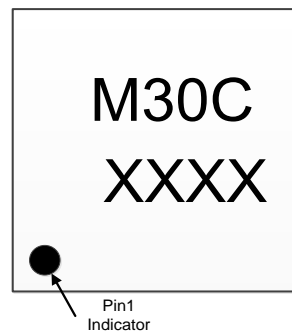
Circuit Diagram



Transparent top view

Pin Schematic

Marking Information



M30C = Series code
 XX = Date code

Ordering Information

Part Number	Marking	Packaging	Reel Size
DC56161D30	M30C	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	$^{\circ}C$

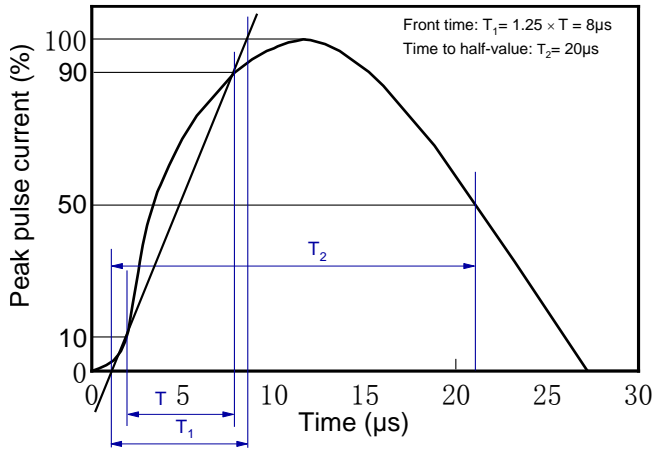
Electrical characteristics ($T_A=25^{\circ}C$, unless otherwise noted)

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

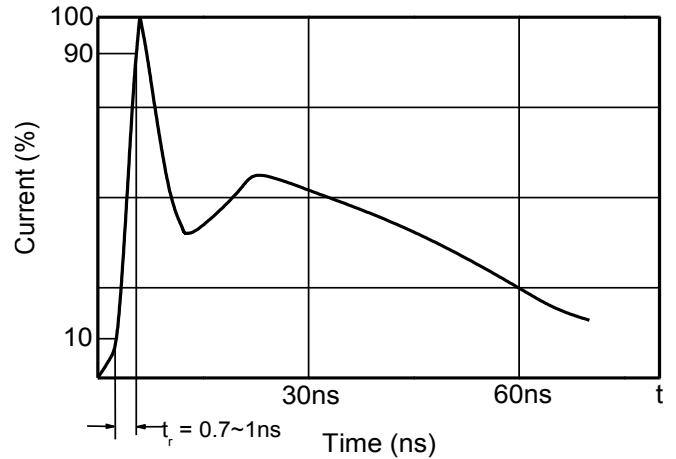
Notes:

- 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.

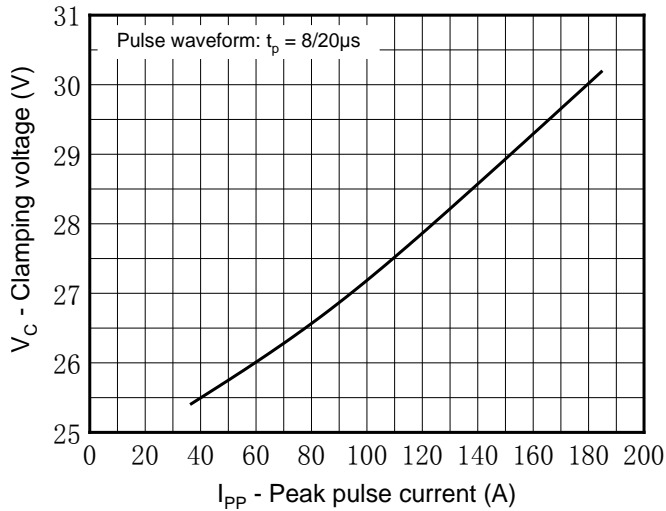
Typical characteristics (T_A=25°C, unless otherwise noted)



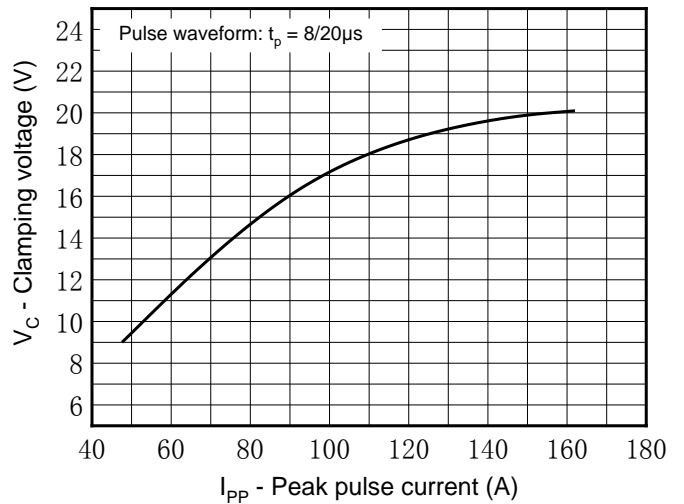
8/20µs waveform per IEC61000-4-5



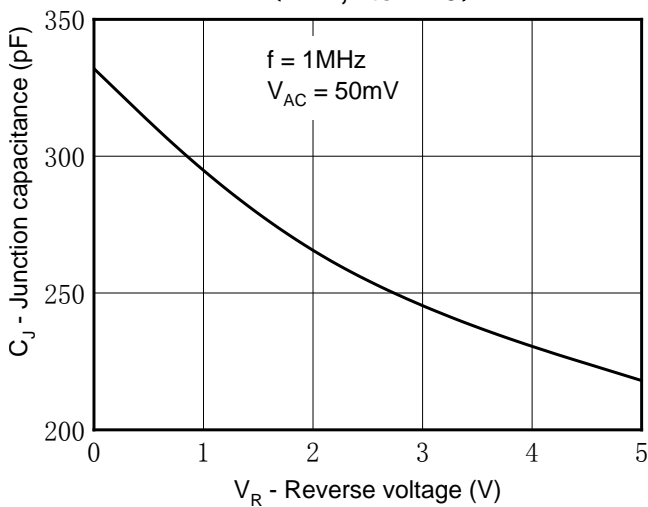
Contact discharge current waveform per IEC61000-4-2



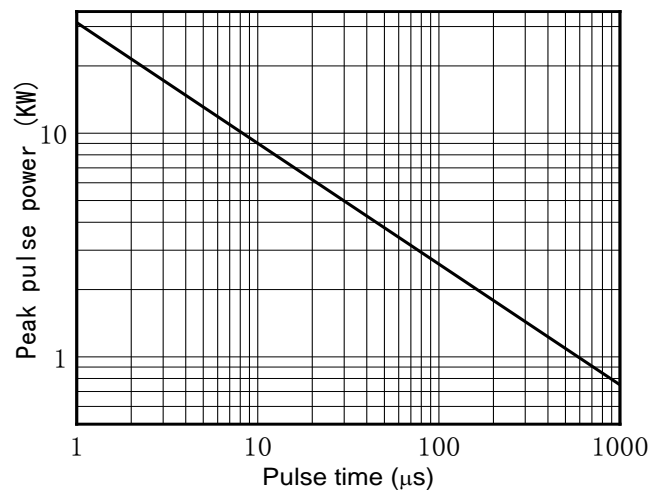
Clamping voltage vs. Peak pulse current (Pin1,2 to Pin3)



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

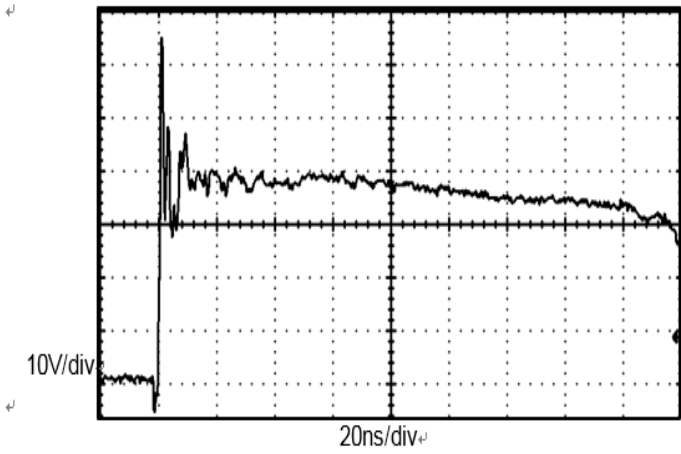


Capacitance vs. Reverse voltage

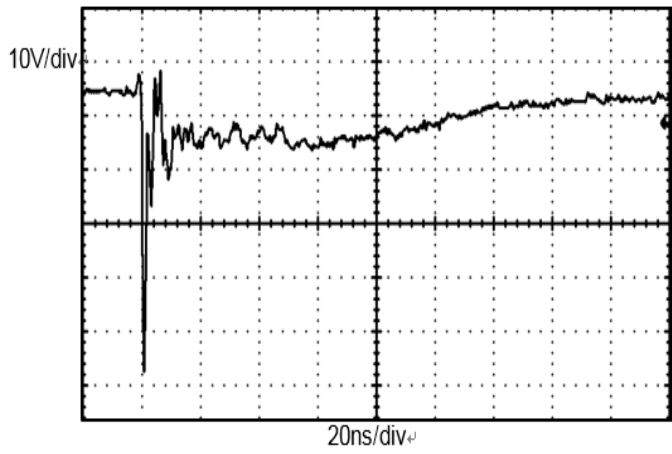


Non-repetitive peak pulse power vs. Pulse time

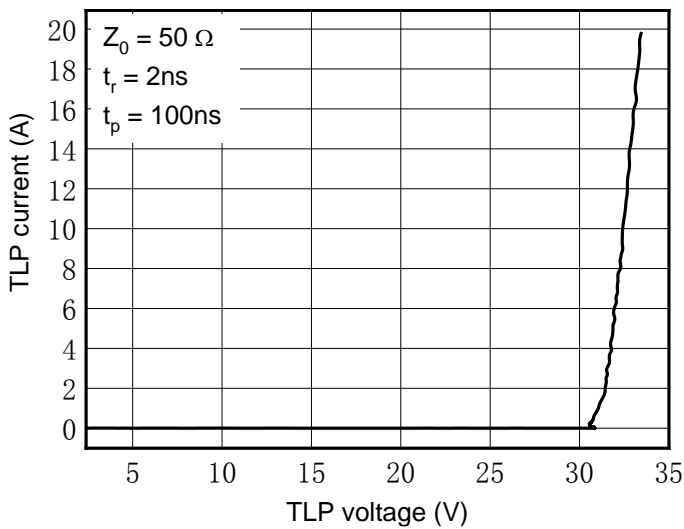
Typical characteristics ($T_A = 25^\circ\text{C}$, unless otherwise noted)



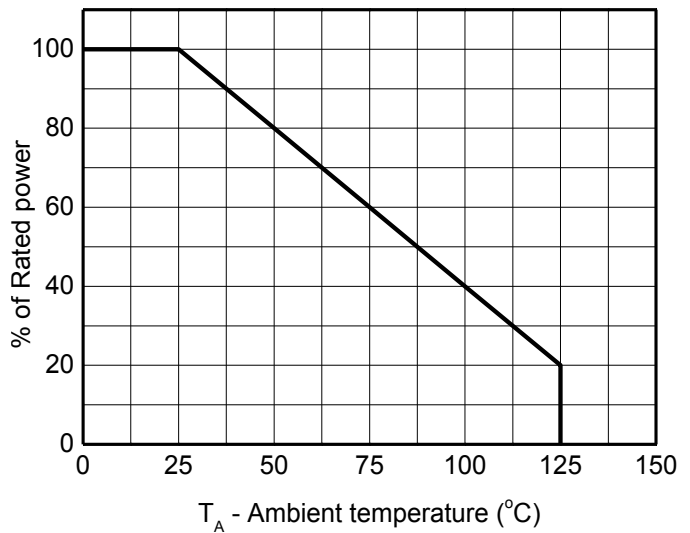
ESD clamping
(+8kV contact discharge per IEC61000-4-2)



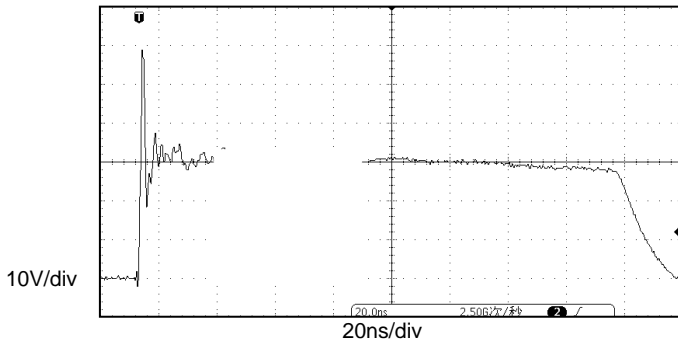
ESD clamping
(-8kV contact discharge per IEC61000-4-2)



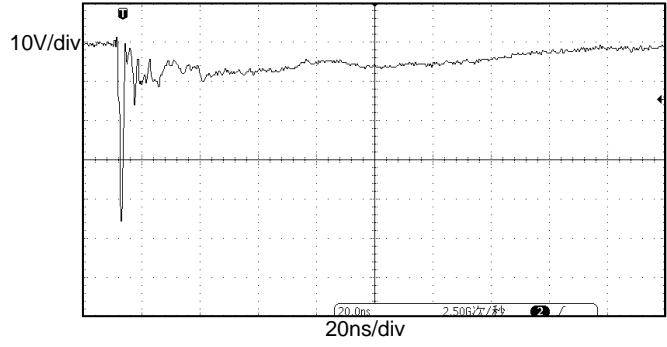
TLP Measurement



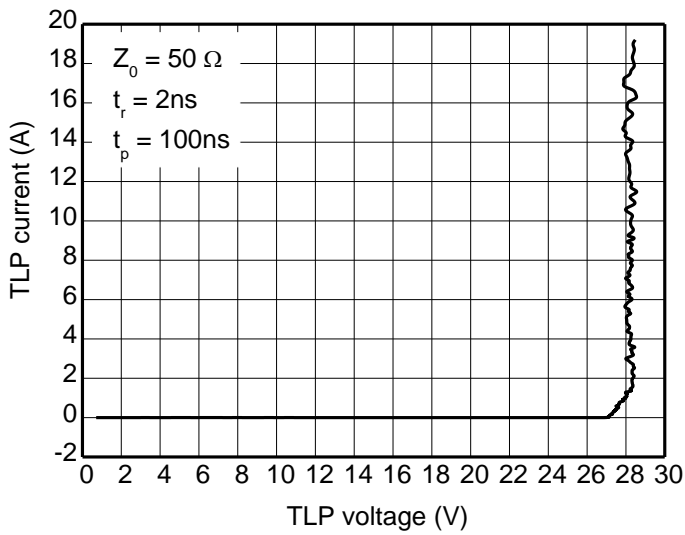
Power derating vs. Ambient temperature



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

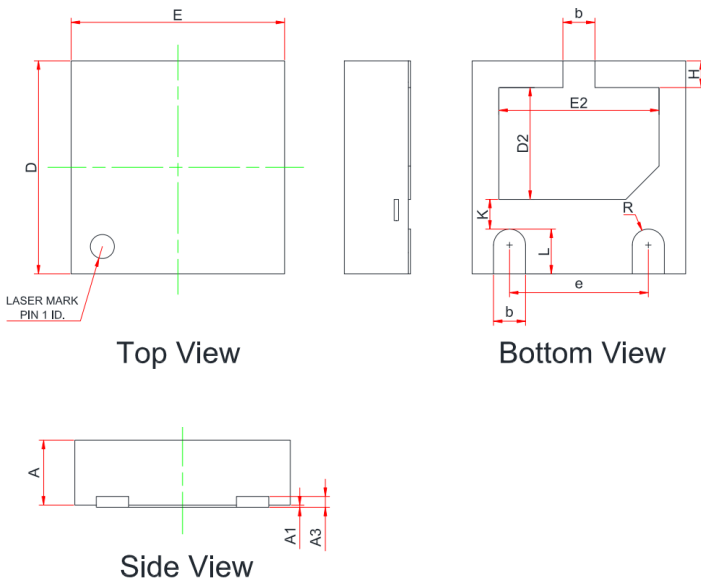


ESD clamping
(-8kV contact discharge per IEC61000-4-2)



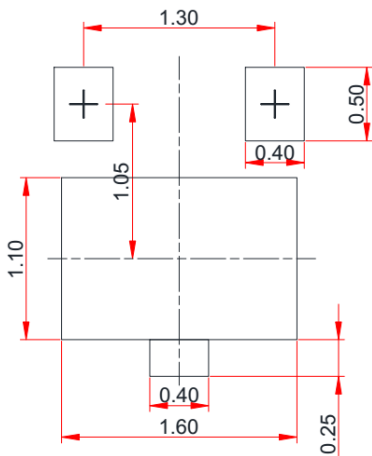
TLP Measurement

DFN2020-3 Package Outline Drawing



	MILLIMETERS		
	MIN	NOM	MAX
A	0.45		0.65
A1	0.00	0.02	0.05
A3	0.10REF.		
b	0.25	--	0.35
D	1.90	--	2.10
E	1.90	--	2.10
D2	0.95	--	1.15
E2	1.40	--	1.60
e	1.20		1.40
H	0.20	--	0.30
K	0.20		0.40
L	0.35	--	0.45
R	0.13	--	--

Suggested Land Pattern



Unit: mm

Contact Information

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