Description

The DC4581P6H is a bi-directional TVS diode, 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 data and power line. The DC4581P6H complies with the IEC 61000-4-2 (ESD) standard with ±30kV air and ±30kV contact discharge. It is assembled into an ultra-small 1.6x1.0x0.5mm lead-free DFN package. The small size and high ESD surge protection make DC4581P6H an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

Features

- Small package: 1.6 x1.0 x0.5mm
- Protects one data or power line
- Ultra low leakage: nA level
- Low clamping voltage
- 2-pin leadless package
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - IEC61000-4-5 (Lightning) 180A (8/20μs)
- RoHS Compliant

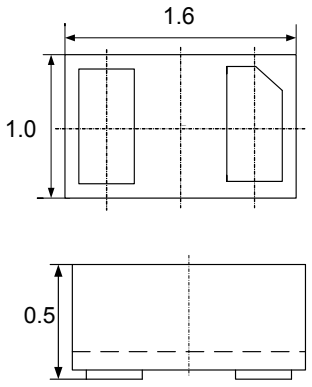
Mechanical Characteristics

- Package: DFN1610-2
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

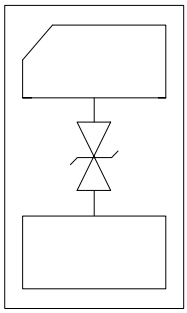
Applications

- Mobile Phones
- Battery Protection
- Power Line Protection
- Vbat pin for Mobile Devices
- Hand Held Portable Applications

Dimensions and Pin Configuration



Package Dimensions



Circuit and Pin Schematic

Marking Information

48H = Device Marking Code

Ordering Information

Part Number	Marking	Packaging	Reel Size
DC4581P6H	48H	3000/Tape & Reel	7 inch

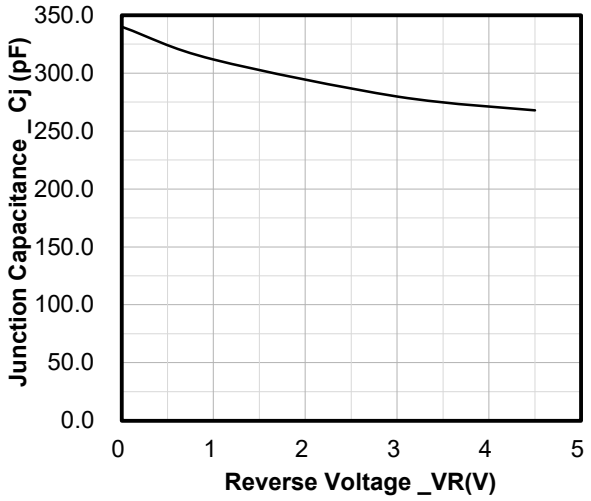
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	2600	W
Peak Pulse Current (8/20μs)	Ipp	180	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±30 ±30	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

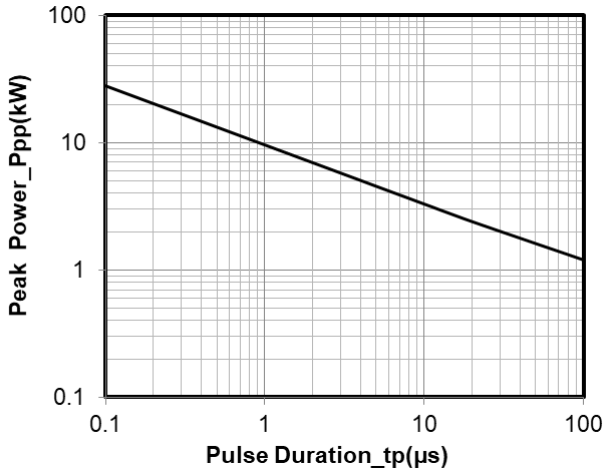
Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			4.5	V	
Breakdown Voltage	V_{BR}	4.7	5.3		V	I_T = 1mA
Reverse Leakage Current	I_R			1.0	μA	V_{RWM} = 4.5V
Clamping Voltage	V_C		7.0	8.0	V	I_{PP} = 20A (8 x 20μs pulse)
Clamping Voltage	V_C		15	17	V	I_{PP} = 180A (8 x 20μs pulse)
Junction Capacitance	C_J		340		pF	VR = 0V, f = 1MHz

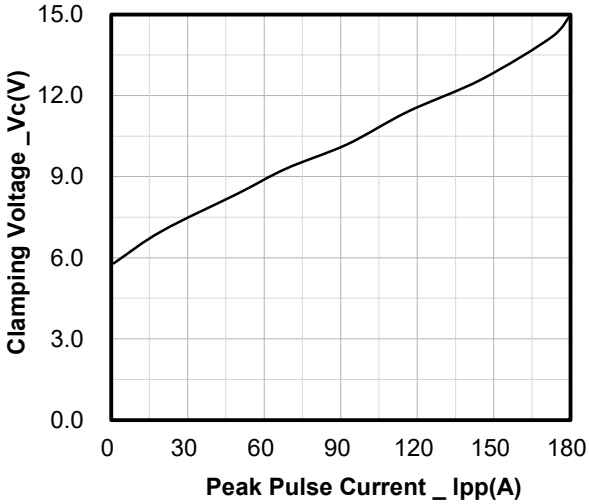
Typical Performance Characteristics (T_A=25℃ unless otherwise Specified)



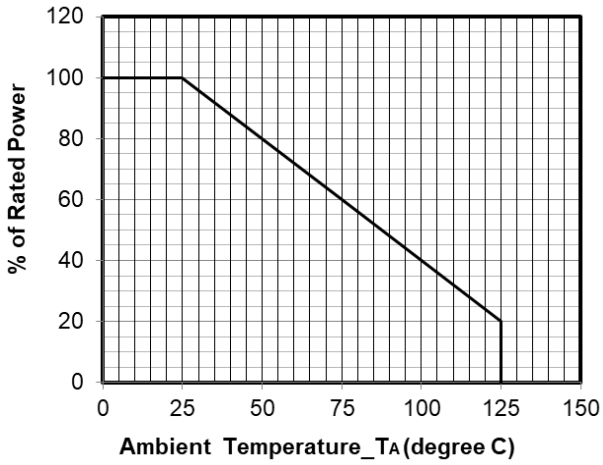
Junction Capacitance vs. Reverse Voltage



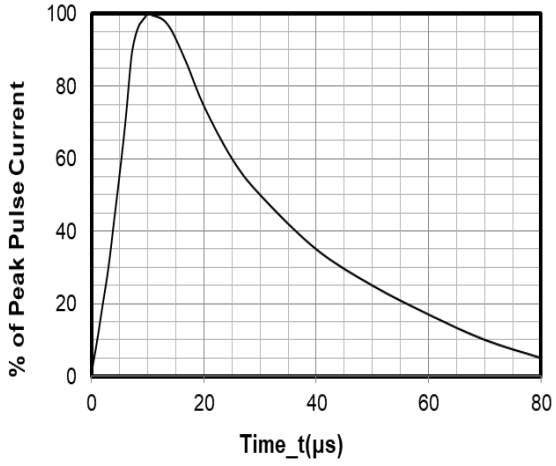
Peak Pulse Power vs. Pulse Time



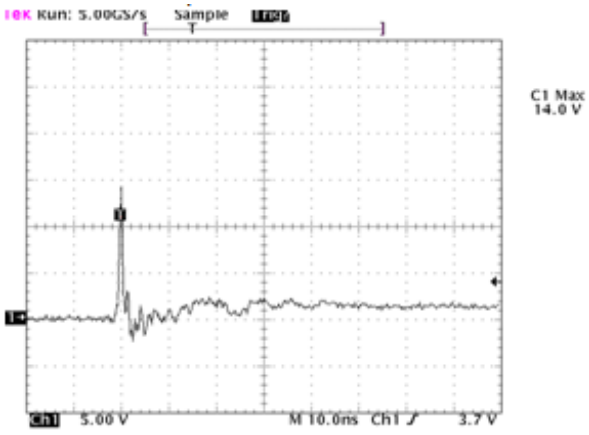
Clamping Voltage vs. Peak Pulse Current (tp = 8/20μs)



Power Derating Curve



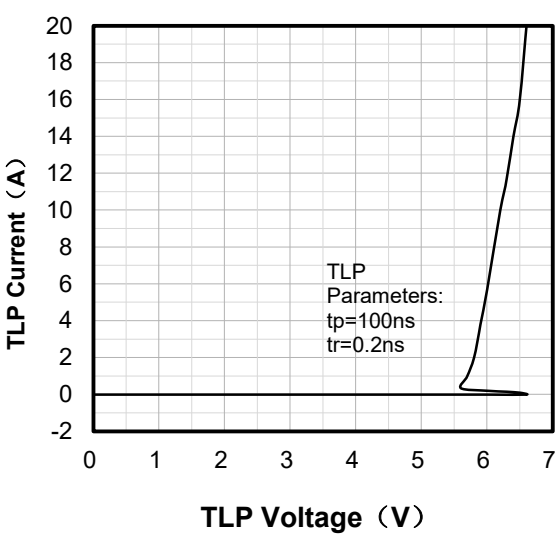
8 X 20μs Pulse Waveform

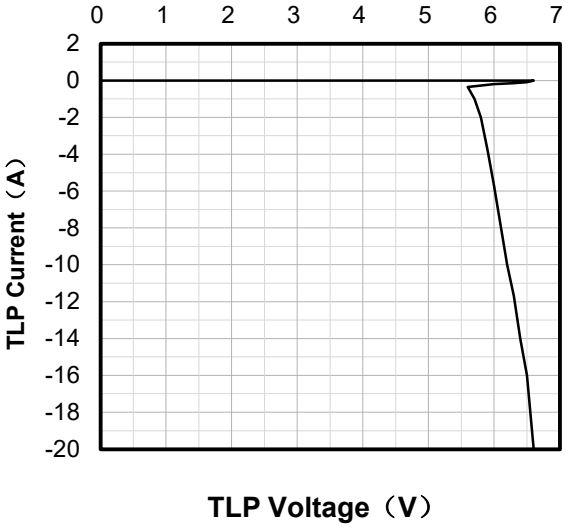


Note：Data is taken with a 10x attenuator

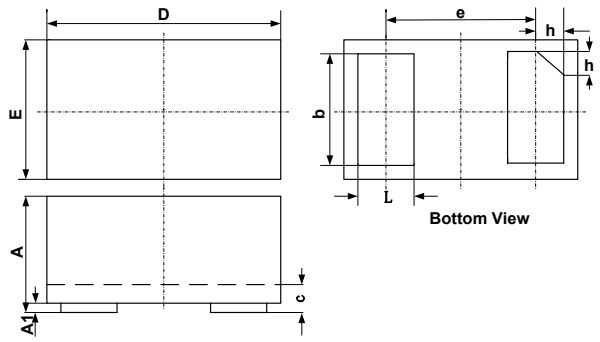
ESD Clamping Voltage

8 kV Contact per IEC61000−4−2


TLP Current（A）
TLP Voltage（V）
TLP
Parameters:
tp=100ns
tr=0.2ns

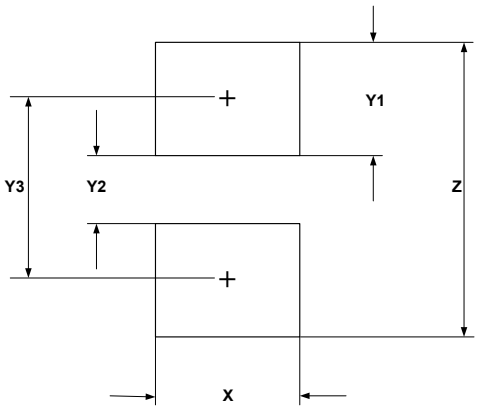

TLP Current（A）
TLP Voltage（V）

DFN1610-2 Package Outline Drawing



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.75	0.80	0.85	0.030	0.032	0.034
c	0.10	0.15	0.20	0.004	0.006	0.008
D	1.55	1.60	1.65	0.062	0.064	0.066
e	1.10 BSC			0.044 BSC		
E	0.95	1.00	1.05	0.038	0.040	0.042
L	0.35	0.40	0.45	0.014	0.016	0.018
h	0.15	0.20	0.25	0.006	0.008	0.010

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	1.00	0.040
Y1	0.62	0.025
Y2	0.60	0.024
Y3	1.22	0.049
Z	1.85	0.074

Contact Information

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