

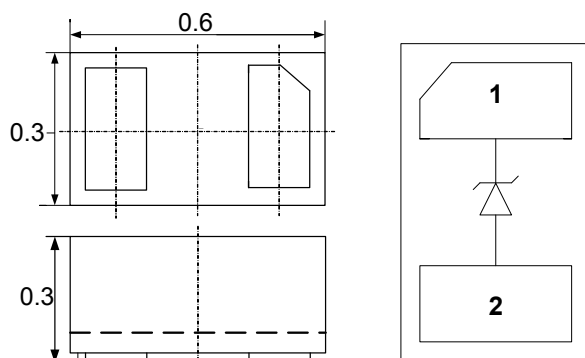
### Description

The UE030603D is an uni-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 high-speed data lines. The UE030603D has an ultra-low capacitance with a typical value at 0.6pF, and complies with the IEC 61000-4-2 (ESD) standard with  $\pm 25\text{kV}$  air and  $\pm 20\text{kV}$  contact discharge. It is assembled into an ultra-small 0.6x0.3x0.3mm lead-free DFN package. The small size, ultra-low capacitance and high ESD surge protection make UE030603D an ideal choice to protect cell phone, digital video interfaces, HDMI, DVI, USB2.0, USB3.0, and other high speed ports.

### Mechanical Characteristics

- ◆ Package: DFN0603-2 (0.6 x0.3 x0.3mm)
- ◆ Case Material: "Green" Molding Compound.
- ◆ UL Flammability Classification Rating 94V-0
- ◆ Moisture Sensitivity: Level 3 per J-STD-020
- ◆ Terminal Connections: See Diagram Below
- ◆ Marking Information: See Below

### Dimensions and Pin Configuration



Circuit and Pin Schematic

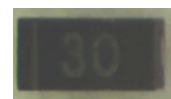
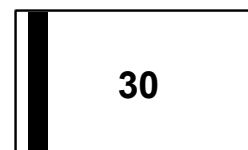
### Features

- ◆ Ultra small package: 0.6 x0.3 x0.3mm
- ◆ Ultra low capacitance: 0.6pF typical
- ◆ Ultra low leakage: nA level
- ◆ Operating voltage: 3.3V
- ◆ Low clamping voltage
- ◆ 2-pin leadless package
- ◆ Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
  - Air discharge:  $\pm 25\text{kV}$
  - Contact discharge:  $\pm 20\text{kV}$
  - IEC61000-4-5 (Lightning) 5A (8/20 $\mu\text{s}$ )
- ◆ RoHS Compliant

### Applications

- ◆ Cellular Handsets and Accessories
- ◆ Display Ports
- ◆ MDDI Ports
- ◆ USB Ports
- ◆ Digital Visual Interface(DVI)
- ◆ PCI Express and Serial SATA Ports

### Marking Information



30 = Device Marking Code  
Bar denotes Cathode

### Ordering Information

Part Number	Marking	Packaging	Reel Size
UE030603D	30	10000/Tape & Reel	7 inch

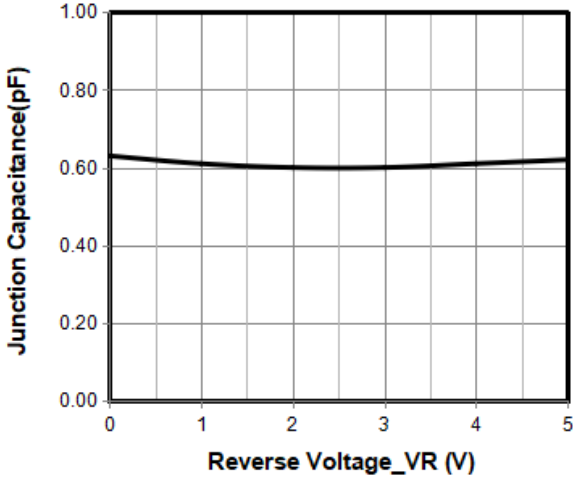
**Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise specified)**

Parameter	Symbol	Value	Unit
Peak Pulse Power(8/20μs)	Ppk	70	W
Peak Pulse Current(8/20μs)	Ipp	5	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	VESD	±25 ±20	kV
Operating Temperature Range	T <sub>J</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to +125	°C

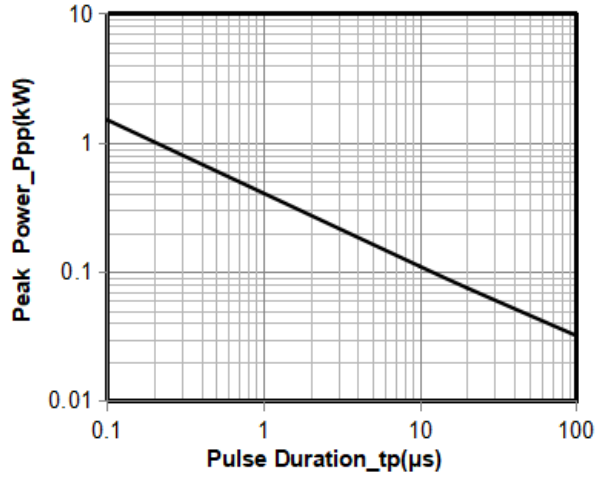
**Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V <sub>RWM</sub>			3.3	V	Pin 1 to Pin 2
Breakdown Voltage	V <sub>BR</sub>		6.2		V	I <sub>T</sub> = 1mA, Pin 1 to Pin 2
Reverse Leakage Current	I <sub>R</sub>			0.5	μA	V <sub>RWM</sub> = 3.3V, Pin 1 to Pin 2
Forward Voltage	V <sub>F</sub>		1.0	1.2	V	I <sub>F</sub> = 10mA, Pin 2 to Pin 1
Clamping Voltage	V <sub>C</sub>			10	V	I <sub>PP</sub> = 1A (8 x 20μs pulse), Pin 1 to Pin 2
Clamping Voltage	V <sub>C</sub>			15	V	I <sub>PP</sub> = 5A (8 x 20μs pulse), Pin 1 to Pin 2
Junction Capacitance	C <sub>J</sub>		0.6	0.8	pF	V <sub>R</sub> = 0V, f = 1MHz

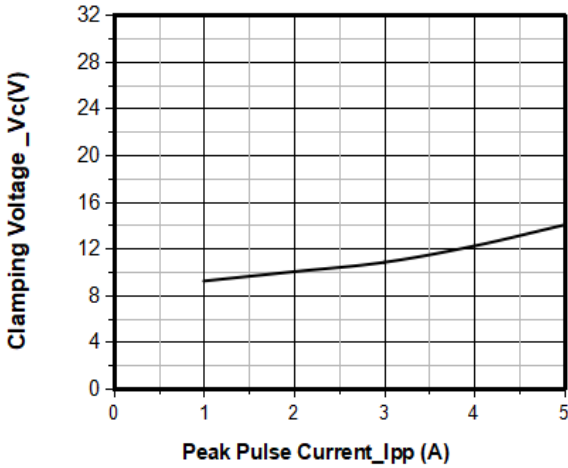
**Typical Performance Characteristics (TA=25°C unless otherwise Specified)**



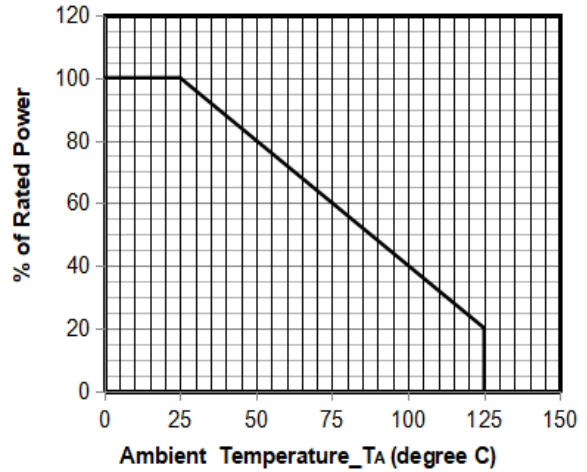
Junction Capacitance vs. Reverse Voltage



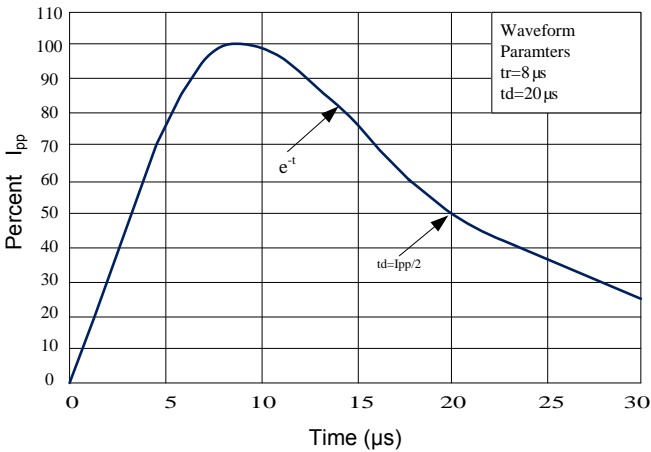
Peak Pulse Power vs. Pulse Time



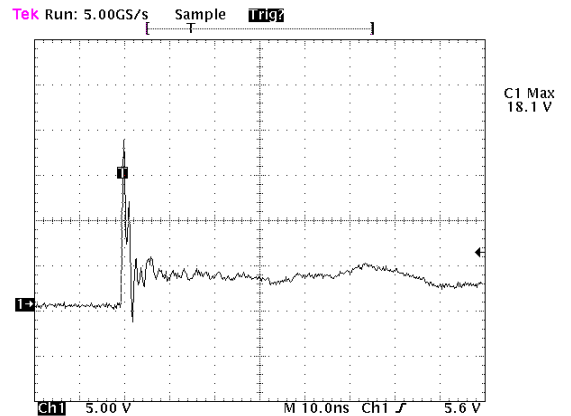
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform

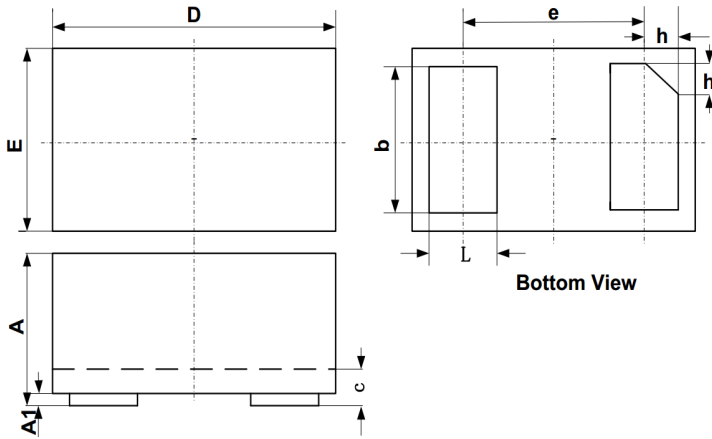


Note: Data is taken with a 10x attenuator

ESD Clamping Voltage

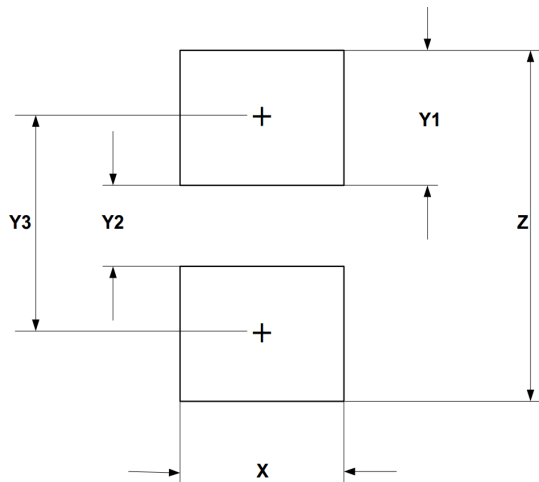
8 kV Contact per IEC61000-4-2

**DFN0603-2 Package Outline Drawing**



SYM	DIMENSIONS		
	MILLIMETERS		
	MIN	NOM	MAX
A	0.230		0.330
A1	0.000	0.020	0.050
b	0.215	0.245	0.275
c	0.120	0.150	0.180
D	0.550	0.600	0.650
e	0.355 BSC		
E	0.250	0.300	0.350
L	0.160	0.190	0.220
h	0.079 BSC		

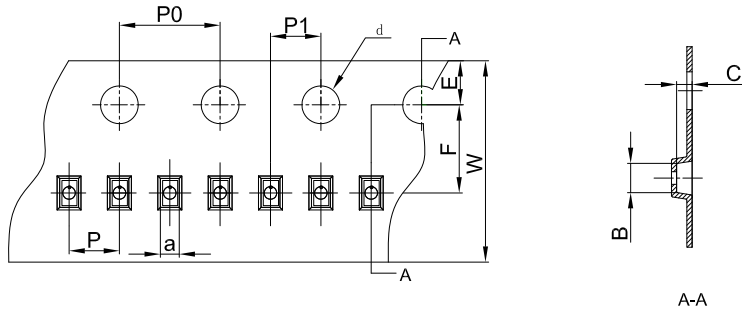
**Suggested Land Pattern**



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	0.30	0.012
Y1	0.25	0.010
Y2	0.15	0.006
Y3	0.40	0.016
Z	0.65	0.026

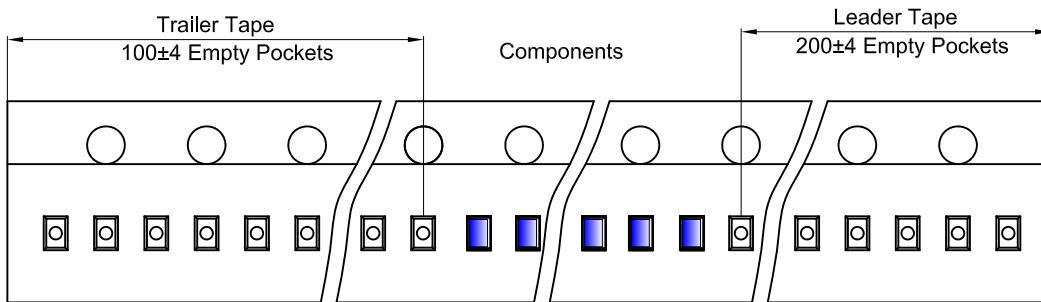
TAPE AND REEL INFORMATION

Embossed Carrier Tape

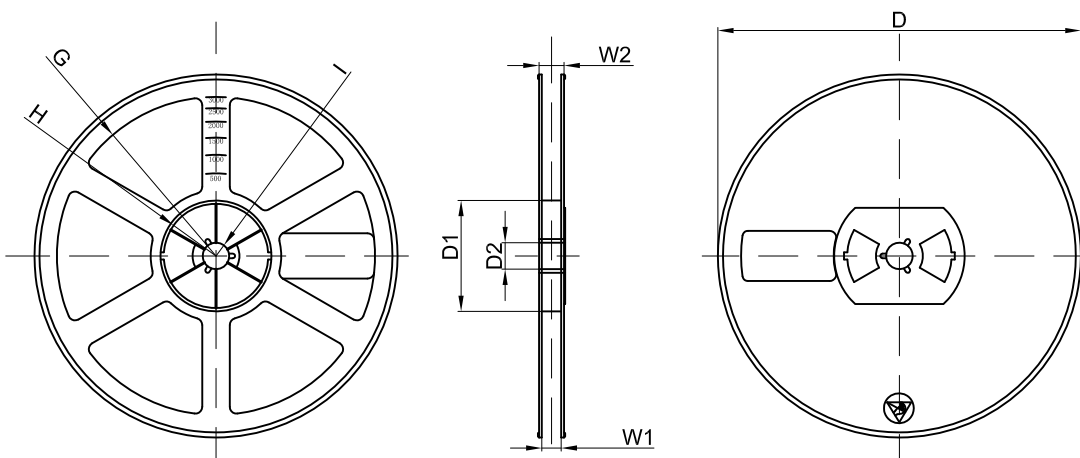


Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
DFNWB0.6x0.3-2L-B	0.41	0.70	0.38	Ø1.50	1.75	3.50	4.00	2.00	2.00	8.00

Tape Leader and Trailer



Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
10,000 pcs	7 inch	150,000 pcs	203×203×195	600,000 pcs	438×438×220	