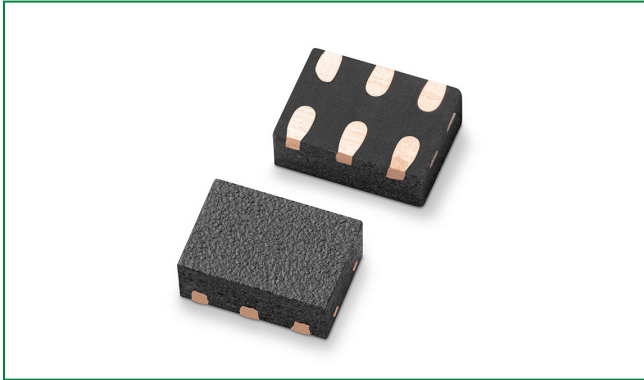


SC3V3-04UTG

3.3 V, 30 kV, 3 A, μ DFN-6, General Purpose ESD protection

HF RoHS Pb

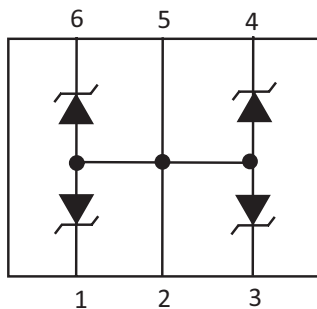


Description

The SC3V3-04UTG unidirectional TVS is fabricated in a proprietary silicon avalanche technology and these each I/O pin provide a high ESD (electrostatic discharge) protection level for electronic equipment.

The SC3V3-04UTG TVS can safely absorb repetitive ESD strikes of ± 30 kV (contact and air discharge as defined in IEC 61000-4-2) without any performance degradation. In addition, it can safely dissipate a 3 A 8/20 μ s surge event as defined in IEC 61000-4-5, 2nd edition.

Functional Block Diagram



Features

- ESD, IEC 61000-4-2, ± 30 kV contact/air
- EFT, IEC 61000-4-4, 40 A (5/50 ns)
- Maximum surge tolerance, IEC 61000-4-5, 2nd edition, 3 A (8/20 μ s)
- Low leakage current of 200 nA (MAX) at 3.3 V
- Halogen-free, lead-free and RoHS compliant
- Moisture Sensitivity Level (MSL-1)

Applications

- Digital cameras
- PDAs
- Power tools
- Portable medical components
- Portable navigation components
- Smart phones

Life Support Note:

Not Intended for Use in Life Support or Life Saving Applications

The products shown herein are not designed for use in life sustaining or life saving applications unless otherwise expressly indicated.

SC3V3-04UTG

3.3 V, 30 kV, 3 A, μ DFN-6, General Purpose ESD protection

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
I_{PP}	Peak Current ($t_p = 8/20 \mu s$)	3.0	A
T_{OP}	Operating Temperature	-40 to 125	°C
T_{STOR}	Storage Temperature	-55 to 150	°C

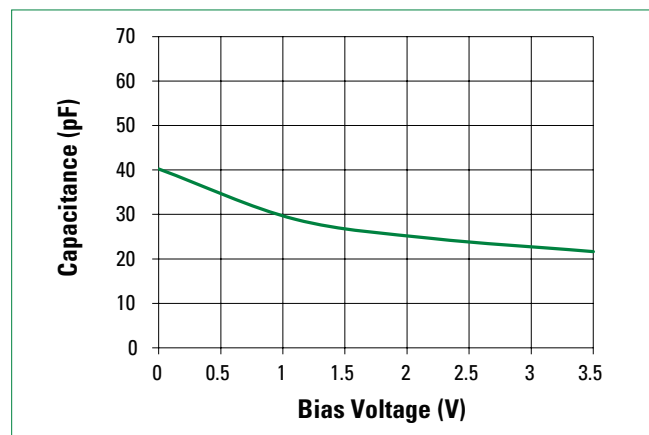
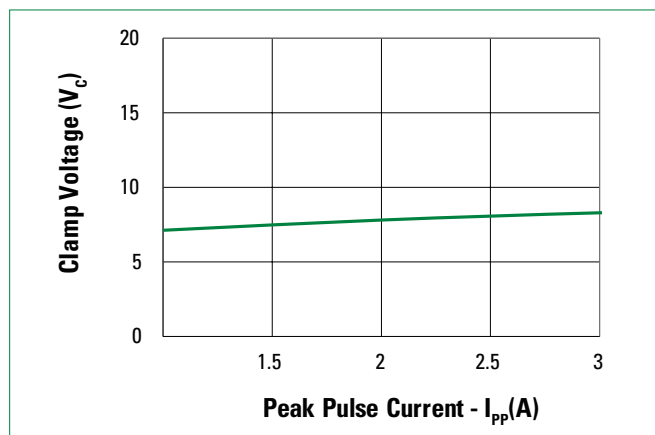
Caution: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the component. This is a stress only rating and operation of the component at these or any other conditions above those indicated in the operational sections of this specification is not implied.

Electrical Characteristics ($T_{OP} = 25^\circ C$)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reverse Standoff Voltage	V_{RWM}				3.3	V
Breakdown Voltage	V_{BR}	$I_R = 1 \text{ mA}$	4.5	5.5	6.5	V
Reverse Leakage Current	I_{LEAK}	$V_R = 3.3 \text{ V}$		75	200	nA
Clamp Voltage ¹	V_C	$I_{PP} = 16 \text{ A}$, $t_p = 0.2/100\text{ns}$ (TLP), I/O to GND		10.5		V
		$I_{PP} = 3 \text{ A}$, $t_p = 8/20 \mu s$, I/O to GND		8.5		V
Dynamic Resistance ²	R_{DYN}	$(V_{C2} - V_{C1}) / (I_{PP2} - I_{PP1})$, I/O to GND		500		m Ω
ESD Withstand Voltage ^{1,3}	V_{ESD}	IEC 61000-4-2 (Contact Discharge)	± 30			kV
		IEC 61000-4-2 (Air Discharge)	± 30			kV
Diode Capacitance ¹	C_{IO-GND}	Reverse Bias = 0 V, $f = 1 \text{ MHz}$, I/O to GND		45		pF

Note:

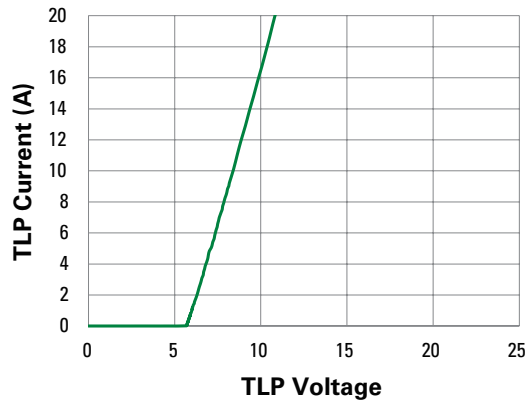
- Parameter is guaranteed by design and/or device characterization.
- Transmission Line Pulse (TLP) with 100 ns width, 0.2 ns rise time, and average window $t_1 = 70 \text{ ns}$ to $t_2 = 90 \text{ ns}$
- Device stressed with ten non-repetitive ESD pulses.

Capacitance vs. Reverse Bias**Clamping Voltage vs I_{PP}** 

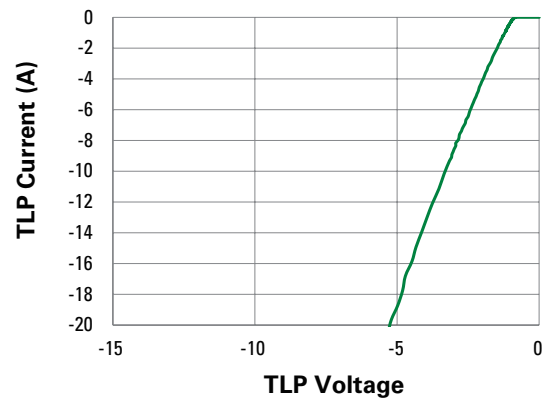
SC3V3-04UTG

3.3 V, 30 kV, 3 A, μ DFN-6, General Purpose ESD protection

Positive Transmission Line Pulsing (TLP) Plot



Negative Transmission Line Pulsing (TLP) Plot



IEC 61000-4-2 +8 kV Contact ESD Clamping Voltage



IEC 61000-4-2 -8 kV Contact ESD Clamping Voltage

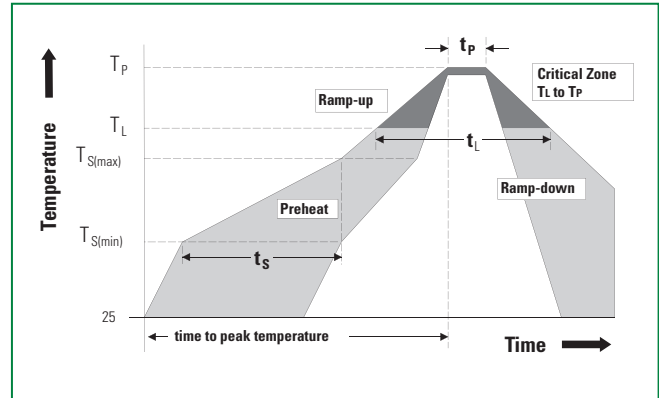


SC3V3-04UTG

3.3 V, 30 kV, 3 A, μ DFN-6, General Purpose ESD protection

Soldering Parameters

Reflow Condition		Pb-free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150 °C
	- Temperature Max ($T_{s(max)}$)	200 °C
	- Time (min to max) (t_s)	60 – 120 seconds
Average Ramp Up Rate (Liquidus) Temp (T_L) to Peak		3 °C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		3 °C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time Within 5°C of Actual Peak Temperature (t_p)		30 seconds
Ramp-down Rate		6 °C/second max
Time 25°C to Peak Temperature (T_p)		8 minutes max
Do Not Exceed		260 °C



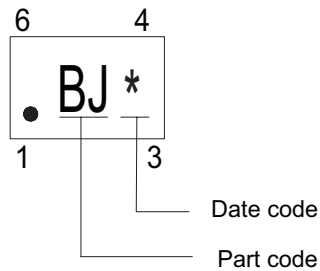
Product Characteristics

Lead plating	Pre-plated frame
Lead material	Copper alloy
Body material	Molded compound
Flammability	UL recognized compound meeting flammability rating V-0

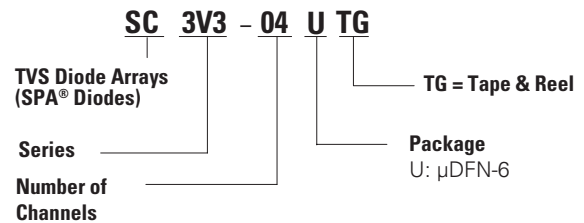
Ordering Information

Part Number	Package	Min. Order Qty.
SC3V3-04UTG	μ DFN-6	5,000

Part Marking System



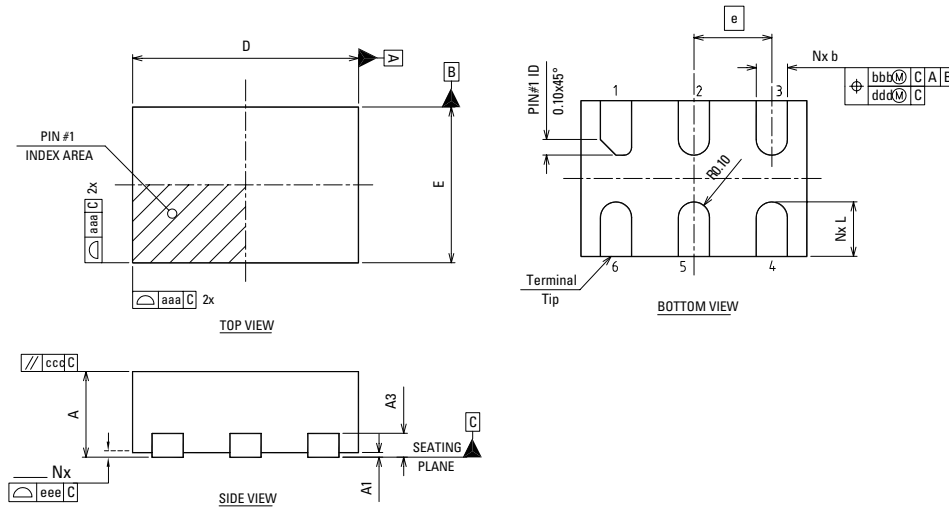
Part Numbering System



SC3V3-04UTG

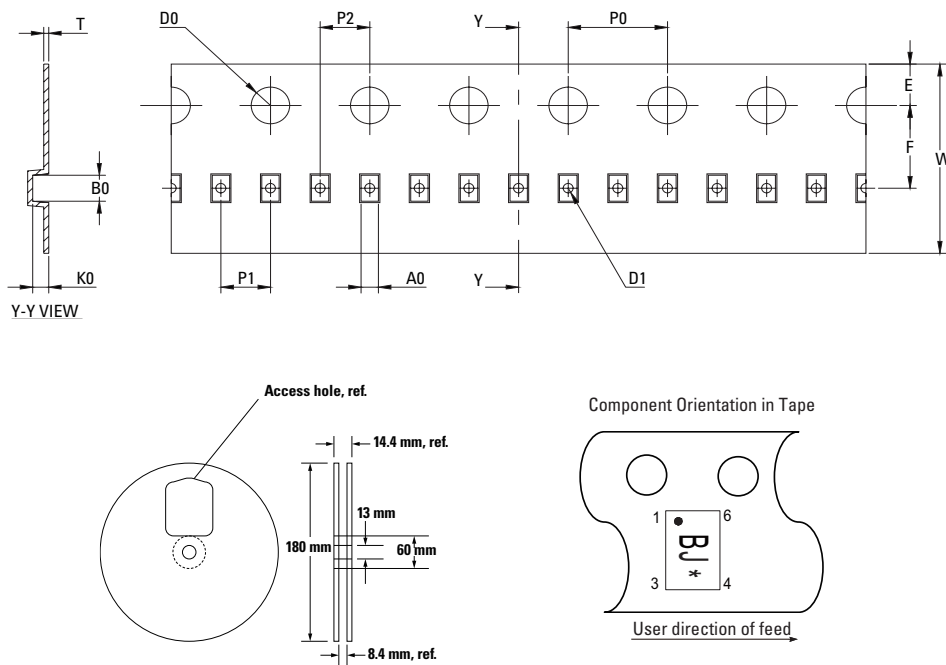
3.3 V, 30 kV, 3 A, μ DFN-6, General Purpose ESD protection

Package Dimensions — μ DFN-6



Symbol	Millimeters		
	Min	Nom	Max
A	0.51	0.55	0.60
A1	0.00	0.02	0.05
A3	0.15 Ref		
b	0.15	0.20	0.25
D	1.40	1.45	1.50
E	0.95	1.00	1.05
e	0.50 BSC		
L	0.25	0.35	0.45
aaa	0.05		
bbb	0.10		
ccc	0.10		
ddd	0.05		
eee	0.08		
N	6		
ND	3		

Embossed Carrier Tape & Reel Specification — μ DFN-6



Symbol	Millimeters		
	Min	Nom	Max
A0	1.10	1.20	1.30
B0	1.55	1.65	1.75
D0	1.50	1.55	1.60
D1	0.50	0.55	0.60
E	1.65	1.75	1.85
F	3.45	3.50	3.55
K0	0.65	0.70	0.75
P0	3.90	4.00	4.10
P1	3.90	4.00	4.10
P2	1.95	2.00	2.05
T	0.25	0.30	0.35
W	7.90	8.00	8.10

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