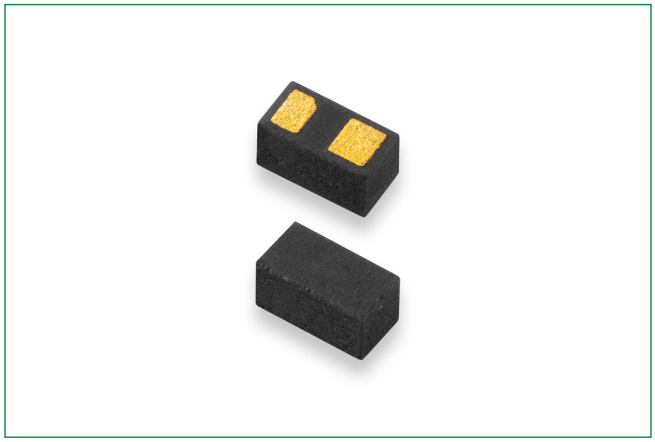
SC1205-01UTG

Bidirectional Discrete TVS Diode, General Purpose Surge Protection

HF RoHS Pb

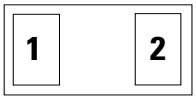


Note: This package image is for example and reference only. for detail package drawing, please refer to the package section in this datasheet.

Additional Information

Resources | Accessories | Samples

Pinout



Functional Block Diagram

Description

The SC1205-01UTG bidirectional TVS is fabricated in a proprietary silicon avalanche technology. These diodes provide a high ESD (electrostatic discharge) protection level for electronic equipment. The SC1205-01UTG 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. Additionally,, each TVS can safely dissipate a 7A 8/20us surge event as defined in IEC 61000-4-5 2nd Edition.

Features & Benefits

- ESD, IEC 61000-4-2, ±30kV contact, ±30kV air
- EFT, IEC 61000-4-4, 40A (5/50ns)
- Surge Tolerance, IEC 6100-4-5 2nd Edition, 7A (8/20us)
- Low leakage current of 1nA (TYP) at 4.5V
- Halogen-Free, Lead-Free and RoHS-compliant
- Moisture Sensitivity Level (MSL -1)

Applications

- Switches / Buttons
- Test Equipment / Instrumentation
- Point-of-Sale Terminals
- Medical Equipment
- Notebooks / Desktops / Servers
- Computer Peripherals
- Battery

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.

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Absolute Maximum Ratings

Symbol	Parameter	Value	Units
I_{PP}	Peak Current (t_p=8/20µs)	7	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.

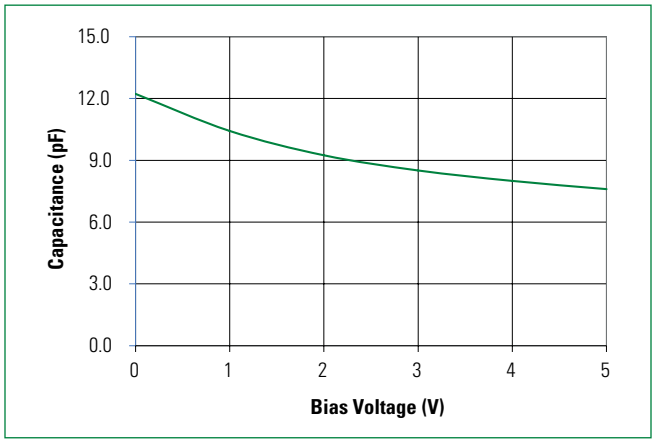
Electrical Characteristics (T_{OP}=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reverse Standoff Voltage	V_{RWM}	I_R=1µA			4.5	V
Breakdown Voltage	V_{BR}	I_R=1mA	5.3	5.5		V
Reverse Leakage Current	I_{LEAK}	V_R=4.5V		1	20	nA
Clamp Voltage[1]	V_C	I_{PP}=7, t_p=8/20µs		10		V
Dynamic Resistance[2]	R_{DYN}	TLP, t_P=100ns		0.17		Ω
ESD Withstand Voltage[1]	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=4.5V, f=1MHz		7	9	pF

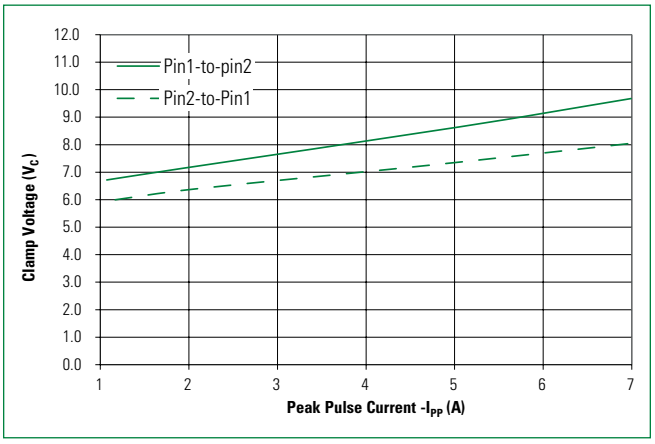
Note:

1. Parameter is guaranteed by design and/or component characterization.
2. Transmission Line Pulse (TLP) with 100ns width, 0.2ns rise time, and average window t1=70ns to t2= 90ns

Capacitance vs Reverse Bias



Clamping Voltage vs IPP



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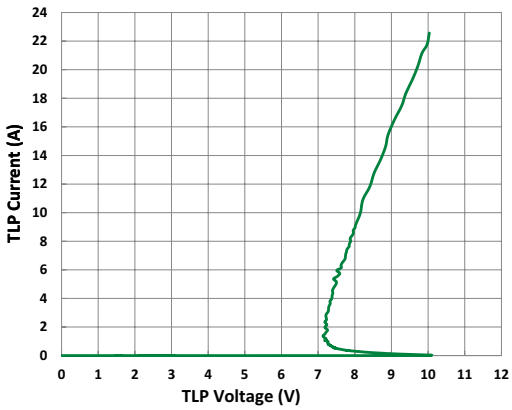
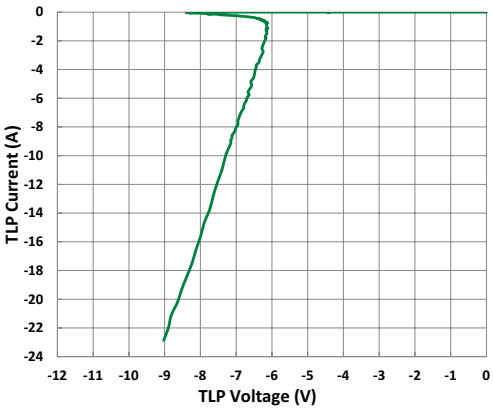
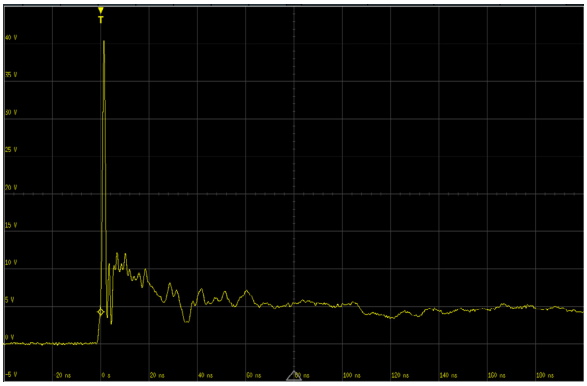
Positive Transmission Line Pulsing (TLP) Plot



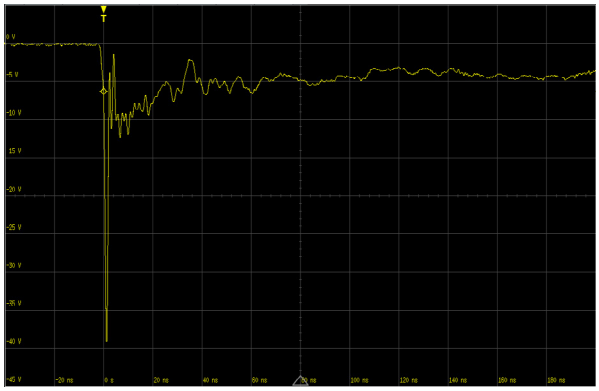
Negative Transmission Line Pulsing (TLP) Plot



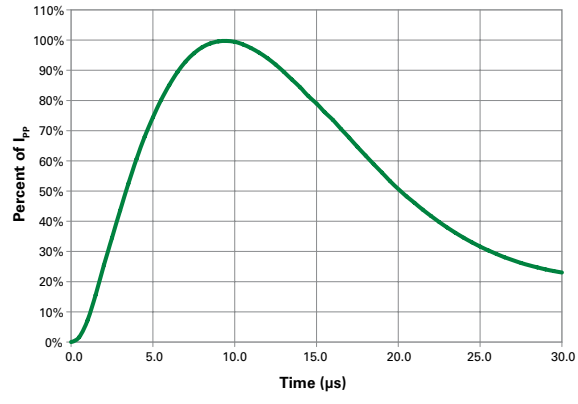
IEC 61000-4-2 +8 kV Contact ESD Clamping Voltage



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



8/20µs Pulse Waveform



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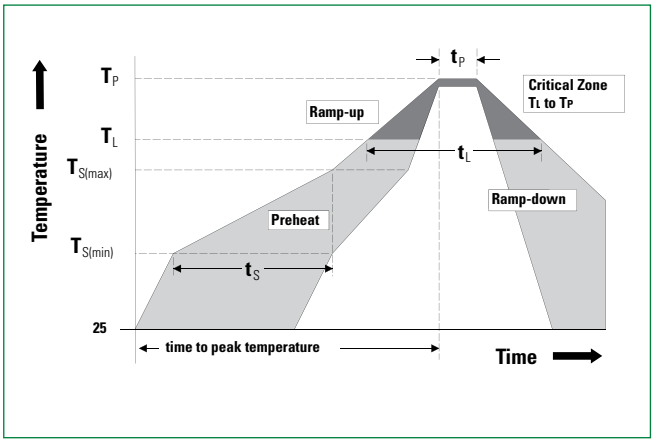
Soldering Parameters

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 secs
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



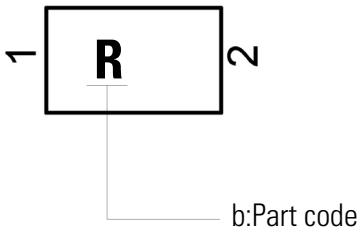
Ordering Information

Part Number	Package	Min. Order Qty.
SC1205-01UTG	0201DFN	15000

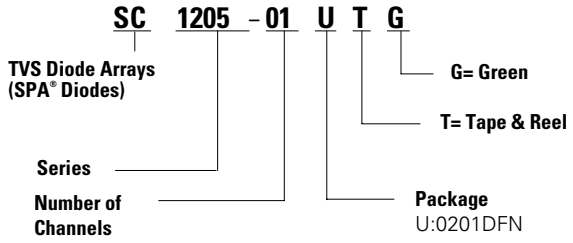
Product Characteristics

Lead Plating	Ag (EF²)
Lead material	Ni/Fe
Substrate Material	Silicon
Body Material	Molded Compound
Flammability	UL Recognized compound meeting flammability rating V-0

Part Marking System



Part Numbering System



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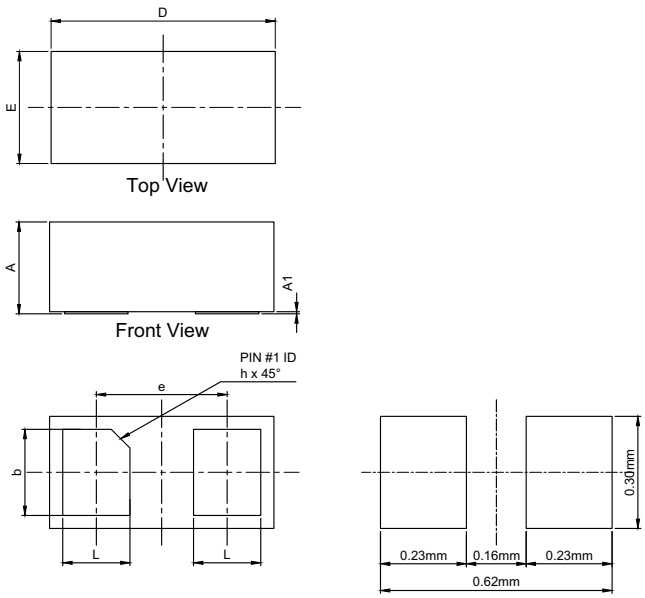
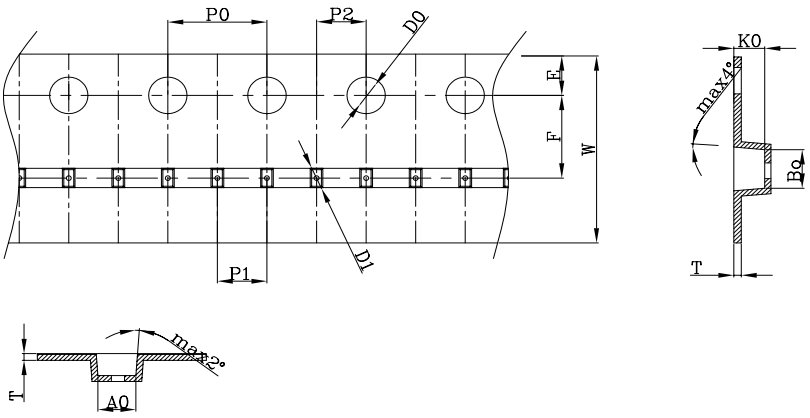
Package Dimensions — 0201DFN



Symbol	0201DFN					
	Millimeters			Inches		
	Min	Typ	Max	Min	Typ	Max
A	0.280	---	0.320	0.011	---	0.013
A1	0.000	---	0.050	0.000	---	0.002
b	0.200	0.250	0.300	0.008	0.010	0.012
L	0.130	0.185	0.240	0.005	0.007	0.009
D	0.550	0.600	0.650	0.022	0.024	0.026
E	0.250	0.300	0.350	0.010	0.012	0.014
h	0.000	0.050	0.10	0.000	0.002	0.004
e	0.350 BSC			0.014 BSC		

Embossed Carrier Tape & Reel Specification — 0201DFN



Symbol	Millimeters
A0	0.38+/-0.03
B0	0.68+/-0.03
K0	0.34+/-0.03
P0	4.00+/-0.10
P1	2.00+/-0.05
P2	2.00+/-0.05
T	0.18+/-0.03
E	1.75+/-0.10
F	3.50+/-0.05
D0	1.55+/-0.05
D1	0.20+/-0.05
W	8.00 + 0.30 -0.10

Revised: GD. 10/09/23