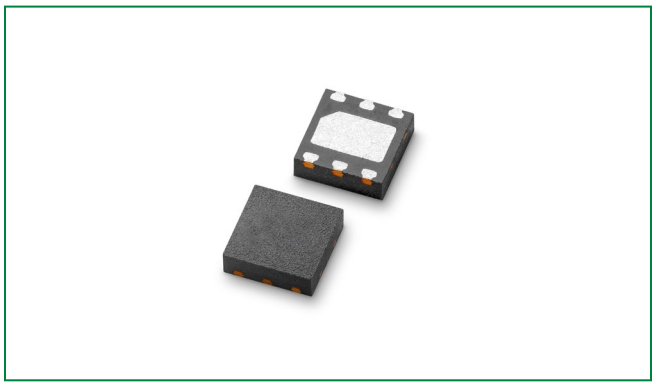
SC2200-01UTG

22 V, 100 A, DFN2020-6L, Unidirectional Discrete TVS Diode, Lightning Surge Protection

HF RoHS Pb

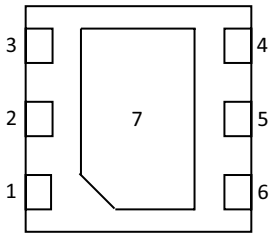


Description

The SC2200-01UTG uni-directional TVS is fabricated in a proprietary silicon avalanche technology. TVS Diode designed to provide protection against ESD (electrostatic discharge) and lightning induced surges.

This robust device can safely absorb repetitive ESD strikes at the maximum level specified in the IEC 61000-4-2 international standard (Level 4, ±8 kV contact discharge) without performance degradation and safely dissipate 100 A of 8/20 µs surge current (IEC61000-4-5 2nd edition).

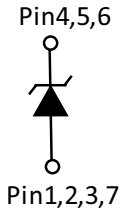
Pinout



Feature and benefits

- 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, 100 A (8/20 µs)
- Low leakage current of 10 nA (max) at 22 V
- Low clamping voltage
- Halogen-free, lead-free and RoHS compliant
- Moisture sensitivity level (MSL -1)

Functional Block Diagram



Applications

- V_{BUS} protection for fast charging USB circuits

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.

Revised: FW.10/29/24

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Absolute Maximum Ratings

Symbol	Parameter	Value	Units
I_{PP}	Peak Current (t_p = 8/20 µs)	100	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.

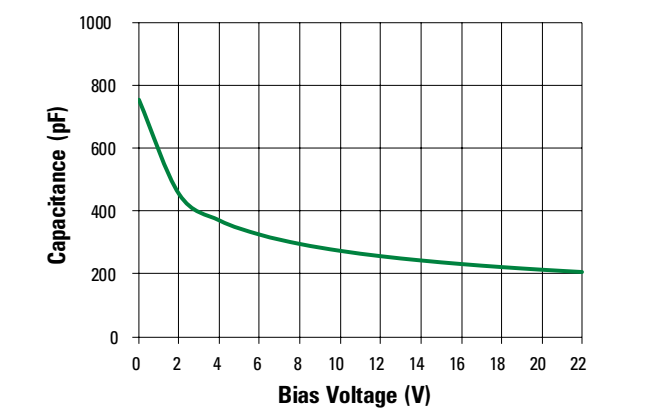
Electrical Characteristics (T_{OP} = 25 °C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reverse Standoff Voltage	V_{RWM}				22	V
Breakdown Voltage	V_{BR}	I_R = 1 mA		25		V
Forward Voltage Drop	V_F	I_F = 1 mA		0.9		V
Reverse Leakage Current	I_{LEAK}	V_R = 22 V		1	10	nA
Clamp Voltage[1]	V_C	I_{PP} = 25 A, t_p= 8/20 µs, I/O to GND		26		V
		I_{PP} = 40 A, t_p= 8/20 µs, I/O to GND		28		V
		I_{PP} = 100 A, t_p= 8/20 µs, I/O to GND		33		V
Dynamic Resistance[1]	R_{DYN}	$(V_{C2}-V_{C1})/(I_{PP2}-I_{PP1})$, I/O to GND		90		mΩ
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 = 22 V, f = 1 MHz, I/O to GND		210		pF

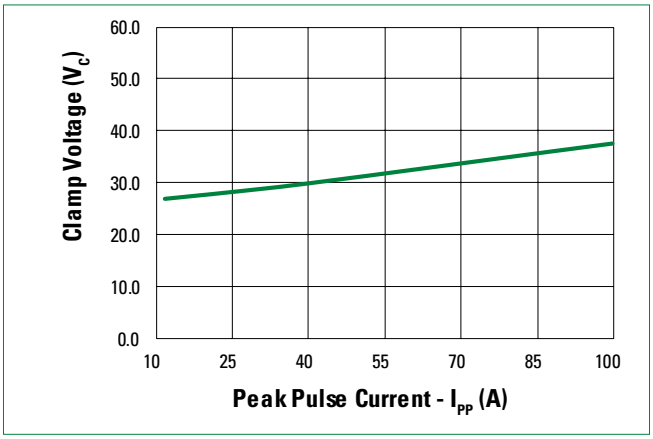
Notes:

1. Parameter is guaranteed by design and/or component characterization.
2. Transmission Line Pulse (TLP) with 100 ns width, 0.2 ns rise time, and average window t1 =70 ns to t2 = 90 ns.
3. Device stressed with ten non-repetitive ESD pulses according to IEC61000-4-2 (R = 330 Ω, C =150 pF).

Capacitance vs Reverse Bias



Clamping Voltage vs I_{PP}



Revised: FW.10/29/24

SC2200-01UTG

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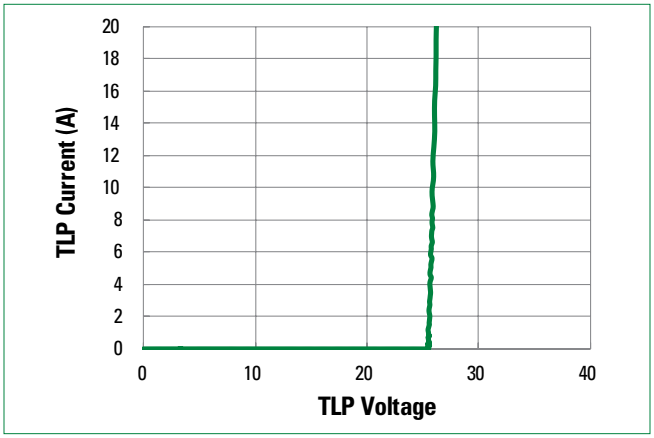
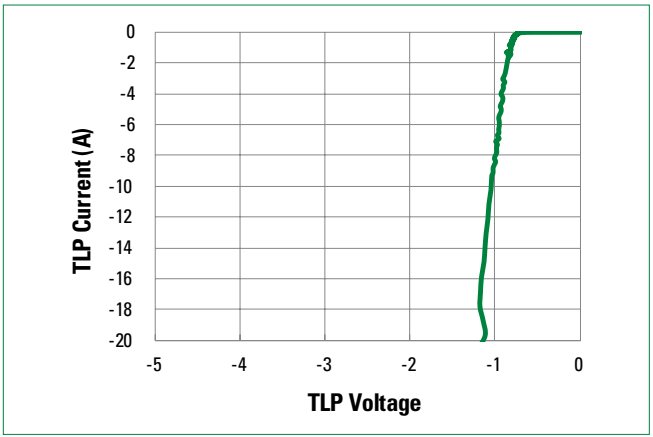
Positive Transmission Line Pulsing (TLP) Plot

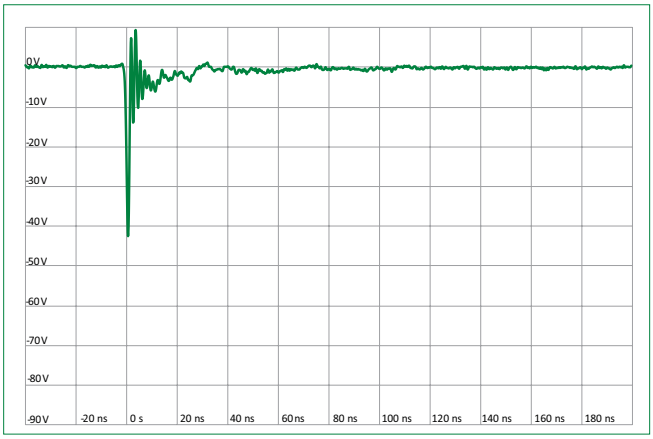


Negative Transmission Line Pulsing (TLP) Plot



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

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



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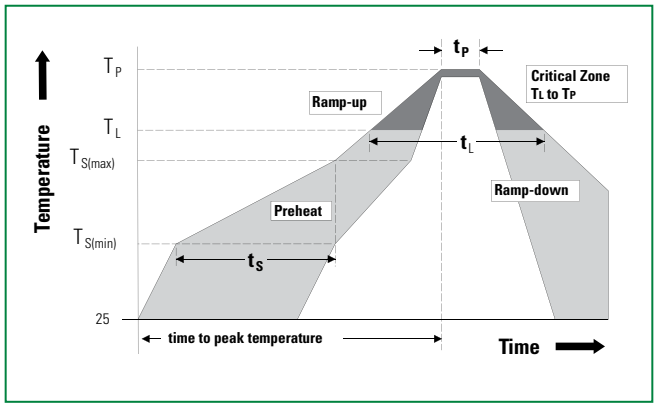
Soldering Parameters

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



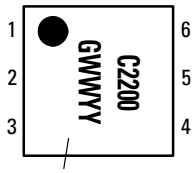
Product Characteristics

Lead Plating	Matte tin
Lead Material	Copper alloy
Body Material	Molded compound
Flammability	UL recognized compound meeting flammability rating V-0

Ordering Information

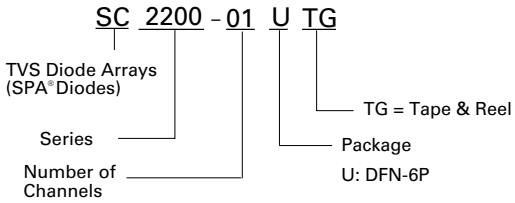
Part Number	Package	Min. Order Qty
SC2200-01UTG	DFN-6P	3000

Part Marking System



C2200 = Part code
G = Assembly code
WW = Work week
YY = Last two digits of the year

Part Numbering System



Revised: FW.10/29/24

SC2200-01UTG

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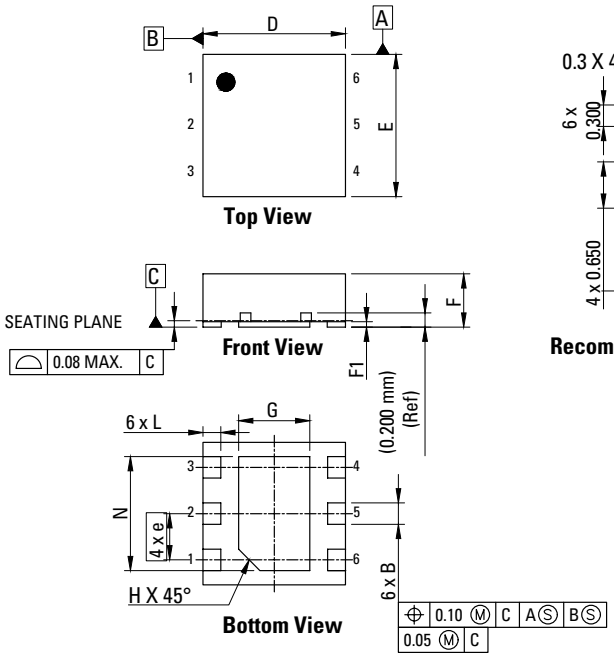
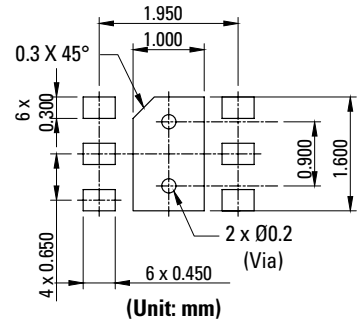
Package Dimensions — DFN-6P

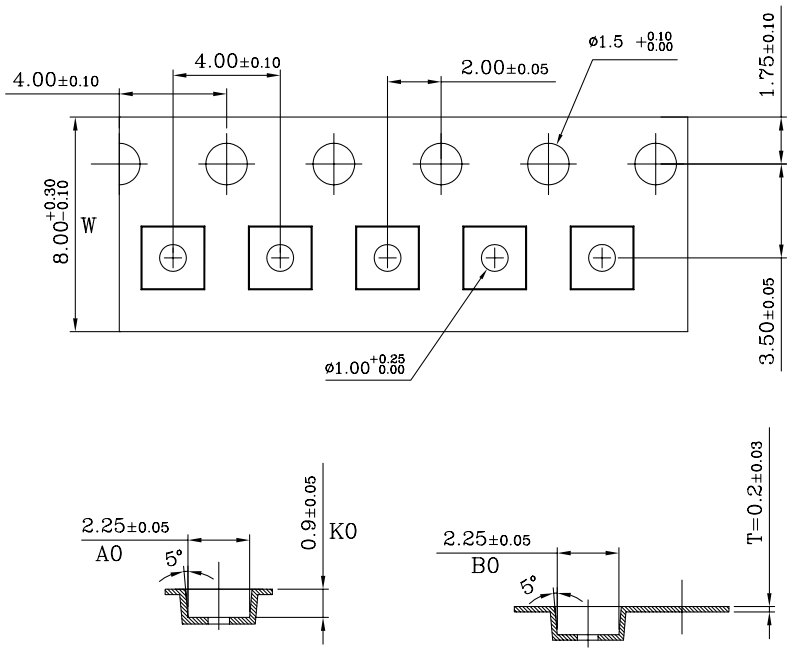


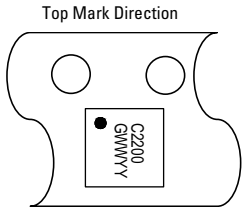


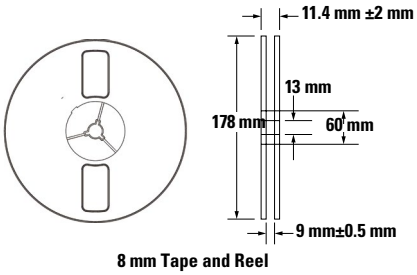
Recommended Soldering Pad Layout

Symbol	Millimeters	
	Min	Max
F	0.700	0.800
F1	0.000	0.050
B	0.250	0.350
D	1.900	2.100
E	1.900	2.100
L	0.200	0.300
G	0.900	1.100
N	1.500	1.700
H	0.250	0.350
e	0.650 BSC	

Embossed Carrier Tape & Reel Specification — DFN-6P







8 mm Tape and Reel

Revised: FW.10/29/24