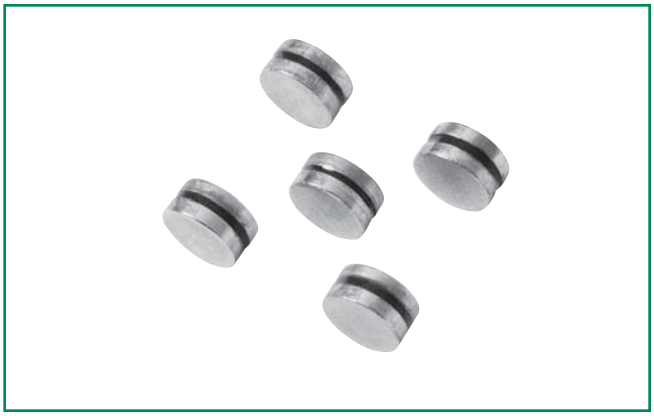
HF RoHS Primary Protection Series - Cell



Description

The Primary Protection Cell Series are SIDACtor® overvoltage protection devices designed for use in primary protection modules.

Some of the series provides a single line overvoltage solution for primary protection modules required to meet the harsh requirements of GR-974.

Features and Benefits

- Low voltage overshoot
- Low on-state voltage
- Does not degrade with use
- Fails short circuit when surged in excess of ratings
- Low capacitance

Agency Approvals

Agency	Agency File Number
	E133083

Applicable Global Standards

- TIA-968-B
- GR-974
- ITU K.20/21 Enhanced Level
- ITU K.20/21 Basic Level
- YD/T 1082
- YD/T 993
- YD/T 950
- UL 497B Component Level
- UL 497 Module Level (GR-974 compliant devices)

Pinout Designation

Not Applicable

Schematic Symbol

Electrical Characteristics

Part Number	V_{DRM} @ I_{DRM} = 5 µA V min	V_S @ 100 V / µs V max	V_T @ I_T = 2.2A V max	I_S mA max	I_T A max	I_H mA min
P-T100-008 *	6	25	4	800	2.2	50
P-T100-030 *	25	40	4	800	2.2	120
P-T100-064 *	58	77	4	800	2.2	150
P-T100-090 *	75	98	4	800	2.2	150
P-T100-150 *	140	180	4	800	2.2	150
P-T100-230 *	190	260	5	800	2.2	150
P-T100-260	220	290	5	800	2.2	260
P-T100-310	280	350	5	800	2.2	260
P-T100-350	320	400	5	800	2.2	260

- Absolute maximum ratings measured at T_A= +25°C (unless otherwise noted).
- Devices are bi-directional (unless otherwise noted).
- I_{PP} rating applicable over temperature range of -40°C to +85°C and guaranteed for the life of the product.
- Peak pulse current rating (I_{PP}) is repetitive.
- I_T is a free air rating and heat sink is at 25°C.
- Part Number with asterisk (*) are non-compliant to GR-974.

Surge Ratings

Series	I_{PP}							I_{TSM} 50/60 Hz	di/dt
	0.2x310 [1] 0.5x700 [2]	10x160 [1] 10x160 [2]	10x560 [1] 10x560 [2]	5x320 [1] 9x720 [2]	10x360 [1] 10x360 [2]	10x1000 [1] 10x1000 [2]	5x310 [1] 10x700 [2]		
	A min	A min	A min	A min	A min	A min	A min	A min	A/µs max
C	50	200	150	200	175	100	200	50	500

Notes:

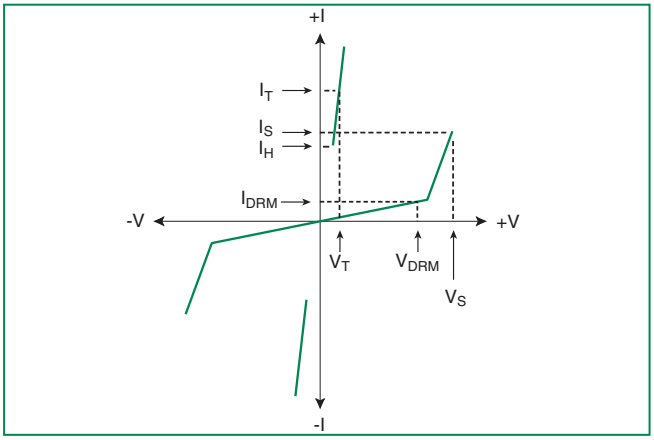
1 Current waveform in µs
2 Voltage waveform in µs

- Peak pulse current rating (I_{PP}) is repetitive and guaranteed for the life of the product.
- I_{PP} ratings applicable over temperature range of -40°C to +85°C
- The device must initially be in thermal equilibrium with -40°C ≤ T_J ≤ +150°C

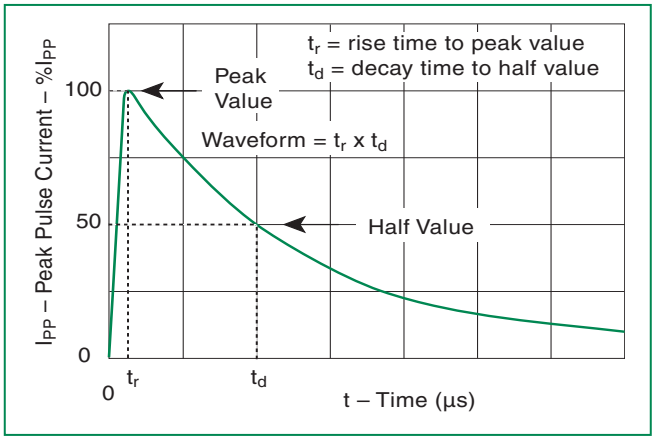
Thermal Considerations

Package	Symbol	Parameter	Value	Unit
Cell 	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C

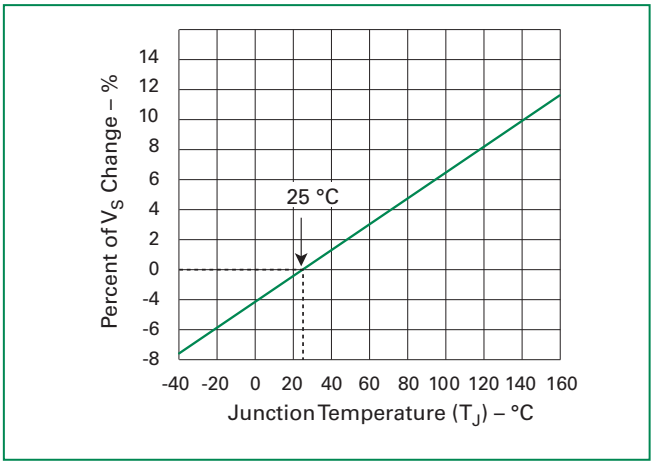
V-I Characteristics



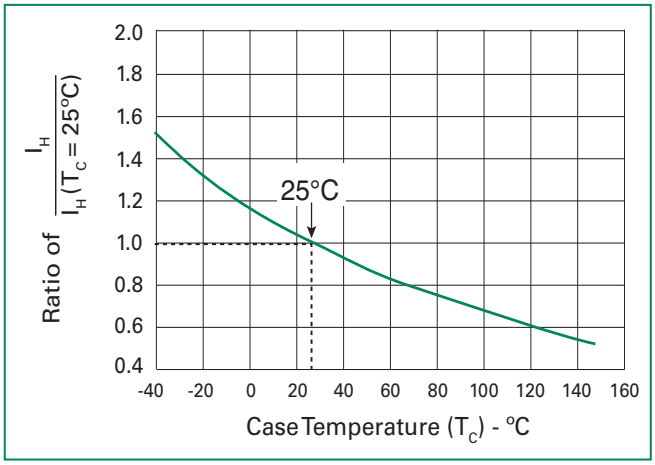
t_r x t_d Pulse Waveform



Normalized V_S Change vs. Junction Temperature



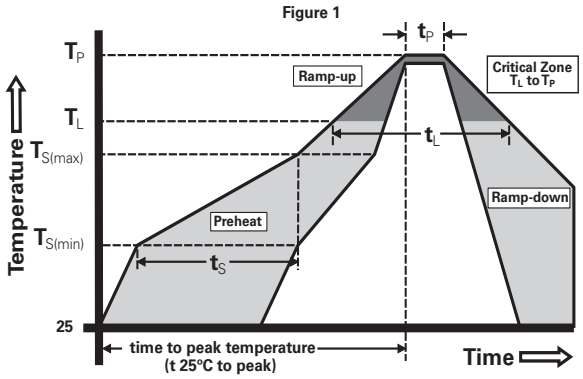
Normalized DC Holding Current vs. Case Temperature



Soldering Parameters

Reflow Condition		Pb-Free assembly (see Fig. 1)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max ($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/sec. Max.
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max.
Reflow	-Temperature (T_L) (Liquidus)	+217°C
	-Temperature (t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max.
Ramp-down Rate		6°C/sec. Max.
Time 25°C to Peak Temp (T_P)		8 min. Max.
Do not exceed		+260°C

Figure 1



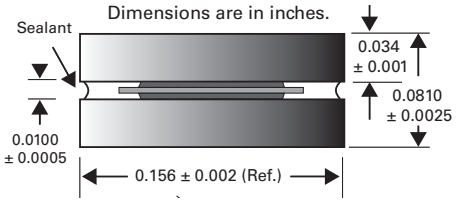
Physical Specifications

Terminal Material	Copper Alloy
Terminal Finish	Nickel Plated

Part Marking

NOT APPLICABLE

Dimensions — Cell



Part Numbering

P T100 xxx

TYPE
P: SIDACtor

100A CELL

MEDIAN VOLTAGE
(see Electrical Characteristics table)

Environmental Specifications

High Temp Voltage Blocking	80% Rated V_{DRM} (V_{AC} Peak) +125°C or +150°C, 504 or 1008 hrs. MIL-STD-750 (Method 1040) JEDEC, JESD22-A-101
Temp Cycling	-65°C to +150°C, 15 min. dwell, 10 up to 100 cycles. MIL-STD-750 (Method 1051) EIA/JEDEC, JESD22-A104
Biased Temp & Humidity	52 V_{DC}* (+85°C) 85%RH, 504 up to 1008 hrs. EIA/JEDEC, JESD22-A-101
High Temp Storage	+150°C 1008 hrs. MIL-STD-750 (Method 1031) JEDEC, JESD22-A-101
Low Temp Storage	-65°C, 1008 hrs.
Thermal Shock	0°C to +100°C, 5 min. dwell, 10 sec. transfer, 10 cycles. MIL-STD-750 (Method 1056) JEDEC, JESD22-A-106
Autoclave (Pressure Cooker Test)	+121°C, 100%RH, 2atm, 24 up to 168 hrs. EIA/JEDEC, JESD22-A-102
Resistance to Solder Heat	+260°C, 30 secs. MIL-STD-750 (Method 2031)

* 80% of V_{DRM} when V_{DRM} is less than 52V.

Packing Options — Cell

Package Type	Description	Packing Options Quantity	Added Suffix	Industry Standard
T	Cell Bulk Pack (25 x trays of 200)	5000	N/A	N/A