

**HF RoHS Primary Protection Series - Cell**



**Description**

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

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

**Applicable Global Standards**

- TIA-968-A
- GR 974
- ITU K.20/21 Enhanced Level
- ITU K.20/21 Basic Level
- YD/T 1082
- YD/T 993
- YD/T 950
- UL 497

**Agency Approvals**

Agency	Agency File Number
	E133083

**Pinout Designation**

Not Applicable

**Schematic Symbol**



**Electrical Characteristics**

Part Number	$V_{DRM} @ I_{DRM} = 5 \mu A$ V min	$V_S @ 100 V / \mu s$ V max	$V_T @ I_T = 2.2 A$ 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	260
P-T100-350	320	400	5	800	2.2	260

- Absolute maximum ratings measured at  $T_a = +25^\circ C$  (unless otherwise noted).
- Devices are bi-directional (unless otherwise noted).
- $I_{pp}$  rating applicable over temperature range of  $-40^\circ C$  to  $+85^\circ C$  and guaranteed for the life of the product.
- Peak pulse current rating ( $I_{pp}$ ) is repetitive.
- $I_s$  is a free air rating and heat sink is at 25A

**Surge Ratings**


Series	$I_{PP}$							$I_{TSM}$ 50/60 Hz	di/dt
	0.2x310 <sup>1</sup>	10x160 <sup>1</sup>	10x560 <sup>1</sup>	5x320 <sup>1</sup>	10x360 <sup>1</sup>	10x1000 <sup>1</sup>	5x310 <sup>1</sup>		
	0.5x700 <sup>2</sup>	10x160 <sup>2</sup>	10x560 <sup>2</sup>	9x720 <sup>2</sup>	10x360 <sup>2</sup>	10x1000 <sup>2</sup>	10x700 <sup>2</sup>		
	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:

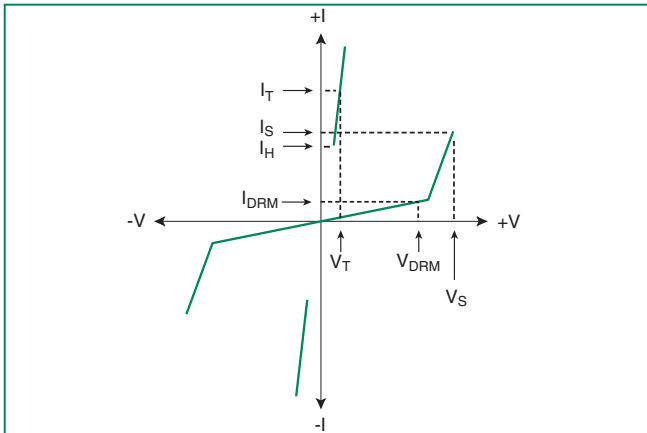
- 1 Current waveform in μs
- 2 Voltage waveform in μs

- 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

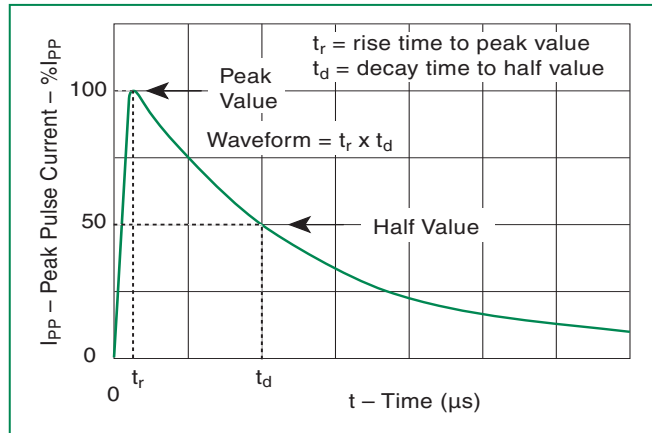
**Thermal Considerations**

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

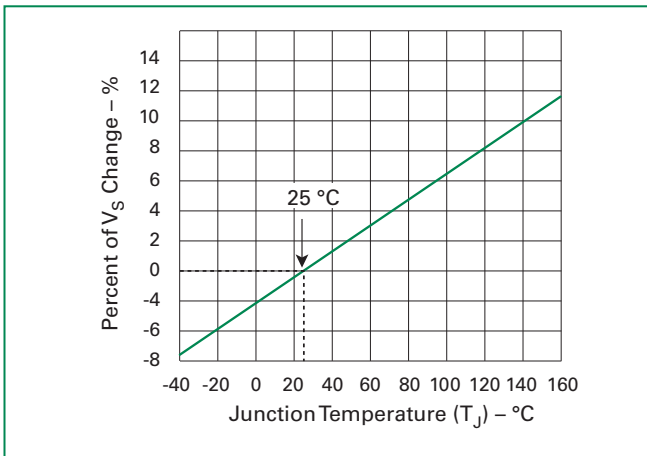
**V-I Characteristics**



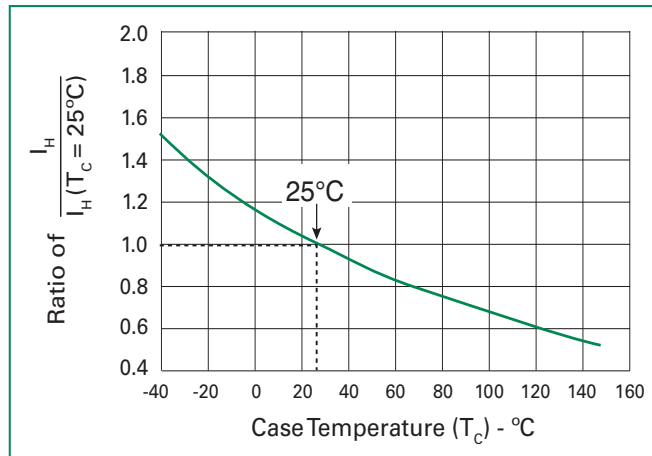
**$t_r \times t_d$  Pulse Waveform**



**Normalized  $V_S$  Change vs. Junction Temperature**

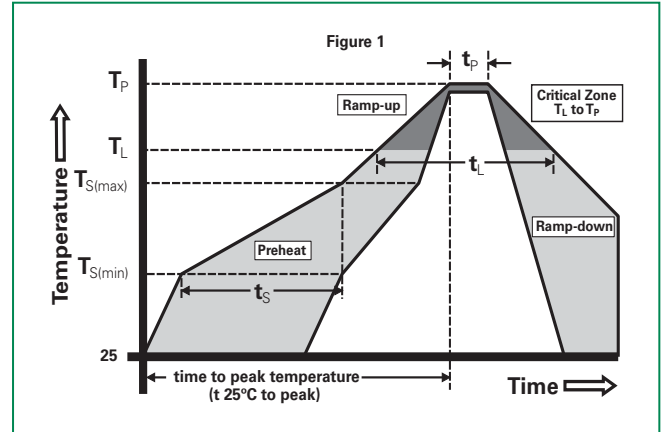


**Normalized DC Holding Current vs. Case Temperature**



**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



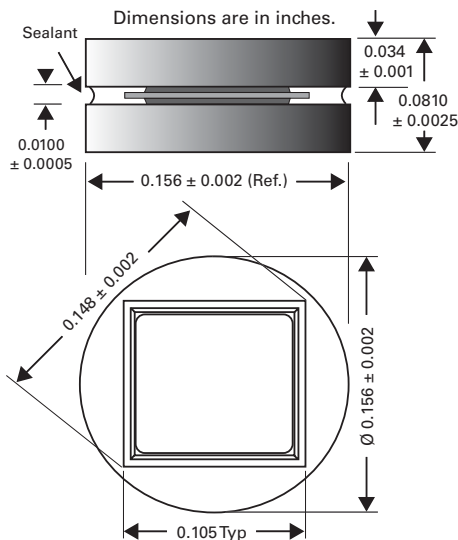
**Physical Specifications**

<b>Terminal Material</b>	Copper Alloy
<b>Terminal Finish</b>	Nickel Plated

**Part Marking**

NOT APPLICABLE

**Dimensions — Cell**

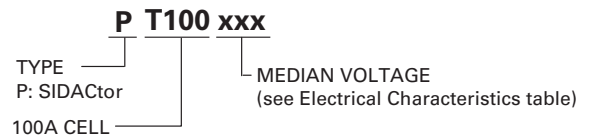


**Environmental Specifications**

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

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

**Part Numbering**



**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