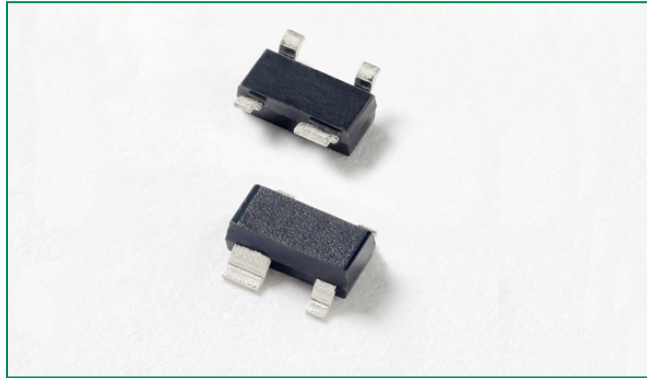




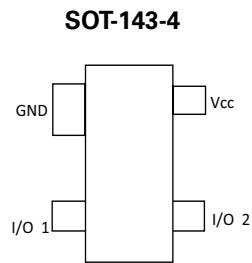
**THE DATASHEET OF  
SR70-02CTG**



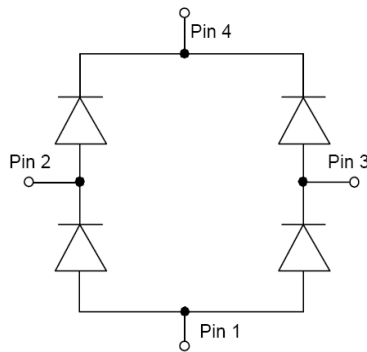
**SR70 Series 70V 40A Diode Array**



**Pinout**



**Functional Block Diagram**



**Additional Information**



**Datasheet**



**Resources**



**Samples**

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.

**Description**

The SR70 consists of four, low capacitance, rail-to-rail diodes that provide protection against ESD and lightning surge events. These robust diodes can safely absorb up to 40A ( $t_p=8/20\mu s$ ) and repetitive ESD strikes at the maximum level (Level 4) specified in the IEC 61000-4-2 international standard without performance degradation.

Its low loading capacitance makes it ideal for protecting high-speed data lines such as VDSL and VDSL2.

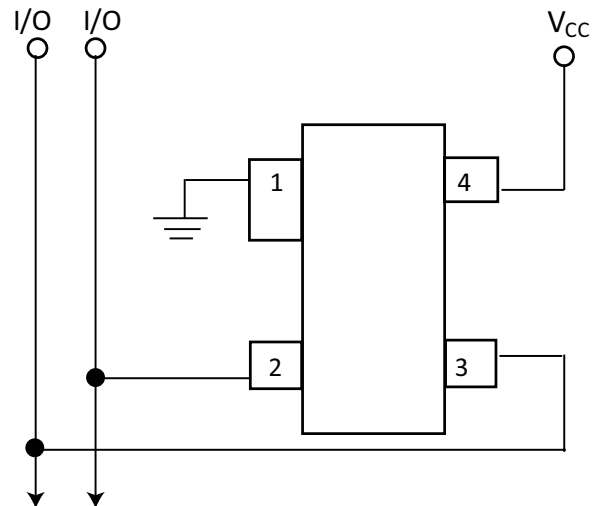
**Features**

- ESD, IEC61000-4-2 ,  $\pm 30kV$  contact discharge,  $\pm 30kV$  air discharge
- EFT, IEC61000-4-4, 80A ( $t_p=5/50ns$ )
- Lightning protection, IEC61000-4-5, 40A ( $t_p=8/20\mu s$ )
- Low capacitance of 2.0pF (TYP) per I/O
- Low clamp voltage
- Small SOT143 (JEDEC TO-253) packaging

**Applications**

- xDSL Lines
- Video Lines
- Customer Premises Equipment
- 10/100/1000 Ethernet

**Application Example**



### Absolute Maximum Ratings

Symbol	Parameter	Value	Units
$I_{PP}$	Peak Current ( $t_p=8/20\mu s$ )	40.0	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 device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

### Thermal Information

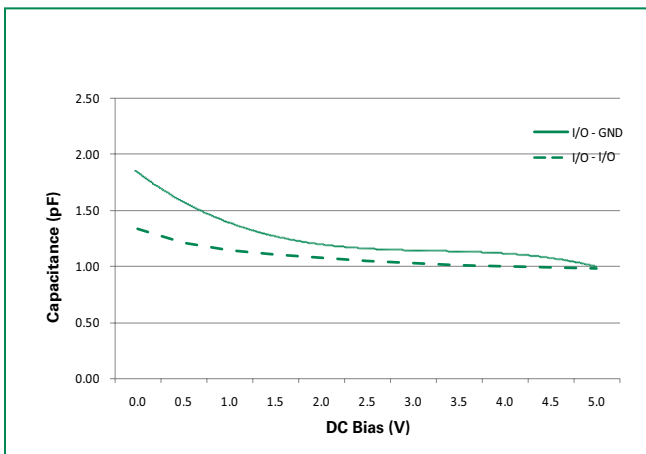
Parameter	Rating	Units
Storage Temperature Range	-55 to 150	°C
Maximum Junction Temperature	150	°C
Maximum Lead Temperature (Soldering 20-40s)	260	°C

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

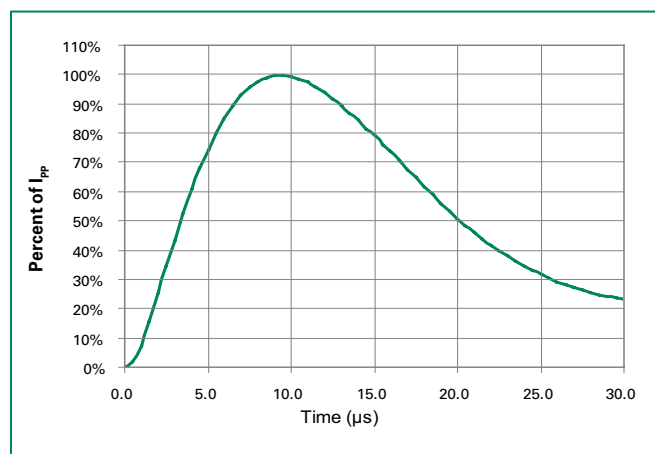
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reverse Standoff Voltage	$V_{RWM}$				70	V
Reverse Leakage Current	$I_{LEAK}$	$V_R=70V$			5	$\mu A$
Clamp Voltage <sup>1</sup>	$V_C$	$I_{PP}=1A, t_p=8/20\mu s, Fwd$		1.4		V
		$I_{PP}=10A, t_p=8/20\mu s, Fwd$		4.7		V
		$I_{PP}=30A, t_p=8/20\mu s, Fwd$		12		V
Dynamic Resistance	$R_{DYN}$	$(V_{C2}-V_{C1})/(I_{PP2}-I_{PP1})$		0.35		$\Omega$
ESD Withstand Voltage <sup>1</sup>	$V_{ESD}$	IEC61000-4-2 (Contact)	$\pm 30$			kV
		IEC61000-4-2 (Air)	$\pm 30$			kV
Diode Capacitance <sup>1</sup>	$C_{I/O-GND}$	Reverse Bias=0V, f=1MHz		2.0	3.0	pF
	$C_{I/O-I/O}$	Reverse Bias=0V, f=1MHz		1.3	2.0	pF

Note: 1. Parameter is guaranteed by design and/or device characterization.

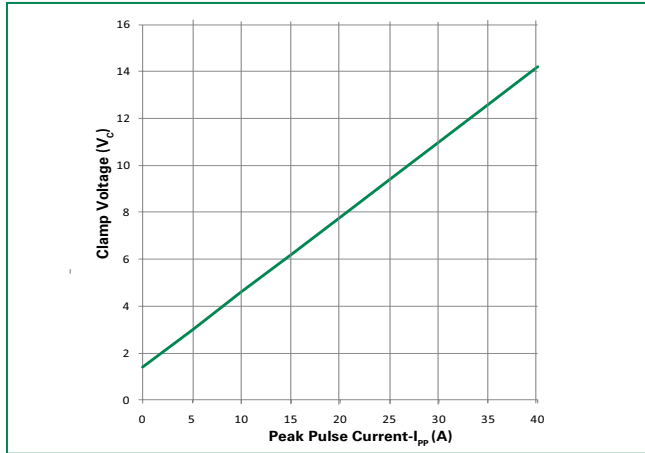
### Capacitance vs. Reverse Bias



### Pulse Waveform



**Clamping Voltage vs.  $I_{pp}$**



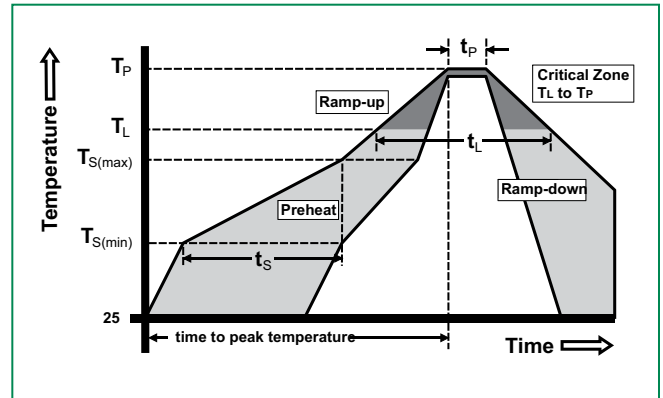
**Product Characteristics**

<b>Lead Plating</b>	Matte Tin
<b>Lead Material</b>	Copper Alloy
<b>Lead Coplanarity</b>	0.0004 inches (0.102mm)
<b>Substitute Material</b>	Silicon
<b>Body Material</b>	Molded Epoxy
<b>Flammability</b>	UL 94 V-0

- Notes :
1. All dimensions are in millimeters
  2. Dimensions include solder plating.
  3. Dimensions are exclusive of mold flash & metal burr.
  4. Blo is facing up for mold and facing down for trim/form, i.e. reverse trim/form.
  5. Package surface matte finish VDI 11-13.

**Soldering Parameters**

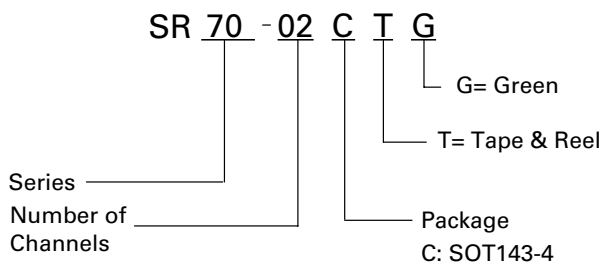
<b>Reflow Condition</b>		Pb – Free assembly
<b>Pre Heat</b>	- Temperature Min ( $T_{s(min)}$ )	150°C
	- Temperature Max ( $T_{s(max)}$ )	200°C
	- Time (min to max) ( $t_s$ )	60 – 180 secs
<b>Average ramp up rate (Liquidus) Temp (<math>T_L</math>) to peak</b>		3°C/second max
<b><math>T_{s(max)}</math> to <math>T_L</math> - Ramp-up Rate</b>		3°C/second max
<b>Reflow</b>	- Temperature ( $T_L$ ) (Liquidus)	217°C
	- Temperature ( $t_l$ )	60 – 150 seconds
<b>Peak Temperature (<math>T_p</math>)</b>		260 <sup>+0/-5</sup> °C
<b>Time within 5°C of actual peak Temperature (<math>t_p</math>)</b>		20 – 40 seconds
<b>Ramp-down Rate</b>		6°C/second max
<b>Time 25°C to peak Temperature (<math>T_p</math>)</b>		8 minutes Max.
<b>Do not exceed</b>		260°C



**Ordering Information**

Part Number	Package	Marking	Min. Order Qty.
SR70-02CTG	SOT143	702C	3000

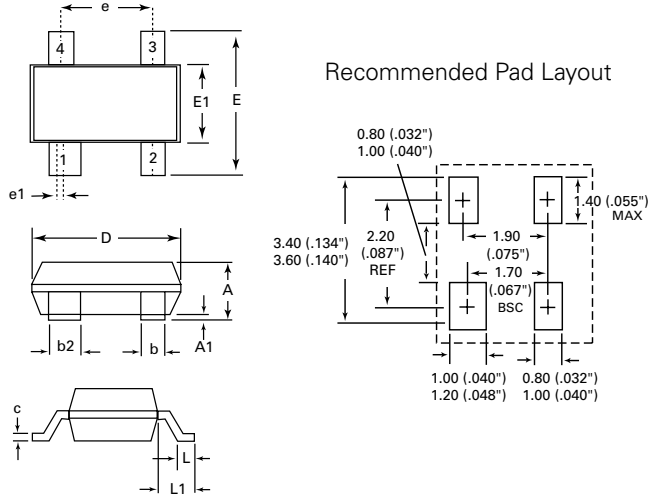
**Part Numbering System**



**Part Marking System**

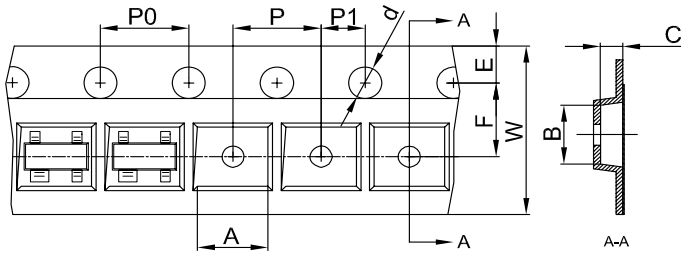


**Package Dimensions—SOT143**

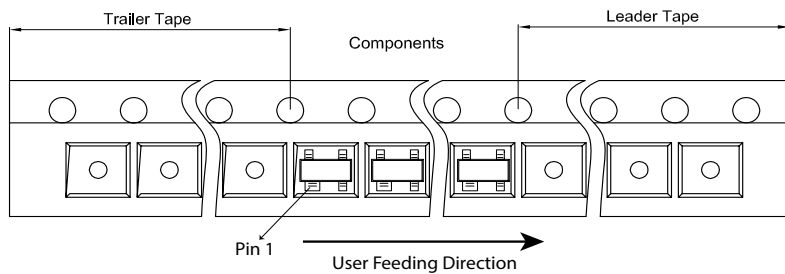


Package	SOT143			
Pins	4			
JEDEC	TO-253			
	Millimeters		Inches	
	Min	Max	Min	Max
<b>A</b>	0.8	1.22	0.03	0.048
<b>A1</b>	0.05	0.15	0.002	0.006
<b>b</b>	0.30	0.50	0.012	0.020
<b>b2</b>	0.76	0.89	0.030	0.035
<b>c</b>	0.08	0.20	0.003	0.008
<b>D</b>	2.80	3.04	0.110	0.120
<b>E</b>	2.10	2.64	0.082	0.104
<b>E1</b>	1.20	1.40	0.047	0.055
<b>e</b>	1.92 BSC		0.076 BSC	
<b>e1</b>	0.20 BSC		0.008 BSC	
<b>L</b>	0.4	0.6	0.016	0.024
<b>L1</b>	0.550 REF		0.022 REF	

**Embossed Carrier Tape & Reel Specification—SOT143**



Symbol	Millimeters
<b>A</b>	3.19±0.10
<b>B</b>	2.8±0.10
<b>C</b>	1.31±0.10
<b>d</b>	∅ 1.50±0.10
<b>E</b>	1.75±0.10
<b>F</b>	3.50±0.10
<b>P0</b>	4.00±0.10
<b>P</b>	4.00±0.10
<b>P1</b>	2.00±0.10
<b>W</b>	8.00±0.10





Notes :  
1. All dimensions are in millimeters

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