

## SR05 Low Capacitance TVS Diode Array

### Description

TVS diodes are surge rated diode arrays designed to protect high speed data interfaces. The SR series has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD (electrostatic discharge), EFT (electrical fast transients), and lightning.

The unique design of the SR series devices incorporates four surge rated, low capacitance steering diodes and a TVS diode in a single package. During transient conditions, the steering diodes direct the transient to either the positive side of the power supply line or to ground. The internal TVS diode prevents over-voltage on the power line, protecting any downstream components.

The low capacitance array configuration allows the user to protect two high-speed data or transmission lines. The low inductance construction minimizes voltage overshoot during high current surges.

### Features

- ESD protection to IEC 61000-4-2, Level 4
- Array of surge rated diodes with internal TVS Diode
- Protects two I/O lines
- Low capacitance (<10pF) for high-speed interfaces
- Low clamping voltage
- Low operating voltage: 5.0V
- Solid-state silicon-avalanche technology

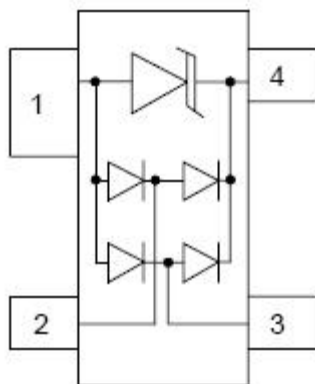
### Mechanical Characteristics

- JEDEC SOT-143 package
- Molding compound flammability rating: UL 94V-0
- Marking : R05

### Applications

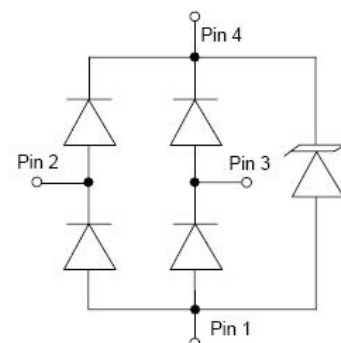
- USB Power & Data Line Protection
- Ethernet 10BaseT
- I<sup>2</sup>C Bus Protection
- Video Line Protection
- T1/E1 secondary IC Side Protection
- Portable Electronics
- Microcontroller Input Protection
- WAN/LAN Equipment ISDN
- S/T Interface

### Pin Configuration



SOT-143 (Top View)

### Circuit Diagram



## Ordering Information

Device	Package	Shipping
SR05	SOT-143(Pb-Free)	3000pcs / reel
SR05TR	SOT-143(Pb-Free)	3000pcs / reel

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

## Maximum Ratings @T<sub>A</sub>=25°C unless otherwise specified

Parameter	Symbol	Value	Units
Peak Pulse Current (tp=8/20μs)	I <sub>PP</sub>	25	A
Peak Pulse Power (tp = 8/20μs)	P <sub>PK</sub>	500	W
Peak Forward Voltage (I <sub>F</sub> =1A, tp=8/20μs)	V <sub>FP</sub>	1.5	V
Lead Soldering Temperature	T <sub>L</sub>	260(10 sec.)	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to + 125	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to + 150	°C

## Electrical Characteristics

Characteristics	Symbol	Condition	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	V <sub>RWM</sub>	-	-	-	5	V
Reverse Breakdown Voltage	V <sub>BR</sub>	@ I <sub>i</sub> =1mA	6	-	-	V
Reverse Leakage Current	I <sub>R</sub>	@V <sub>RWM</sub> = 5V, T = 25 °C	-	-	5	μA
Clamping Voltage	V <sub>C</sub>	@I <sub>PP</sub> = 1A, tp=8/20μs, Between I/O pins and Gnd	-	-	9.8	V
Clamping Voltage	V <sub>C</sub>	@I <sub>PP</sub> = 10A, tp=8/20μs, Between I/O pins and Gnd	-	-	12	V
Clamping Voltage	V <sub>C</sub>	@I <sub>PP</sub> = 25A, tp=8/20μs, Between I/O pins and Gnd	-	-	20	V
Junction Capacitance	C <sub>j</sub>	Between I/O pins and Gnd VR = 0V, f = 1MHz	-	6.5	10	pF
		Between I/O pins VR = 0V, f = 1MHz	-	3.3	-	pF

**Ratings and Characteristics Curves**

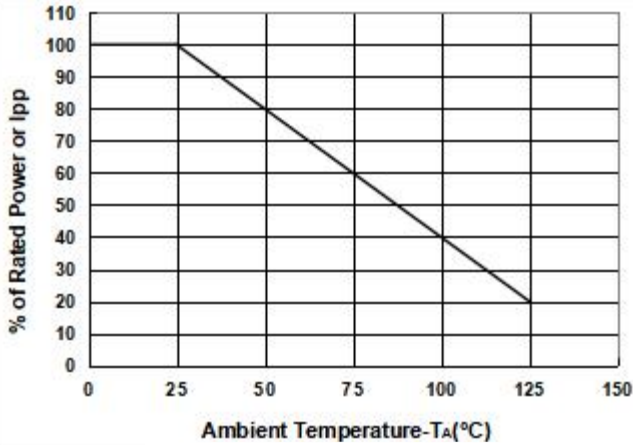


Fig.1 Power Derating Curve

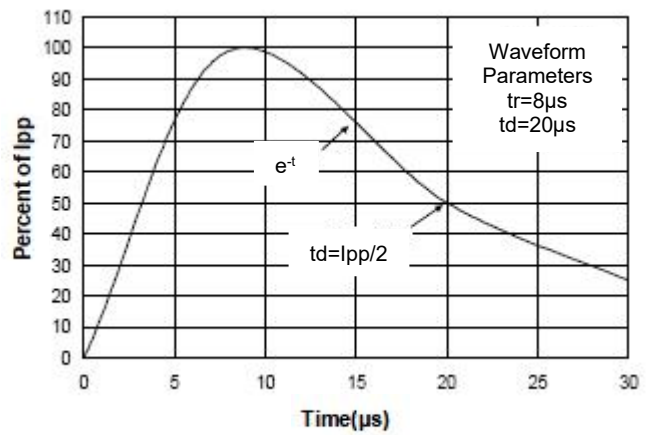


Fig.2 Pulse Waveform

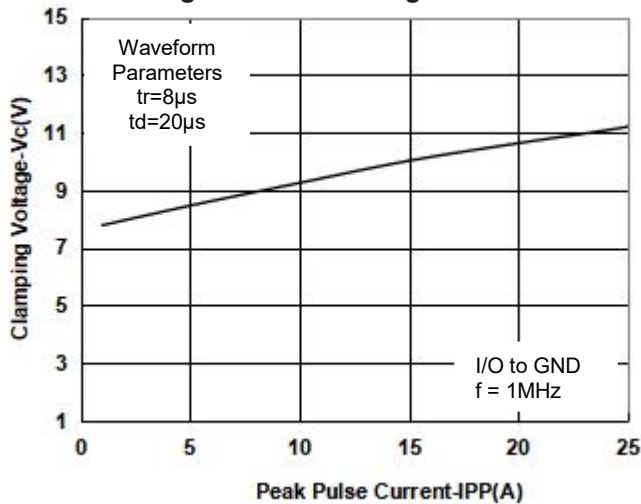


Fig. 3 Typical Clamping Voltage vs. Peak Pulse Current

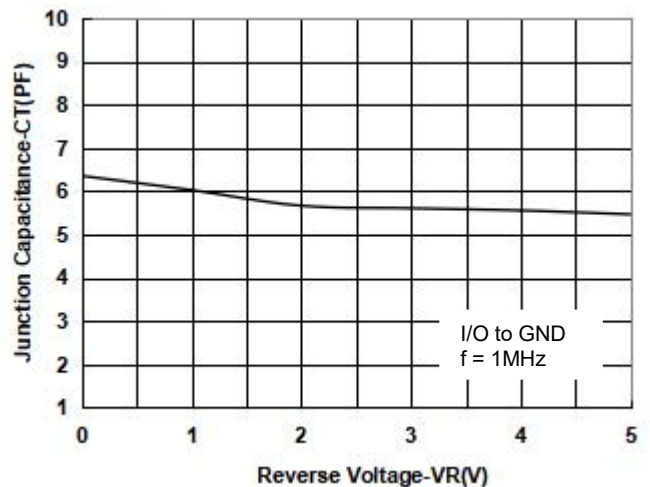


Fig. 4 Typical Capacitance vs. Reverse Voltage

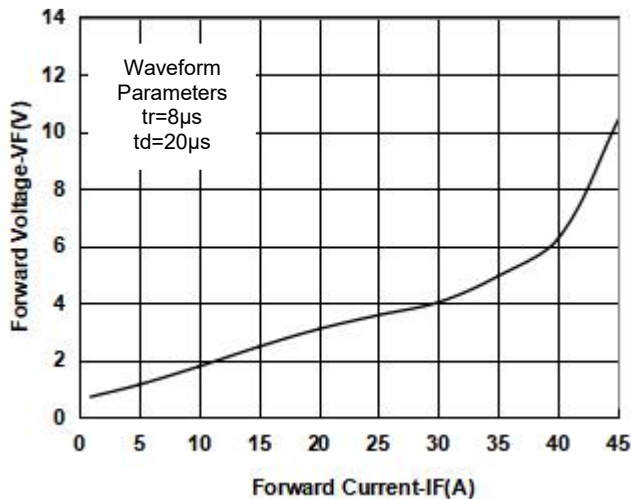
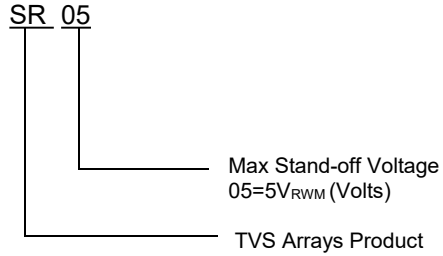
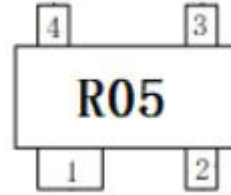


Fig. 5 Typical Forward Voltage vs. Forward Current

**Part Name Information**

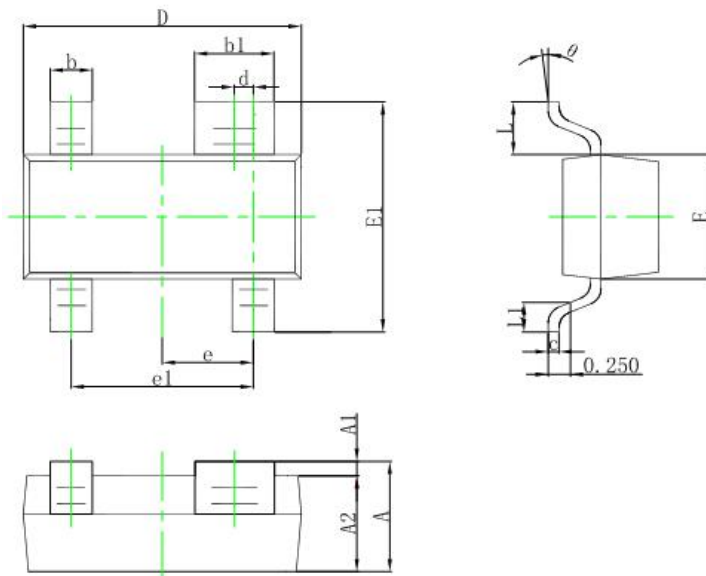


**Marking Diagram**



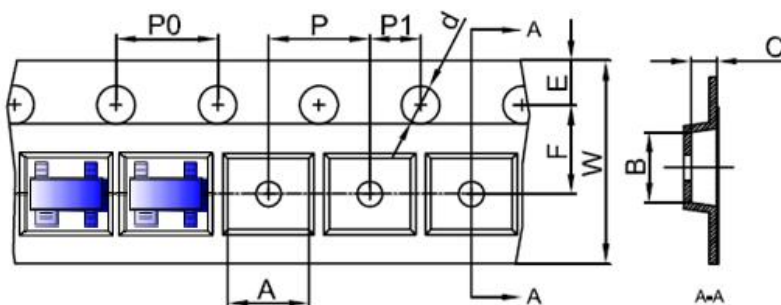
Where R05 is SR05  
R05 =Marking code

**Mechanical Dimensions SOT-143**



SYMBOL	Millimeters		Inches	
	MIN.	MAX.	MIN.	MAX.
A	0.890	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.076	0.170	0.003	0.007
D	2.650	3.050	0.104	0.120
E	1.190	1.400	0.047	0.055
E1	2.100	2.550	0.083	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.780	2.050	0.070	0.081
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

**Mechanical Dimensions SOT-143**



SYMBOL	Millimeters	
	Min.	Max.
A	3.09	3.29
B	2.70	2.90
C	1.21	1.41
d	1.40	1.60
E	1.65	1.85
F	3.40	3.60
P	3.90	4.10
P0	3.90	4.10
P1	1.90	2.10
W	7.90	8.10

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