

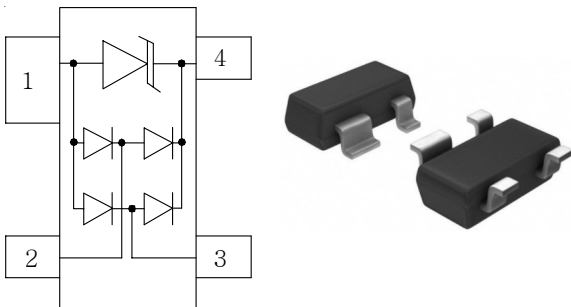
Description

The SR05 is a 2-line ultra-low capacitance TVS diode array, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The SR05 has a very low capacitance with a typical value at 0.6pF, and complies with the IEC 61000-4-2 (ESD) standard with $\pm 20\text{kV}$ air and $\pm 15\text{kV}$ contact discharge. It is assembled into a 4-pin SOT-143 lead-free package. The small size, very low capacitance and high ESD surge protection make SR05 an ideal choice to protect cell phone, digital video interfaces, high speed data ports, and many other portable applications.

Features

- * Uni-directional ESD protection of two lines
- * Low capacitance: 0.6pF(Max)
- * Low reverse stand-off voltage: 5V
- * Low reverse clamping voltage
- * Low leakage current
- * Fast response time
- * IEC 61000-4-2 Level ESD protection
- * RoHS Compliant

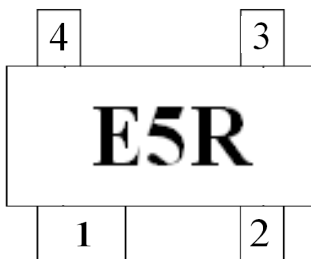
Circuit Diagram



Applications

- * Cellular Handsets and Accessories
- * Notebooks and Handhelds
- * Personal Digital Assistants
- * Portable Instrumentation
- * Digital Cameras
- * Peripherals
- * Audio Players, Keypads, Side Keys, LCD
- * USB 2.0

Marking Diagram



Transparent top view

E5R= Device Marking Code

Dot denotes Pin1

Ordering Information

Part Number	Packaging	Reel Size
SR05	3000/Tape & Reel	7 inch

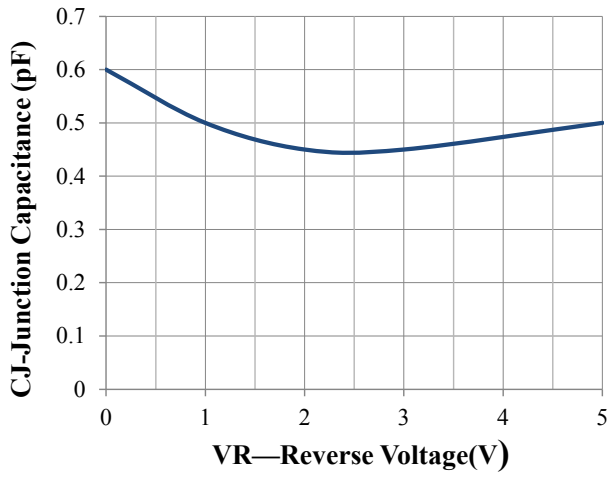
Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs , I/O-GND)	Ppk	50	W
Peak Pulse Power (8/20 μs , Vcc-GND)	Ppk	240	W
Peak Pulse Current (8/20 μs , I/O-GND)	IPP	4	A
Peak Pulse Current (8/20 μs , Vcc-GND)	IPP	15	A
ESD per IEC 61000-4-2 (Air)	$V_{\text{ESD}, \text{VDD}}$	± 20	kV
ESD per IEC 61000-4-2 (Contact)	$V_{\text{ESD}, \text{I/O}}$	± 15	
Operating Temperature Range	TJ	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$

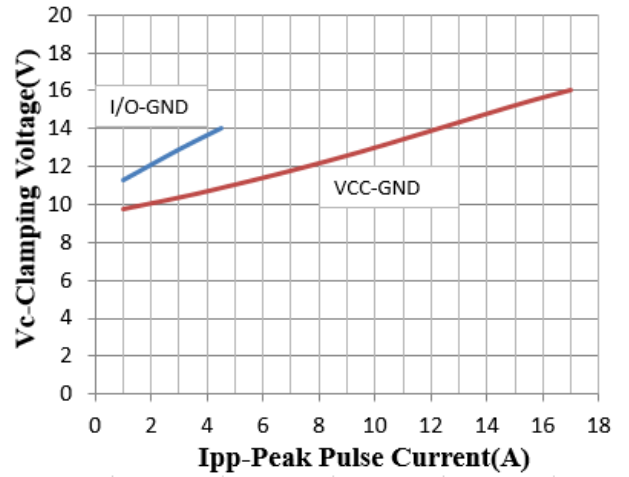
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	$I_{\text{T}} = 1\text{mA}, \text{I/O-GND}$			5	V
Breakdown Voltage	V_{BR}	$I_{\text{T}} = 1\text{mA}, \text{I/O-GND}$	6.0	7.0	8.5	V
Breakdown Voltage	V_{BR}	$I_{\text{T}} = 1\text{mA}, \text{VCC-GND}$	6.0	7.2	8.3	V
Reverse Leakage Current	I_{R}	$V_{\text{RWM}} = 5\text{V}$			1	μA
Clamping Voltage	V_{C}	$\text{IPP} = 4\text{A} (8 \times 20\mu\text{s pulse}), \text{I/O-GND}$		14.0	16.0	V
Clamping Voltage	V_{C}	$\text{IPP} = 15\text{A} (8 \times 20\mu\text{s pulse}), \text{VCC-GND}$		15.0	17.0	V
Junction Capacitance	C_{J}	$V_{\text{R}} = 0\text{V}, f = 1\text{MHz}, \text{I/O-I/O}$		0.3	0.5	pF
Junction Capacitance	C_{J}	$V_{\text{R}} = 0\text{V}, f = 1\text{MHz}, \text{I/O-GND}$		0.6	0.9	pF

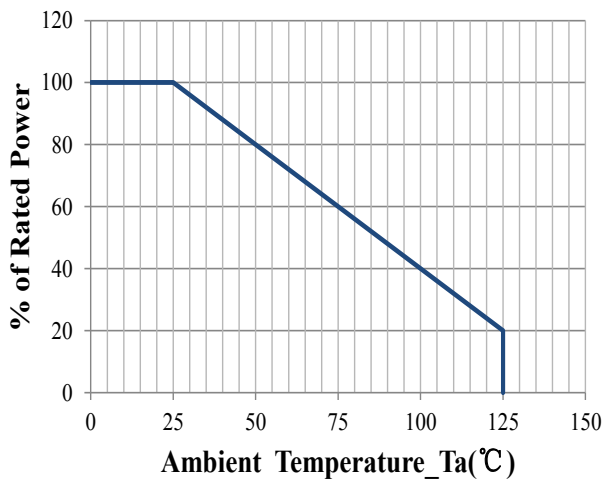
Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)



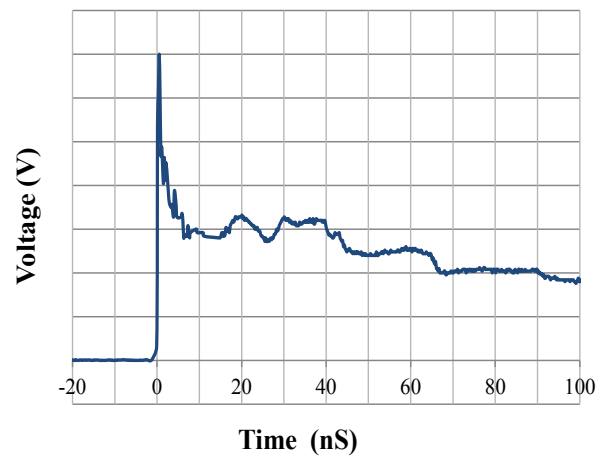
Capacitance Characteristics



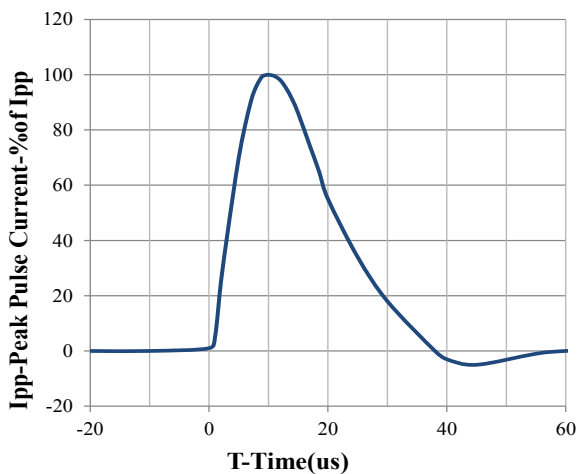
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve

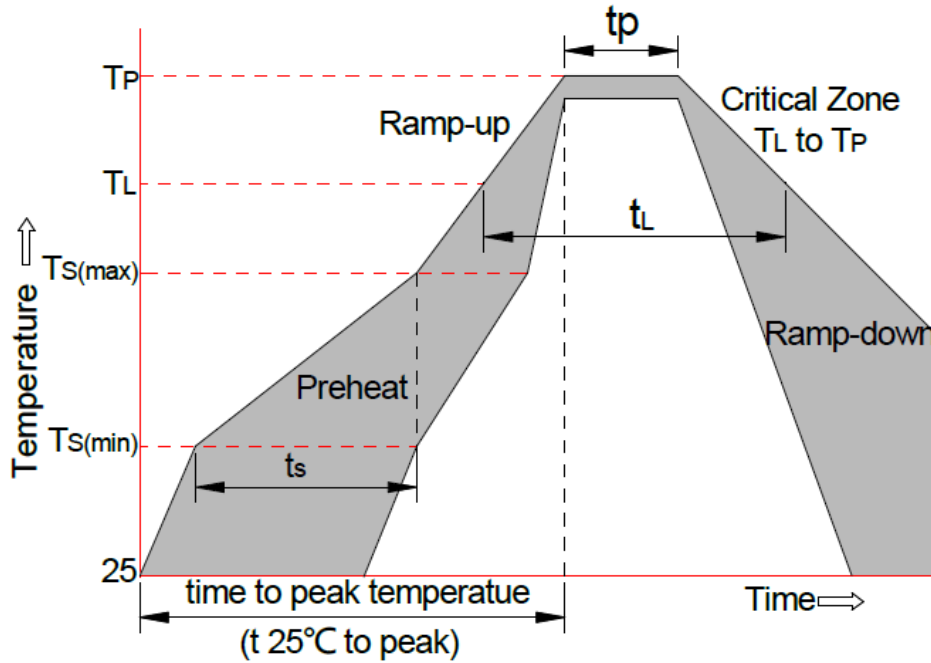


IEC61000-4-2 Pulse Waveform



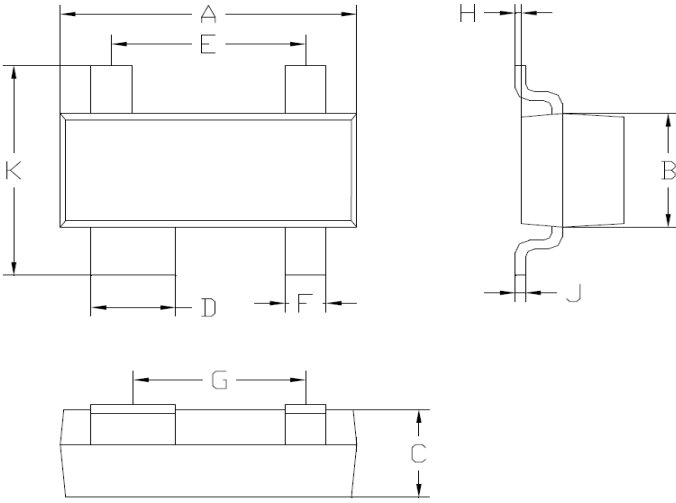
8 X 20us Pulse Waveform

Soldering Parameters



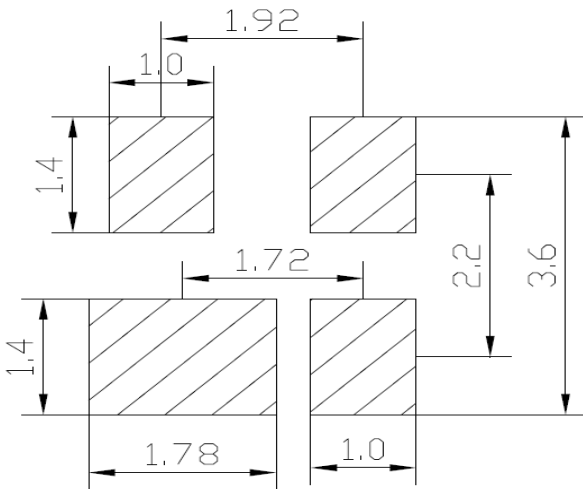
Reflow Condition		Pb-Free Assembly
Pre-heat	-Temperature Min (Ts (min))	+150°C
	-Temperature Max (Ts (max))	+200°C
	-Time (Min to Max) (ts)	60-180 secs
Average ramp up rate(Liquid us Temp (TL) to peak)		3°C/sec. Max
Ts (max) to TL-Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature (TL) (Liquid us)	+217°C
	-Temperature (tL)	60-150 secs
Peak Temp (Tp)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (tp)		30 secs. Max
Ramp-down Rate		6 °C/secs. Max
xTime 25°C to Peak Temp (Tp)		8 min. Max
Do not exceed		+260°C

SOT-143 Package Outline Drawing



SOT-143		
Dim	Min	Max
A	2.70	3.10
B	1.10	1.50
C	0.9	1.1
D	0.78	0.88
E	1.80	2.00
F	0.37	0.43
G	1.59	1.79
H	0.02	0.1
J	0.05	0.15
K	2.20	2.60
ALL Dimensions in mm		

SOLDERING FOOTPRINT



Unit : mm