General description

The SR05 are monolithic application specific devices dedicated to ESD protection of high speed interfaces, such as USB 2.0, Ethernet links and video lines.The very low line capacitance secures a high level of signal integrity without compromising in protecting sensitive chips against the most stringently characterized ESD strikes.

Features and benefits

- ESD Protect for 2 high-speed I/O channels
- Provide ESD protechtion for each channel to IEC 61000-4-2(ESD)±30kV(air),±30kV(contact)
- Low Working Voltage: 5.0V
- Low Capacitance: 0.8pF (I/O-GND)
- Low Clamping Voltage
- Response time is typically < 1 ns
- Array of surge rated diodes with internal equivalent TVS diodes
- Small package saves board space
- RoHS compliant

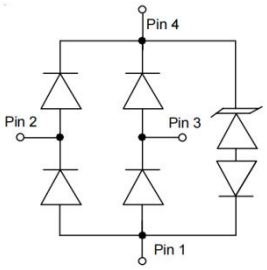
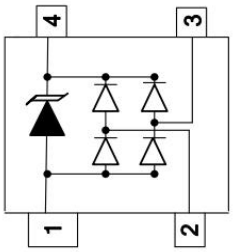
Application information

- Video Graphics Cards
- USB2.0 Power and Data lines protechtion
- 10/100/1000 Ethernet
- Notebooks and PC Computers
- IEEE 1394 Firewire Ports
- Portable electronics
- SIM ports

Ordering information

Device	Package	Marking	Packaging
SR05	SOT-143	R05	3000/Tape & Reel

Schematic & Pin configuration

Circuit Diagram	Schematic & PIN Configuration
	

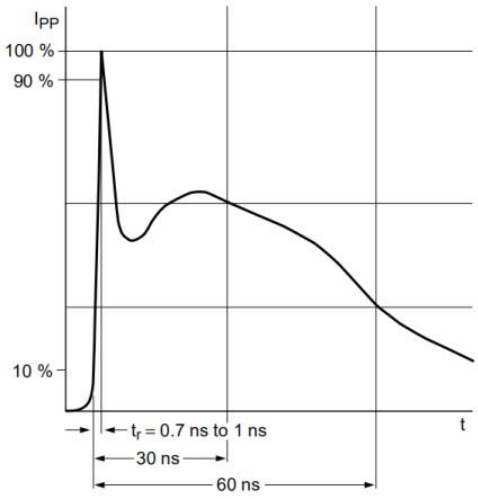
Maximum Ratings (T_{OP} = 25 °C, unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (Tp = 8/20μs)	P_{PPM}	78	W
Rated Peak Pulse Current (Tp = 8/20μs)	I_{PPM}	6	A
ESD voltage IEC 61000-4-2 (air discharge)	V_{ESD}	30	kV
ESD voltage IEC 61000-4-2 (contact discharge)	V_{ESD}	30	kV
Maximum lead temperature for soldering during 10s	T_L	260	°C
Storage Temperature Range	T_{stg}	-55 to +150	°C
Operating Temperature Range	T_{OP}	-40 to +125	°C

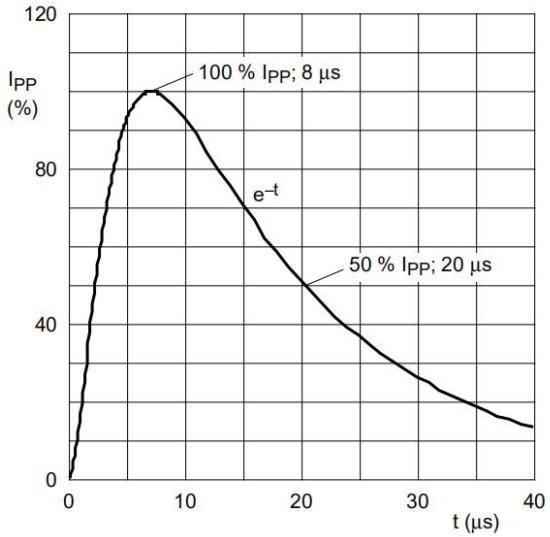
Electrical Characteristics (T_{OP} = 25 °C, unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Reverse Working Voltage	V_{RWM}	--	--	5.0	V	
Breakdown Voltage	V_{BR}	6.4	--	7.8	V	I_T=1mA
Leakage Current ILeak	I_R	--	--	100	nA	V_{RWM}=5V
Clamping Voltage(I/O-GND)	V_C	--	11	13	V	I_{PP}=6A,Tp=8/20μs
Clamping Voltage(V_{DD}-GND)	V_C	--	11	13	V	I_{PP}=9A,Tp=8/20μs
Junction Capacitance	C_j	--	0.4	0.45	pF	V_R=0V, f=1MHz I/O to I/O
Junction Capacitance	C_j	--	0.8	1.0	pF	V_R=0V, f=1MHz I/O to GND

Typical Characteristics

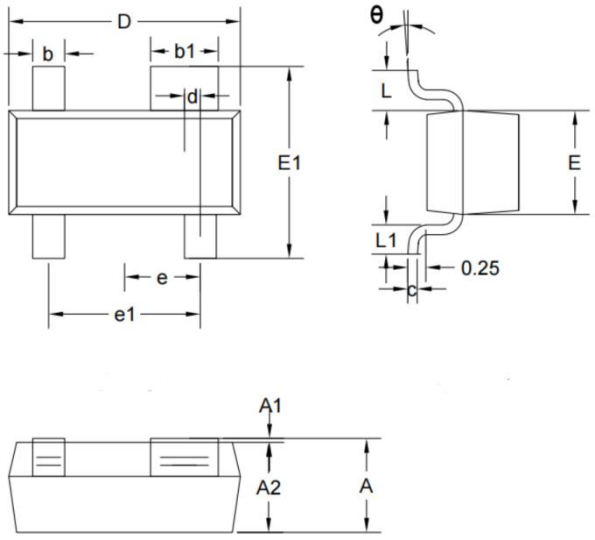


IEC61000−4−2 Waveform



IEC 61000-4-5 Waveform(8/20µs pulse)

Package Outline Dimensions (SOT-143)



Symbol	Dimensions In Millimet		
	Min	Typ	Max
A	0.950	1.125	1.300
A1	0.000	0.050	0.100
A2	0.900	1.050	1.200
b	0.300	0.400	0.500
b1	0.750	0.850	0.950
c	0.080	0.115	0.150
D	2.800	2.900	3.000
d		0.2TYP	
E	1.200	1.300	1.400
E1	2.250	2.400	2.550
e		0.950TYP	
e1	1.800	1.900	2.000
L		0.550TYP	
L1	0.300	0.400	0.500
θ	0°	4°	8°

Soldering Parameters

Reflow Condition		Pb-Free Assembly
Pre-heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us 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)(Liquid us)	+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
xTime 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C