

2-Line Unidirectional ESD Protection Diode

General description

These dual monolithic silicon surge protection diodes are designed for applications requiring transient overvoltage protection capability. They are intended for use in voltage and ESD sensitive equipment. as computers, printers, business machines, communication systems, medical equipment and other applications. Their dual junction common anode design protects two separate lines using only one package. These devices are ideal for situations where board space is at a premium.

Features and benefits

- 2 Unidirectional transil functions
- Reverse stand-off voltage: 5.0V Max
- Ultra Low Capacitance 0.5pF (Typ)
- Low leakage current: nA Level
- Response time is typically < 1 ns
- ESD Protection: 20kV(air)/ 15kV(contact) (IEC61000-4-2)

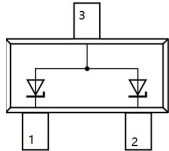
Application information

- USB 2.0 and USB 3.0
- HDMI 1.3 and HDMI 1.4
- SATA and eSATA
- IEEE 1394
- PCI Express
- Portable Electronics

Ordering information

Device	Package	Marking	Packaging
SM05L	SOT23	5ML	3000/Tape & Reel

Schematic & Pin configuration

Simplified outline and symbol	Pinning
	<p>PIN1 cathode 1</p> <p>PIN2 cathode 2</p> <p>PIN3 common anode</p>

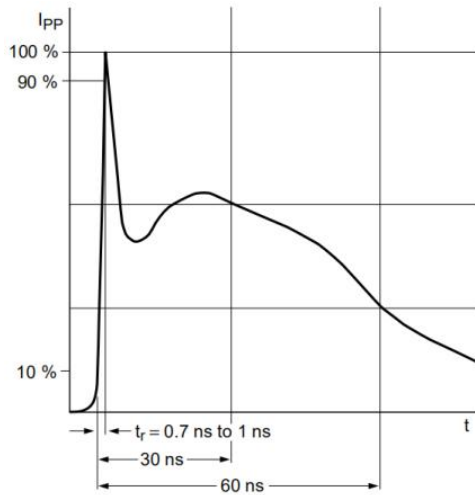
Maximum Ratings ($T_{OP} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power ($t_p = 8/20\text{ }\mu\text{s}$)	P_{PPM}	100	W
Peak Pulse Current($t_p = 8/20\text{ }\mu\text{s}$)	I_{PPM}	4	A
Maximum lead temperature for soldering during 10s	T_L	260	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^{\circ}\text{C}$
Operating Temperature Range	T_{OP}	-40 to +125	$^{\circ}\text{C}$
Maximum junction temperature	T_j	150	$^{\circ}\text{C}$
ESD voltage IEC 61000-4-2 (air discharge)	V_{ESD}	25	kV
ESD voltage IEC 61000-4-2 (contact discharge)	V_{ESD}	15	kV

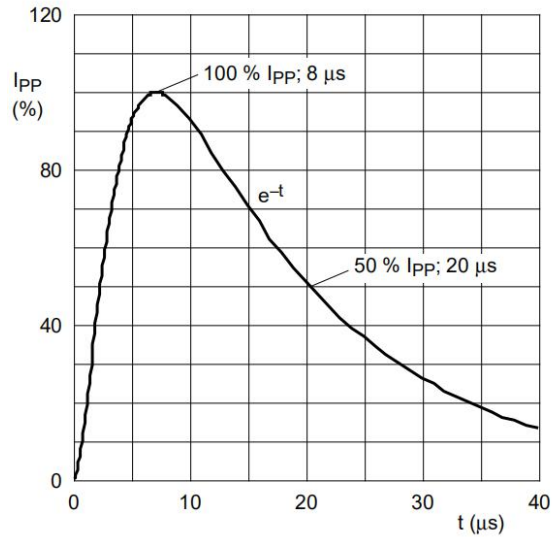
Electrical Characteristics ($T_{OP} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Reverse Working Voltage	V_{RWM}	--	--	5.0	V	
Breakdown Voltage	V_{BR}	6.0	--	8.0	V	$I_T=1\text{mA}$
Leakage Current ILeak	I_R	--	--	100	nA	$V_{RWM}=5\text{V}$
Clamping Voltage	V_C	--	--	25	V	$I_{PP}=4\text{A}, t_p=8/20\mu\text{s}$
Junction Capacitance	C_j	--	0.5	0.6	pF	$V_R=0\text{V}, f=1\text{MHz}$ (Pin 1 or 2 to 3)
		--	0.25	0.3	pF	$V_R=0\text{V}, f=1\text{MHz}$ (Pin 1 to P2 and 2 to 1)

Typical Characteristics



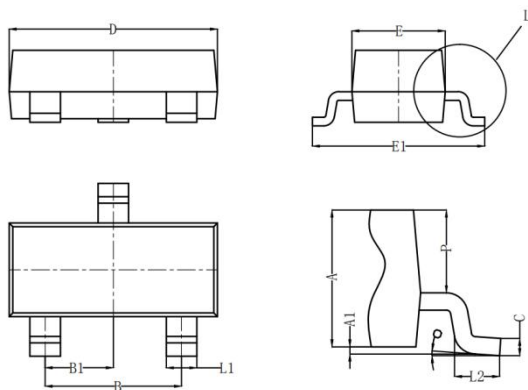
IEC61000-4-2 Waveform



IEC 61000-4-5 Waveform(8/20μs pulse)

Package Outline Dimensions

SOT23



Symbol	Dimensions (mm)		
	Min	Typ	Max
A	0.900	1.000	1.1100
A1	0.000	0.050	0.100
L1	0.350	0.400	0.500
C	0.100	0.110	0.120
D	2.800	2.900	3.000
E	1.250	1.300	1.350
E1	2.250	2.400	2.550
B	1.800	1.900	2.000
B1	0.950 Typ		
L2	0.200	0.350	0.450
P	0.550	0.575	0.600