Description

The MS0552S6 is a low capacitance TVS 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 MS0552S6 has an ultra-low capacitance with a typical value at 0.4pF, and complies with the IEC 61000-4-2 (ESD) with ±25kV air and ±20kV contact discharge. It is assembled into a 6-pin lead-free SOT-563 package. The low capacitance array make it ideal for four high speed data and transmission line. This device is optimized for ESD protection of portable electronics.

Features

- Two data lines and one power line protects
- Ultra low leakage: nA level
- Low clamping voltage
- Operating voltage: 5V
- Ultra low capacitance: 0.4pF typical(I/O to I/O)
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    Air discharge: ±25kV
    Contact discharge: ±20kV
  - IEC61000-4-5 (Lightning) 5A (8/20μs)
- RoHS Compliant

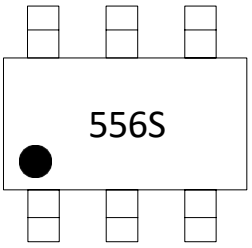
Mechanical Data

- Package: SOT-563
- Case Material: “Green” Molding Compound.
- Terminal Connections: See Diagram Below

Applications

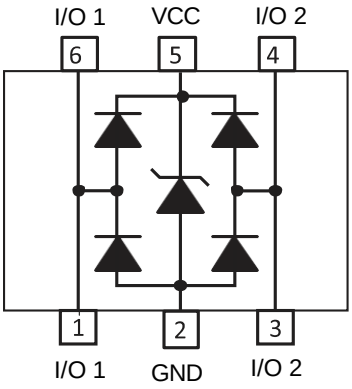
- USB 2.0 Ports
- Digital Visual Interface (DVI)
- Monitor and Flat Panel Displays
- Gigabit Ethernet
- Ethernet port: 10/100Mb/s
- SIM card protection

Marking Information



556S = Device Marking code

Schematic and PIN Configuration



SOT-563 (Top View)

Product and Packing Information

Part Number	QTY/Reel	Reel Size
MS0552S6	3,000	7 inch

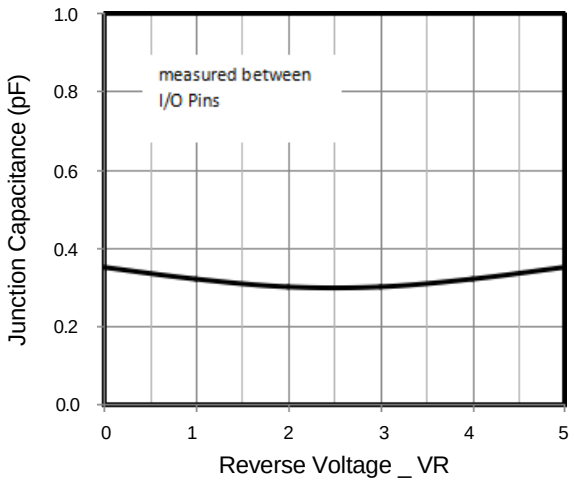
Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	P_{PP}	75	W
Peak Pulse Current (8/20μs)	I_{PP}	5	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±25 ±20	KV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	T_{stg}	−55 to +150	°C

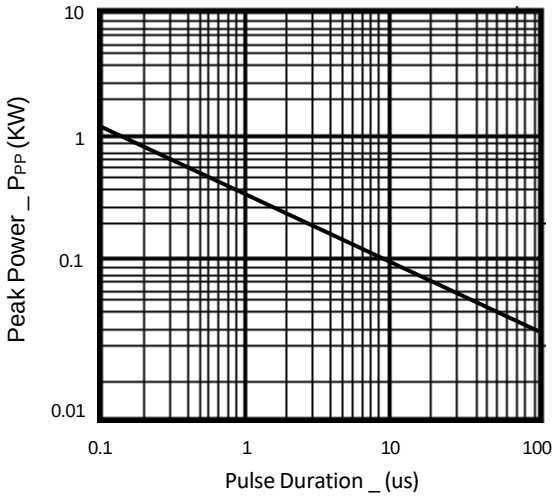
Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6			V	I_T = 1mA
Reverse Leakage Current	I_R			0.2	μA	V_{RWM} = 5V
Clamping Voltage	V_C			10	V	I_{PP} = 1A (8/20μs)
Clamping Voltage	V_C			15	V	I_{PP} = 5A (8/20μs)
Junction Capacitance	C_J		0.6	0.8	pF	VR = 0V, f = 1MHz, any I/O pin to ground
Junction Capacitance	C_J		0.3	0.4	pF	VR = 0V, f = 1MHz, between I/O pins

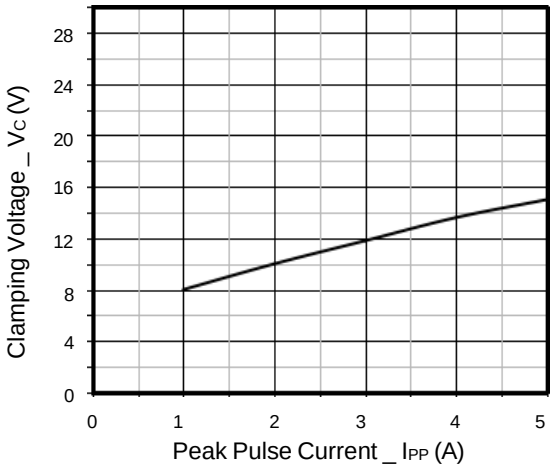
Typical Characteristics (T_A=25˚C unless otherwise specified)



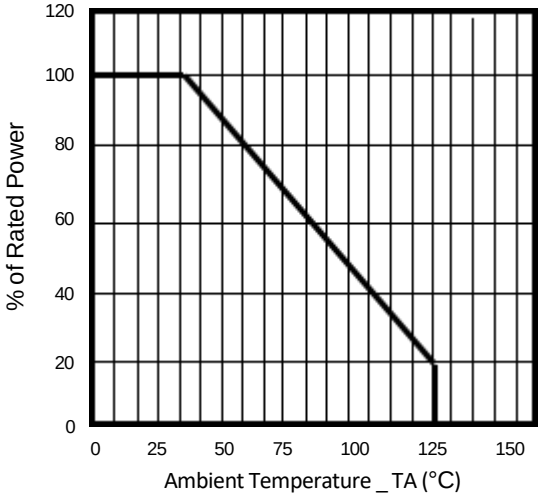
Junction Capacitance vs. Reverse Voltage



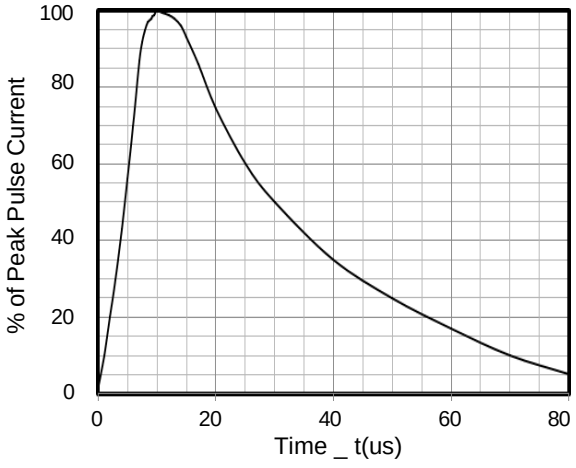
Peak Pulse Power vs. Pulse Time



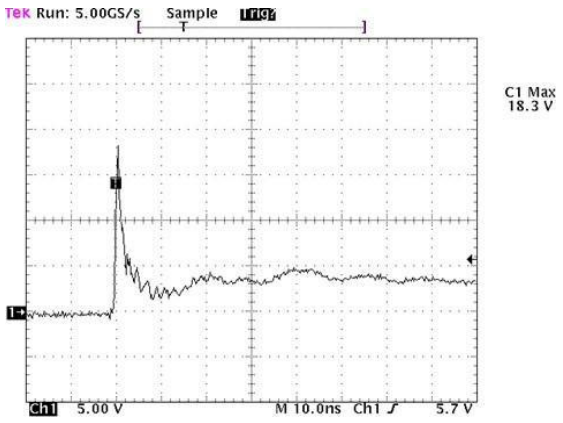
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



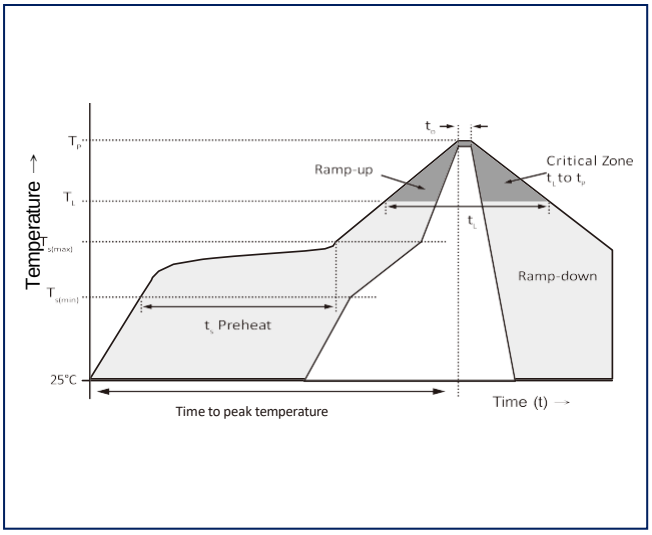
8/20 Pulse Waveform



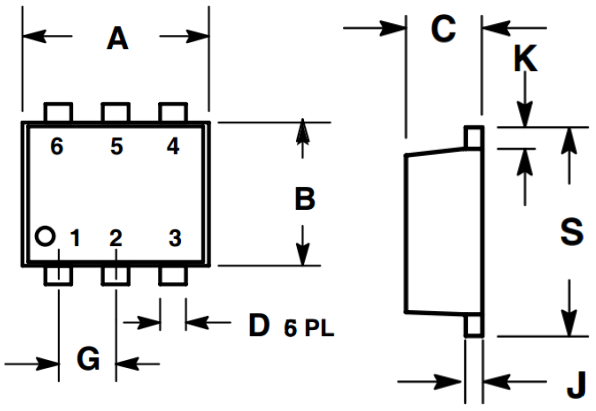
Note : Data is taken with a 10x attenuator
ESD clamping Voltage
8 kV Contact per IEC61000-4-2

Soldering Parameters

Reflow Condition		Lead–free assembly
Pre Heat	Temperature Max ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak		3°C/second max
$T_{S(max)}$to T_L - Ramp-up Rate		3°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Time (min to max) (t_L)	60 – 150 seconds
Peak Temperature (T_P)		260°C (+0/-5)
Time within 5°C of actual peak Temperature (t_p)		30 seconds Max
Ramp-down Rate		6°C/second Max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		260°C

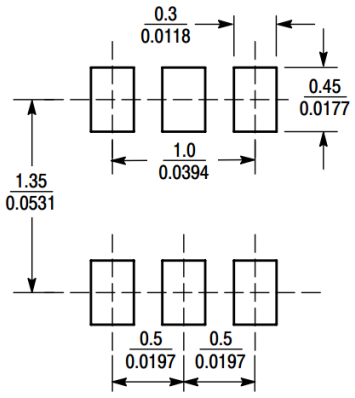


SOT-563 Package Outline Drawing



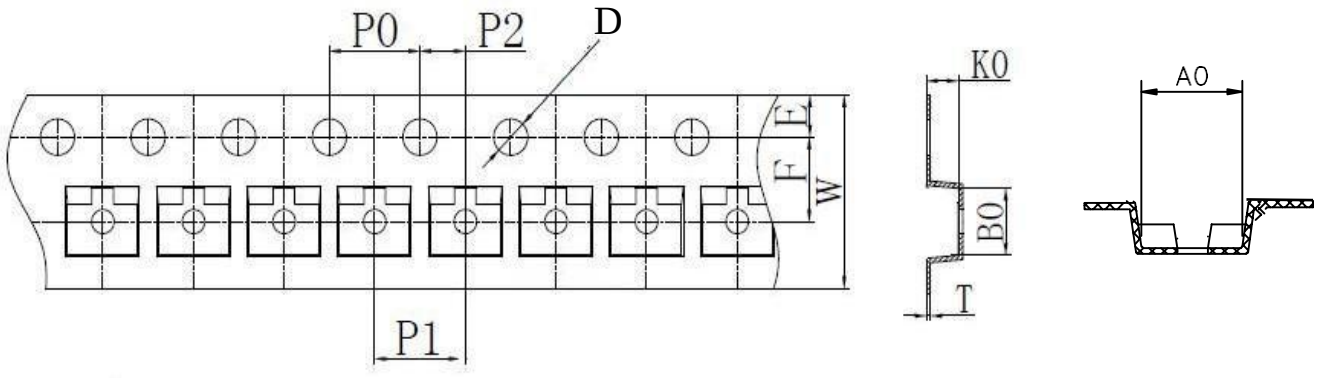
SYMBOL	Dimensions Millimeter	
	Min	Max
A	1.50	1.70
B	1.10	1.30
C	0.50	0.60
D	0.17	0.27
G	0.50 BSC	
J	0.08	0.18
K	0.10	0.30
S	1.50	1.70

Suggested Land Pattern



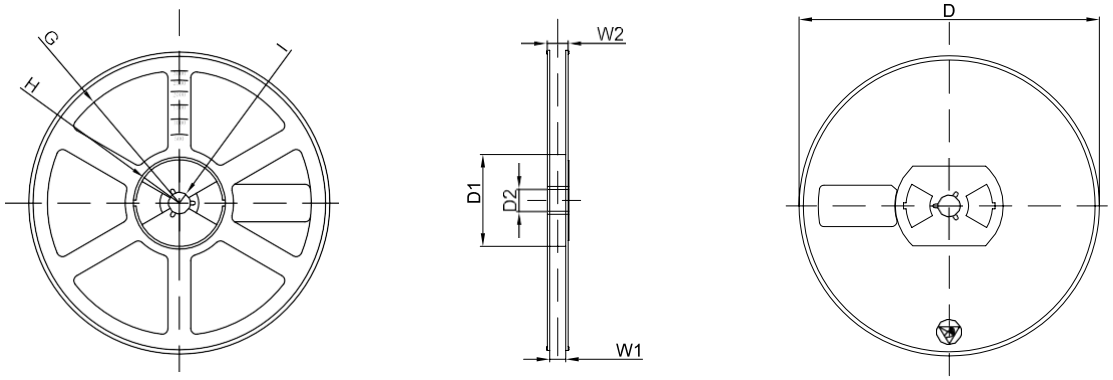
Unit : mm

Carrier Tape



Symbol	A0	B0	K0	P0	P1	P2
Spec	3.15±0.10	2.70±0.10	1.25±0.10	4.00±0.10	4.00±0.10	2.00±0.10
Symbol	D	W	E	F	T	
Spec	1.50±0.10	8.00±0.2	1.75±0.10	3.50±0.05	0.18±0.05	

Reel



Symbol	D	D1	D2	G	H	I	W1	W2
Spec	178±2.00	54.4±1.00	13.00±1.00	R78.00	R25.60	R6.50	9.50±1.00	12.30±1.00