

Low Capacitance Transient Voltage Suppressors / ESD Protectors

Features

- Low I/O capacitance at 7pF typical
- Four channels of ESD protection
- In-system ESD protection to $\pm 15\text{kV}$ contact discharge, per the IEC 61000-4-2 international standard
- Compact SMT package saves board space and facilitates layout in space-critical applications
- Each I/O pin can withstand over 1000 ESD strikes
- Lead-free

Note: For other versions of the CM1218, see the CM1218 datasheet or the CM1218-C4 datasheet.

Applications

- High-speed consumer electronic ports
- ESD protection of PC ports, including USB ports, serial ports, parallel ports, IEEE1394 ports, docking ports, proprietary ports, etc.
- Protection of interface ports or IC pins which are exposed to high ESD levels

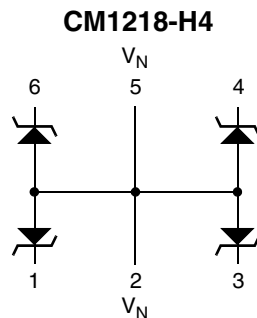
Product Description

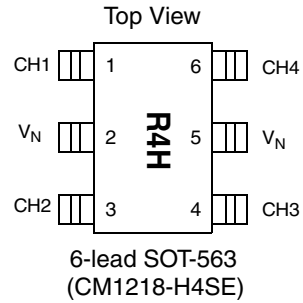
The CM1218-H4 device features transient voltage suppressor arrays that provide a very high level of protection for sensitive electronic components which may be subjected to electrostatic discharge (ESD).

All pins of the CM1218-H4 are rated to withstand $\pm 15\text{kV}$ ESD pulses using the IEC 61000-4-2 contact discharge method. Using the MIL-STD-883D (Method 3015) specification for Human Body Model (HBM) ESD, all pins are protected from contact discharges of greater than $\pm 30\text{kV}$.

The CM1218-H4 is supplied in an SOT563, lead-free finished package.

Electrical Schematic



PACKAGE / PINOUT DIAGRAMS


This drawing is not to scale.

PIN DESCRIPTIONS

LEADS	NAME	DESCRIPTION
(Refer to package / pinout diagrams)	CHx	The cathode of the respective TVS diode, which should be connected to the node requiring transient voltage protection.
(Refer to package / pinout diagrams)	V _N	The anode of the TVS diodes.

Ordering Information
PART NUMBERING INFORMATION

Leads	Channels	Package	Lead-free Finish	
			Ordering Part Number	Part Marking
6	4	SOT-563	CM1218-H4SE	R4H

Notes : The maximum soldering reflow temperature for these packages is 260°C. Parts are shipped in tape and reel form unless otherwise specified.

Specifications

ABSOLUTE MAXIMUM RATINGS

PARAMETER	RATING	UNITS
Storage Temperature Range	-65 to +150	°C
Package Power Dissipation SOT-563	0.15	W

STANDARD OPERATING CONDITIONS

PARAMETER	RATING	UNITS
Operating Temperature	-40 to +85	°C

ELECTRICAL OPERATING CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
C_{IN}	Channel Input Capacitance	$T_A = 25^\circ\text{C}$, 2.5VDC, 1MHz; Note 1		7		pF
ΔC_{IN}	Differential Channel I/O to GND Capacitance	$T_A = 25^\circ\text{C}$, 2.5VDC, 1MHz; Note 1		0.19		pF
V_{RSO}	Reverse Stand-off Voltage	$I_R = 10\mu\text{A}$, $T_A = 25^\circ\text{C}$	5.5			V
		$I_R = 1\text{mA}$, $T_A = 25^\circ\text{C}$	6.1			V
I_{LEAK}	Leakage Current	$V_{IN} = 5.0\text{VDC}$, $T_A = 25^\circ\text{C}$			1	μA
V_{SIG}	Small Signal Clamp Voltage Positive Clamp Negative Clamp	$I = 10\text{mA}$, $T_A = 25^\circ\text{C}$		6.8		V
		$I = -10\text{mA}$, $T_A = 25^\circ\text{C}$		-0.8		V
V_{ESD}	ESD Withstand Voltage Contact Discharge per IEC 61000-4-2 standard Human Body Model, MIL-STD-883, Method 3015	Notes 1, 3 & 4; $T_A = 25^\circ\text{C}$	± 15			kV
		Notes 1, 2 & 4; $T_A = 25^\circ\text{C}$	± 30			kV
R_D	Diode Dynamic Resistance Forward Conduction Reverse Conduction	$T_A = 25^\circ\text{C}$; Notes 1 & 2		0.57		Ω
				1.36		Ω

Note 1: These parameters guaranteed by design and characterization.

Note 2: Human Body Model per MIL-STD-883, Method 3015, $C_{Discharge} = 100\text{pF}$, $R_{Discharge} = 1.5\text{K}\Omega$, V_N grounded.

Note 3: Standard IEC 61000-4-2 with $C_{Discharge} = 150\text{pF}$, $R_{Discharge} = 330\Omega$, V_N grounded.

Note 4: These measurements performed with no external capacitor on CH_X .

Performance Information

Diode Capacitance

Typical diode capacitance with respect to positive TVS cathode voltage (reverse voltage across the diode) is given in Figure 1.

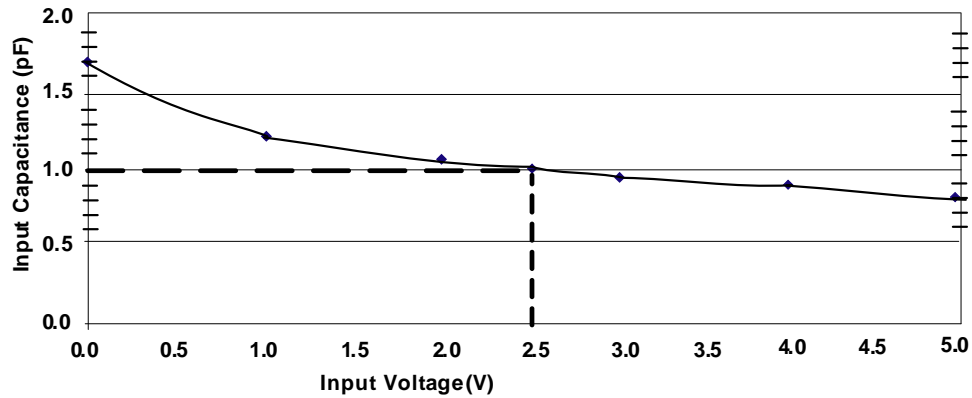


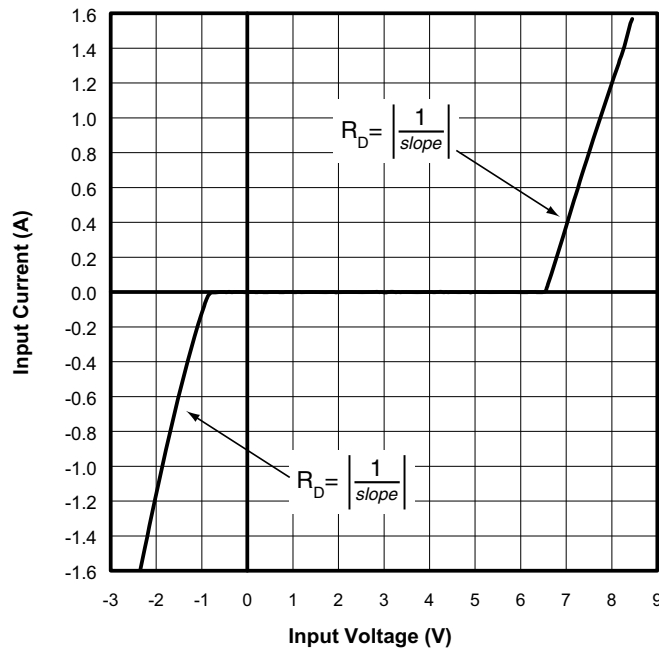
Figure 1. Diode Capacitance vs. Reverse Voltage

Typical High Current Diode Characteristics

Measurements are made in pulsed mode with a nominal pulse width of 0.7ms.

Typical Input VI Characteristics

(Pulse-mode measurements, pulse width = 0.7ms nominal)

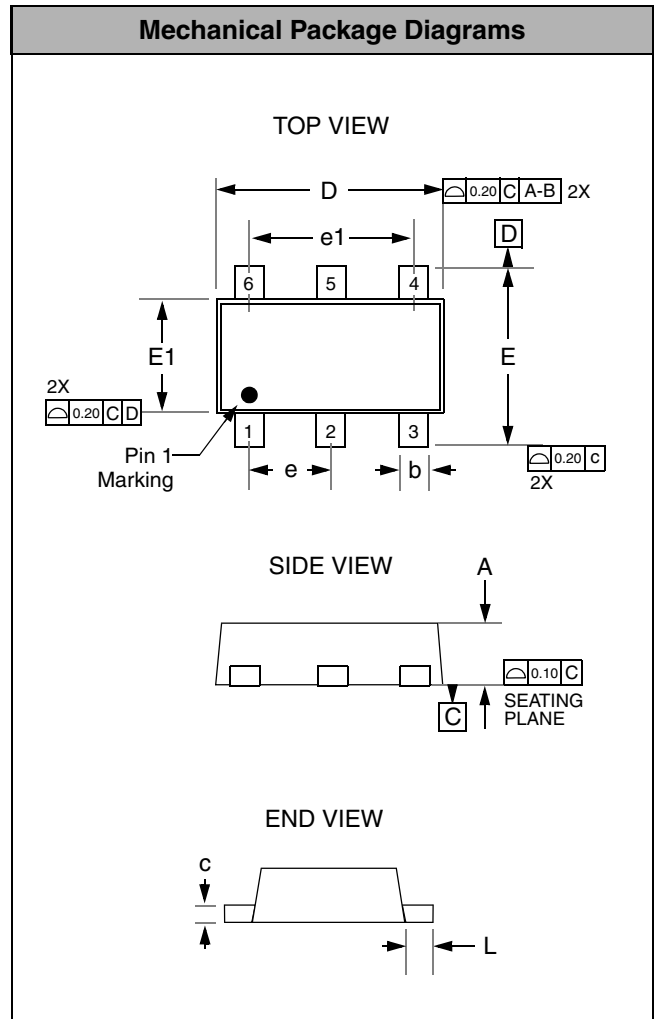


Mechanical Details

SOT-563 Mechanical Specifications

The CM1218-H4SE is supplied in a 6-pin SOT-563 package. Dimensions are presented below.

PACKAGE DIMENSIONS						
Package	SOT-563					
Leads	6					
Dim.	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	0.50	0.55	0.60	0.020	0.022	0.024
b	0.17		0.27	0.007		0.011
c	0.08		0.18	0.003		0.006
D	1.60 BSC			0.063 BSC		
E	1.50	1.60	1.70	0.059	0.063	0.067
E1	1.20 BSC			0.047 BSC		
e	0.50 BSC			0.020 BSC		
e1	1.00 BSC			0.040 BSC		
L	0.14	0.20	0.27	0.006	0.008	0.011
# per tape and reel	5000 pieces					
Controlling dimension: millimeters						



Package Dimensions for SOT-563