



Low Capacitance Transient Voltage Suppressors / ESD Protectors

CM1218-C4

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
- RoHS-compliant, lead-free

Note: For other versions of the CM1218, see the CM1218 datasheet or the CM1218-H4 datasheet.

Product Description

The CM1218-C4 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).

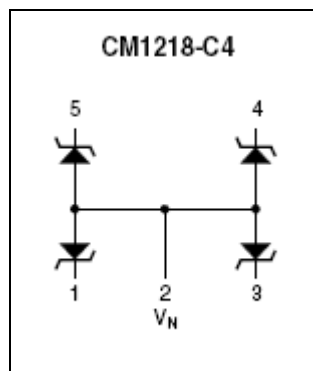
All pins of the CM1218-C4 are rated to withstand $\pm 15\text{kV}$ ESD pulses using the IEC 61000-4-2 contact discharge method. Using the MIL-STD-883D (Method 3015) specification for Human Body Model (HBM) ESD, all pins are protected from contact discharges of greater than $\pm 30\text{kV}$.

The CM1218C4 is supplied in an SOT-553, RoHS-compliant, lead-free finished package.

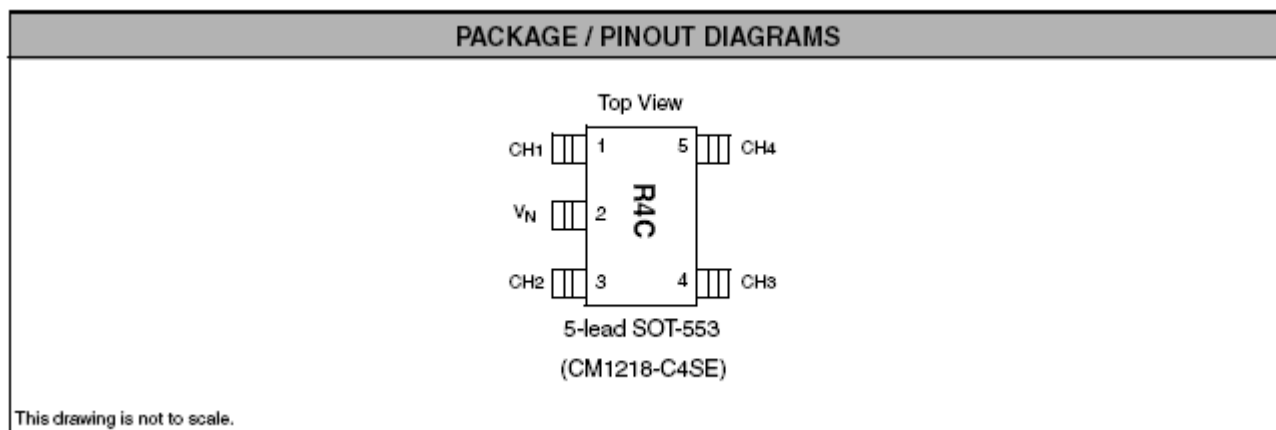
Applications

- 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

Block Diagram



Pin Configurations



Pin Information

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
5	4	SOT-553	CM1218-C4SE	R4C

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

CM1218-C4

Specifications

ABSOLUTE MAXIMUM RATINGS

PARAMETER	RATING	UNITS
Storage Temperature Range	-65 to +150	°C
Package Power Dissipation SOT-553	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		7		pF
ΔC_{IN}	Differential Channel I/O to GND Capacitance	$T_A = 25^\circ\text{C}$, 2.5VDC, 1MHz		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 2 and 3; $T_A = 25^\circ\text{C}$	± 15			kV
		Notes 1 and 3; $T_A = 25^\circ\text{C}$	± 30			kV
R_D	Diode Dynamic Resistance Forward Conduction Reverse Conduction	$T_A = 25^\circ\text{C}$; Note 1		0.57		Ω
				1.36		Ω

Note 1: 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 2: Standard IEC 61000-4-2 with $C_{Discharge} = 150\text{pF}$, $R_{Discharge} = 330\Omega$, V_N grounded.

Note 3: 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 Diode Capacitance vs. Reverse Voltage .

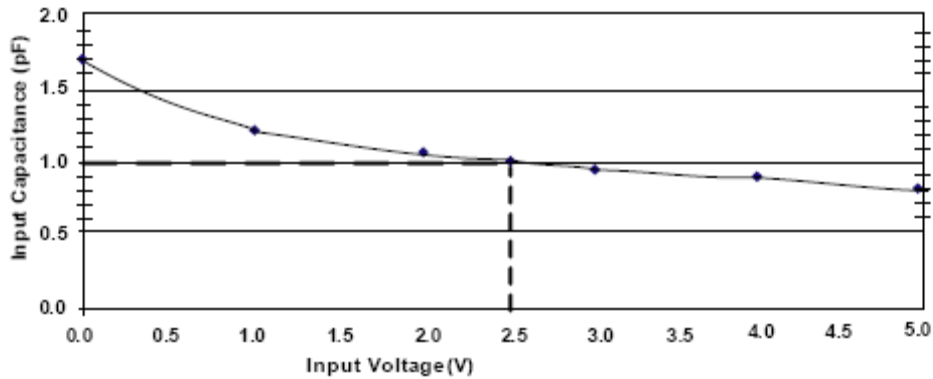
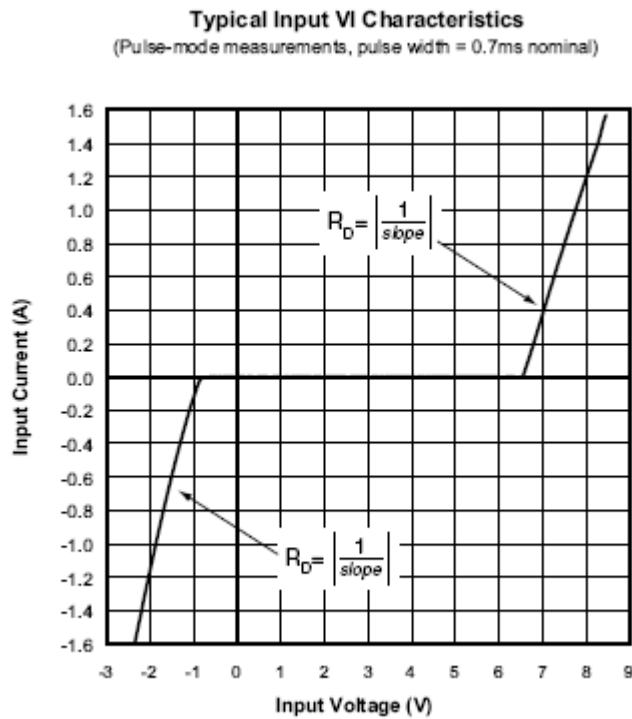


Figure 1. Diode Capacitance vs. Reverse Voltage

Typical High Current Diode Characteristics

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



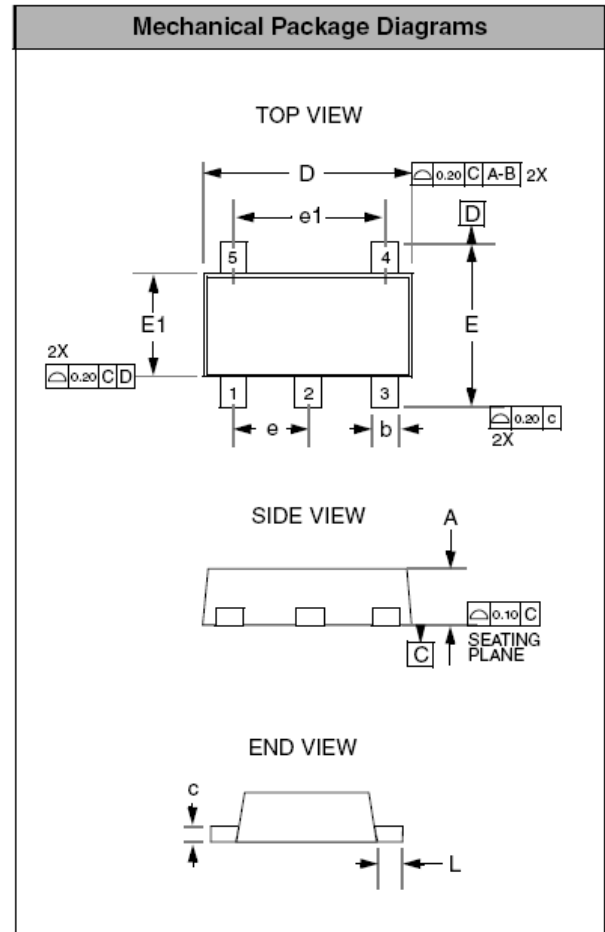
CM1218-C4

Mechanical Details

SOT-553 Mechanical Specifications

The CM1218-C4SE is supplied in a 5-pin SOT-553 package. Dimensions are presented below.

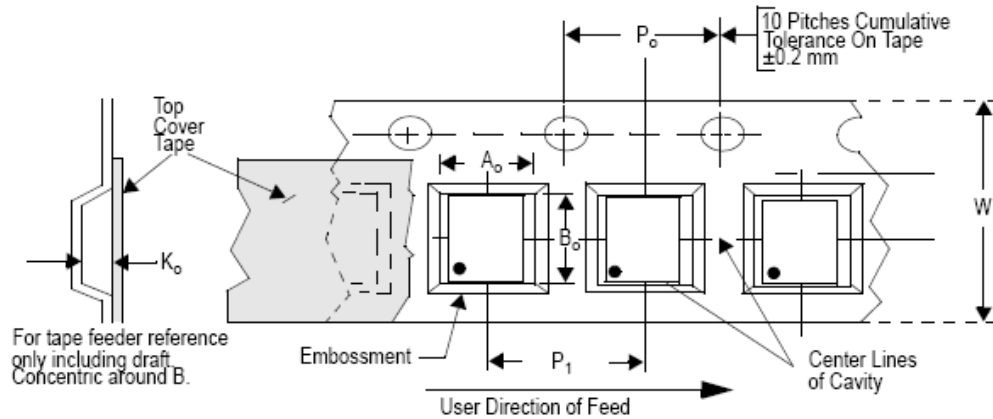
PACKAGE DIMENSIONS						
Package	SOT-553					
Leads	5					
Dim.	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	0.50	0.55	0.60	0.020	0.022	0.024
b	0.17	0.22	0.27	0.007	0.009	0.011
c	0.08	0.13	0.18	0.003	0.005	0.007
D	1.60 BSC			0.063 BSC		
E	1.60 BSC			0.063 BSC		
E1	1.20 BSC			0.047 BSC		
e	0.50 BSC			0.020 BSC		
e1	1.00 BSC			0.040 BSC		
L	0.20 BSC			0.008 BSC		
# per tape and reel	5000 pieces					
Controlling dimension: millimeters						




Package Dimensions for SOT-553

Tape and Reel Specifications

PART NUMBER	PACKAGE SIZE (mm)	POCKET SIZE (mm) $B_o \times A_o \times K_o$	TAPE WIDTH W	REEL DIAMETER	QTY PER REEL	P_o	P_1
CM1218-C4SE	1.60 X 1.60 X 0.55	1.78 X 1.78 X 0.690	8mm	178mm (7")	5000	4mm	4mm



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