

CM1218-C4

Low Capacitance Transient Voltage Suppressors / ESD Protectors

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 ± 15 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 ± 30 kV.

The CM1218-C4 is supplied in an SOT-553, RoHS-compliant, lead-free finished package.

Features*

- Low I/O Capacitance at 7 pF Typical
- Four Channels of ESD Protection
- In-system ESD Protection to ± 15 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
- These Devices are Pb-Free and are RoHS Compliant

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



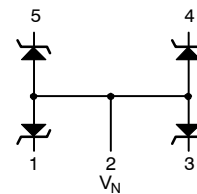
ON Semiconductor®

<http://onsemi.com>



SOT-553
SE SUFFIX
CASE 463B

BLOCK DIAGRAM



CM1218-C4

MARKING DIAGRAM



R4C = Specific Device Code
M = Month Code
■ = Pb-Free Package

ORDERING INFORMATION

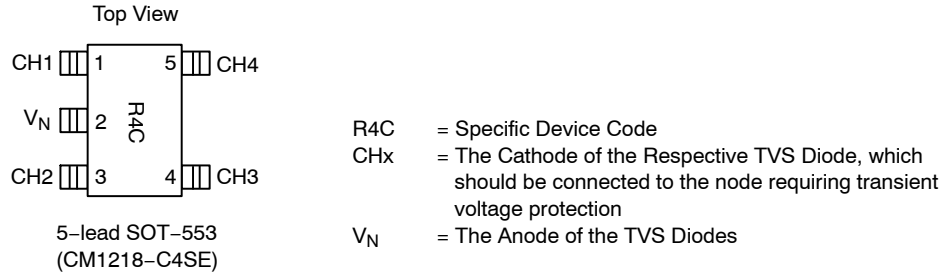
Device	Package	Shipping†
CM1218-C4SE	SOT-553 (Pb-Free)	5000/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

*For Other Versions of the CM1218, see the CM1218 datasheet or the CM1218-H4 datasheet.

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PACKAGE / PINOUT DIAGRAM & PIN DESCRIPTIONS



SPECIFICATIONS

Table 1. ABSOLUTE MAXIMUM RATINGS

Parameter	Rating	Units
Storage Temperature Range	-65 to +150	°C
Package Power Dissipation SOT-553	0.15	W

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Table 2. STANDARD OPERATING CONDITIONS

Parameter	Rating	Units
Operating Temperature	-40 to +85	°C

Table 3. ELECTRICAL OPERATING CHARACTERISTICS

Symbol	Parameter	Conditions	Min	Typ	Max	Units
C _{IN}	Channel Input Capacitance	T _A = 25°C, 2.5 VDC, 1 MHz		7		pF
ΔC _{IN}	Differential Channel I/O to GND Capacitance	T _A = 25°C, 2.5 VDC, 1 MHz		0.19		pF
V _{RSO}	Reverse Stand-off Voltage	I _R = 10 μA, T _A = 25°C	5.5			V
		I _R = 1 mA, T _A = 25°C	6.1			V
I _{LEAK}	Leakage Current	V _{IN} = 5.0 VDC, T _A = 25°C			1	μA
V _{SIG}	Small Signal Clamp Voltage Positive Clamp Negative Clamp	I = 10 mA, T _A = 25°C		6.8		V
		I = -10 mA, T _A = 25°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	T _A = 25°C; Notes 2 & 3	±15			kV
		T _A = 25°C; Notes 1 & 3	±30			kV
R _D	Diode Dynamic Resistance Forward Conduction Reverse Conduction	T _A = 25°C; Note 1		0.57		Ω
				1.36		Ω

1 Human Body Model per MIL-STD-883, Method 3015, C_{Discharge} = 100 pF, R_{Discharge} = 1.5 KΩ, V_N grounded.

2 Standard IEC 61000-4-2 with C_{Discharge} = 150 pF, R_{Discharge} = 330 Ω, V_N grounded.

3 These measurements performed with no external capacitor on CH_x.

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Performance Information

Diode Capacitance

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

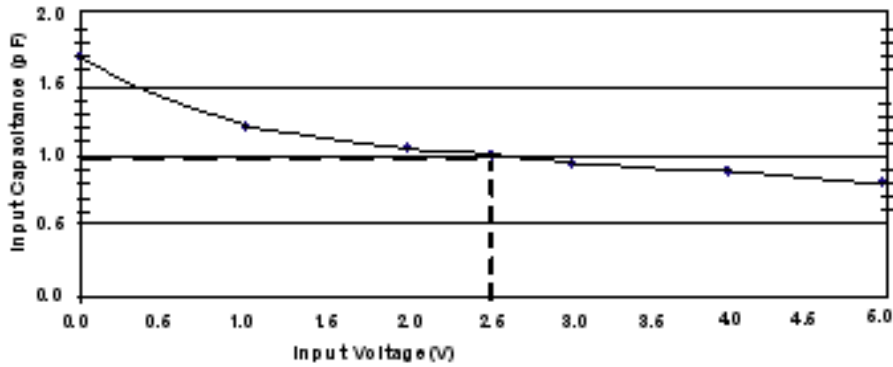


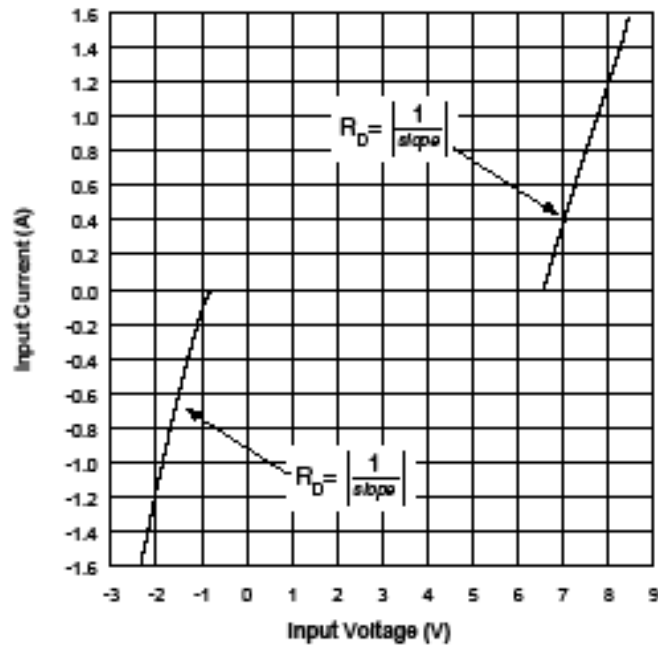
Figure 1. Diode Capacitance vs. Reverse Voltage

Typical High Current Diode Characteristics

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

Typical Input VI Characteristics

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



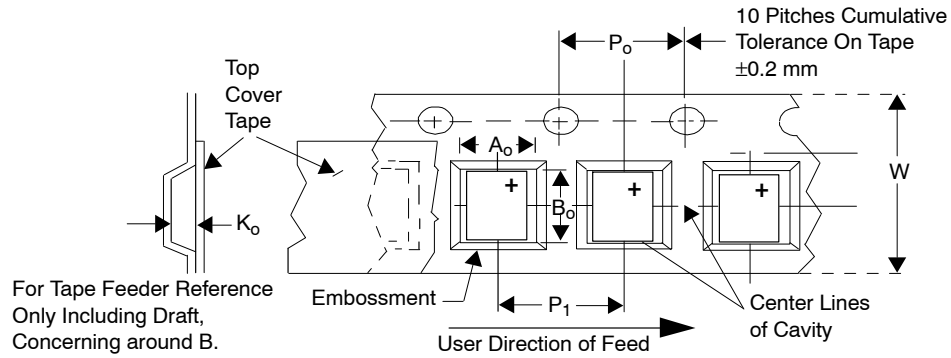
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MECHANICAL SPECIFICATIONS

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

Table 4. CSP TAPE AND REEL SPECIFICATIONS

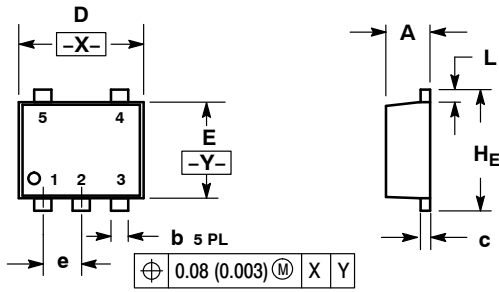
Part Number	Chip Size (mm)	Pocket Size (mm) $B_0 \times A_0 \times K_0$	Tape Width W	Reel Diameter	Qty per Reel	P_0	P_1
CM1218-C4SE	1.60 X 1.60 X 0.55	1.78 X 1.78 X 0.69	8 mm	178 mm (7")	5000	4 mm	4 mm



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PACKAGE DIMENSIONS

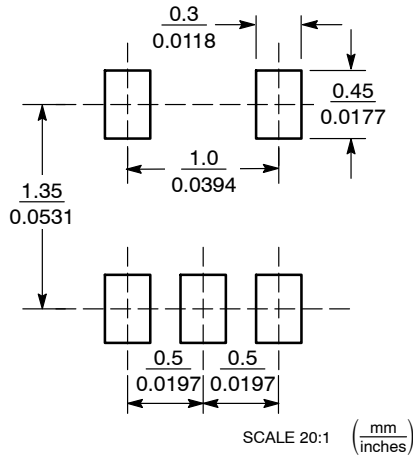
SOT-553, 5 LEAD CASE 463B-01 ISSUE B



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: MILLIMETERS
 3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

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	1.50	1.60	1.70	0.059	0.063	0.067
E	1.10	1.20	1.30	0.043	0.047	0.051
e	0.50 BSC			0.020 BSC		
L	0.10	0.20	0.30	0.004	0.008	0.012
HE	1.50	1.60	1.70	0.059	0.063	0.067

SOLDERING FOOTPRINT*



- STYLE 2:
1. CATHODE
 2. COMMON ANODE
 3. CATHODE 2
 4. CATHODE 3
 5. CATHODE 4

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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