ON Semiconductor®

Low Capacitance Transient Voltage Suppressors / ESD Protectors

CM1219

Features

- Low I/O capacitance at 4pF typical
- In-system ESD protection to ±8kV contact discharge, per the IEC 61000-4-2 international standard
- Five channels of ESD protection
- 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 version packaging

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

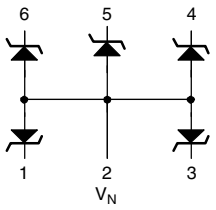
Product Description

The CM1219 family of devices 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 CM1219 are rated to withstand ±8kV 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 ±15kV.

Electrical Schematics

CM1219-05



SOT-563

*Standard test condition is IEC61000-4-2 level 4 test circuit with each pin subjected to ±8kV contact discharge for 1000 pulses. Discharges are timed at 1 second intervals and all 1000 strikes are completed in one continuous test run. The part is then subjected to standard production test to verify that all of the tested parameters are within spec after the 1000 strikes.

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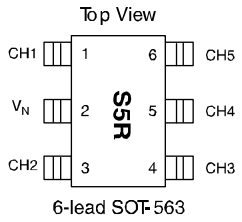
Publication Order Number:
CM1218/D



Note: 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	Package	Lead-free Finish	
		Ordering Part Number[1]	Part Marking
6	SOT-563	CM1219-05SE	S5R

Note 1: Parts are shipped in Tape & 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°C, 2.5VDC, 1MHz		4		pF
ΔC_{IN}	Differential Channel I/O to GND Capacitance	T_A = 25°C, 2.5VDC, 1MHz		0.14		pF
V_{RSO}	Reverse Stand-off Voltage	I_R=10μA, T_A = 25°C	5.5	6.8	8.5	V
		I_R=1mA, T_A = 25°C	6.1	6.8	8.8	V
I_{LEAK}	Leakage Current	V_{IN}=5.0VDC, T_A = 25°C			1	μA
V_{SIG}	Small Signal Clamp Voltage Positive Clamp Negative Clamp	 I = 10mA, T_A = 25°C I = -10mA, T_A = 25°C	 5.5 -0.4	 6.8 -0.8	 9.0 -1.2	 V 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 and 3 T_A = 25°C; Notes 1 and 3	 ±8 ±15			 kV kV
R_D	Diode Dynamic Resistance Forward Conduction Reverse Conduction	T_A = 25°C; Note 1	 0.5 1.3	 0.7 1.9	 0.9 2.4	 Ω Ω

Note 1: Human Body Model per MIL-STD-883, Method 3015, $C_{Discharge}$ = 100pF, $R_{Discharge}$ = 1.5KΩ, V_N grounded.
Note 2: Standard IEC 61000-4-2 with $C_{Discharge}$ = 150pF, $R_{Discharge}$ = 330Ω, 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 .

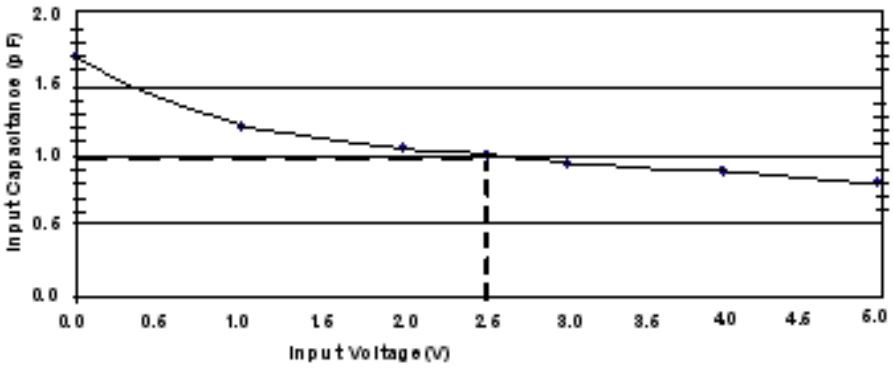
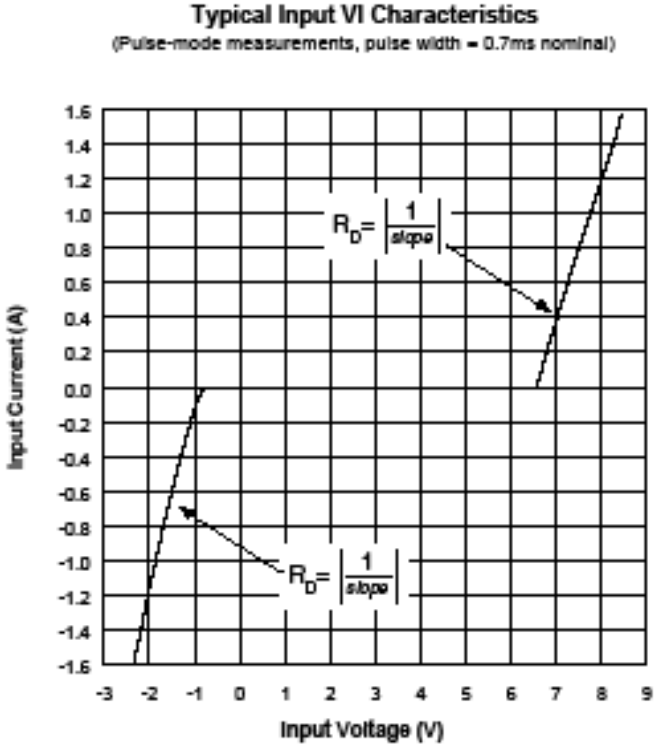


Figure 1. Diode Capacitance vs. Reverse Voltage

Typical High Current Diode Characteristics

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

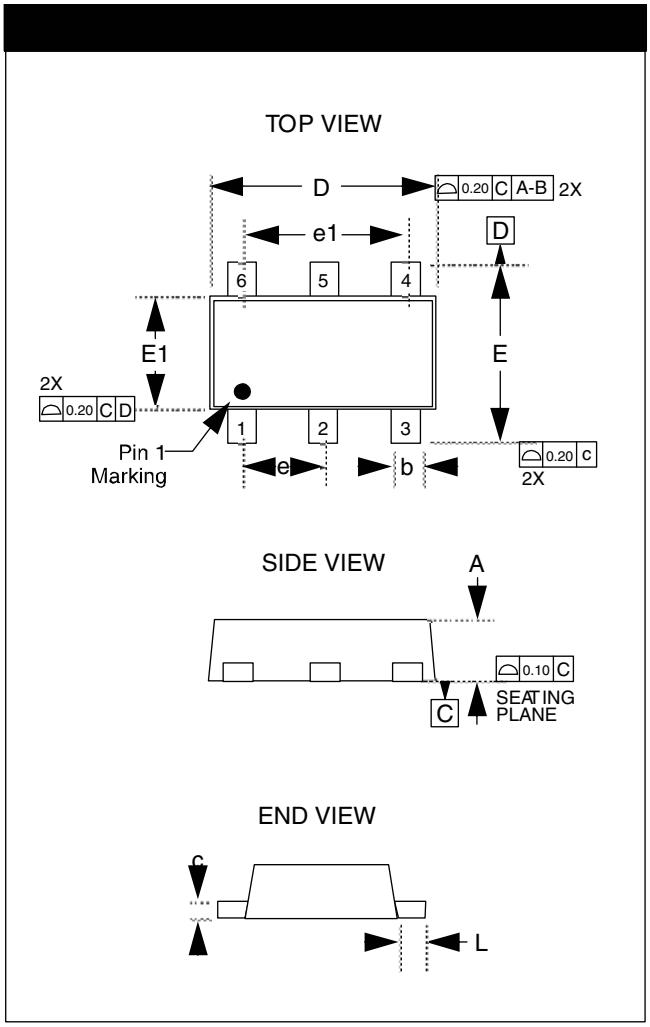


Mechanical Details

SOT-563 Mechanical Specifications

The CM1219-05SE is supplied in a 5-pin SOT-563 package. Dimensions are presented below.

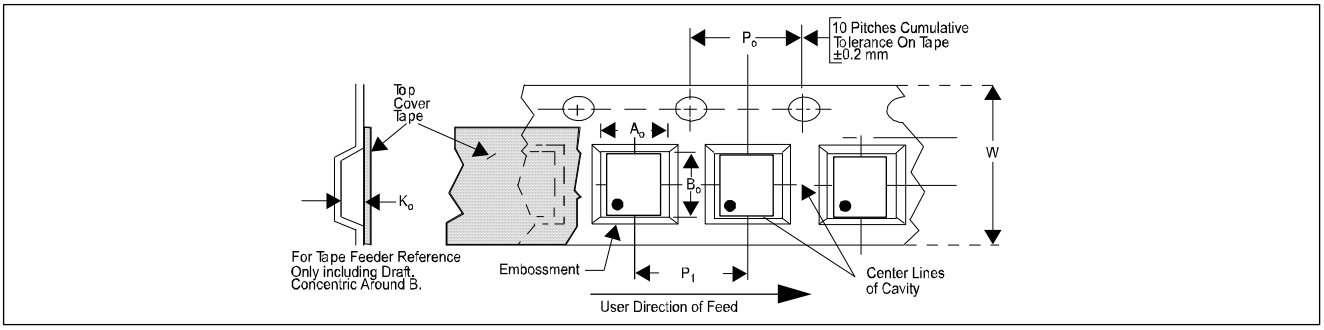
PACKAGE DIMENSIONS						
Package	SOT-563					
Leads	6					
Dim.	**Millimeters**			**Inches**		
	Min	**Nom**	**Max**	**Min**	**Nom**	**Max**
A	0.50	0.55	0.60	0.020	0.022	0.024
b	0.17	0.22	0.27	0.007	0.009	0.011
c	0.08	0.13	0.18	0.003	0.005	0.007
D	1.60 BSC			0.063 BSC		
E	1.60 BSC			0.063 BSC		
E1	1.20 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-563

Tape and Reel Specifications

PART NUMBER	PACKAGE SIZE (mm)	POCKET SIZE (mm) B_0 X A_0 X K_0	TAPE WIDTH W	REEL DIAMETER	QTY PER REEL	P_0	P_1
CM1219	1.60 X 1.60 X 0.55	1.78 X 1.78 X 0.69	8mm	178mm (7")	5000	4mm	4mm



PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
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