

CM1219

Low Capacitance Transient Voltage Suppressors / ESD Protectors

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 ± 8 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 ± 15 kV.

Features

- Functionally and Pin Compatible with CMD's PACDN1408 ESD Protection Device
- Low I/O Capacitance at 4 pF Typical
- In-system ESD Protection to ± 8 kV 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*
- These are Pb-Free Devices

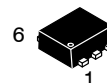
Applications

- 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



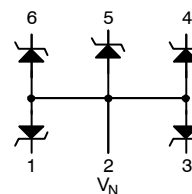
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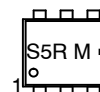
SOT-563
SE SUFFIX
CASE 463A

BLOCK DIAGRAM



SOT-563

MARKING DIAGRAM



S5R = Specific Device Code
M = Month Code
■ = Pb-Free Package

ORDERING INFORMATION

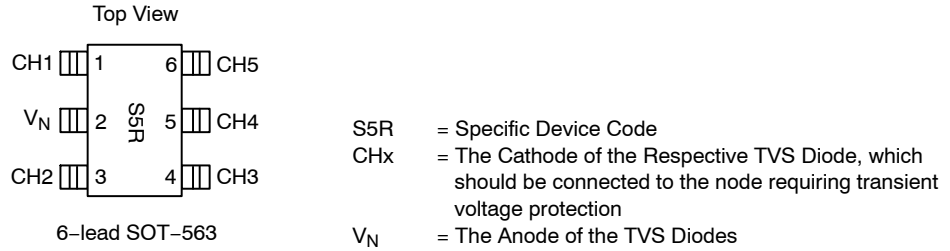
Device	Package	Shipping†
CM1219-05SE	SOT-563 (Pb-Free)	5000/Tape & Reel

†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.

*Standard test condition is IEC61000-4-2 level 4 test circuit with each pin subjected to ± 8 kV 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.

CM1219

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-563	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		4		pF
ΔC _{IN}	Differential Channel I/O to GND Capacitance	T _A = 25°C, 2.5 VDC, 1 MHz		0.14		pF
V _{RSO}	Reverse Stand-off Voltage	I _R = 10 μA, T _A = 25°C	5.5	6.8	8.5	V
		I _R = 1 mA, T _A = 25°C	6.1	6.8	8.8	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	5.5	6.8	9.0	V
		I = -10 mA, T _A = 25°C	-0.4	-0.8	-1.2	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	±8			kV
		T _A = 25°C; Notes 1 & 3	±15			kV
R _D	Diode Dynamic Resistance Forward Conduction Reverse Conduction	T _A = 25°C; Note 1				Ω
			0.5 1.3	0.7 1.9	0.9 2.4	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.

PERFORMANCE INFORMATION

Diode Capacitance

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

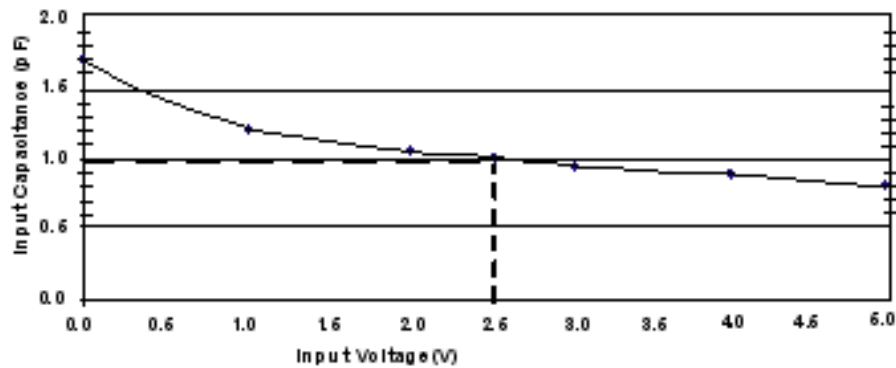
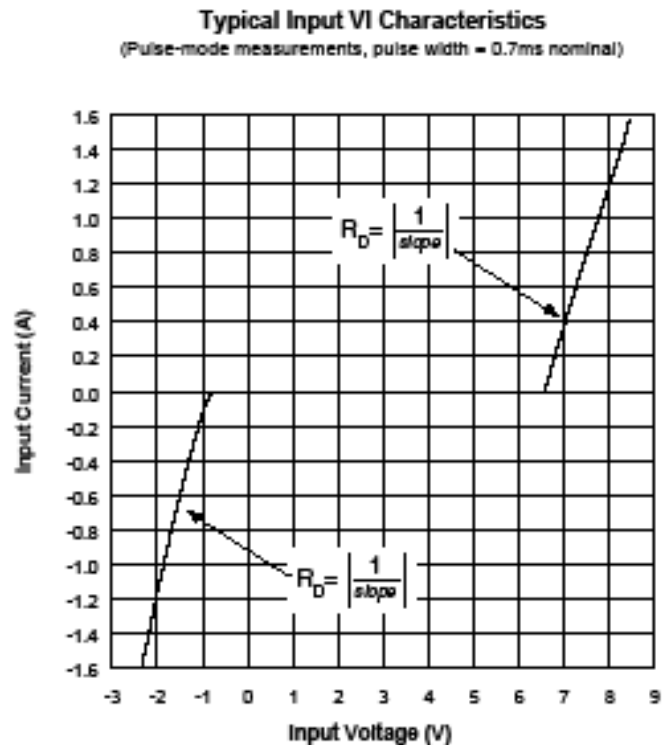


Figure 1. Diode Capacitance vs. Reverse Voltage

Typical High Current Diode Characteristics

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



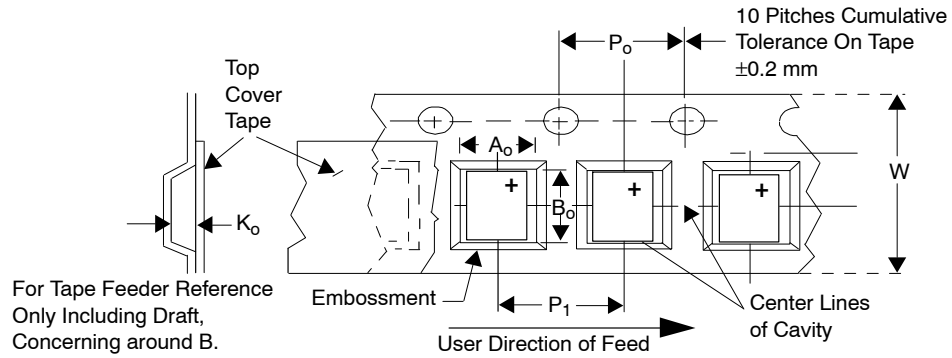
CM1219

MECHANICAL SPECIFICATIONS

The CM1219-05SE is supplied in a 5-pin SOT-563 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
CM1219	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



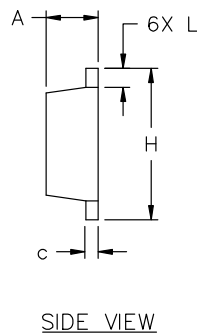
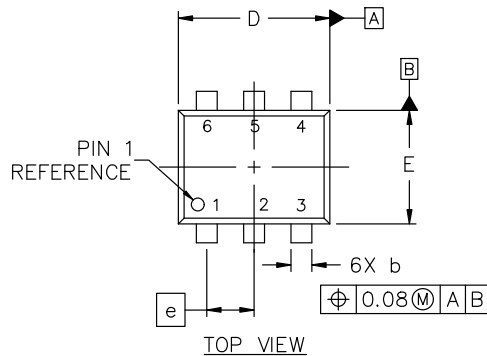


SOT-563-6 1.60x1.20x0.55, 0.50P
CASE 463A
ISSUE J

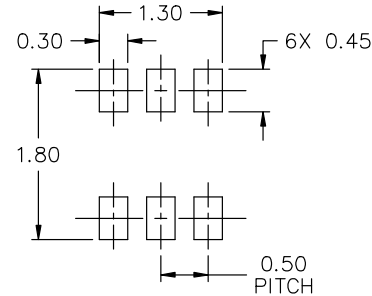
DATE 15 FEB 2024

NOTES:

1. DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5-2018.
2. ALL DIMENSION ARE IN MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.



DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.50	0.55	0.60
b	0.17	0.22	0.27
c	0.08	0.13	0.18
D	1.50	1.60	1.70
E	1.10	1.20	1.30
e	0.50 BSC		
H	1.50	1.60	1.70
L	0.10	0.20	0.30



STYLE 1:
PIN 1. EMITTER 1
2. BASE 1
3. COLLECTOR 2
4. EMITTER 2
5. BASE 2
6. COLLECTOR 1

STYLE 2:
PIN 1. EMITTER 1
2. EMITTER 2
3. BASE 2
4. COLLECTOR 2
5. BASE 1
6. COLLECTOR 1

STYLE 3:
PIN 1. CATHODE 1
2. CATHODE 1
3. ANODE/ANODE 2
4. CATHODE 2
5. CATHODE 2
6. ANODE/ANODE 1

STYLE 4:
PIN 1. COLLECTOR
2. COLLECTOR
3. BASE
4. EMITTER
5. COLLECTOR
6. COLLECTOR

STYLE 5:
PIN 1. CATHODE
2. CATHODE
3. ANODE
4. ANODE
5. CATHODE
6. CATHODE

STYLE 6:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. CATHODE
5. CATHODE
6. CATHODE

STYLE 7:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. CATHODE
5. ANODE
6. CATHODE

STYLE 8:
PIN 1. DRAIN
2. DRAIN
3. GATE
4. SOURCE
5. DRAIN
6. DRAIN

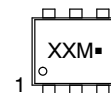
STYLE 9:
PIN 1. SOURCE 1
2. GATE 1
3. DRAIN 2
4. SOURCE 2
5. GATE 2
6. DRAIN 1

STYLE 10:
PIN 1. CATHODE 1
2. N/C
3. CATHODE 2
4. ANODE 2
5. N/C
6. ANODE 1

STYLE 11:
PIN 1. EMITTER 2
2. BASE 2
3. COLLECTOR 1
4. EMITTER 1
5. BASE 1
6. COLLECTOR 2

* FOR ADDITIONAL INFORMATION ON OUR Pb-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ON SEMICONDUCTOR SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERM/D.

**GENERIC
MARKING DIAGRAM***



XX = Specific Device Code
M = Month Code
▪ = Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

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