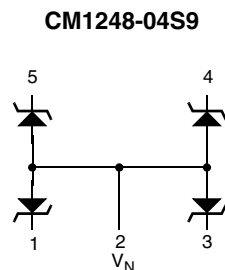


## Low Capacitance Transient Voltage Suppressors / ESD Protectors

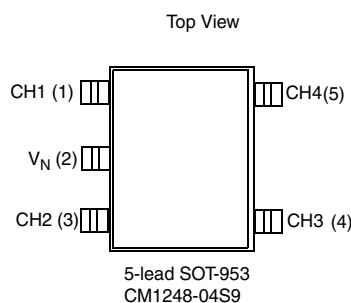
### Features

- Low I/O capacitance at 10pF at 0V
- 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

### Electrical Schematics



### PACKAGE / PINOUT DIAGRAMS



Note: This drawing is not to scale.

### PIN DESCRIPTIONS

Pins	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				
Pins	Channels	Package	Lead-free Finish	
			Ordering Part Number <sup>1</sup>	Part Marking
5	4	SOT-953	CM1248-04S9	L8

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

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

ELECTRICAL OPERATING CHARACTERISTICS (NOTE 1)						
SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
$C_{IN}$	Channel Input Capacitance	$T_A = 25^\circ\text{C}$ , 0VDC, 1MHz; Note 2		10	13	pF
$\Delta C_{IN}$	Differential Channel I/O to GND Capacitance	$T_A = 25^\circ\text{C}$ , 2.5VDC, 1MHz; Note 2		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	$V_{IN} = 5.0\text{VDC}$ , $T_A = 25^\circ\text{C}$			0.75	$\mu\text{A}$
$V_{SIG}$	Small Signal Clamp Voltage Positive Clamp Negative Clamp	$I = 10\text{mA}$ , $T_A = 25^\circ\text{C}$		6.8		V
		$I = -10\text{mA}$ , $T_A = 25^\circ\text{C}$		-0.89		V
$V_{ESD}$	ESD Withstand Voltage Contact Discharge per IEC 61000-4-2 standard Human Body Model, MIL-STD-883, Method 3015	Notes 2, 4 & 5; $T_A = 25^\circ\text{C}$	$\pm 15$			kV
		Notes 2, 3 & 5; $T_A = 25^\circ\text{C}$	$\pm 30$			kV
$R_D$	Diode Dynamic Resistance Forward Conduction Reverse Conduction	$T_A = 25^\circ\text{C}$ ; Notes 2 & 3		0.57		$\Omega$
				1.36		$\Omega$

Note 1: All parameters specified at  $T_A = -40^\circ\text{C}$  to  $+85^\circ\text{C}$  unless otherwise noted.

Note 2: These parameters guaranteed by design and characterization.

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

Note 5: 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.

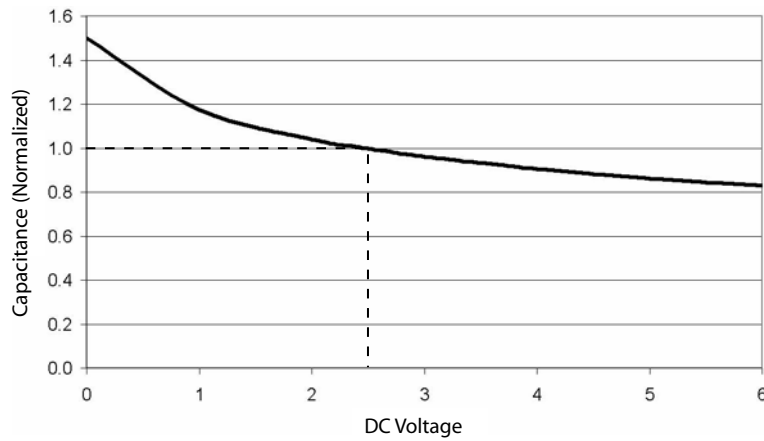


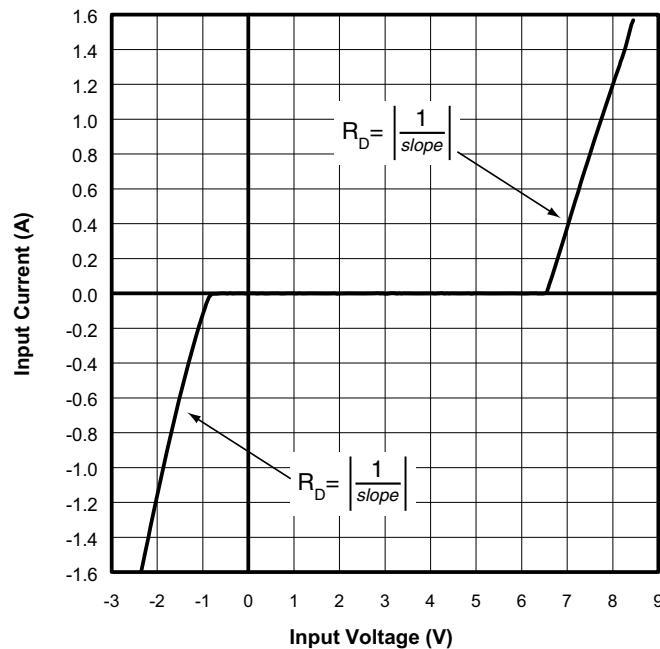
Figure 1. Diode Capacitance vs. Reverse Voltage

### 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)

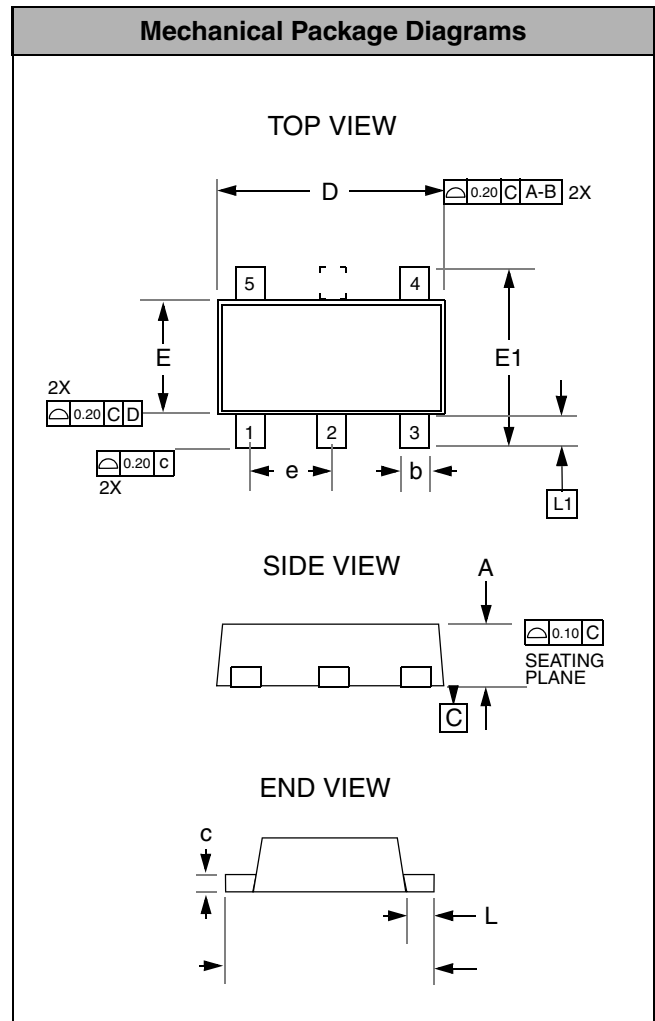


## Mechanical Details

### SOT-953 Mechanical Specifications, 5 pin

The 5-pin SOT-953 package dimensions are shown below.

PACKAGE DIMENSIONS						
Package	SOT-953					
Leads	5					
Dim.	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	0.400	0.450	0.500	0.016	0.018	0.020
b	0.100	0.150	0.200	0.004	0.006	0.008
c	0.050	0.100	0.150	0.002	0.004	0.006
D	0.950	1.000	1.050	0.037	0.039	0.041
E	0.750	0.800	0.850	0.029	0.031	0.033
E1	0.950	1.000	1.050	0.037	0.039	0.041
e	0.350 BSC			0.014 BSC		
L	0.050	0.100	0.150	0.002	0.004	0.006
L1	0.125	0.150	0.175	0.005	0.006	0.007
# per tape and reel	8000 pieces					
Controlling dimension: millimeters						



**Package Dimensions for SOT-953**

**Tape and Reel Specifications**

PART NUMBER	PACKAGE SIZE (mm)	POCKET SIZE (mm) $B_0 \times A_0 \times K_0$	TAPE WIDTH W	REEL DIAMETER	QTY PER REEL	$P_0$	$P_1$
CM1248-04S9	1.00 X 0.80 X 0.45	1.16 X 1.16 X 0.63	8mm	178mm (7")	8000	4mm	4mm

