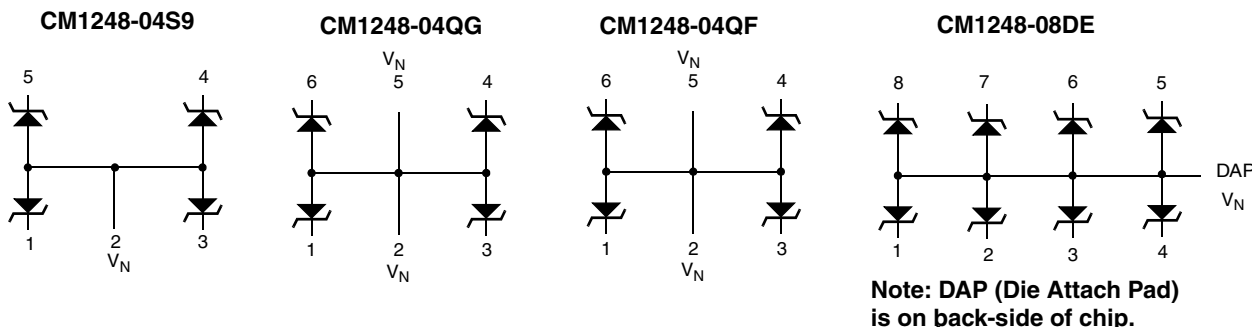


Low Capacitance Transient Voltage Suppressors / ESD Protectors

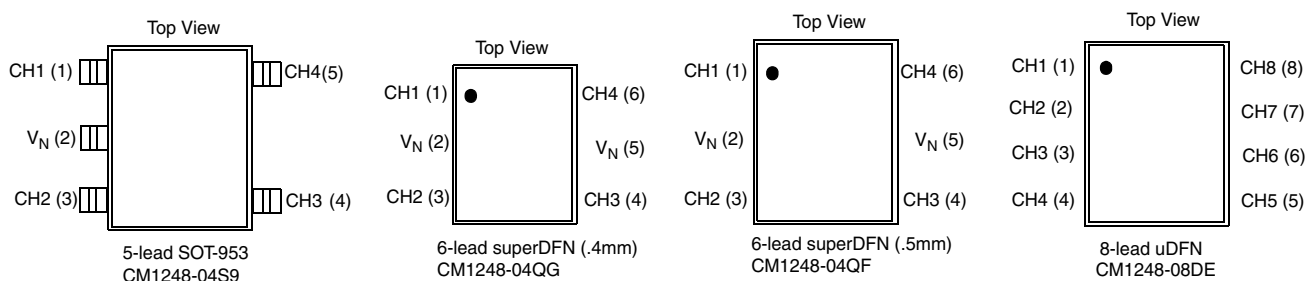
Features

- Low I/O capacitance at 10pF at 0V
- In-system ESD protection to ±20kV 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: These drawings are 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 ¹	Part Marking
5	4	SOT-953	CM1248-04S9	L8
6	4	superDFN-0.4mm	CM1248-04QG	LR
6	4	superDFN-0.5mm	CM1248-04QF	LR
8 + DAP	8	uDFN	CM1248-08DE	L48

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
ΔC_{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	mA
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; $T_A = 25^\circ\text{C}$	± 20			kV
		Notes 2, 3 & 5; $T_A = 25^\circ\text{C}$	± 30			kV
R_D	Diode Dynamic Resistance Forward Conduction Reverse Conduction	$T_A = 25^\circ\text{C}$; Notes 2 & 3		0.97		Ω
				1.36		Ω

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.

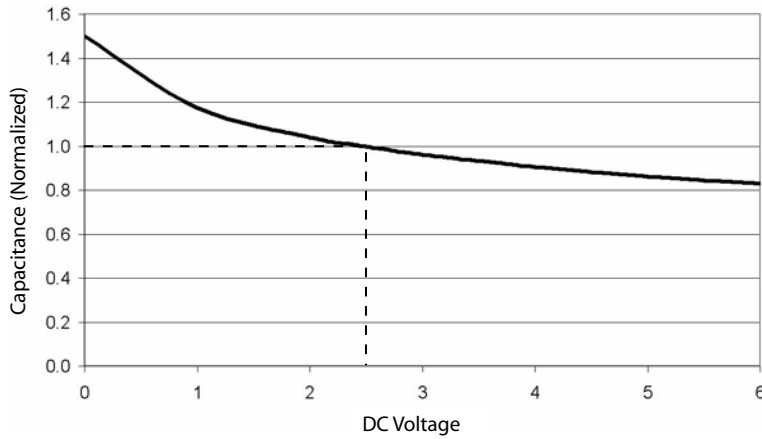
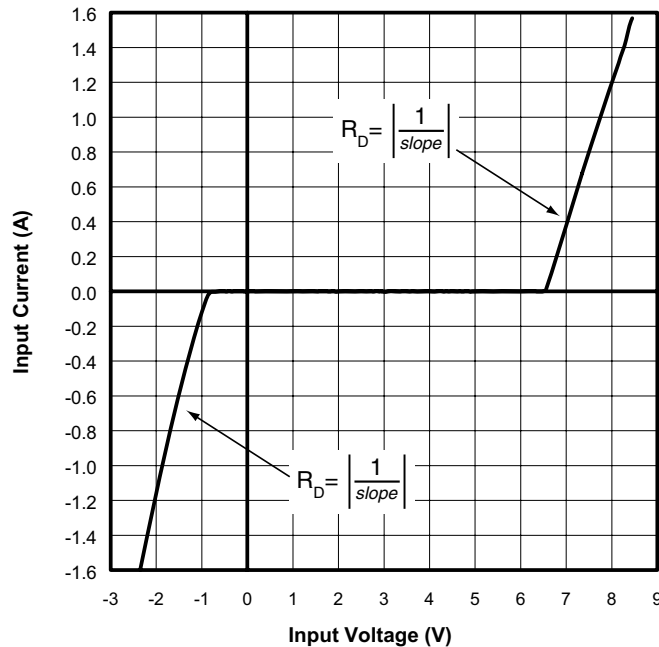


Figure 1. Diode Capacitance vs. Reverse Voltage

Typical High Current Diode Characteristics

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

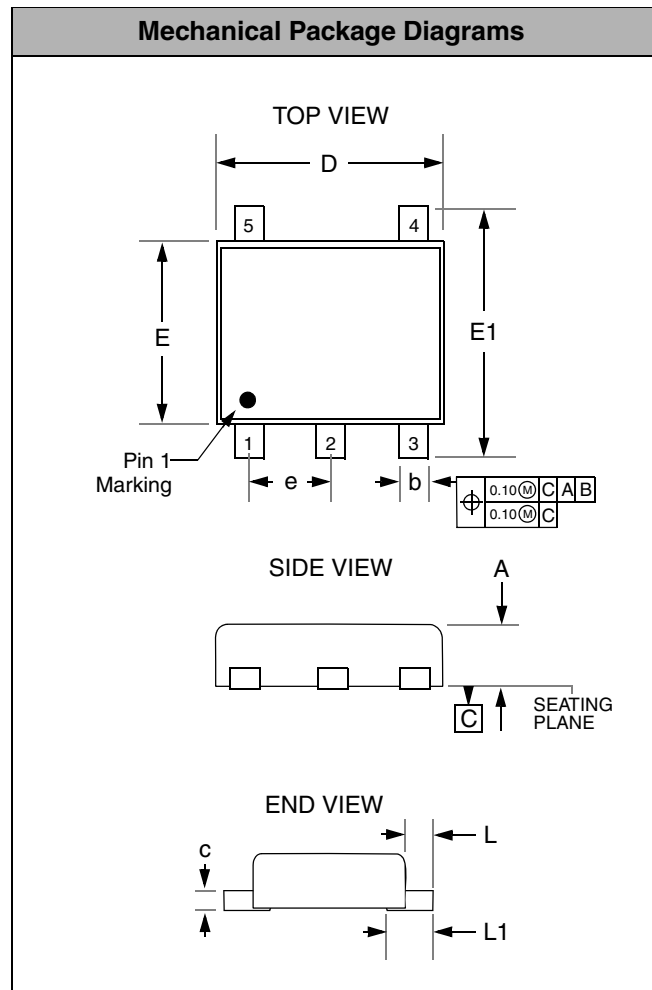
Typical Input VI Characteristics
(Pulse-mode measurements, pulse width = 0.7ms nominal)



Mechanical Details

SOT-953 Mechanical Specifications

PACKAGE DIMENSIONS						
Package	SOT-953					
Leads	5					
Dim.	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	0.40	0.45	0.50	0.016	0.018	0.020
b	0.10	0.15	0.20	0.004	0.006	0.008
c	0.05	0.10	0.15	0.002	0.004	0.006
D	0.95	1.00	1.05	0.037	0.039	0.041
E	0.75	0.80	0.85	0.029	0.031	0.033
E1	0.95	1.00	1.05	0.037	0.039	0.041
e	0.35 BSC			0.014 BSC		
L	0.05	0.10	0.15	0.002	0.004	0.006
L1	0.125	0.150	0.175	0.005	0.006	0.007
# per tape and reel	5000 pieces					
Controlling dimension: millimeters						



Package Dimensions for SOT-953

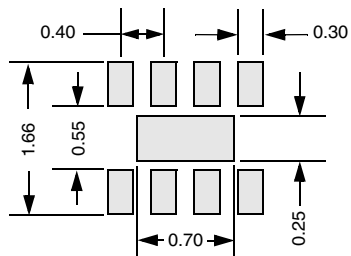
Mechanical Details

uDFN-08 Mechanical Specifications, 0.4mm

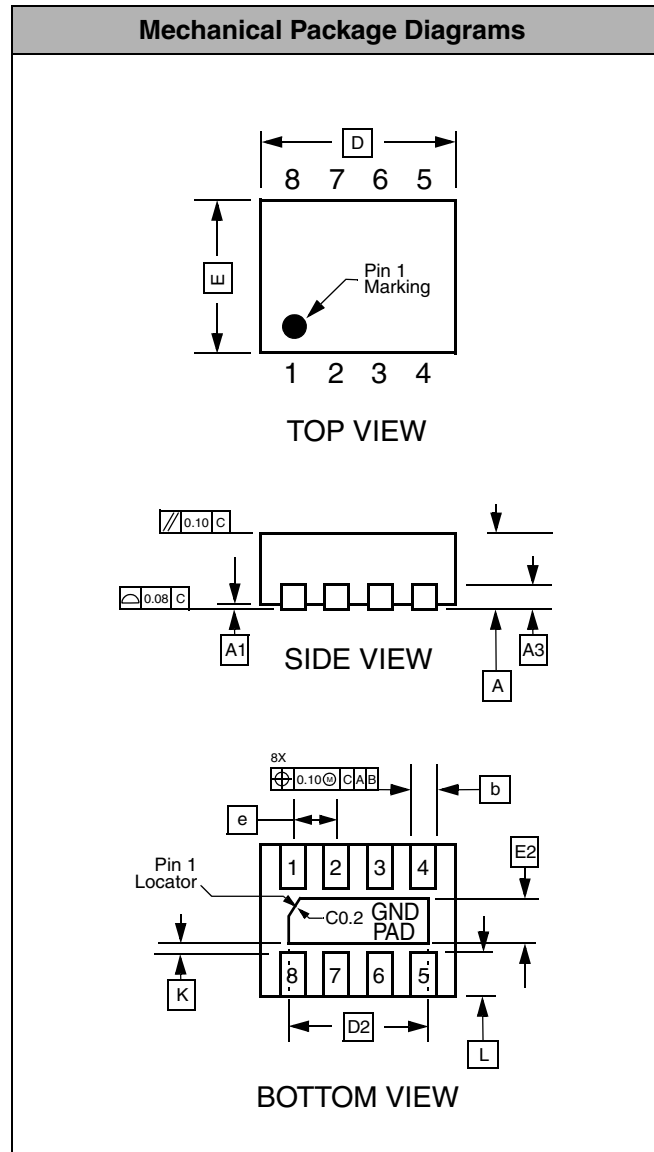
PACKAGE DIMENSIONS						
Package	uDFN					
JEDEC No.	MO-229C*					
Leads	8					
Dim.	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
A3	0.127 REF			0.005 REF		
b	0.15	0.20	0.25	0.006	0.008	0.010
D	1.60	1.70	1.80	0.063	0.067	0.071
D2	1.10	1.20	1.30	0.043	0.047	0.051
E	1.25	1.35	1.45	0.049	0.053	0.057
E2	0.30	0.40	0.50	0.012	0.016	0.020
e	0.40 BSC			0.016 BSC		
K	0.20			0.008		
L	0.15	0.25	0.35	0.006	0.010	0.014
# per tape and reel	3000 pieces					
Controlling dimension: millimeters						

*This package is compliant with JEDEC standard MO-229C with the exception of the D, D2, E, E2, K and L dimensions as called out in the table above.

Recommend PCB Land Pattern



Note: Dimensions in millimeters. Drawing not to scale.



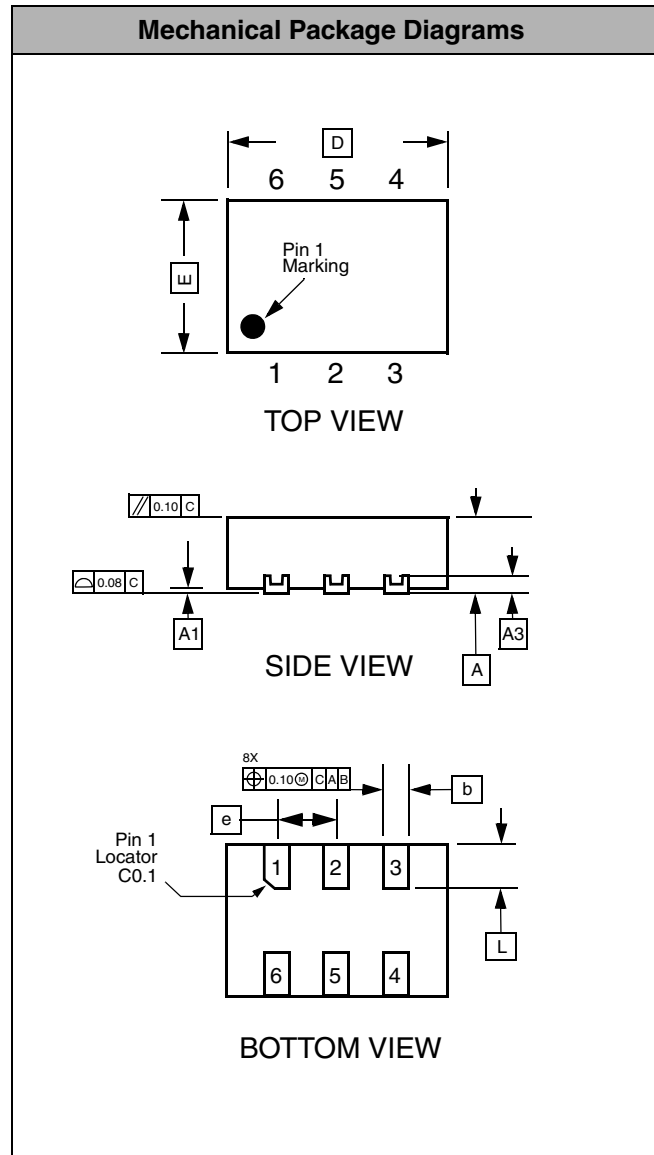
Dimensions for 8-Lead, 0.4mm pitch uDFN package

Mechanical Details

superDFN-0.5 Mechanical Specifications, 0.5mm

PACKAGE DIMENSIONS						
Package	superDFN-0.5					
JEDEC No.	MO-229C*					
Leads	6					
Dim.	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
A3	0.127 REF			0.005 REF		
b	0.20	0.25	0.30	0.008	0.010	0.012
D	1.40	1.45	1.50	0.055	0.57	0.059
E	0.95	1.00	1.05	0.037	0.039	0.041
e	0.50 BSC			0.020 BSC		
L	0.30	0.35	0.40	0.012	0.014	0.016
# per tape and reel	3000 pieces					
Controlling dimension: millimeters						

*This package is compliant with JEDEC standard MO-229C with the exception of the D, E and L dimensions as called out in the table above.



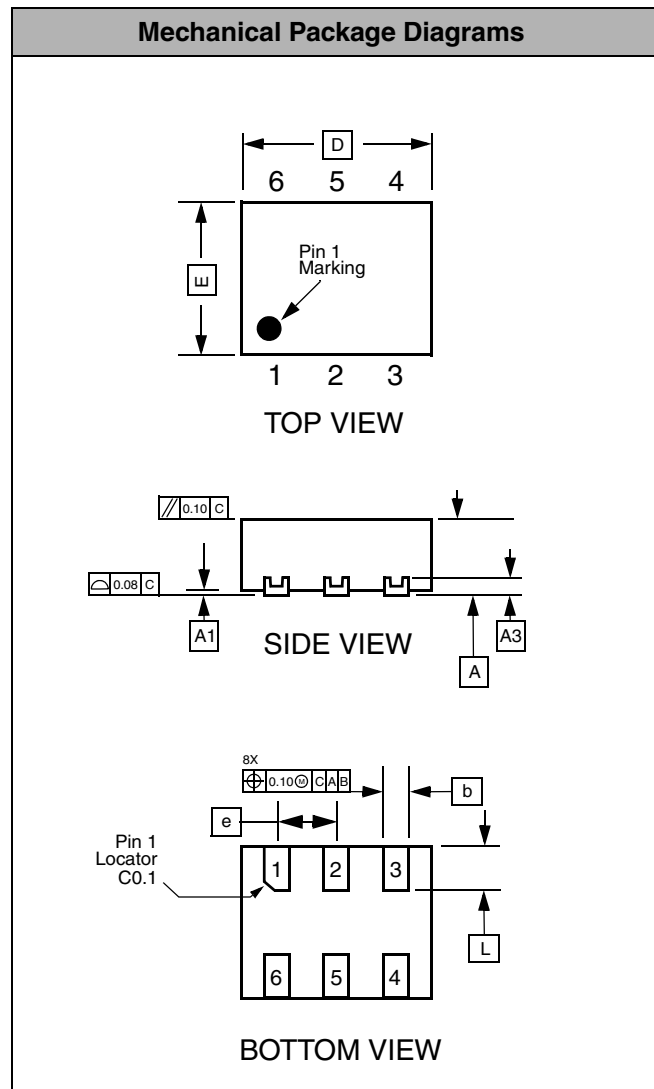
Dimensions for 6-Lead, 0.5mm pitch superDFN-0.5 package

Mechanical Details

superDFN-0.4 Mechanical Specifications, 0.4mm

PACKAGE DIMENSIONS						
Package	superDFN-0.4					
JEDEC No.	MO-229C*					
Leads	6					
Dim.	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
A3	0.127 REF			0.005 REF		
b	0.15	0.20	0.25	0.006	0.008	0.010
D	1.20	1.25	1.30	0.047	0.049	0.051
E	0.95	1.00	1.05	0.037	0.039	0.041
e	0.40 BSC			0.016 BSC		
L	0.25	0.30	0.35	0.010	0.012	0.014
# per tape and reel	3000 pieces					
Controlling dimension: millimeters						

*This package is compliant with JEDEC standard MO-229C with the exception of the D, E and L dimensions as called out in the table above.



Dimensions for 6-Lead, 0.4mm pitch superDFN-0.4 package