

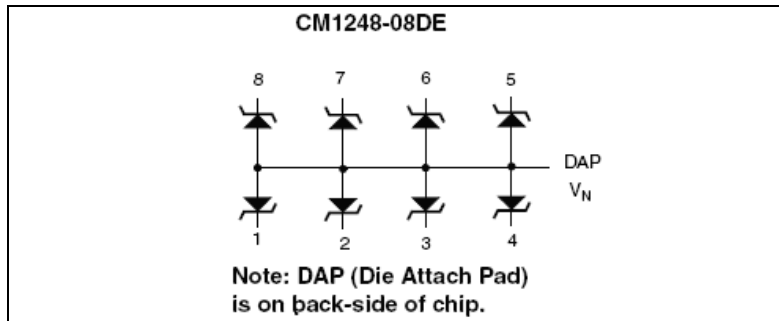


Low Capacitance Transient Voltage Suppressors / ESD Protectors

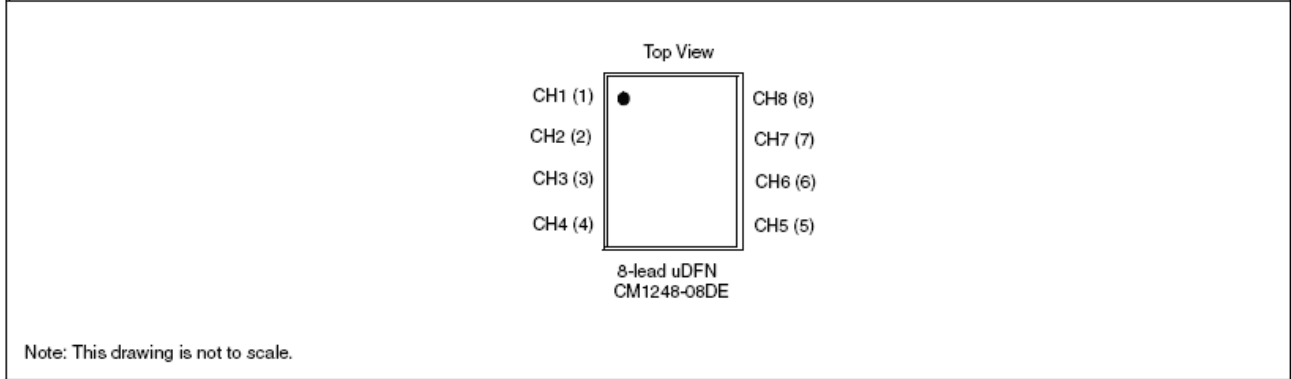
CM1248-08DE

Features

- Low I/O capacitance at 10pF at 0V
- In-system ESD protection to ±15kV 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



PACKAGE / PINOUT DIAGRAMS



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 |
| 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 |

CM1248-04DE

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 | | 10 | | pF |
| | | 0VDC, 1MHz | 7 | | 15 | pF |
| ΔC_{IN} | Differential Channel I/O to GND Capacitance | $T_A = 25^\circ\text{C}$, 2.5VDC, 1MHz | | 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 | $V_{IN} = 5.0\text{VDC}$, $T_A = 25^\circ\text{C}$ | | | 0.25 | μA |
| | | $V_{IN} = 5.0\text{VDC}$ | | | 0.75 | μA |
| 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 | Notes 2 and 3; $T_A = 25^\circ\text{C}$ | ± 15 | | | kV |
| R_D | Diode Dynamic Resistance Forward Conduction Reverse Conduction | $T_A = 25^\circ\text{C}$, $I_{PP} = 1\text{A}$, $t_p = 8/20\text{ms}$ | | 0.57 | | 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: Standard IEC 61000-4-2 with $C_{Discharge} = 150\text{pF}$, $R_{Discharge} = 330\Omega$, 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 .

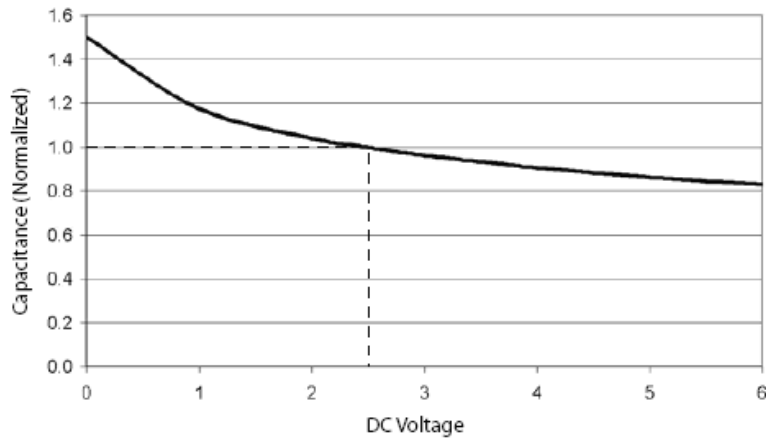
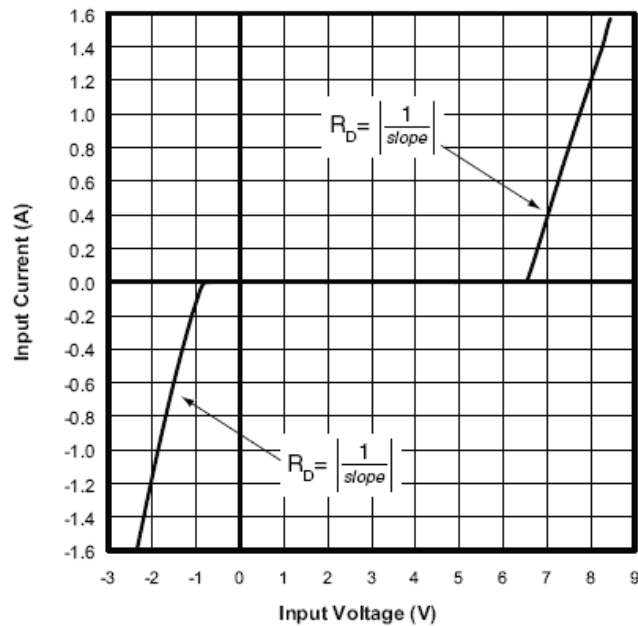


Figure 1. Diode Capacitance vs. Reverse Voltage

Typical High Current Diode Characteristics

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

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



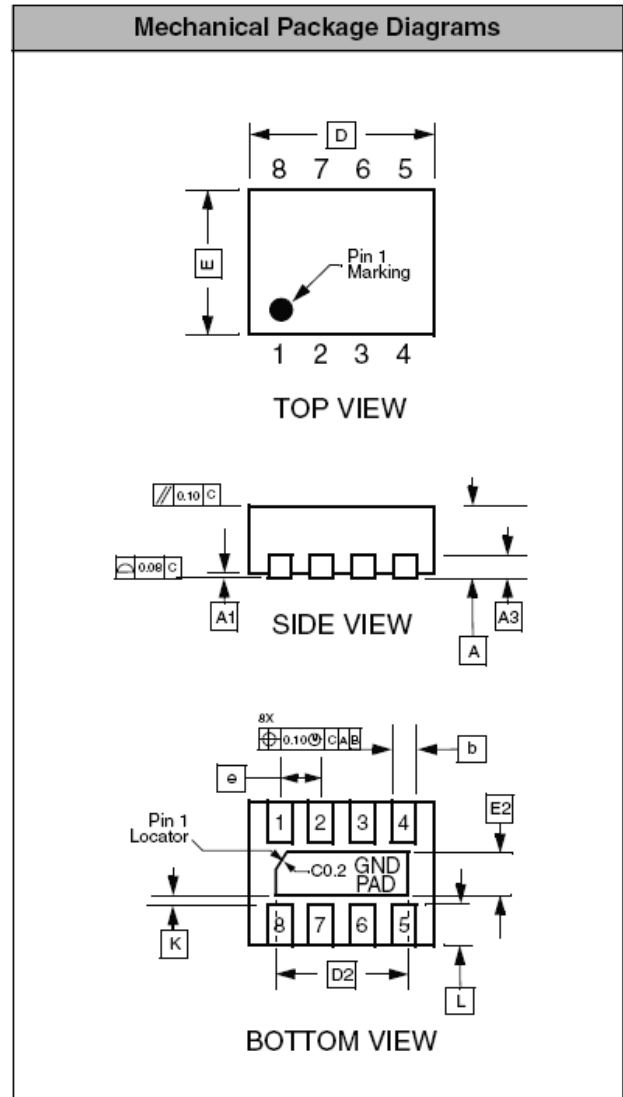
CM1248-04DE

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.



Dimensions for 8-Lead, 0.4mm pitch uDFN package

ON Semiconductor and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855
Toll Free USA/Canada

Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910

Japan Customer Focus Center
Phone: 81-3-5773-3850

ON Semiconductor Website: www.onsemi.com

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local
Sales Representative