

# CM1248-08DE

## ESD Protection Diode

### Low Capacitance

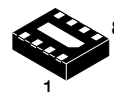
#### Features

- Low I/O Capacitance at 10 pF at 0 V
- In-System ESD Protection to  $\pm 15$  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
- These Devices are Pb-Free and are RoHS Compliant



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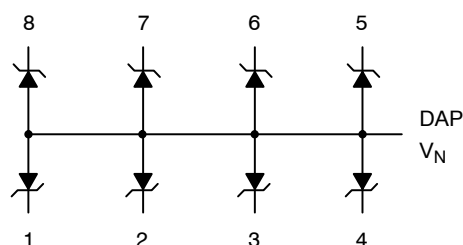
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UDFN-8  
DE SUFFIX  
CASE 517BC

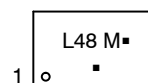
#### BLOCK DIAGRAM

CM1248-08DE



Note: DAP (Die Attach Pad)  
is on back-side of chip.

#### MARKING DIAGRAM



L48 = Specific Device Code  
M = Date Code  
■ = Pb-Free Package  
(Note: Microdot may be in either location)

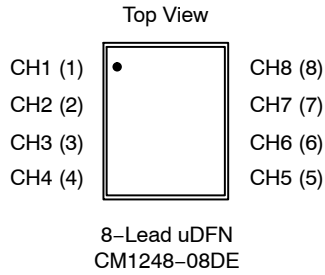
#### ORDERING INFORMATION

| Device      | Package             | Shipping†        |
|-------------|---------------------|------------------|
| CM1248-08DE | uDFN-8<br>(Pb-Free) | 3000/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.

# CM1248-08DE

## PACKAGE / PINOUT DIAGRAMS



**Table 1. PIN DESCRIPTIONS**

| Pins                                 | Name           | Description                                                                                                                         |
|--------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------|
| (Refer to package / pinout diagrams) | CHx            | The cathode of the respective surge protection diode, which should be connected to the node requiring transient voltage protection. |
| (Refer to package / pinout diagrams) | V <sub>N</sub> | The anode of the surge protection diodes.                                                                                           |

## SPECIFICATIONS

**Table 2. ABSOLUTE MAXIMUM RATINGS**

| Parameter                 | Rating      | Units |
|---------------------------|-------------|-------|
| Storage Temperature Range | -65 to +150 | °C    |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

**Table 3. STANDARD OPERATING CONDITIONS**

| Parameter             | Rating     | Units |
|-----------------------|------------|-------|
| Operating Temperature | -40 to +85 | °C    |

**Table 4. ELECTRICAL OPERATING CHARACTERISTICS** (Note 1)

| Symbol            | Parameter                                                             | Conditions                                                             | Min | Typ          | Max  | Unit |
|-------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------|-----|--------------|------|------|
| C <sub>IN</sub>   | Channel Input Capacitance                                             | T <sub>A</sub> = 25°C, 0 VDC, 1 MHz                                    |     | 10           |      | pF   |
|                   |                                                                       | 0 VDC, 1 MHz                                                           | 7   |              | 15   | pF   |
| ΔC <sub>IN</sub>  | Differential Channel I/O to GND Capacitance                           | T <sub>A</sub> = 25°C, 2.5 VDC, 1 MHz                                  |     | 0.19         |      | pF   |
| V <sub>RSO</sub>  | Reverse Stand-off Voltage                                             | I <sub>R</sub> = 10 μA, T <sub>A</sub> = 25°C                          | 5.5 |              |      | V    |
|                   |                                                                       | I <sub>R</sub> = 1 mA, T <sub>A</sub> = 25°C                           | 6.1 |              |      | V    |
| I <sub>LEAK</sub> | Leakage Current                                                       | V <sub>IN</sub> = 5.0 VDC, T <sub>A</sub> = 25°C                       |     |              | 0.25 | μA   |
|                   |                                                                       | V <sub>IN</sub> = 5.0 VDC                                              |     |              | 0.75 | μA   |
| V <sub>SIG</sub>  | Small Signal Clamp Voltage<br>Positive Clamp<br>Negative Clamp        | I = 10 mA, T <sub>A</sub> = 25°C<br>I = -10 mA, T <sub>A</sub> = 25°C  |     | 6.8<br>-0.89 |      | V    |
| V <sub>ESD</sub>  | ESD Withstand Voltage<br>Contact Discharge per IEC 61000-4-2 standard | T <sub>A</sub> = 25°C<br>(Notes 2 and 3)                               | ±15 |              |      | kV   |
| R <sub>D</sub>    | Diode Dynamic Resistance<br>Forward Conduction<br>Reverse Conduction  | T <sub>A</sub> = 25°C, I <sub>PP</sub> = 1 A, t <sub>p</sub> = 8/20 μs |     | 0.57<br>1.36 |      | Ω    |

1. All parameters specified at T<sub>A</sub> = -40°C to +85°C unless otherwise noted.
2. Standard IEC 61000-4-2 with C<sub>Discharge</sub> = 150 pF, R<sub>Discharge</sub> = 330 Ω, V<sub>N</sub> grounded.
3. These measurements performed with no external capacitor on CH<sub>x</sub>.

## PERFORMANCE INFORMATION

### Diode Capacitance

Typical diode capacitance with respect to positive cathode voltage (reverse voltage across the diode) is given in Diode Capacitance vs. Reverse Voltage.

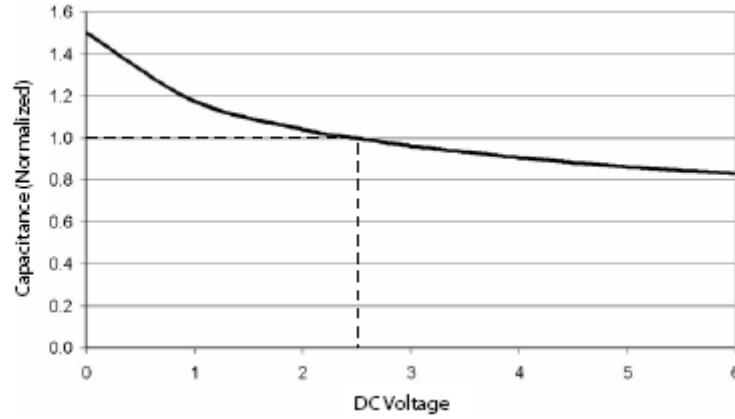


Figure 1. Diode Capacitance vs. Reverse Voltage

### Typical High Current Diode Characteristics

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

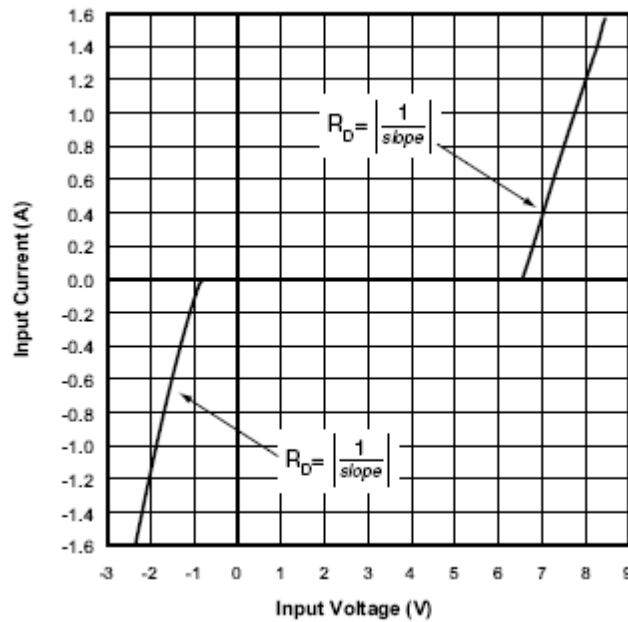
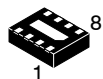


Figure 2. Typical Input VI Characteristics  
(Pulse-mode Measurements, Pulse Width = 0.7 ms nominal)

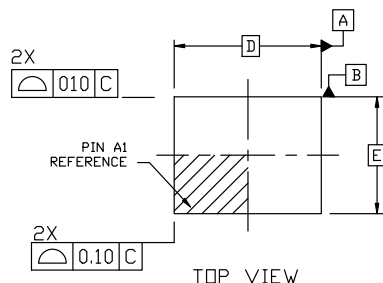
# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



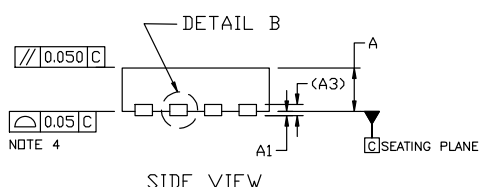
SCALE 4:1

UDFN8, 1.7x1.35, 0.4P  
CASE 517BC  
ISSUE A

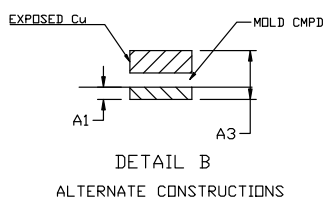
DATE 11 AUG 2022



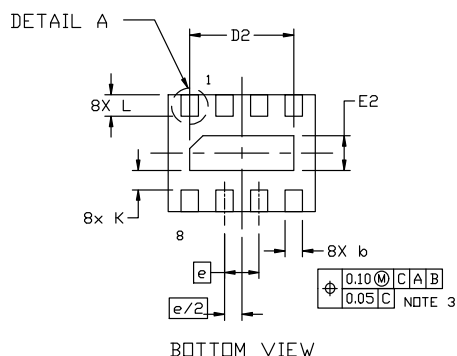
TOP VIEW



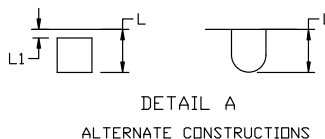
SIDE VIEW



DETAIL B  
ALTERNATE CONSTRUCTIONS



BOTTOM VIEW



DETAIL A  
ALTERNATE CONSTRUCTIONS

## NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2004.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.25MM FROM THE TERMINAL TIP.
4. COPLANARITY APPLIES TO THE EXPOSED PADS AS WELL AS THE TERMINALS.

| DIM | MILLIMETERS |      |
|-----|-------------|------|
|     | MIN.        | MAX. |
| A   | 0.45        | 0.55 |
| A1  | 0.00        | 0.05 |
| A3  | 0.13 REF    |      |
| b   | 0.15        | 0.25 |
| D   | 1.70 BSC    |      |
| D2  | 1.10        | 1.30 |
| E   | 1.35 BSC    |      |
| E2  | 0.30        | 0.50 |
| e   | 0.40 BSC    |      |
| K   | 0.15        | ---  |
| L   | 0.20        | 0.30 |
| L1  | ---         | 0.05 |

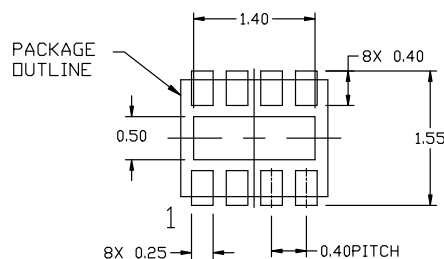
## GENERIC MARKING DIAGRAMS\*



XXX = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

\*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.



## RECOMMENDED MOUNTING FOOTPRINT\*

\* For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERM/D.

|                  |                       |                                                                                                                                                                                  |
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