

# CM1242-07CP

## 1-Channel Ultra Small 0201 Package ESD Protection Device in 0201

### Description

The CM1242-07CP is a 2-bump ESD protection device in 0201 form factor. It is fully compliant with IEC 61000-4-2. The CM1242-07CP is also RoHS II compliant and has a pure tin finish.

### Features

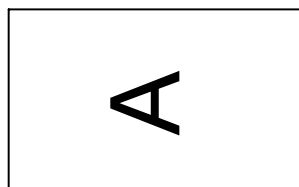
- Low Capacitance < 5.8 pF
- Low Clamping Voltage
- Small Body Outline Dimensions: 0.60 mm x 0.30 mm
- Low Body Height: 0.275 mm
- Stand-off Voltage:  $\pm 5.0$  V
- Low Dynamic Resistance: < 1.5  $\Omega$
- IEC61000-4-2 Level 4 ESD Protection
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

Table 1. PIN DESCRIPTIONS

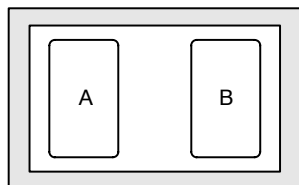
| Pin | Description       |
|-----|-------------------|
| A   | ESD Channel Pin 1 |
| B   | ESD Channel Pin 2 |

### PACKAGE / PINOUT DIAGRAMS

Top View  
(Bumps Down)



Bottom View  
(Bumps Up)



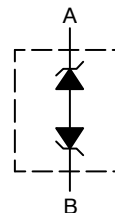
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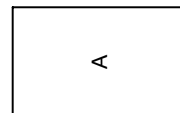


WLCSP2  
CP SUFFIX  
CASE 567AV

### BLOCK DIAGRAM



### MARKING DIAGRAM



A = Specific Device Code

### ORDERING INFORMATION

| Device      | Package   | Shipping           |
|-------------|-----------|--------------------|
| CM1242-07CP | (Pb-Free) | 10,000/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.

## SPECIFICATIONS

Table 2. STANDARD OPERATING CONDITIONS

| Parameter                   | Rating      | Units |
|-----------------------------|-------------|-------|
| Storage Temperature Range   | -55 to +150 | °C    |
| Operating Temperature Range | -40 to +85  | °C    |
| Maximum Input Voltage       | ±5.5        | V     |

Table 3. ELECTRICAL OPERATING CHARACTERISTICS (Note 1)

| Symbol     | Parameter                                                                                                                                                    | Conditions                                                 | Min         | Typ          | Max         | Units    |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-------------|--------------|-------------|----------|
| $V_B$      | Breakdown Voltage                                                                                                                                            | $I_F = +1.0 \text{ mA}$<br>$I_F = -1.0 \text{ mA}$         | 6.0<br>-9.0 | 7.6<br>-7.6  | 9.0<br>-6.0 | V        |
| $I_{LEAK}$ | Channel Leakage Current                                                                                                                                      | $V_{IN} = \pm 5.0 \text{ V}$                               |             | ±1.0         | ±100        | nA       |
| $C_{IN}$   | Channel Input Capacitance                                                                                                                                    | At 1 MHz, $V_{IN} = 0 \text{ V}$                           | 4.6         | 5.8          | 7.0         | pF       |
| $V_{ESD}$  | ESD Protection Peak Discharge Voltage at any channel input<br>a) Contact Discharge per IEC 61000-4-2 standard<br>b) Air Discharge per IEC 61000-4-2 standard | (Note 2)                                                   | ±17<br>±17  |              |             | kV       |
| $V_{CL}$   | Channel Clamp Voltage<br>Positive Transients<br>Negative Transients                                                                                          | $I_{PP} = 1 \text{ A}$ , $t_p = 8/20 \text{ } \mu\text{s}$ |             | +9.8<br>-9.8 |             | V        |
| $R_{DYN}$  | Dynamic Resistance<br>Positive Transients<br>Negative Transients                                                                                             | $I_{PP} = 1 \text{ A}$ , $t_p = 8/20 \text{ } \mu\text{s}$ |             | 1.5<br>1.5   |             | $\Omega$ |

1.  $T_A = 25^\circ\text{C}$  unless otherwise specified.
2. Standard IEC 61000-4-2 with  $C_{Discharge} = 150 \text{ pF}$ ,  $R_{Discharge} = 330 \text{ } \Omega$ .

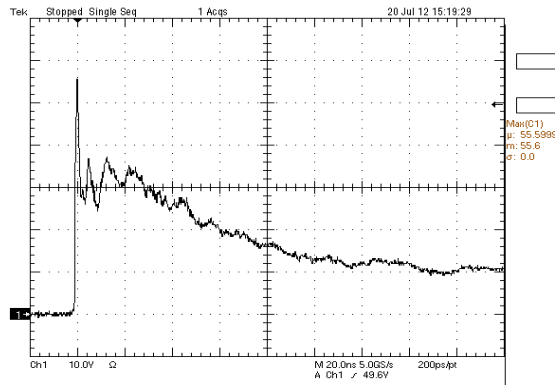


Figure 1. ESD Clamping Voltage Screenshot  
Positive 8 kV Contact per IEC61000-4-2

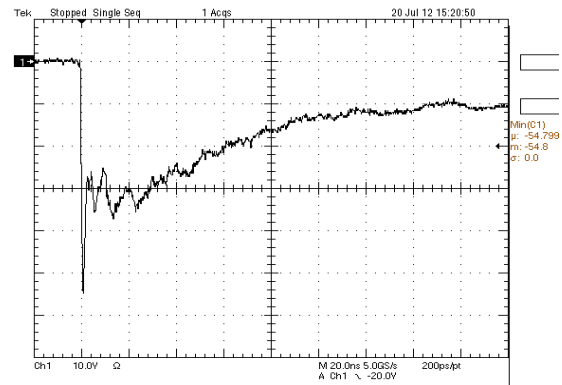


Figure 2. ESD Clamping Voltage Screenshot  
Negative 8 kV Contact per IEC61000-4-2

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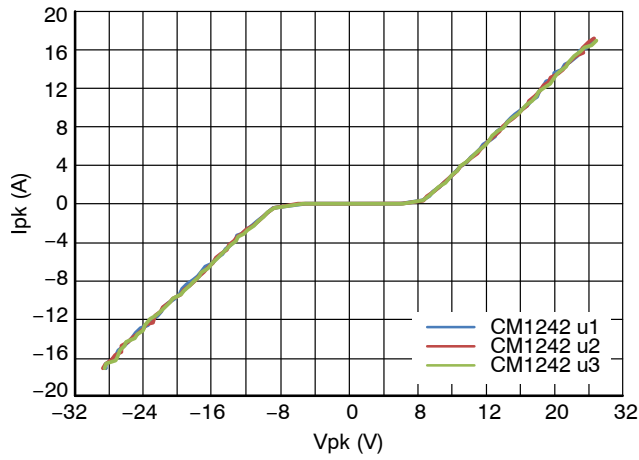


Figure 3. TLP Characteristics

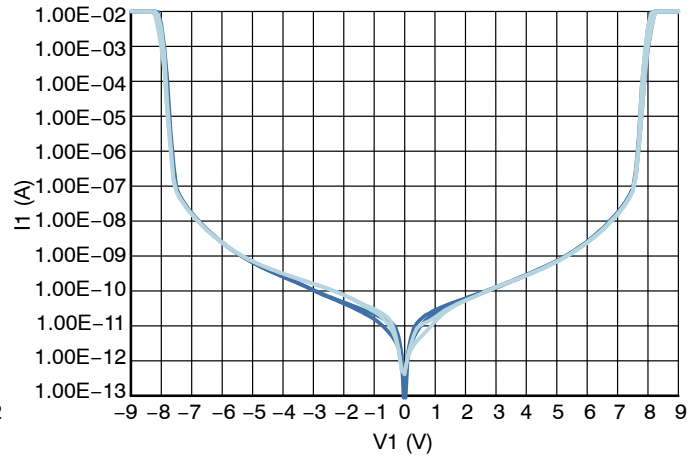


Figure 4. IV Characteristics

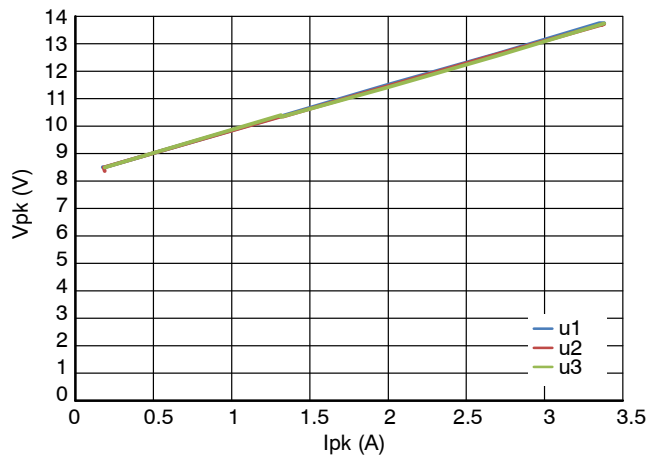


Figure 5. 80 x 20 Surge Characteristics

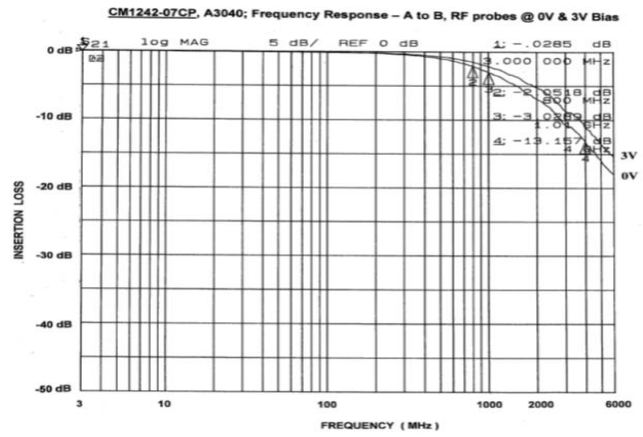


Figure 6. Typical Insertion Loss (S21)

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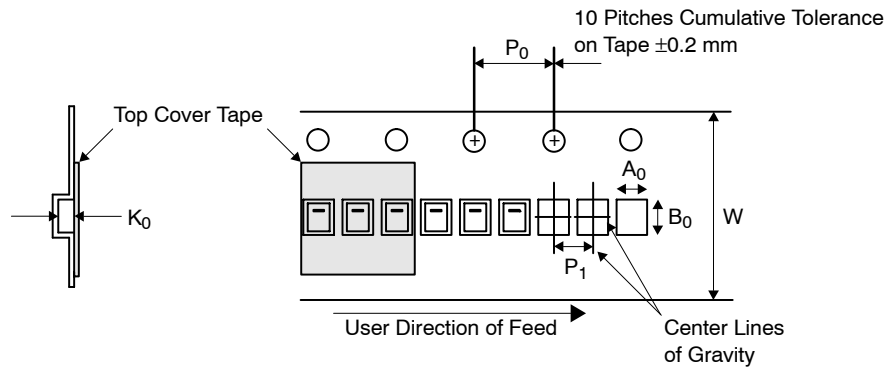
## MECHANICAL SPECIFICATIONS

### CM1242-07CP Mechanical Specifications

The CM1242-07CP is supplied in a 2-bump custom package. Dimensions are presented below.

**Table 4. TAPE AND REEL SPECIFICATIONS**

| Part Number | Chip Size (mm)      | Pocket Size (mm)<br>$B_0 \times A_0 \times K_0$ | Tape Width<br>W | Reel Diameter | Qty per Reel | $P_0$ | $P_1$ |
|-------------|---------------------|-------------------------------------------------|-----------------|---------------|--------------|-------|-------|
| CM1242-07CP | 0.60 X 0.30 X 0.275 | 0.67 X 0.37 X 0.35                              | 8 mm            | 178 mm (7")   | 10,000       | 4 mm  | 2 mm  |



**Figure 7. Tape and Reel Mechanical Data**

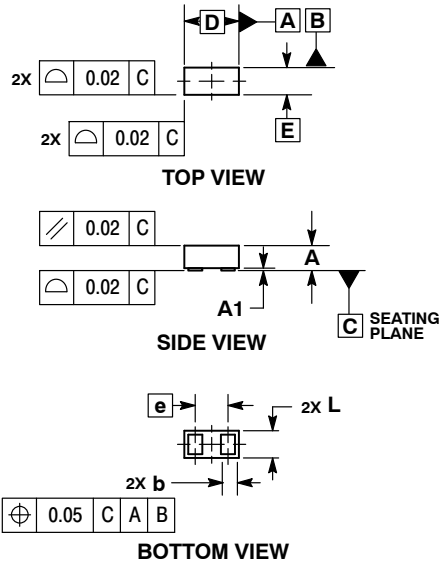
### CM1242-07CP Board Level Application.

Refer to Application Note AND8398/D – Board Level Application Note for 0201 DSN2 Package.

# CM1242-07CP

## PACKAGE DIMENSIONS

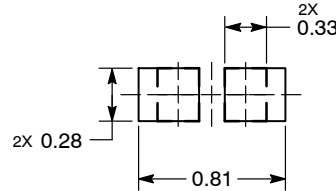
WLCSP2, 0.6x0.3  
CASE 567AV  
ISSUE O



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
  2. CONTROLLING DIMENSION: MILLIMETERS.

| MILLIMETERS |      |      |
|-------------|------|------|
| DIM         | MIN  | MAX  |
| A           | 0.25 | 0.30 |
| A1          | 0.00 | 0.05 |
| b           | 0.14 | 0.17 |
| D           | 0.60 | BSC  |
| E           | 0.30 | BSC  |
| e           | 0.36 | BSC  |
| L           | 0.19 | 0.24 |

### RECOMMENDED SOLDER FOOTPRINT\*



DIMENSIONS: MILLIMETERS

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

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