

# ESD6100

## 2 Channel Very Low Capacitance ESD Protection Device in CSP

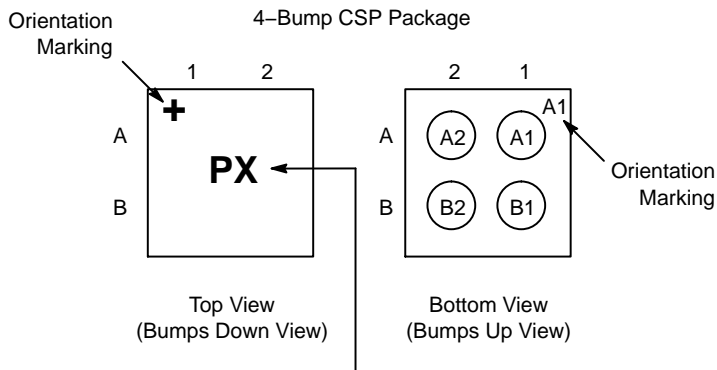
### Product Description

The ESD6100 is a 4-bump very low capacitance ESD protection device in 0.4 mm CSP form factor. It is fully compliant with IEC 61000-4-2. The ESD6100 is RoHS II compliant.

Table 1. PIN DESCRIPTIONS

| 4-bump CSP Package |               |
|--------------------|---------------|
| Pin                | Description   |
| A1                 | ESD Channel 1 |
| A2                 | ESD Channel 2 |
| B1 and B2          | Device Ground |

### PACKAGE / PINOUT DIAGRAMS



### WHERE X =

|                |                |                |
|----------------|----------------|----------------|
| A = ww01, ww02 | J = ww19, ww20 | S = ww37, ww38 |
| B = ww03, ww04 | K = ww21, ww22 | T = ww39, ww40 |
| C = ww05, ww06 | L = ww23, ww24 | U = ww41, ww42 |
| D = ww06, ww08 | M = ww25, ww26 | V = ww43, ww44 |
| E = ww08, ww10 | N = ww27, ww28 | W = ww45, ww46 |
| F = ww11, ww12 | O = ww29, ww30 | X = ww47, ww48 |
| G = ww13, ww14 | P = ww31, ww32 | Y = ww49, ww50 |
| H = ww15, ww16 | Q = ww33, ww34 | Z = ww51, ww52 |
| I = ww17, ww18 | R = ww35, ww36 |                |



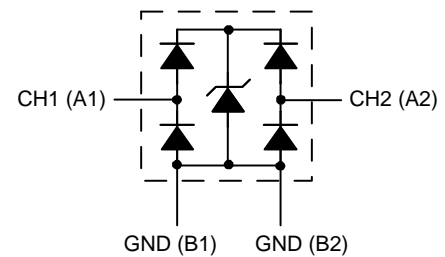
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WLCSP4  
CASE 567CB

### ELECTRICAL SCHEMATIC



### MARKING DIAGRAM



P = ESD6100  
X = Single Digit Date Code

### ORDERING INFORMATION

| Device  | Package          | Shipping†         |
|---------|------------------|-------------------|
| ESD6100 | WLCSP4 (Pb-Free) | 10000/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.

# ESD6100

## ELECTRICAL SPECIFICATIONS AND CONDITIONS

**Table 2. PARAMETERS AND OPERATING CONDITIONS**

| Parameter                   | Rating      | Units |
|-----------------------------|-------------|-------|
| Storage Temperature Range   | -55 to +150 | °C    |
| Operating Temperature Range | -40 to +85  | °C    |

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

**Table 3. ELECTRICAL OPERATING CHARACTERISTICS** (Note 1)

| Symbol            | Parameter  | Conditions  | Min | Typ          | Max | Units |
|-------------------|--|---|-----|--------------|-----|-------|
| V <sub>IN</sub>   | Input Operating Supply Voltage   |   |     | 3.0          | 5.5 | V     |
| V <sub>B</sub>    | Breakdown Voltage (Positive)   | I <sub>F</sub> = 1 mA   | 6   |              |     | V     |
| I <sub>LEAK</sub> | Channel Leakage Current  | V <sub>IN</sub> = 3 V (Note 2)  |     | 1.0          | 100 | nA    |
| C <sub>IN</sub>   | Channel Input Capacitance  | At 1 MHz, V <sub>IN</sub> = 0 V (Note 2)  |     |              | 1.5 | pF    |
| ΔC <sub>IN</sub>  | Channel Input Capacitance Matching   | At 1 MHz, V <sub>IN</sub> = 0 V (Note 2)  |     | 0.02         |     | pF    |
| V <sub>ESD</sub>  | 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 | (Notes 2 and 3)   |     |              |     | kV    |
|                   |  |   | ±8  |              |     |       |
|                   |  |   | ±15 |              |     |       |
| V <sub>CL</sub>   | Channel Clamp Voltage<br>Positive Transients<br>Negative Transients  | I <sub>PP</sub> = 1 A, t <sub>P</sub> = 8/20 μs (Note 2)                          |     | +9.8<br>-1.5 |     | V     |
| R <sub>DYN</sub>  | Dynamic Resistance<br>Positive Transients<br>Negative Transients   | I <sub>PP</sub> = 1 A, t <sub>P</sub> = 8/20 μs<br>Any I/O pin to Ground (Note 2) |     | 0.7<br>0.5   |     | Ω     |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

1. All parameters specified at T<sub>A</sub> = 25°C unless otherwise noted.
2. These parameters are guaranteed by design and characterization.
3. Standard IEC 61000-4-2 with C<sub>Discharge</sub> = 150 pF, R<sub>Discharge</sub> = 330 Ω.

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

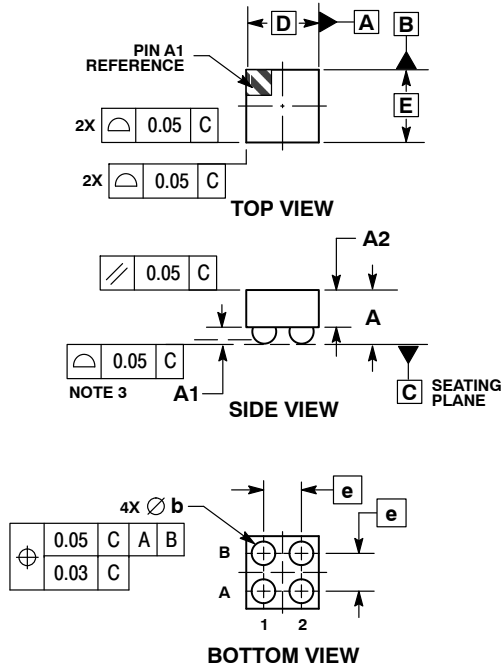
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SCALE 4:1

WLCSP4, 0.8x0.8  
CASE 567CB-01  
ISSUE 0

DATE 26 JUL 2010

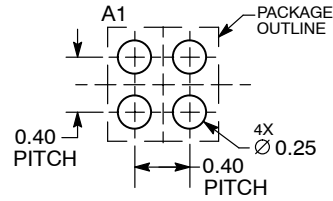


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. COPLANARITY APPLIES TO SPHERICAL CROWNS OF SOLDER BALLS.

| DIM | MILLIMETERS |      |
|-----|-------------|------|
|     | MIN         | MAX  |
| A   | 0.57        | 0.63 |
| A1  | 0.17        | 0.24 |
| A2  | 0.41        | REF  |
| b   | 0.24        | 0.29 |
| D   | 0.80        | BSC  |
| E   | 0.80        | BSC  |
| e   | 0.40        | BSC  |

**RECOMMENDED SOLDERING 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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| <b>DESCRIPTION:</b>     | <b>WLCSP4, 0.8X0.8</b> | <b>PAGE 1 OF 1</b>   |

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