



### Discription

The HACPDQC5V0CSP-HF protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events.

Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD.

It gives designer the flexibility to protect one bi-directional line in applications where arrays are not practical.



SOD-923

### Features

- ★ Ultra Low Capacitance 0.6 pF
- ★ Low Clamping Voltage
- ★ Small Body Outline Dimensions:  
0.031" x 0.024" (0.80 mm x 0.60 mm)
- ★ Low Body Height: 0.015" (0.37 mm)
- ★ Stand-off Voltage: 5 V
- ★ Low Leakage
- ★ Response Time is Typically < 1.0 ns
- ★ IEC61000-4-2 Level 4 ESD Protection
- ★ This is a Pb-Free Device



Circuit Diagram

### Ordering information

| Product ID       | Pack    | Qty(PCS) |
|------------------|---------|----------|
| HACPDQC5V0CSP-HF | SOD-923 | 8000     |

### Absolute Ratings(Tamb = 25°C)

| Symbol           | Parameter   | Value                              | Units            |
|------------------|---|------------------------------------|------------------|
| P <sub>PP</sub>  | Peak Pulse Power (t <sub>p</sub> = 8/20 μ s)      | 45                                 | W                |
| T <sub>L</sub>   | Maximum lead temperature for soldering during 10s | 260                                | °C               |
| T <sub>stg</sub> | Storage Temperature Range                         | -55 to +155                        | °C               |
| T <sub>op</sub>  | Operating Temperature Range                       | -40 to +125                        | °C               |
| T <sub>j</sub>   | Maximum junction temperature                      | 150                                | °C               |
|                  | IEC61000-4-2 (ESD)                                | air discharge<br>contact discharge | ±10<br>±10<br>KV |

Stresses exceeding Maximum Ratings may damage the device. Maximum Rating are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. FR-5 = 1.0\*0.75\*0.62 in.



**Electrical Characteristics** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

| Device           | $V_{RWM}$ (V) | $I_R$ ( $\mu\text{A}$ ) @ $V_{RWM}$ | $V_{BR}$ (V) @ $I_T$ (Note 2) | $I_T$ | C (pF) | $V_C$ (V) @ $I_{PP} = 1\text{ A}$ | $I_{pp}$ (A) | Ppk (W) ( $8 \times 20\ \mu\text{S}$ ) | $V_C$                        |
|------------------|---------------|-------------------------------------|-------------------------------|-------|--------|-----------------------------------|--------------|--|------------------------------|
|                  | Max           | Max                                 | Min                           | mA    | Typ    | Max                               | Max          | Max                                    | Per IEC61000-4-2 (Note 4)    |
| HACPDQC5V0CSP-HF | 5.0           | 1.0                                 | 5.4                           | 1.0   | 0.8    | 15                                | 3            | 45                                     | Figures 1 and 2<br>See Below |

2.  $V_{BR}$  is measured with a pulse test current  $I_T$  at an ambient temperature of  $25^\circ\text{C}$ .

**Typical Characteristics**

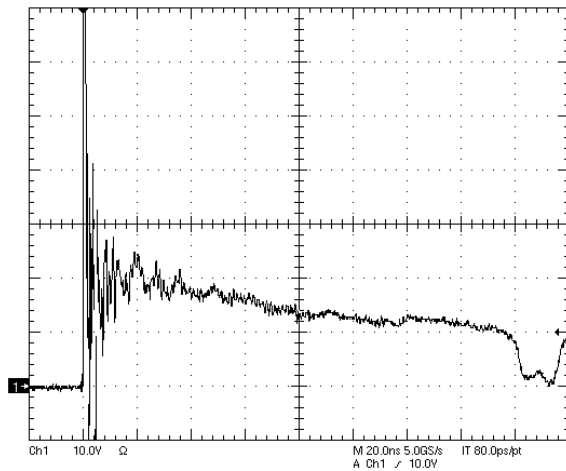


Figure 1. ESD Clamping Voltage Screenshot Positive 8 kV Contact per IEC61000-4-2

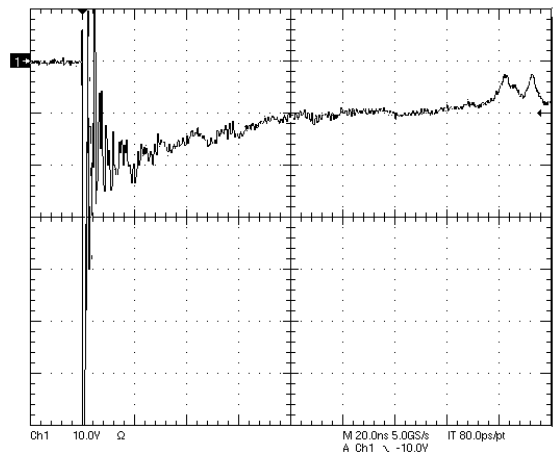


Figure 2. ESD Clamping Voltage Screenshot Negative 8 kV Contact per IEC61000-4-2

**IEC 61000-4-2 Spec.**

| Level | Test Voltage (kV) | First Peak Current (A) | Current at 30 ns (A) | Current at 60 ns (A) |
|-------|-------------------|------------------------|----------------------|----------------------|
| 1     | 2                 | 7.5                    | 4                    | 2                    |
| 2     | 4                 | 15                     | 8                    | 4                    |
| 3     | 6                 | 22.5                   | 12                   | 6                    |
| 4     | 8                 | 30                     | 16                   | 8                    |

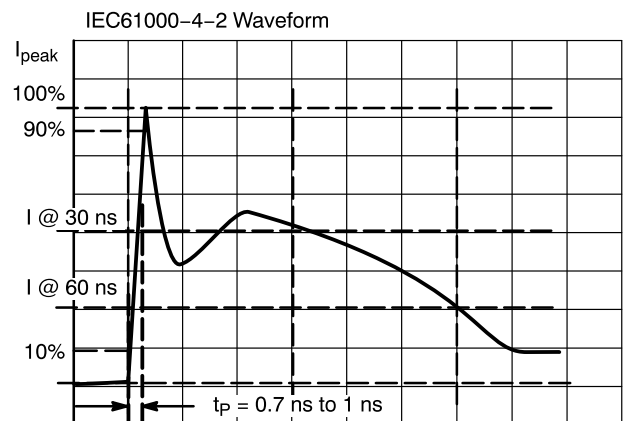
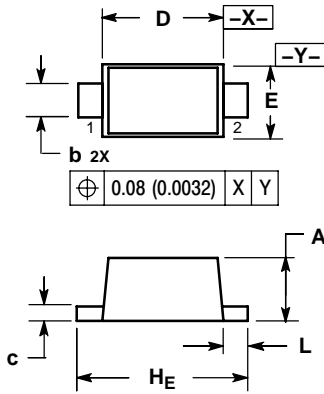


Figure 3. IEC61000-4-2 Spec



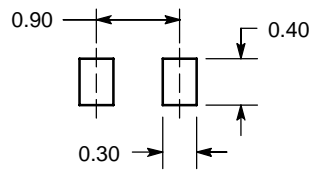
### SOD-923 Outline And Dimensions



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: MILLIMETERS.
  3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

| DIM | MILLIMETERS |      |      | INCHES |       |       |
|-----|-------------|------|------|--------|-------|-------|
|     | MIN         | NOM  | MAX  | MIN    | NOM   | MAX   |
| A   | 0.34        | 0.37 | 0.40 | 0.013  | 0.015 | 0.016 |
| b   | 0.15        | 0.20 | 0.25 | 0.006  | 0.008 | 0.010 |
| c   | 0.07        | 0.12 | 0.17 | 0.003  | 0.005 | 0.007 |
| D   | 0.75        | 0.80 | 0.85 | 0.030  | 0.031 | 0.033 |
| E   | 0.55        | 0.60 | 0.65 | 0.022  | 0.024 | 0.026 |
| HE  | 0.95        | 1.00 | 1.05 | 0.037  | 0.039 | 0.041 |
| L   | 0.05        | 0.10 | 0.15 | 0.002  | 0.004 | 0.006 |

### SOLDERING FOOTPRINT\*



DIMENSIONS: MILLIMETERS



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