

2 Channel Very Low Capacitance ESD Protection Device in CSP



<http://onsemi.com>

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.

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

WLCSP4
CASE 567CB

The diagram illustrates the orientation marking for a 4-Bump CSP Package. It consists of two views: a Top View (Bumps Down) and a Bottom View (Bumps Up).

Top View (Bumps Down): This view shows a square package with a '+' symbol in the top-left corner, indicating the orientation. The package is labeled with '1' and '2' at the top, and 'A' and 'B' on the left side. The text 'PX' is shown with an arrow pointing to the right side of the package.

Bottom View (Bumps Up): This view shows the package from the bottom, with four bumps labeled A1, A2, B1, and B2. The package is labeled with '2' and '1' at the top, and 'A' and 'B' on the left side. An arrow points to the bump labeled A1, which is also labeled 'A1'.

The text 'Orientation Marking' is shown with an arrow pointing to the '+' symbol in the Top View and the bump labeled A1 in the Bottom View.

PX

P = ESD6100
X = Single Digit Date Code

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	

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.

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_{IN}	Input Operating Supply Voltage			3.0	5.5	V
V_B	Breakdown Voltage (Positive)	$I_F = 1 \text{ mA}$	6			V
I_{LEAK}	Channel Leakage Current	$V_{IN} = 3 \text{ V}$ (Note 2)		1.0	100	nA
C_{IN}	Channel Input Capacitance	At 1 MHz, $V_{IN} = 0 \text{ V}$ (Note 2)			1.5	pF
ΔC_{IN}	Channel Input Capacitance Matching	At 1 MHz, $V_{IN} = 0 \text{ V}$ (Note 2)		0.02		pF
V_{ESD}	ESD Protection Peak Discharge Voltage at any channel input a) Contact Discharge per IEC 61000–4–2 standard b) Air Discharge per IEC 61000–4–2 standard	(Notes 2 and 3)	± 8 ± 15			kV
V_{CL}	Channel Clamp Voltage Positive Transients Negative Transients	$I_{PP} = 1 \text{ A}$, $t_P = 8/20 \mu\text{s}$ (Note 2)		+9.8 –1.5		V
R_{DYN}	Dynamic Resistance Positive Transients Negative Transients	$I_{PP} = 1 \text{ A}$, $t_P = 8/20 \mu\text{s}$ Any I/O pin to Ground (Note 2)		0.7 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.

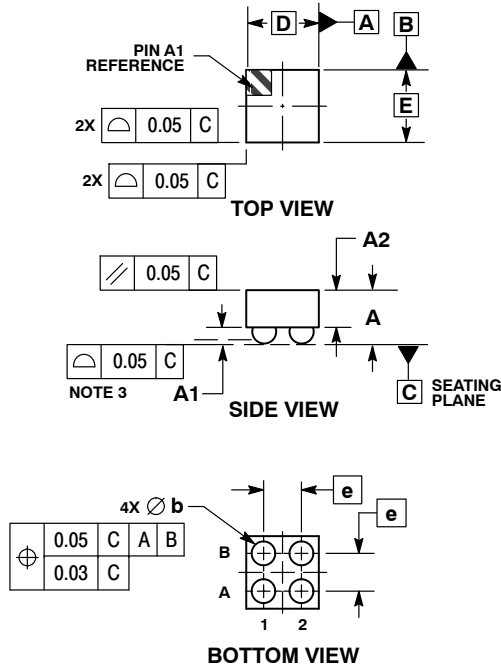
1. All parameters specified at $T_A = 25^\circ\text{C}$ unless otherwise noted.
2. These parameters are guaranteed by design and characterization.
3. Standard IEC 61000–4–2 with $C_{Discharge} = 150 \text{ pF}$, $R_{Discharge} = 330 \Omega$.



SCALE 4:1

WLCSP4, 0.8x0.8
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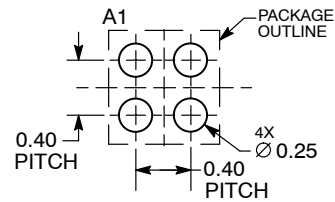


NOTES:

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 onsemi Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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