ON Semiconductor®

0.4mm Pitch Daisy Chain

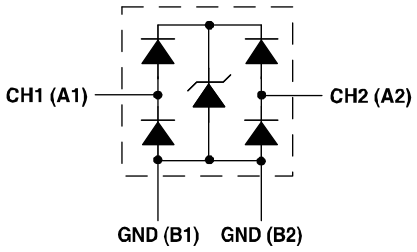
CM6100

Product Description

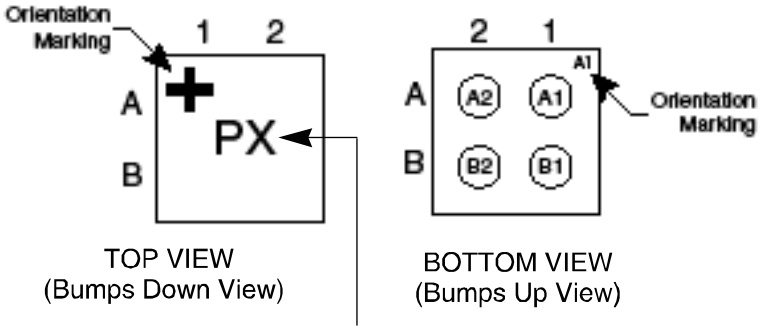
The 6100 is a 4-bump very low capacitance ESD protection device in 0.4mm CSP form factor. It is fully compliant with IEC 61000-4-2. The CM6100 is RoHS II compliant.

Electrical Schematic / Pin Description

Electrical Schematic



4-Bump CSP Package



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	

Notes:
1) These drawings are not to scale.

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Publication Order Number:
CM6100/D

Pin Information

PIN DESCRIPTIONS				
PIN	**DESCRIPTION**		**PIN**	**DESCRIPTION**
A1	ESD Channel 1		B1	Device Ground
A2	ESD Channel 2		B2	Device Ground

Ordering Information

PART NUMBERING INFORMATION				
Bumps	**Package**	**Variation**	**Ordering Part Number[1]**	**Part Marking**
4	CSP	CSP-SAC105	CM6100	P

Note 1: Parts are shipped in Tape & Reel form unless otherwise specified.

Electrical Specifications and Conditions

PARAMETERS AND OPERATING CONDITIONS		
PARAMETER	**RATING**	**UNITS**
Storage Temperature Range	-55 to +150	°C
Operating Temperature Range	-40 to +85	°C

ELECTRICAL OPERATING CHARACTERISTICS(SEE 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 = 8mA	6			V
I_{LEAK}	Channel Leakage Current	V_{IN} = 3V		±0.1	±0.30	μA
C_{IN}	Channel Input Capacitance	At 1 MHz, V_{IN}=0V			1.5	pF
ΔC_{IN}	Channel Input Capacitance Matching	At 1 MHz, V_{IN}=0V		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	 ±8 ±15			 kV kV
V_{CL}	Channel Clamp Voltage Positive Transients Negative Transients	I_{PP} = 1A, t_P = 8/20μs		 +9.8 -1.5		 V V
R_{DYN}	Dynamic Resistance Positive Transients Negative Transients	I_{PP} = 1A, t_P = 8/20μS Any I/O pin to Ground		 0.7 0.5		 Ω Ω

Note 1: All parameters specified at T_A = 25°C unless otherwise noted.
Note 2: Standard IEC 61000-4-2 with $C_{Discharge}$ = 150pF, $R_{Discharge}$ = 330Ω.

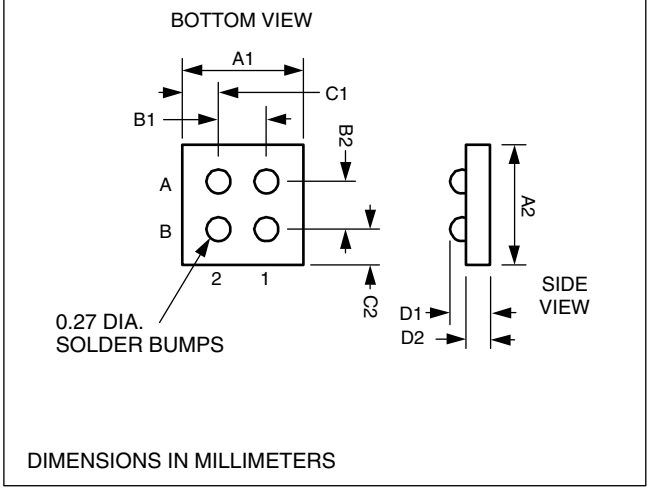
Mechanical Specification

CSP-4 Mechanical Specifications

The CM6100 is supplied in a 4 bump Chip Scale Package (CSP).

Controlling dimension: millimeters

PACKAGE DIMENSIONS						
Package	Custom CSP					
Bumps	4					
Dim	**Millimeters**			**Inches**		
	Min	**Nom**	**Max**	**Min**	**Nom**	**Max**
A1	0.755	0.800	0.845	0.0297	0.0315	0.0333
A2	0.755	0.800	0.845	0.0297	0.0315	0.0333
B1	0.395	0.400	0.405	0.0156	0.0157	0.0159
B2	0.395	0.400	0.405	0.0156	0.0157	0.0159
C1	0.150	0.200	0.250	0.0059	0.0079	0.0098
C2	0.150	0.200	0.250	0.0059	0.0079	0.0098
D1	0.570	0.600	0.630	0.0224	0.0236	0.0248
D2	0.394	0.406	0.418	0.0155	0.0160	0.0165



Package Dimensions for
CM6100 Chip Scale Package

Vertical Structure Specification*

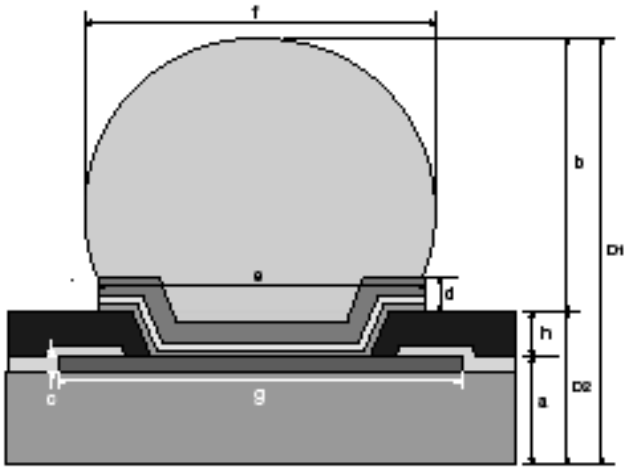


Figure 1. Sectional View

* Daisy Chain CM6000

Vertical Structure Dimensions (nominal)			
REF.	**Parameter**	**Material**	**Dimension**
a	Die Thickness	Silicon	396μm
h	Repassivation	Polyimide	10μm
d	UBM-(Ti/Cu)	Plated Cu	5.0μm
		Sputtered Cu	0.4μm
		Sputtered Ti	0.1μm
e	UBM Wetting Area Diameter		240μm
b	Bump Standoff		194μm
f	Solder Bump Diameter after Bump Reflow		270μm
c	Metal Pad Height	AlSiCu	1.5μm
g	Metal Pad Diameter		310μm
D2			0.406mm
D1	Finished Thickness		0.600mm

Mechanical Specification (cont'd)

CSP Tape and Reel Specifications

PART NUMBER	CHIP SIZE (mm)	POCKET SIZE (mm) B_0 X A_0 X K_0	TAPE WIDTH W	REEL DIA.	QTY PER REEL	P_0	P_1
CM6100	0.8 X 0.8 X 0.60	0.89 x 0.91 x 0.67	8mm	178mm (7")	5000	4mm	4mm

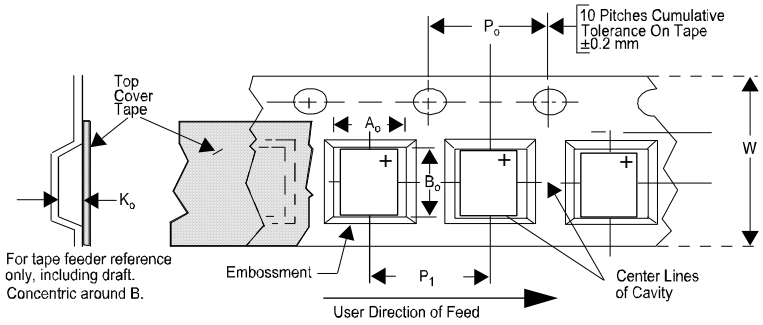


Figure 2. Tape and Reel Mechanical Data

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
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P.O. Box 5163, Denver, Colorado 80217 USA
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