

# CM6300

## EMI Filters with ESD Protection for SIM Card Applications

### Product Description

The CM6300 is a 3 x 3, 8-bump EMI filter with ESD protection device for SIM card applications in 0.5 mm pitch CSP form factor. It is fully compliant with IEC 61000-4-2. The CM6300 is RoHS II compliant.

**Table 1. PIN DESCRIPTIONS**

8-bump CSP Package	
Pin	Description
A2	Channel 1 External
A3	Channel 1 Internal
B1	Channel 2 External
B2	GND
B3	Channel 2 Internal
C1	Channel 3 External
C2	V External
C3	Channel 3 Internal



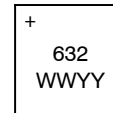
**ON Semiconductor®**

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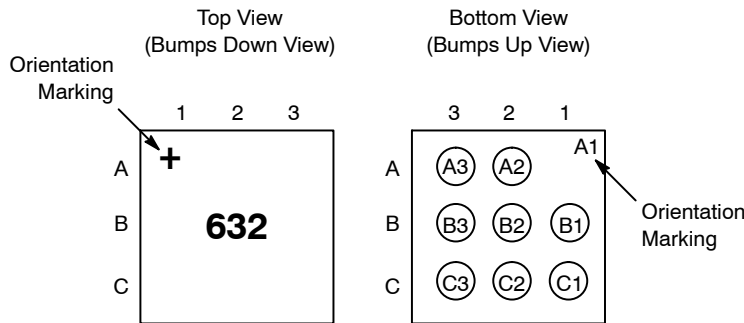
WLCSP8  
CASE 567CD

### MARKING DIAGRAM



632 = CM6300  
WWYY = Date Code

### PACKAGE / PINOUT DIAGRAMS

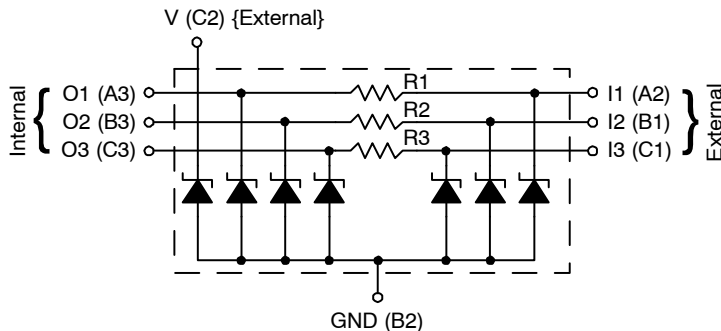


### ORDERING INFORMATION

Device	Package	Shipping†
CM6300	CSP-8 (Pb-Free)	5000/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 SCHEMATIC



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## 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

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
R <sub>1</sub>	Resistance		80	100	120	Ω
R <sub>2</sub>	Resistance		37.6	47	56.4	Ω
R <sub>3</sub>	Resistance		80	100	120	Ω
C	Capacitance on filter channels 1, 2 and 3	At 1 MHz, V <sub>IN</sub> = 0 V	13.4	16.7	20	pF
	Capacitance on clamp channel (pin C2)	At 1 MHz, V <sub>IN</sub> = 0 V	8.2	10.3	12.4	pF
V <sub>B</sub>	Breakdown Voltage (Positive)	I <sub>F</sub> = 8 mA	6	6.8	20	V
V <sub>ESD</sub>	ESD Protection Peak Discharge Voltage at A2, B1 and C1 pins a) Contact Discharge per IEC 61000-4-2 standard b) Air Discharge per IEC 61000-4-2 standard	(Note 2)	±15 ±15			kV
	ESD Protection Peak Discharge Voltage at C2 pin a) Contact Discharge per IEC 61000-4-2 standard b) Air Discharge per IEC 61000-4-2 standard	(Note 2)	±15 ±15			kV
	ESD Protection Peak Discharge Voltage at A3, B3 and C3 pins a) Contact Discharge per IEC 61000-4-2 standard b) Air Discharge per IEC 61000-4-2 standard	(Note 2)	±4 ±4			kV

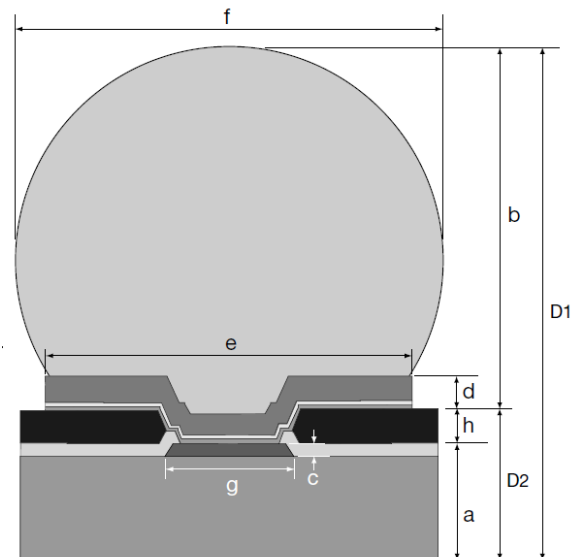
- All parameters specified at T<sub>A</sub> = 25°C unless otherwise noted.
- Standard IEC 61000-4-2 with C<sub>Discharge</sub> = 150 pF, R<sub>Discharge</sub> = 330 Ω.

## MECHANICAL SPECIFICATION

**Table 4. VERTICAL STRUCTURE DIMENSIONS** (nominal)

Ref.	Parameter	Material	Dimension
a	Die Thickness	Silicon	396 μm
h	Repassivation	Polyimide	10 μm
d	UBM-(Ti/Cu)	Plated Cu	5.0 μm
		Sputtered Cu	0.4 μm
		Sputtered Ti	0.1 μm
e	UBM Wetting Area Diameter		280 μm
b	Bump Standoff		240 μm
f	Solder Bump Diameter after Bump Reflow		320 μm
c	Metal Pad Height	AlSiCu	1.5 μm
g	Metal Pad Diameter		60 μm
D1	Finished Thickness		0.650 mm
D2			0.406 mm

**Vertical Structure Specification\***



**Figure 1. Sectional View**

\* Daisy Chain CM6020

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## RF CHARACTERISTICS

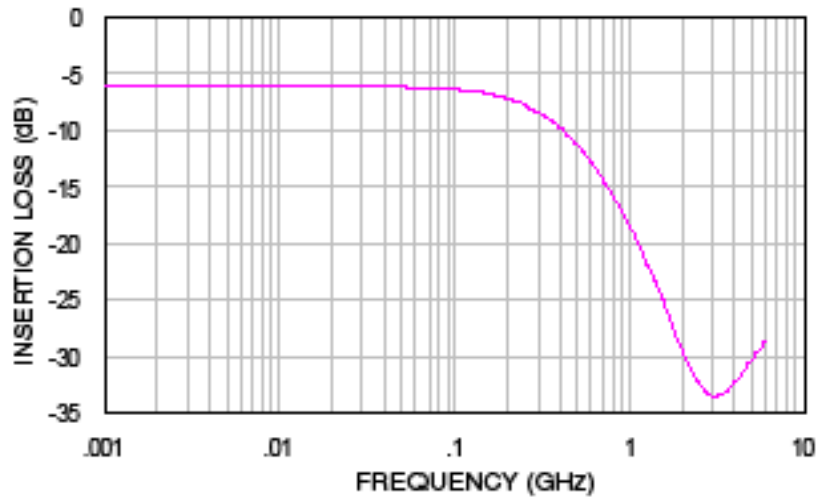


Figure 2. Insertion Loss, Filter 1 (pins A2, A3) and Filter 3 (pins C1, C3) (Bias = 0 V,  $T_A = 25^\circ\text{C}$ )

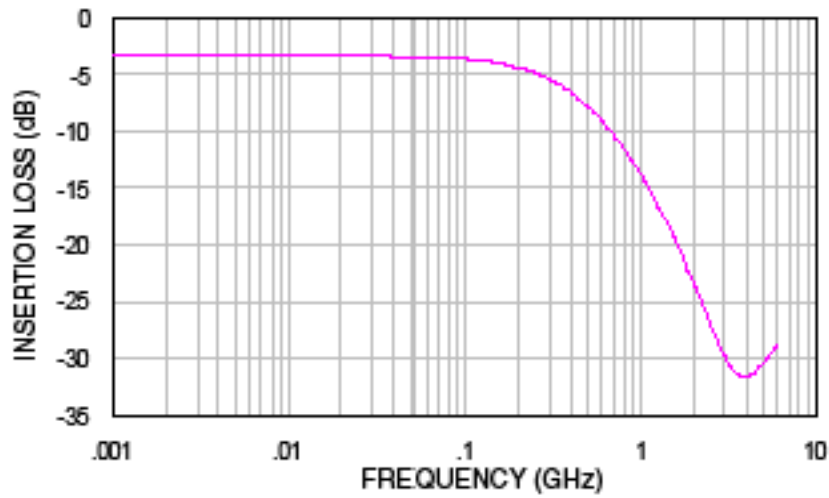
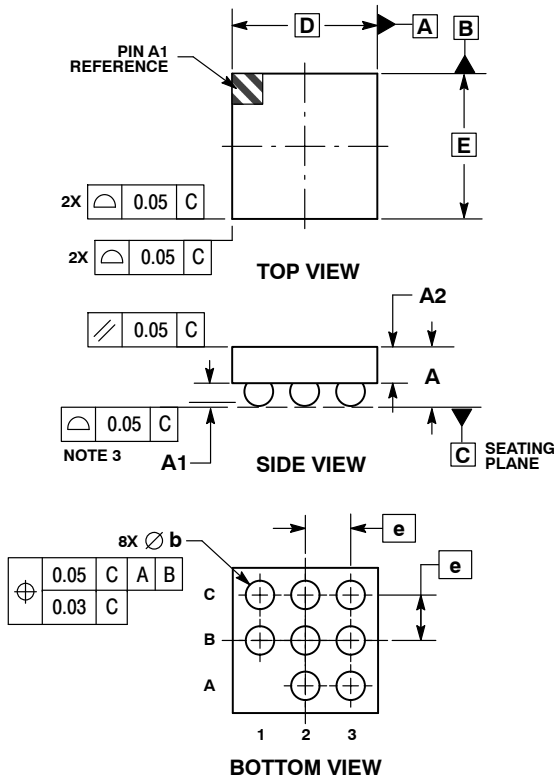


Figure 3. Insertion Loss, Filter 2 (pins B1, B3) (Bias = 0 V,  $T_A = 25^\circ\text{C}$ )

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## PACKAGE DIMENSIONS

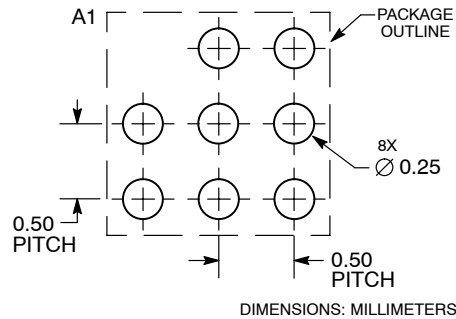
WLCSP8, 1.6x1.6  
CASE 567CD-01  
ISSUE O



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

MILLIMETERS		
DIM	MIN	MAX
A	0.61	0.69
A1	0.21	0.27
A2	0.41 REF	
b	0.29	0.34
D	1.60 BSC	
E	1.60 BSC	
e	0.50 BSC	

### RECOMMENDED SOLDERING FOOTPRINT\*



\*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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