



**THE DATASHEET OF  
CM6304**



# CM6304

## EMI Filters with ESD Protection for SIM Card Applications

### Product Description

The CM6304 is a 3 x 3, 8-bump EMI filter with ESD protection device for SIM card applications in a 0.4 mm pitch CSP form factor. It is fully compliant with IEC 61000-4-2. The CM6304 is also 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



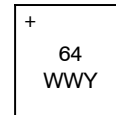
**ON Semiconductor®**

<http://onsemi.com>



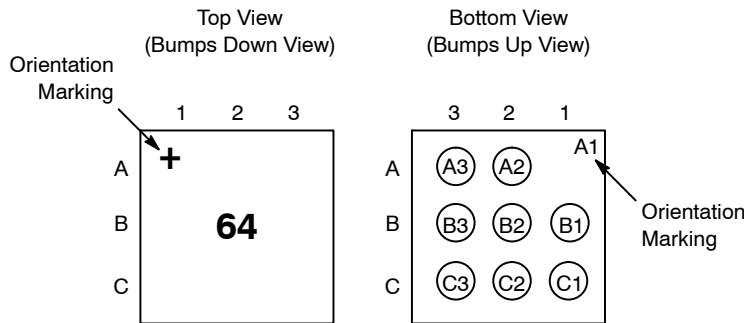
WLCSP8  
CASE 567CF

### MARKING DIAGRAM

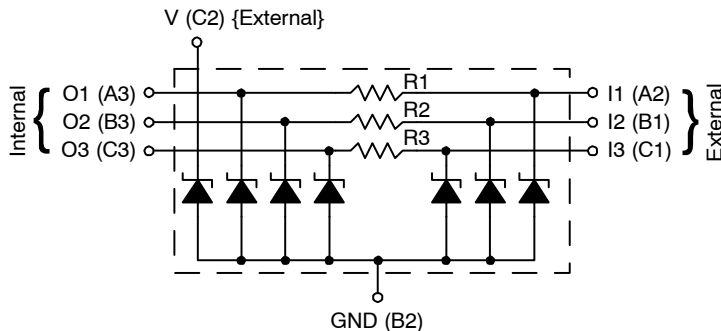


64 = CM6304  
WWY = Date Code

### PACKAGE / PINOUT DIAGRAMS



### ELECTRICAL SCHEMATIC



### ORDERING INFORMATION

Device	Package	Shipping†
CM6304	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.

# CM6304

## 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

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

# CM6304

## RF CHARACTERISTICS

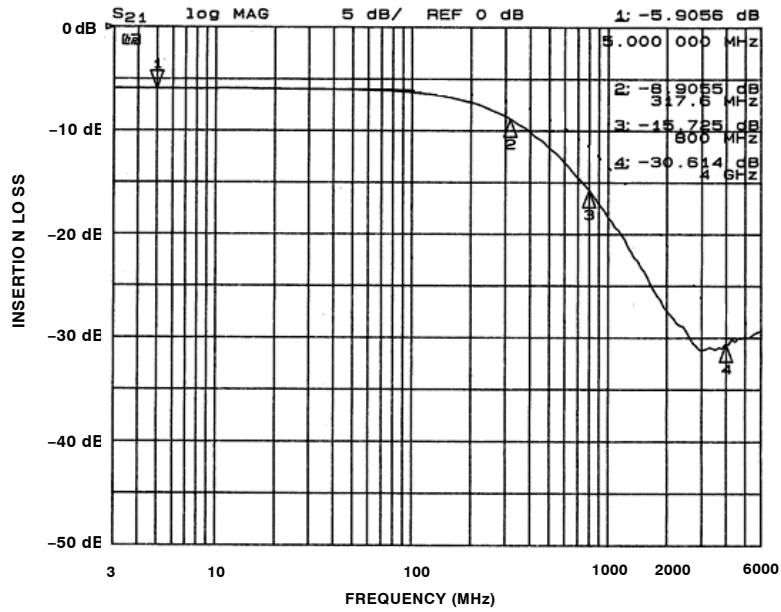


Figure 1. Insertion Loss, Filter 1 (pins A2, A3) and Filter 3 (pins C1, C3) (Bias = 0 V,  $T_A = 25^\circ\text{C}$ )

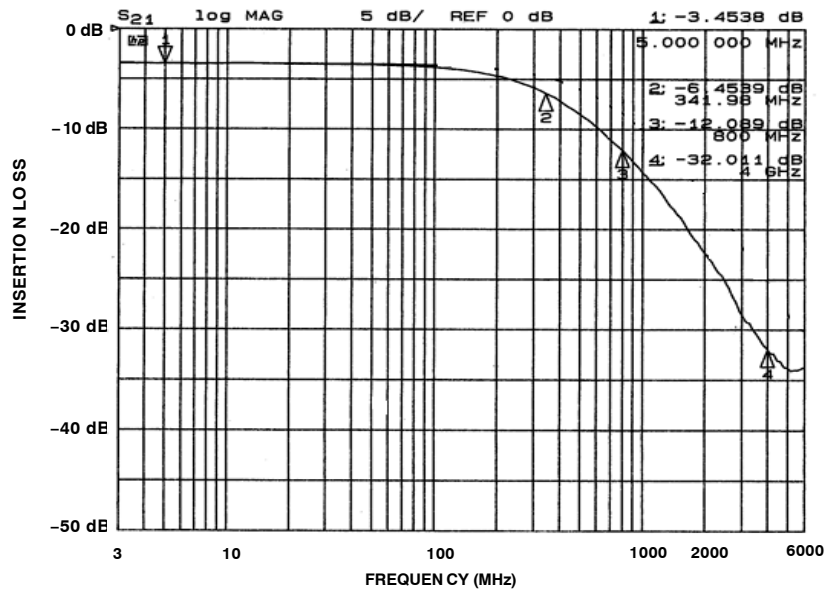
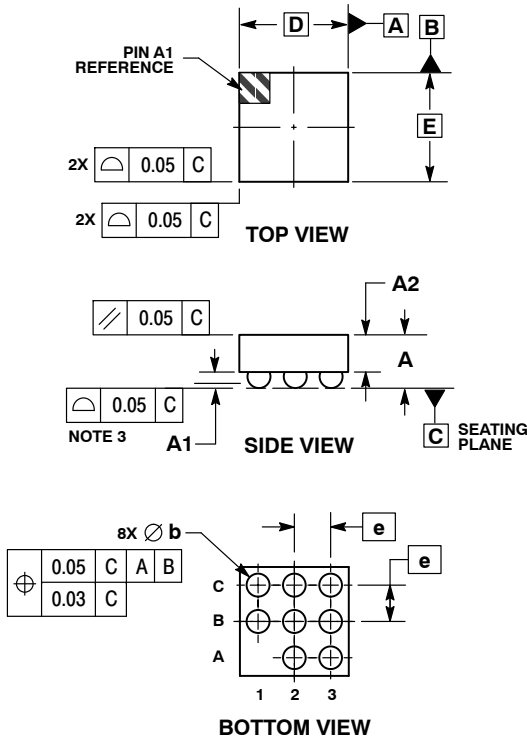


Figure 2. Insertion Loss, Filter 2 (pins B1, B3) (Bias = 0 V,  $T_A = 25^\circ\text{C}$ )

# CM6304

## PACKAGE DIMENSIONS

WLCSP8, 1.2x1.2  
CASE 567CF-01  
ISSUE O

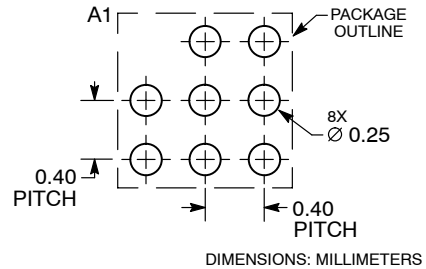


NOTES:

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	0.57	0.63
A1	0.17	0.24
A2	0.41 REF	
b	0.24	0.29
D	1.20 BSC	
E	1.20 BSC	
e	0.40 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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