CM6304

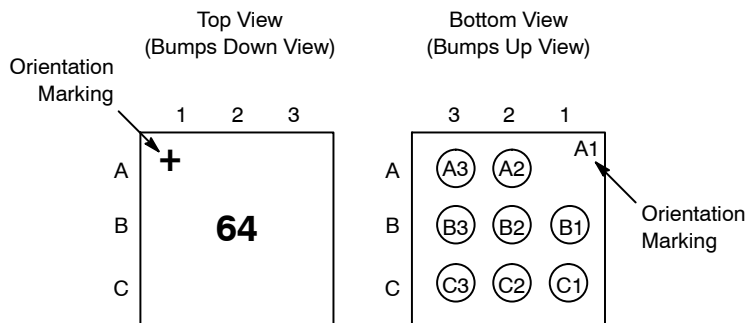# EMI Filters with ESD Protection for SIM Card Applications

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.
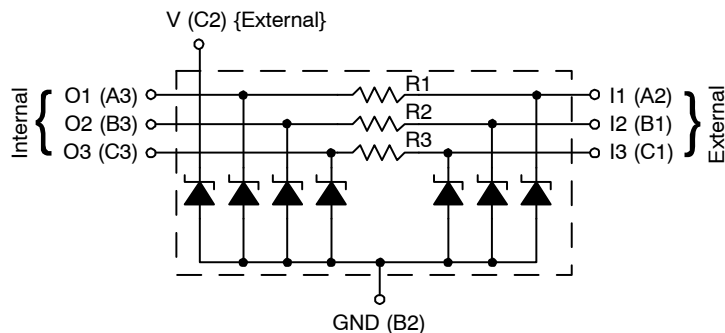
Table 1. PIN DESCRIPTIONS

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®

WLCSP8
CASE 567CF

MARKING DIAGRAM

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+
   64
  WWY
```
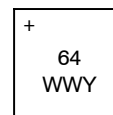
64 = CM6304
WWY = Date Code

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.

PACKAGE / PINOUT DIAGRAMS

ELECTRICAL SCHEMATIC

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_1	Resistance		80	100	120	Ω
R_2	Resistance		37.6	47	56.4	Ω
R_3	Resistance		80	100	120	Ω
C	Capacitance on filter channels 1, 2 and 3	At 1 MHz, V_{IN} = 0 V	13.4	16.7	20	pF
	Capacitance on clamp channel (pin C2)	At 1 MHz, V_{IN} = 0 V	8.2	10.3	12.4	pF
V_B	Breakdown Voltage (Positive)	I_F = 8 mA	6	6.8	20	V

V_{ESD}	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_A = 25°C unless otherwise noted.
2. Standard IEC 61000−4−2 with $C_{Discharge}$ = 150 pF, $R_{Discharge}$ = 330 Ω.
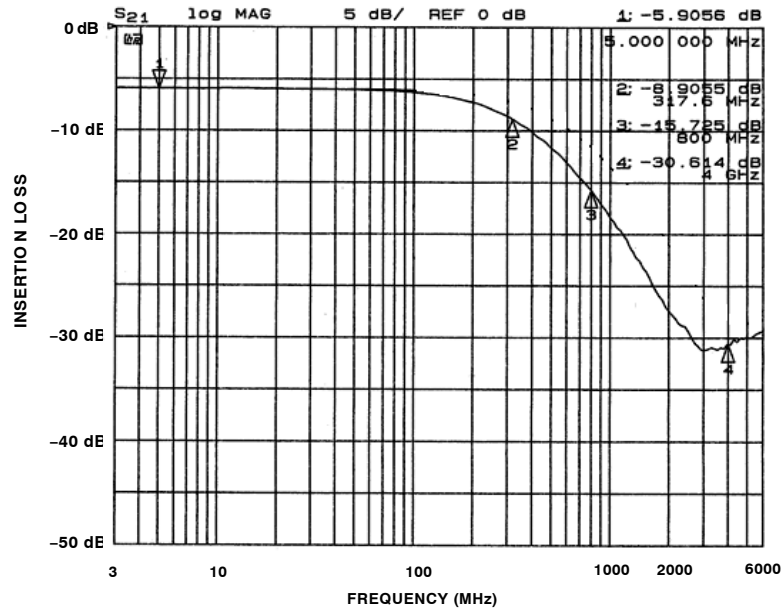
CM6304

RF CHARACTERISTICS

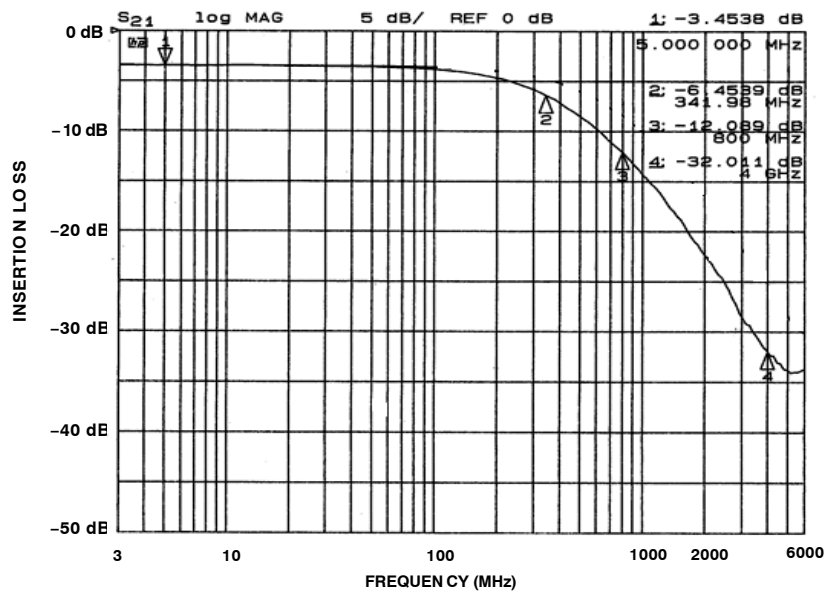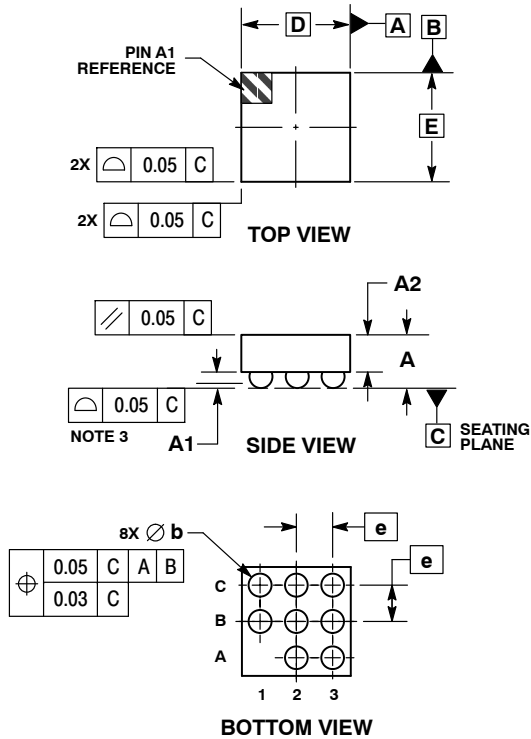**Figure 1. Insertion Loss, Filter 1 (pins A2, A3) and Filter 3 (pins C1, C3) (Bias = 0 V, T$_A$ = 25°C)**

Figure 2. Insertion Loss, Filter 2 (pins B1, B3) (Bias = 0 V, T$_A$ = 25°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.

DIM	MILLIMETERS	
	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	

TOP VIEW

SIDE VIEW

BOTTOM VIEW

RECOMMENDED SOLDERING FOOTPRINT*

DIMENSIONS: MILLIMETERS
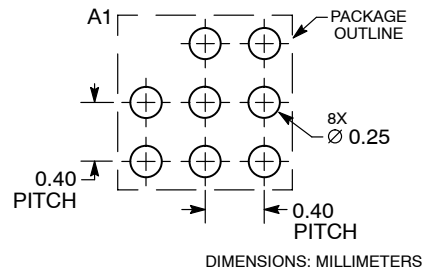
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.