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CM1623

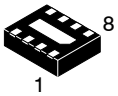
EMI Filter with ESD Protection for SIM Card Applications

Features

- 4−Channel EMI Filtering with Integrated ESD Protection
- Pi−Style EMI Filters in a Capacitor−Resistor−Capacitor (C−R−C) Network
- ±15 kV ESD Protection on Each Channel (IEC 61000−4−2 Level 4, Contact Discharge)
- 8−Lead UDFN Package with 0.40 mm Pitch
- Tiny UDFN Package Size: 1.7 mm x 1.35 mm x 0.5 mm
- Increased Robustness Against Vertical Impacts During Manufacturing Process
- These Devices are Pb−Free and are RoHS Compliant

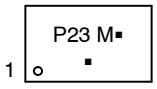
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UDFN8
DE SUFFIX
CASE 517BC

MARKING DIAGRAM



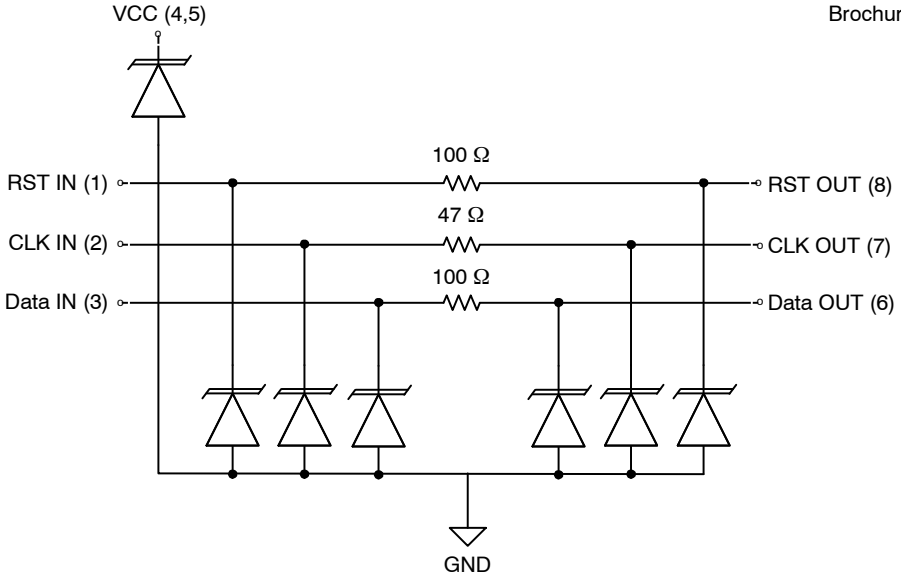
P23 = CM1623−04DE
M = Date Code
▪ = Pb−Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
CM1623−04DE	UDFN−8 (Pb−Free)	3000/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



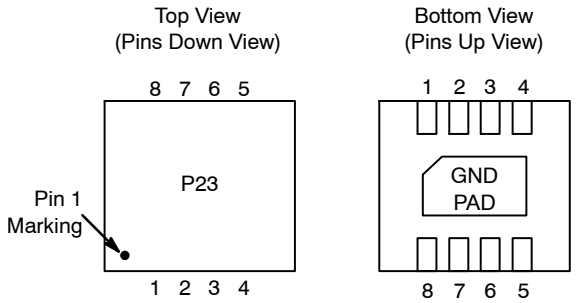
*See Package/Pinout Diagrams for expanded pin information.

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Table 1. PIN DESCRIPTIONS

8−Lead UDFN Package		
Pin	**Name**	**Description**
1	RST	Filter + ESD Channel 1
2	CLK	Filter + ESD Channel 2
3	DATA	Filter + ESD Channel 3
4	VCC	V External
GND PAD	GND	Device Ground
8	RST	Filter + ESD Channel 1
7	CLK	Filter + ESD Channel 2
6	DATA	Filter + ESD Channel 3
5	VCC	V External

PACKAGE / PINOUT DIAGRAMS



CM1623−04DE
8−Lead UDFN Package

SPECIFICATIONS

Table 2. ABSOLUTE MAXIMUM RATINGS

Parameter	Rating	Units
Storage Temperature Range	−65 to +150	°C
DC Power per Resistor	100	mW
DC Package Power Rating	500	mW

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Table 3. STANDARD OPERATING CONDITIONS

Parameter	Rating	Units
Operating Temperature Range	−40 to +85	°C

Table 4. ELECTRICAL OPERATING CHARACTERISTICS (Note 1)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
R1	Reset Channel Resistance		80	100	120	Ω
R2	Clock Channel Resistance		37.6	47	56.4	Ω
R3	Data Channel Resistance		80	100	120	Ω
C_1	Capacitance on Pins 1, 2, and 3	At 1 MHz, V_{IN} = 0 V	16	20	24	pF
C_2	Capacitance on Pins 4 and 5	At 1 MHz, V_{IN} = 0 V		18		pF
I_{LEAK}	Diode Leakage Current (Reverse Bias)	V_{DIODE} = 3.3 V		0.1	1.0	μA
V_{SIG}	Signal Clamp Voltage a) Positive Clamp b) Negative Clamp	 I_{LOAD} = 10 mA I_{LOAD} = −10 mA	 5.6 −1.5	 6.8 −0.8	 9.0 −0.4	V
V_{ESD}	ESD Peak Discharge Voltage Protection on All Pins In−system ESD Withstand Voltage: a) Contact Discharge per IEC 61000−4−2 Level 4 b) Air Discharge per IEC 61000−4−2 Level 4	T_A = 25°C (Note 2)	 ±15 ±15	 ±15 ±15		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.

PERFORMANCE INFORMATION

Typical Filter Performance (T_A = 25°C, DC Bias = 0 V, 50 Ω Environment)

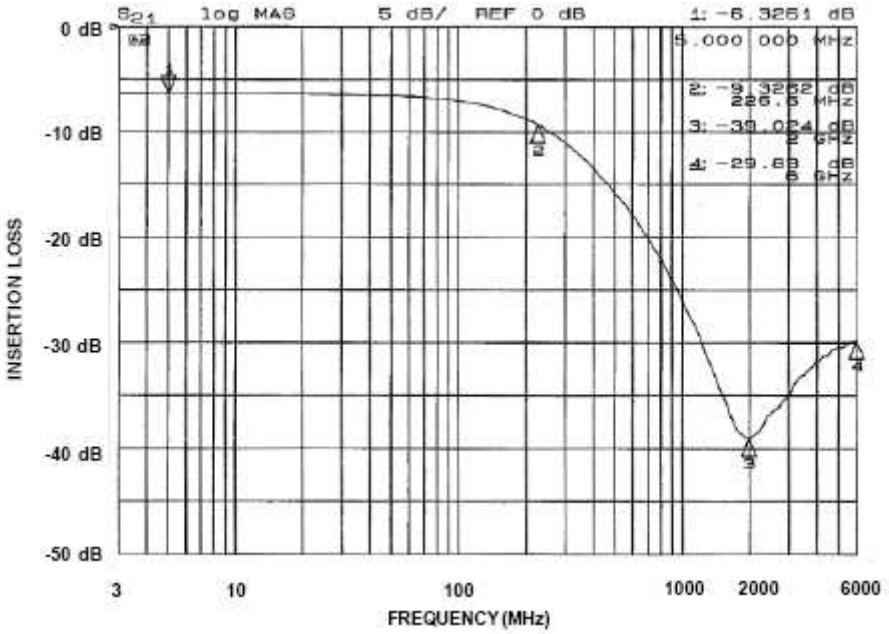


Figure 1. Insertion Loss vs. Frequency, Filter 1 (Pins 1 and 8)

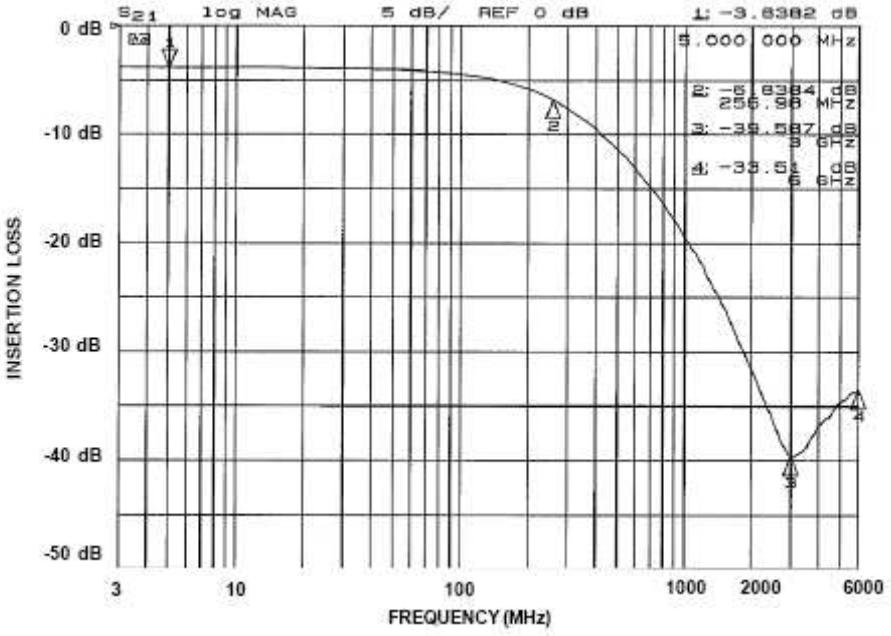


Figure 2. Insertion Loss vs. Frequency, Filter 2 (Pins 2 and 7)

PERFORMANCE INFORMATION (Cont'd)

Typical Filter Performance (T_A = 25°C, DC Bias = 0 V, 50 Ω Environment)

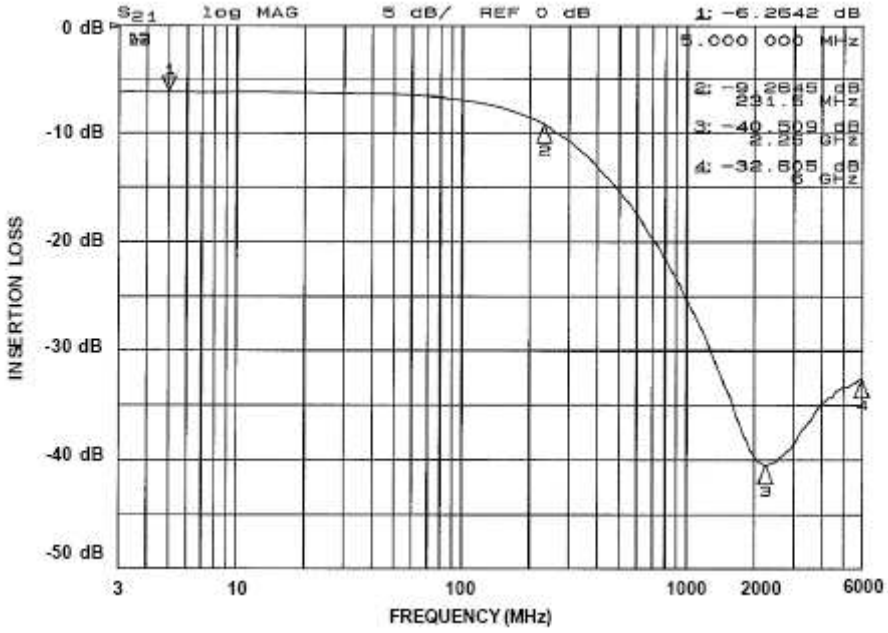


Figure 3. Insertion Loss vs. Frequency, Filter 3 (Pins 3 and 6)

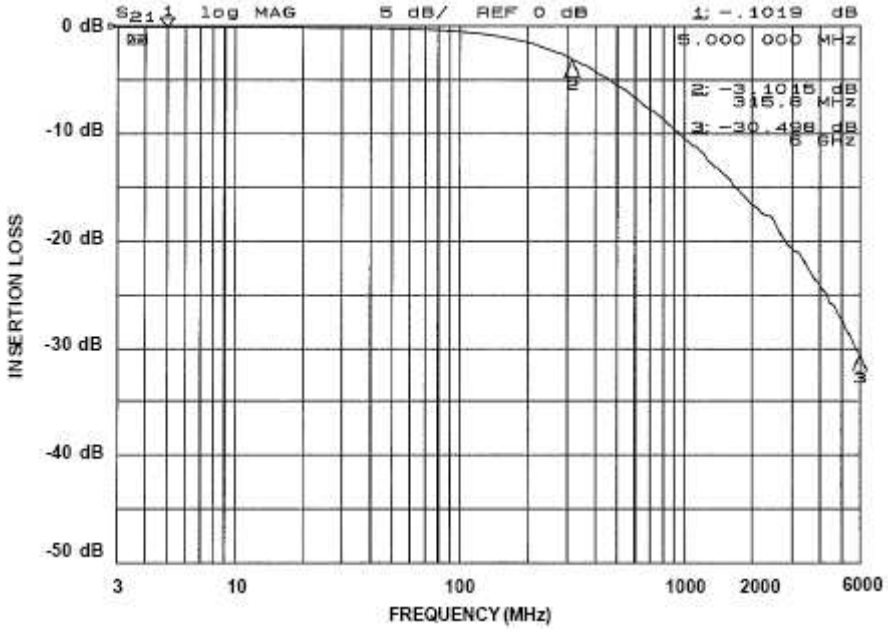


Figure 4. Insertion Loss vs. Frequency, Filter 4 (Pins 4 and 5)

PERFORMANCE INFORMATION (Cont'd)

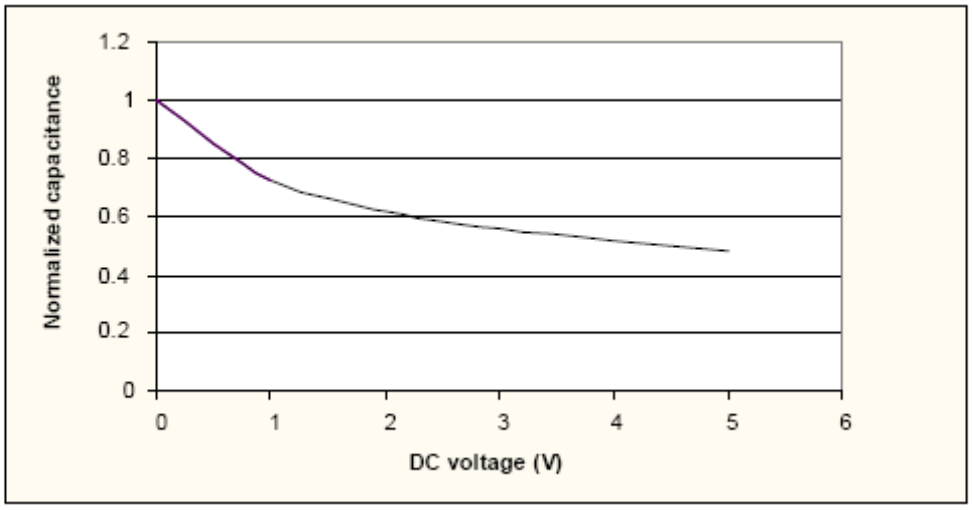
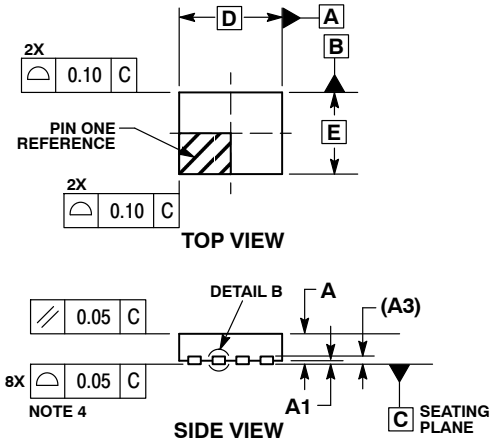
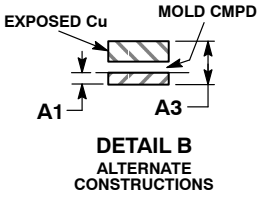


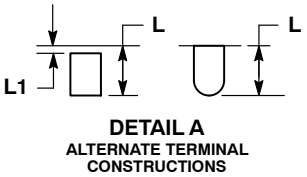
Figure 5. Diode Capacitance vs. Input Voltage (Normalized to Capacitance at 0 VDC and 25°C)

PACKAGE DIMENSIONS

UDFN8, 1.7x1.35, 0.4P
CASE 517BC−01
ISSUE O

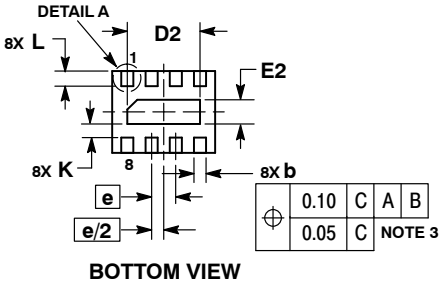




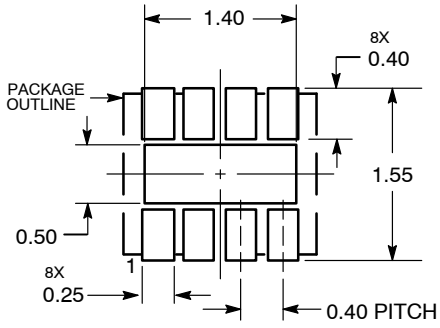


NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.25 mm FROM THE TERMINAL TIP.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

	MILLIMETERS	
DIM	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A3	0.13 REF	
b	0.15	0.25
D	1.70 BSC	
D2	1.10	1.30
E	1.35 BSC	
E2	0.30	0.50
e	0.40 BSC	
K	0.15	−−−
L	0.20	0.30
L1	−−−	0.05



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.

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