CM1621

LCD and Camera EMI Filter Array with ESD Protection

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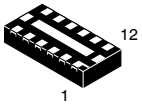


UDFN12
DE SUFFIX
CASE 517AE

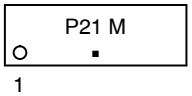
Features

- Six Channels of 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)
- ±30 kV ESD Protection on Each Channel (HBM)
- Greater than 40 dB Attenuation (Typical) at 1 GHz
- uDFN Package with 0.40 mm Lead Pitch:
  - 12−Lead: 2.50 mm x 1.20 mm x 0.50 mm
- These Devices are Pb−Free and are RoHS Compliant

Applications

- LCD and Camera Data Lines in Mobile Handsets
- I/O Port Protection for Mobile Handsets, Notebook Computers, PDAs, etc.
- EMI Filtering for Data Ports in Cell Phones, PDAs or Notebook Computers
- Wireless Handsets
- Handheld PCs/PDAs

MARKING DIAGRAM



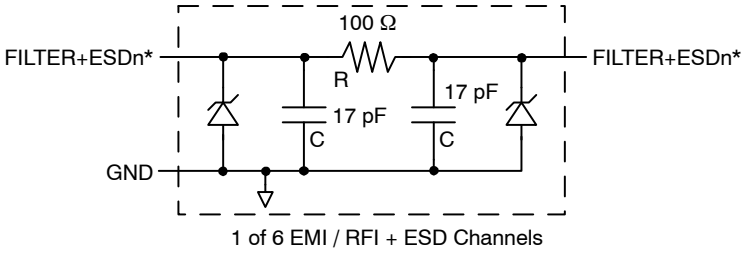
P21 = CM1621−06DE
M = Month Code
▪ = Pb−Free Package

ORDERING INFORMATION

Device	Package	Shipping†
CM1621−06DE	uDFN−12 (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.

BLOCK DIAGRAM



*See Package/Pinout Diagrams for expanded pin information.

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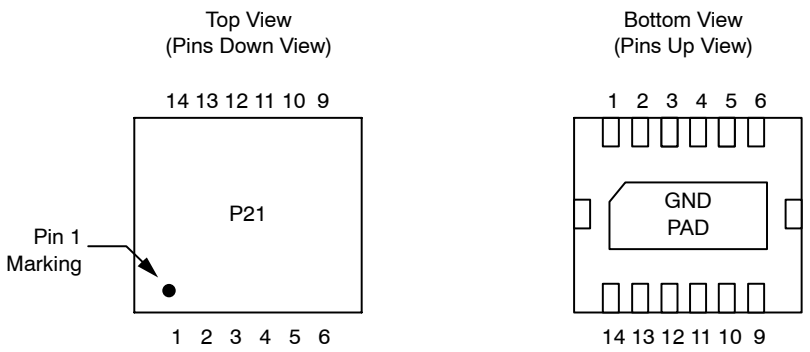
PACKAGE / PINOUT DIAGRAMS



12−Lead UDFN Package

Table 1. PIN DESCRIPTIONS

Device Pin(s)	Name	Description	Device Pin(s)	Name	Description
1	FILTER1	Filter + ESD Channel 1	12	FILTER1	Filter + ESD Channel 1
2	FILTER2	Filter + ESD Channel 2	11	FILTER2	Filter + ESD Channel 2
3	FILTER3	Filter + ESD Channel 3	10	FILTER3	Filter + ESD Channel 3
4	FILTER4	Filter + ESD Channel 4	9	FILTER4	Filter + ESD Channel 4
5	FILTER5	Filter + ESD Channel 5	8	FILTER5	Filter + ESD Channel 5
6	FILTER6	Filter + ESD Channel 6	7	FILTER6	Filter + ESD Channel 6
GND PAD	GND	Device Ground			

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
R	Resistance		85	100	115	Ω
C_{TOTAL}	Total Channel Capacitance	At 2.5 VDC Reverse Bias, 1 MHz, 30 mVAC	27	34	41	pF
C	Capacitance C	At 2.5 VDC Reverse Bias, 1 MHz, 30 mVAC		17		pF
V_{DIODE}	Standoff Voltage	I_{DIODE} = 10 μA		6.0		V
I_{LEAK}	Diode Leakage Current (reverse bias)	V_{DIODE} = +3.3 V			100	nA
V_{SIG}	Signal Clamp Voltage	I_{LOAD} = 1.0 mA	6.0	7.0	8.0	V
V_{ESD}	In−system ESD Withstand Voltage a) Human Body Model (HBM), MIL−STD−883, Method 3015 b) Contact Discharge per IEC 61000−4−2 Level 4	(Note 2)	 ±30 ±15			kV
R_{DYN}	Dynamic Resistance Positive Negative			 2.3 0.9		Ω
f_C	Cut−off Frequency Z_{SOURCE} = 50 Ω, Z_{LOAD} = 50 Ω	Channel R = 100 Ω, Channel C = 15 pF		90	135 (Note 3)	MHz
A_{1GHz}	Absolute Attenuation at 1 GHz from 0 dB Level	Z_{SOURCE} = 50 Ω, Z_{LOAD} = 50 Ω, DC Bias = 0 V; (Notes 1 and 3)		−40		dB
$A_{800MHz - 3 GHz}$	Absolute Attenuation at 800 MHz to 3 Ghz from 0 dB Level	Z_{SOURCE} = 50 Ω, Z_{LOAD} = 50 Ω, DC Bias = 0 V; (Notes 1 and 3)		−35		dB

1. T_A = 25°C unless otherwise specified.
2. ESD applied to input and output pins with respect to GND, one at a time.
3. Attenuation / RF curves characterized by a network analyzer using microprobes.

PERFORMANCE INFORMATION

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

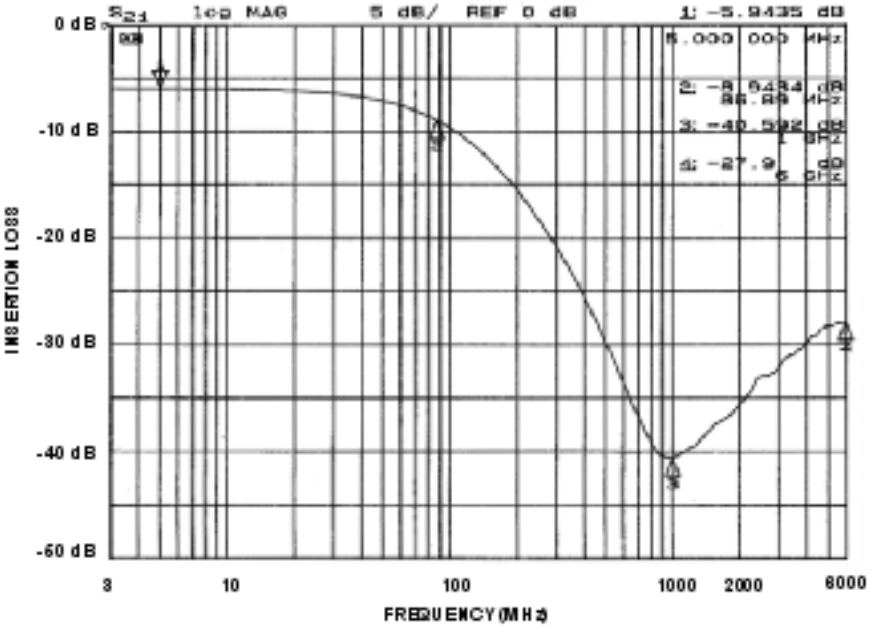


Figure 1. Insertion Loss vs. Frequency (FILTER1 Input to GND, CM1621−06DE)
Typical Diode Capacitance vs. Input Voltage

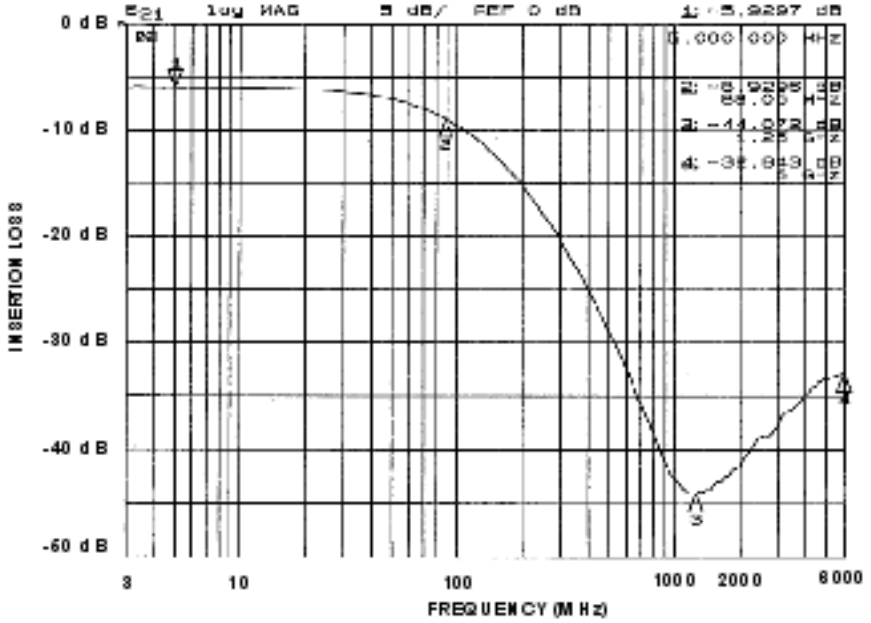


Figure 2. Insertion Loss vs. Frequency (FILTER2 Input to GND, CM1621−06DE)
Typical Diode Capacitance vs. Input Voltage

PERFORMANCE INFORMATION (Cont'd)

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

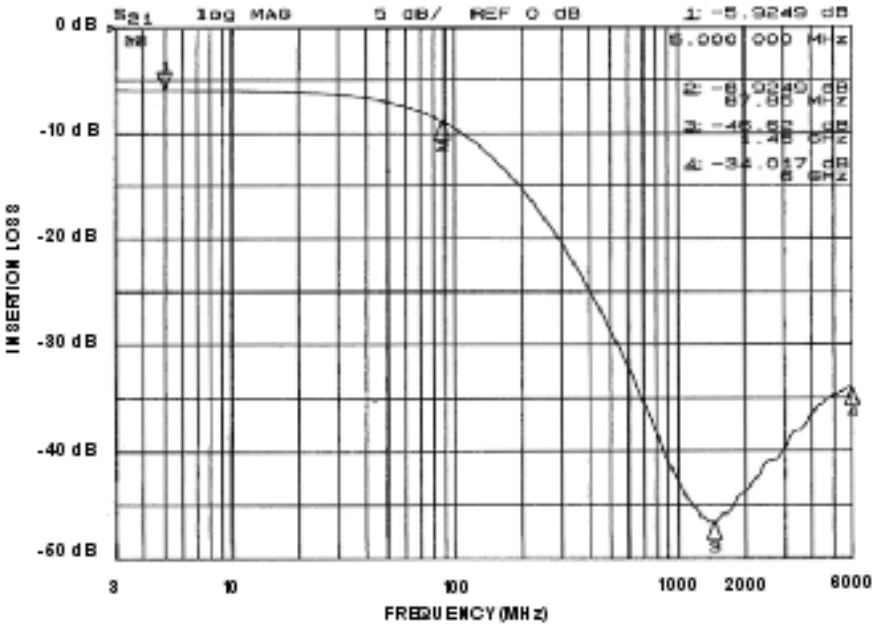


Figure 3. Insertion Loss vs. Frequency (FILTER3 Input to GND, CM1621−06DE)
Typical Diode Capacitance vs. Input Voltage

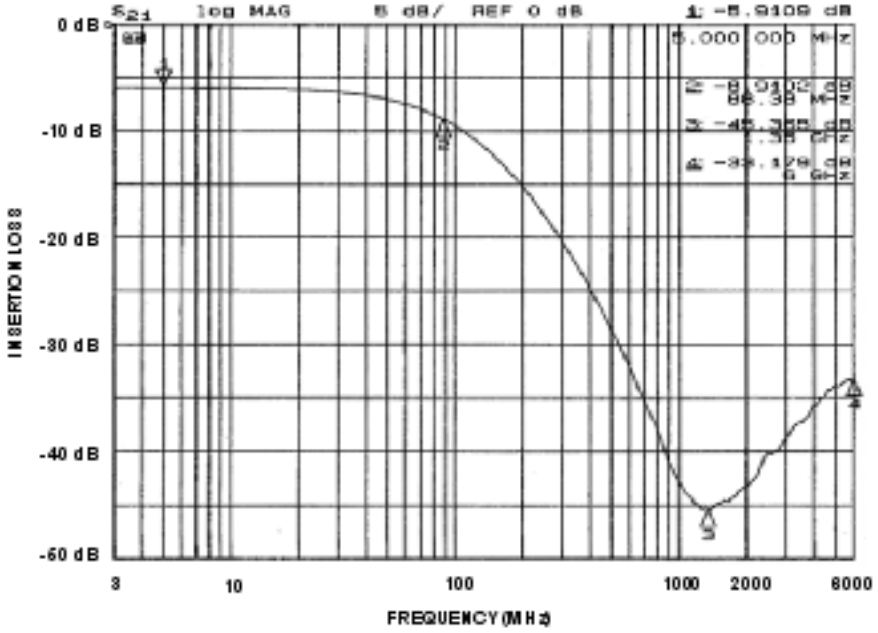


Figure 4. Insertion Loss vs. Frequency (FILTER4 Input to GND, CM1621−06DE)
Typical Diode Capacitance vs. Input Voltage

PERFORMANCE INFORMATION (Cont'd)

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

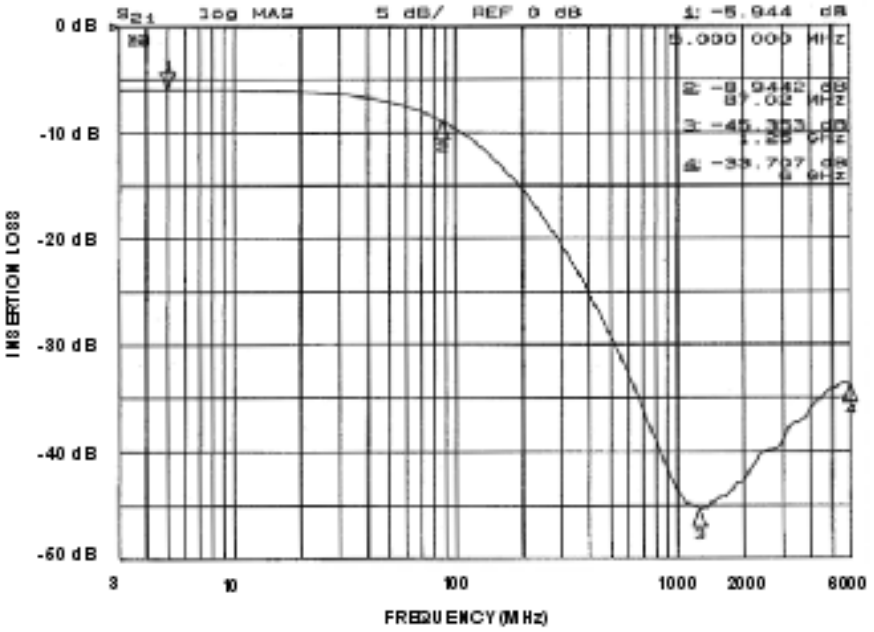


Figure 5. Insertion Loss vs. Frequency (FILTER5 Input to GND, CM1621−06DE)
Typical Diode Capacitance vs. Input Voltage

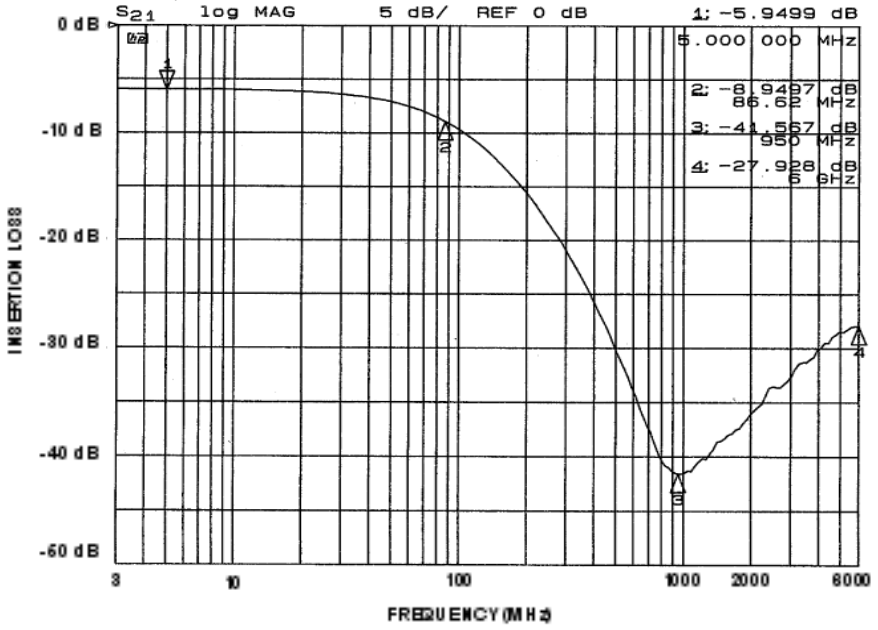


Figure 6. Insertion Loss vs. Frequency (FILTER6 Input to GND, CM1621−06DE)
Typical Diode Capacitance vs. Input Voltage

PERFORMANCE INFORMATION (Cont'd)

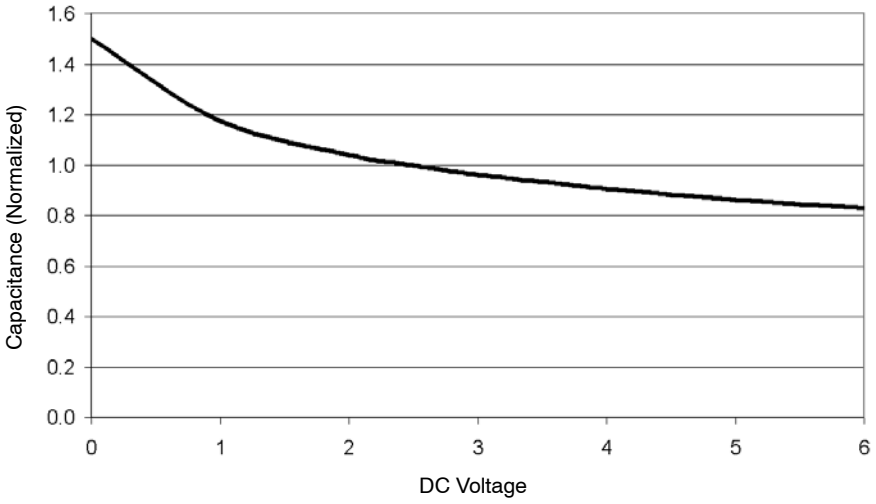
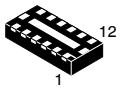


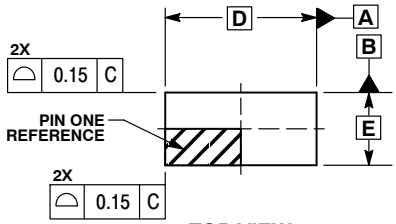
Figure 7. Filter Capacitance vs. Input Voltage (normalized to capacitance at 2.5 VDC and 25°C)



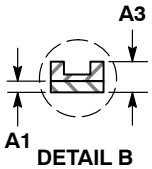
SCALE 4:1

UDFN12 2.5x1.2, 0.4P
CASE 517AE
ISSUE C

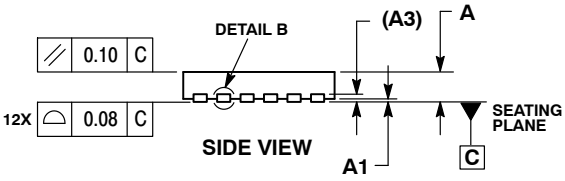
DATE 23 OCT 2012



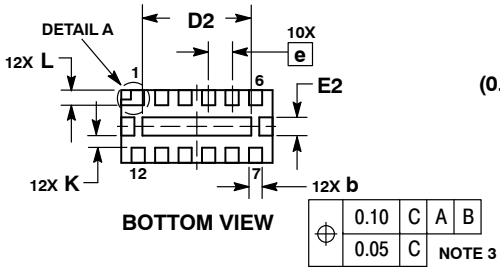
TOP VIEW



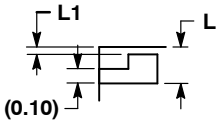
DETAIL B
OPTIONAL CONSTRUCTION



SIDE VIEW



BOTTOM VIEW

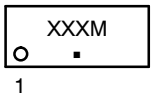


DETAIL A
OPTIONAL CONSTRUCTION

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 0.25 AND 0.30 mm FROM TERMINAL.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

	MILLIMETERS		
DIM	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	0.00	0.03	0.05
A3	0.127 REF		
b	0.15	0.20	0.25
D	2.50 BSC		
D2	1.70	1.80	1.90
E	1.20 BSC		
E2	0.20	0.30	0.40
e	0.40 BSC		
K	0.20 TYP		
L	0.20	0.25	0.30
L1	---	---	0.10

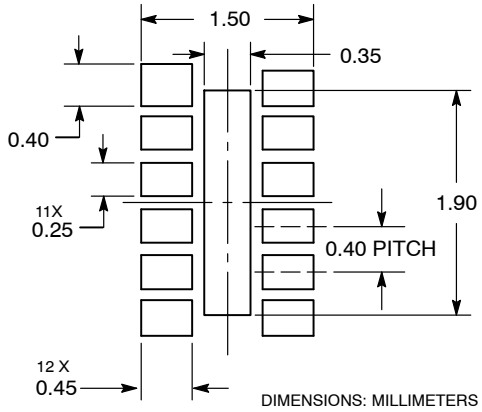
GENERIC MARKING DIAGRAM*



XXX = Specific Device Code
M = Month Code
▪ = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking.
Pb−Free indicator, “G” or microdot “ ▪”, may or may not be present.

SOLDERING FOOTPRINT*



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

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DESCRIPTION:	UDFN12 2.5X1.2, 0.4P	PAGE 1 OF 1

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