

CM1443-04CP

4-Channel EMI Filter Array with ESD Protection

Features

- Four Channels of EMI Filtering for Data Ports
- 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)
- Chip Scale Package (CSP) Features Extremely Low Lead Inductance for Optimum Filter and ESD Performance
- 10-Bump; 0.4 mm Pitch, 1.560 x 1.053 mm Footprint
- TM Coating for Improved Reliability at Assembly
- These Devices are Pb-Free and are RoHS Compliant

Applications

- EMI Filtering and ESD Protection for Both Data and I/O Ports
- Wireless Handsets
- Handheld PCs / PDAs
- MP3 Players
- Notebooks
- Desktop PCs

BLOCK DIAGRAM

CM1443-

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Table 4. ELECTRICAL OPERATING CHARACTERISTICS (Note 1)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
R	Resistance		80	100	120	Ω
C _T	Total Capacitance	At 2.5 V DC	14	17	21	pF
C _S	Single Capacitor	At 2.5 V DC		8.5		pF
V _{DIODE}	Diode Voltage (reverse bias)	I _{DIODE} = 10 μA	5.5			V
I _{LEAK}	Diode Leakage Current (reverse bias)	V _{DIODE} = 3.3 V		0.1	1.0	μA
V _{SIG}	Signal Voltage Positive Clamp Negative Clamp	I _{LOAD} = 10 mA	5.6 -0.4	6.8 -0.8	9.0 -1.5	V
V _{ESD}	In-system ESD Withstand Voltage a) Human Body Model, MIL-STD-883, Method 3015 b) Contact Discharge per IEC 61000-4-2 Level 4	(Notes 2 and 4)	±30 ±15			kV
V _{CL}	Clamping Voltage during ESD Discharge MIL-STD-883 (Method 3015), 8 kV Positive Transients Negative Transients	(Notes 2, 3 and 4)		+10 -5		V
f _C	Cut-off Frequency Z _{SOURCE} = 50 Ω, Z _{LOAD} = 50 Ω	R = 100 Ω, C _S = 8.5 pF		220		MHz

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. Clamping voltage is measured at the opposite side of the EMI filter to the ESD pin. For example, if ESD is applied to Pin A1,

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PERFORMANCE INFORMATION (Cont'd)

Typical Filter Performance ($T_A = 25^\circ\text{C}$, DC Bias = 0 V, 50 Ω Environment)

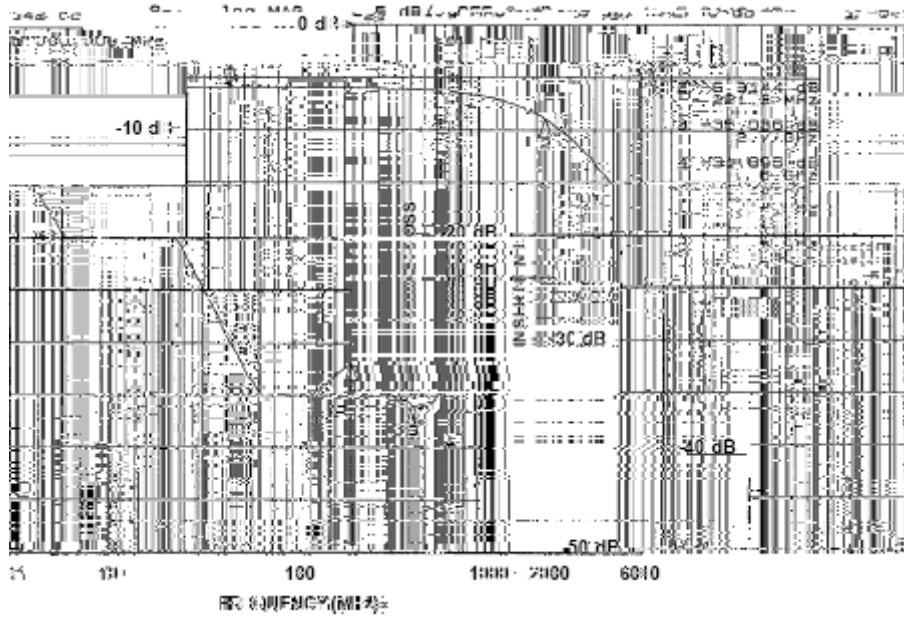


Figure 4. Insertion Loss vs. Frequency (A3-C3 to GND B2)

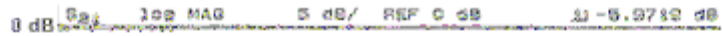


Figure 5. Insertion Loss vs. Frequency (A4-C4 to GND B2)

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PERFORMANCE INFORMATION (Cont'd)

Typical Filter Performance ($T_A = 25^\circ\text{C}$, DC Bias = 0 V, 50 Ω Environment)

Figure 6. Comparison of Filter Response Curves for CM1443 vs. DC Bias

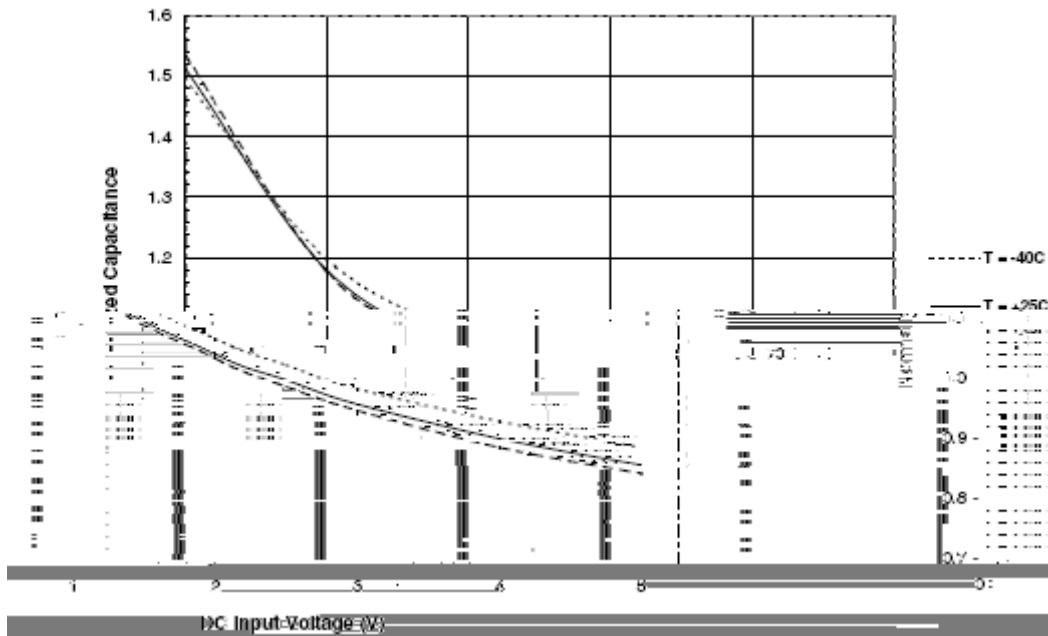


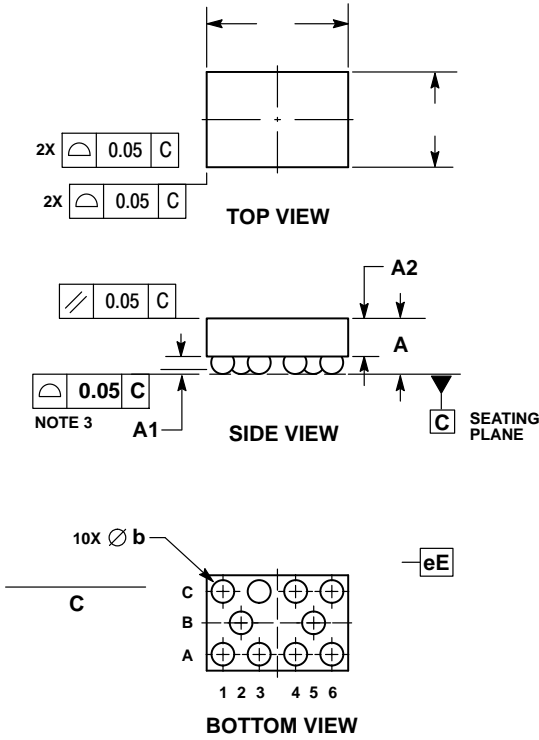
Figure 7. Filter Capacitance vs. Input Voltage over Temperature (normalized to capacitance at 2.5 VDC and 25°C)



SCALE 4:1

WLCSP10, 1.56x1.05
CASE 567BH-01
ISSUE O

DATE 26 JUL 2010



NOTES:

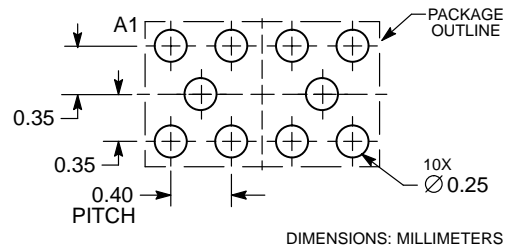
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. COPLANARITY APPLIES TO SPHERICAL CROWNS OF SOLDER BALLS.

MILLIMETERS		
DIM	MIN	MAX
A	0.54	0.24
A2	0.17	0.42 REF

1.05 BSC

eE 0.347 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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