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
- OptiGuard[™] 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-

Symbol	Parameter	Conditions	Min	Тур	Max	Units
R	Resistance		80	100	120	Ω
CT	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	μΑ
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 $Z_{SOURCE} = 50 \Omega$, $Z_{LOAD} = 50 \Omega$	R = 100 Ω, C _S = 8.5 pF		220		MHz

Table 4. ELECTRICAL OPERATING CHARACTERISTICS (Note 1)

T_A = 25°C unless otherwise specified.
ESD applied to input and output pins with respect to GND, one at a time.
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,

PERFORMANCE INFORMATION (Cont'd)

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



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

8 dB 521 102 MAG 5 dB/ REF C 68 11-5.9712 dB

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

PERFORMANCE INFORMATION (Cont'd)

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





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

OptiGuard[™] is a trademark of Semiconductor Components Industries, LLC.



onsemi, , and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "onsemi" or its affiliates and/or subsidiaries in the United States and/or other countries. onsemi owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of onsemi's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. Onsemi reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and onsemi makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or incruit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using onsemi