

# CM1402

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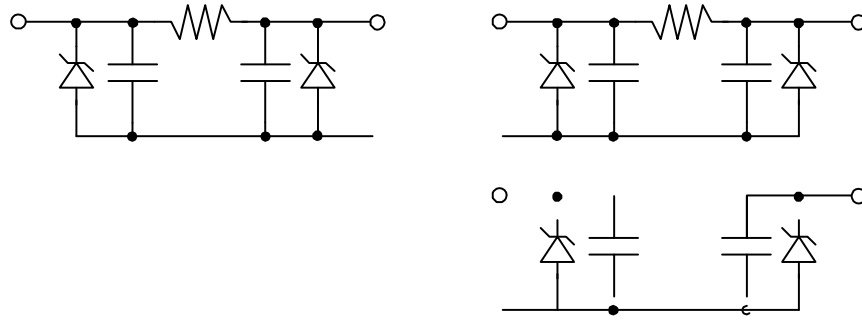
## SIM Card EMI Filter Array

Electrical and Mechanical Specifications are defined and characterized

• ±10 kV, beyond the maximum requirement of the IEC 61000-4

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## ELECTRICAL SCHEMATIC



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**Table 3. STANDARD OPERATING CONDITIONS**

Parameter	Rating	Units
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## PERFORMANCE INFORMATION

Typical Filter Performance (nominal conditions unless specified otherwise, 50  $\Omega$  Environment)

FREQUENCY (MHz)

Figure 1. A1-C1 EMI Filter Performance

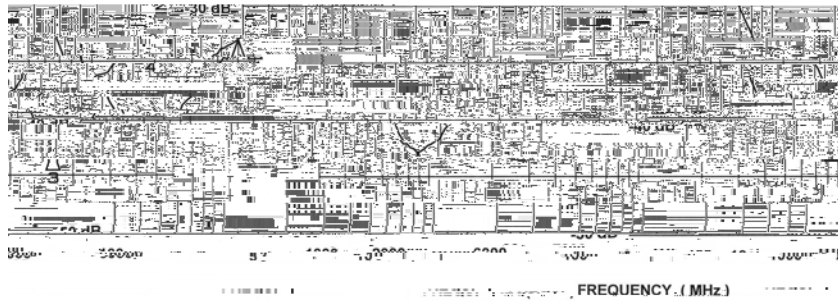


Figure 2. A2-C2 EMI Filter Performance

PERFORMANCE INFORMATION (Cont'd)

Typical Filter Performance (nominal conditions unless specified otherwise, 50 Ω Environment)

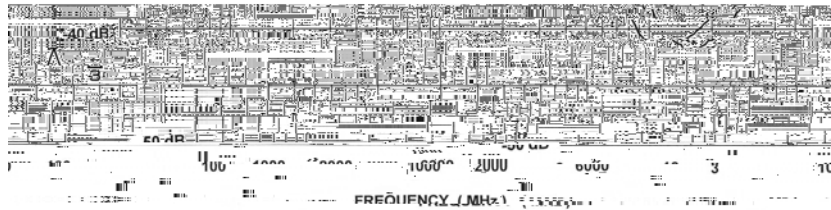


Figure 3. A3–C3 EMI Filter Performance

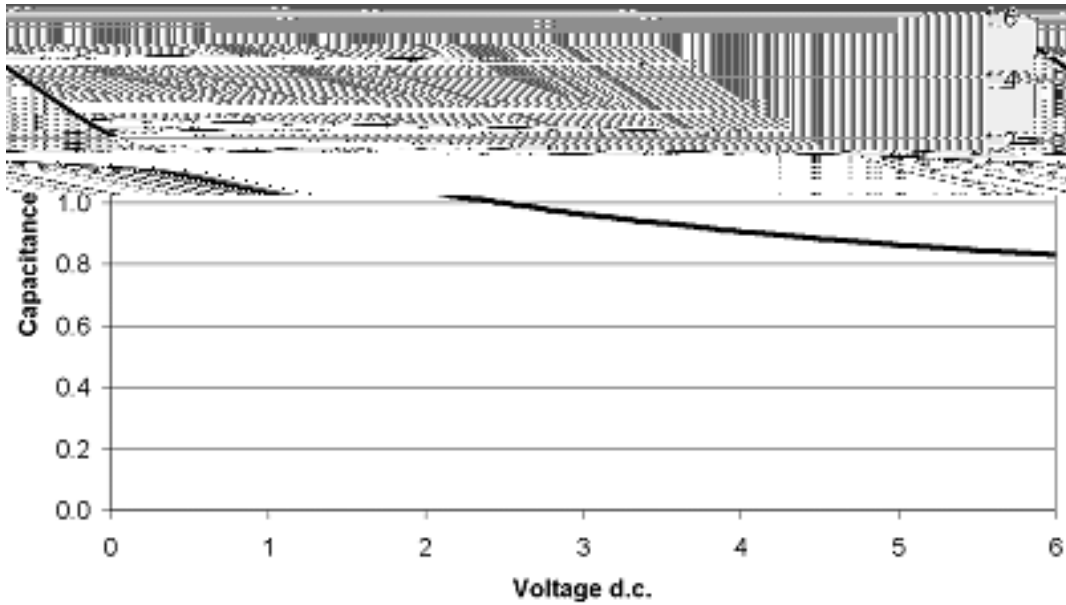
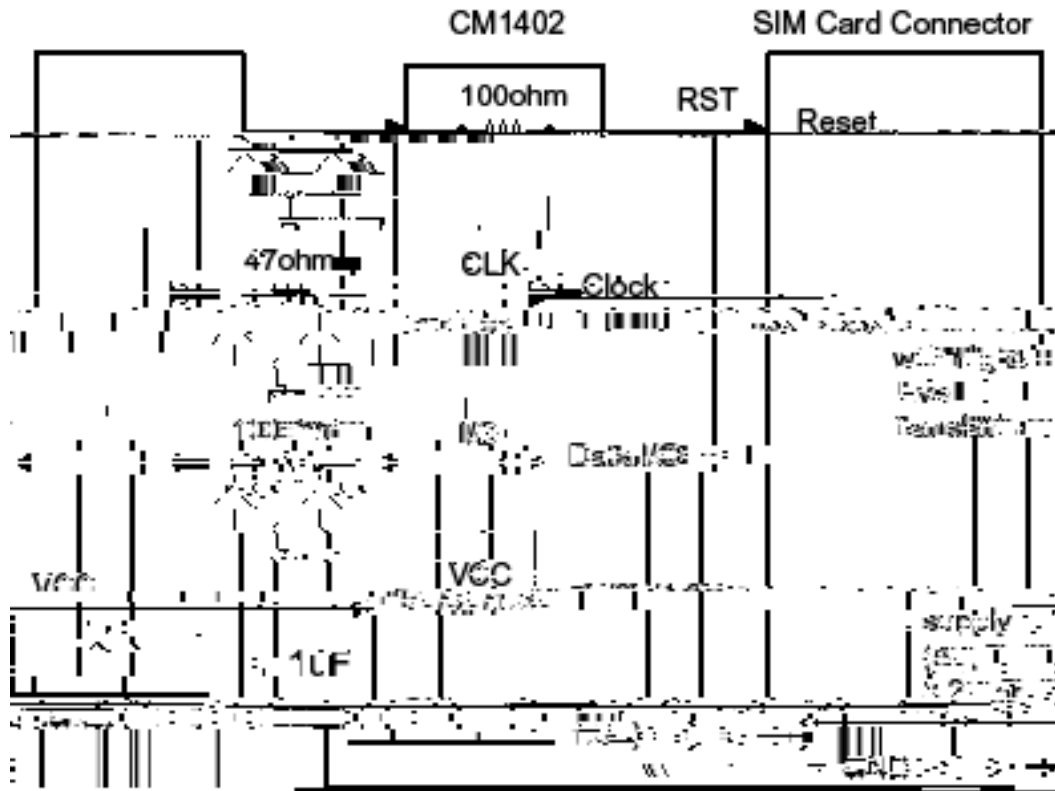


Figure 4. Typical Diode Capacitance vs. Input Voltage (normalized to 2.5 VDC)

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## APPLICATION INFORMATION

The CM1402 provides a bidirectional filter and protector for all the signals and the power line on the SIM (subscriber identity module) card connector. SIM cards are found in all GSM cellular phones and in some other handheld devices or card readers. The ESD diodes protect the controller against possible ESD strikes that may occur when the connector pins are exposed during direct contact, or during insertion of the SIM card into the card slot. The EMI filter suppresses all high frequency noise, preventing the unwanted EMI signals from both entering and exiting the main board. The signals that interface with the SIM card are the Reset, the Clock and the bidirectional data I/O, as shown in Typical Application Diagram for the SIM Card Interface.



Note: One channel of the CM1402 with a zener diode is not shown on the diagram.

**Figure 5. Typical Application Diagram for the SIM Card Interface**

For best filter and ESD performance, both GND bumps (B1, B2) of the CM1402 should be directly connected to the Ground plane. A small capacitor of about 1  $\mu$ F is required next to the VCC pin of the SIM connector in order to improve stability of the SIM card supply rail.

For information on the assembly of the CM1402 to the PCB (printed circuit board), please refer to the Chip Scale Package (CSP) Application Note AP217, or contact factory at 800 282 9855 for technical support.

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## APPLICATION INFORMATION

**Table 5. PRINTED CIRCUIT BOARD RECOMMENDATIONS**

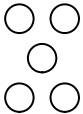
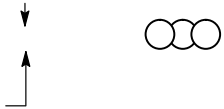
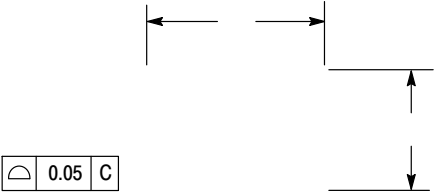
Parameter	Value
Pad Size on PCB	0.240 mm
Pad Shape	Round
Pad Definition	Non-Solder Mask defined pads
Solder Mask Opening	0.290 mm Round
Solder Stencil Thickness	0.125 – 0.150 mm
Solder Stencil Aperture Opening (laser cut, 5% tapered walls)	0.300 mm Round
Solder Flux Ratio	50/50 by volume
Solder Paste Type	No Clean
Pad Protective Finish	OSP (Entek Cu Plus 106A)
Tolerance – Edge To Corner Ball	±50 µm
Solder Ball Side Coplanarity	±20 µm

Maximum Dwell Time Above Liquidous (183

CASE 567BL  
ISSUE O

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NOTES:





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