



## Features

- Two channels of EMI filtering with integrated ESD protection
- Pi-style EMI filters in a capacitor-resistor-capacitor (C-R-C) network
- $\pm 15\text{kV}$  ESD protection on each channel (IEC 61000-4-2 Level 4, contact discharge)
- $\pm 30\text{kV}$  ESD protection on each channel (HBM)
- Greater than 20dB attenuation (typical) at 1 GHz
- 5-lead SC70 package
- Lead-free version available

## 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
- LCD and camera modules

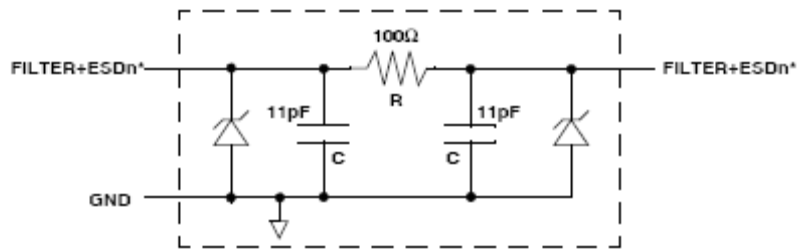
## Product Description

The CM1484 is a two channel pi-style EMI filter array with ESD protection, housed in a 5-lead SC-70 package. The CM1484 has component values of 11pF-100W-11pF per channel. The CM1484 has a cut-off frequency of 220MHz and can be used in applications with data rates up to 80Mbps. The parts include ESD diodes on every pin, which provide a very high level of protection for sensitive electronic components that may be subjected to electrostatic discharge (ESD). The ESD protection diodes safely dissipate ESD strikes of  $\pm 15\text{kV}$ , well beyond the maximum requirement of the IEC61000-4-2 international standard. Using the MIL-STD-883 (Method 3015) specification for Human Body Model (HBM) ESD, the pins are protected for contact discharges at greater than  $\pm 30\text{kV}$ .

These devices are particularly well-suited for portable electronics (e.g. wireless handsets, PDAs, notebook computers) because of their small package and easy-to-use pin assignments. In particular, the CM1484 is ideal for EMI filtering and protecting data and control lines for the I/O data ports, LCD display and camera interface in mobile handsets.

The CM1484 is housed in a small, 5-lead SC70 package and is available with lead-free finishing.

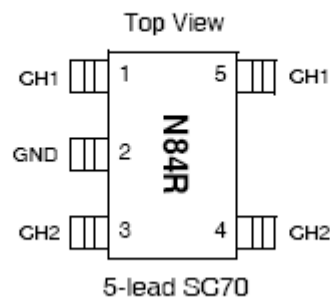
**Electrical Schematic**



**1 of 2 EMI/RFI Filter Channels with Integrated ESD Protection**

\* See Package/Pinout Diagram for expanded pin information.

**PACKAGE / PINOUT DIAGRAMS**



Notes:  
1) These drawings are not to scale.

**PIN DESCRIPTIONS**

	NAME	DESCRIPTION
1	FILTER1	Filter + ESD Channel 1
2	GND	Ground
3	FILTER2	Filter + ESD Channel 2
4	FILTER2	Filter + ESD Channel 2
5	FILTER1	Filter + ESD Channel 1

CM1484

## Ordering Information

PART NUMBERING INFORMATION			
Pins	Package	Lead-free Finish	
		Ordering Part Number <sup>1</sup>	Part Marking
5	SC70	CM1484 -02S7	N84R

Note 1: Parts are shipped in Tape & Reel form unless otherwise specified.

## Specifications

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

STANDARD OPERATING CONDITIONS		
PARAMETER	RATING	UNITS
Operating Temperature Range	-40 to +85	°C

**ELECTRICAL OPERATING CHARACTERISTICS** (SEE NOTE1)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
R	Resistance		90	100	110	$\Omega$
C <sub>TOTAL</sub>	Total Channel Capacitance	At 0VDC Reverse Bias, 1MHz, 30mVAC	17.6	22	26.4	pF
C	Capacitance C1	At 0VDC Reverse Bias, 1MHz, 30mVAC	8.8	11	13.2	pF
I <sub>LEAK</sub>	Diode Leakage Current (reverse bias)	V <sub>DIODE</sub> = +3.0V			1.0	$\mu$ A
V <sub>Z</sub>	Zener Breakdown Voltage Positive Clamp	I <sub>LOAD</sub> = 1mA	6.0		8.0	V
V <sub>F</sub>	Zener Forward Voltage	I <sub>F</sub> = 50mA			1.5	V
V <sub>ESD</sub>	In-system ESD Withstand Voltage a) Human Body Model, MIL-STD-883, Method 3015 b) Contact Discharge per IEC 61000-4-2 Level 4	Note 2	$\pm 30$			kV kV
R <sub>DYN</sub>	Dynamic Resistance Positive Negative			2.3 0.9		$\Omega$ $\Omega$
f <sub>C</sub>	Cut-off Frequency Z <sub>SOURCE</sub> = 50 $\Omega$ , Z <sub>LOAD</sub> = 50 $\Omega$	Channel R = 100 $\Omega$ , Channel C = 22pF at 0V reverse bias		220		MHz

Note 1: T<sub>A</sub> = 25°C unless otherwise specified.

Note 2: ESD applied to input and output pins with respect to GND, one at a time.

## Performance Information

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

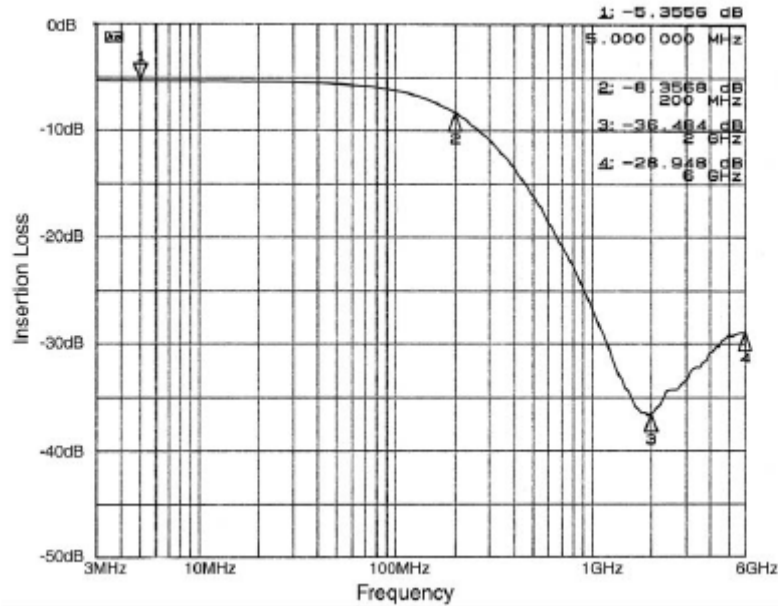


Figure 1. Insertion Loss vs. Frequency (FILTER1 Input to GND)

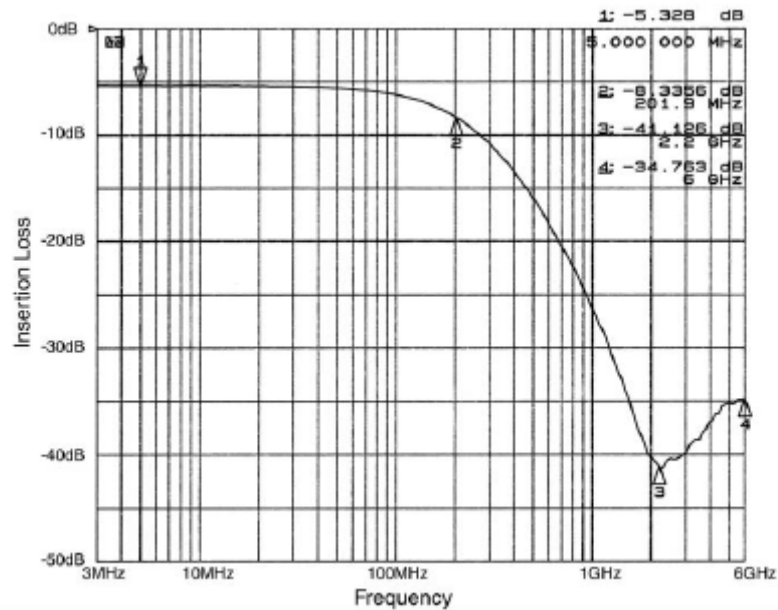


Figure 2. Insertion Loss vs. Frequency (FILTER2 Input to GND)

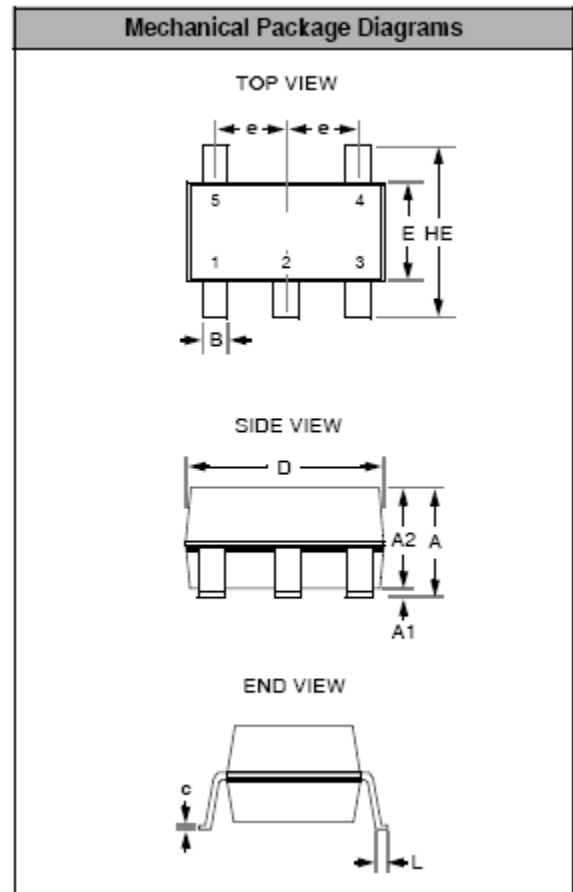
## Mechanical Details

### SC70-5 Mechanical Specifications:


The CM1484-02S7 is supplied in a 5-pin SC70 package. Dimensions are presented below.

For complete information on the SC70-5, see the California Micro Devices SC70 Package Information document.

PACKAGE DIMENSIONS		
Package	SC70-5 (JEDEC name is MO-203 Issue A)	
Pins	5	
Dimensions	Millimeters	
	Min	Max
A	0.80	1.10
A1	0.00	0.10
A2	0.70	1.00
B	0.15	0.30
c	0.08	0.25
D	1.85	2.25
E	1.15	1.35
e	0.65 BSC	
HE	2.00	2.40
L	0.26	0.46
# / tape and reel	3000 pieces	
Controlling dimension: millimeters		



Package Dimensions for SC70-5

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