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# CM1682

## 2 Channel EMI Filter with ESD Protection for Headsets/Speakers

### Features

- Two Channels of EMI Filtering
- Pi-Style EMI Filters in a Capacitor-Resistor-Capacitor (C-R-C) Network
- $\pm 8$  kV ESD Protection (IEC 61000-4-2, Contact Discharge)
- $\pm 15$  kV ESD Protection (HBM)
- Supports AC Signals – Ideal for Audio Applications
- Greater than 40 dB of Attenuation at 1 GHz
- 8-Lead, 2.00 mm x 2.00 mm Footprint CUDFN Package
- Low Profile Height of 0.5 mm
- These Devices are Pb-Free and are RoHS Compliant

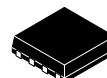
### Applications

- Headset Microphone Port 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



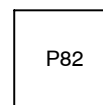
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CUDFN8  
DE SUFFIX  
CASE 505AF

### MARKING DIAGRAM



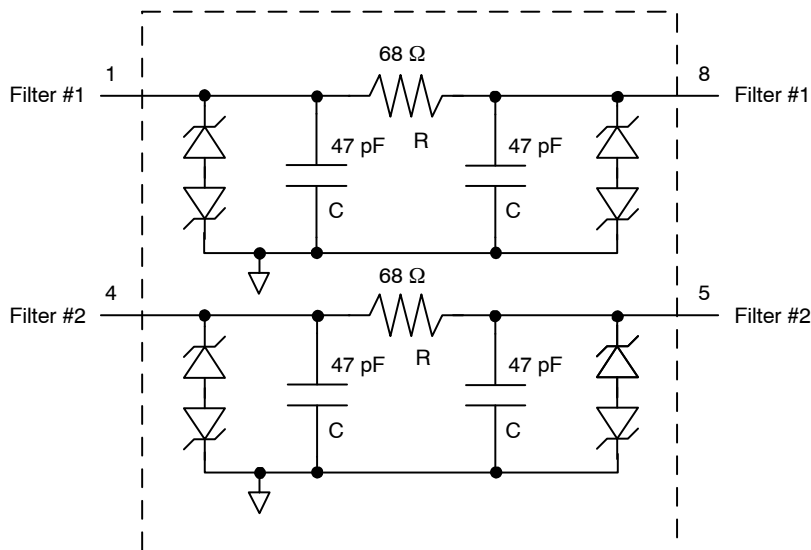
P82 = CM1682-02DE

### ORDERING INFORMATION

Device	Package	Shipping†
CM1682-02DE	CUDFN-8 (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.

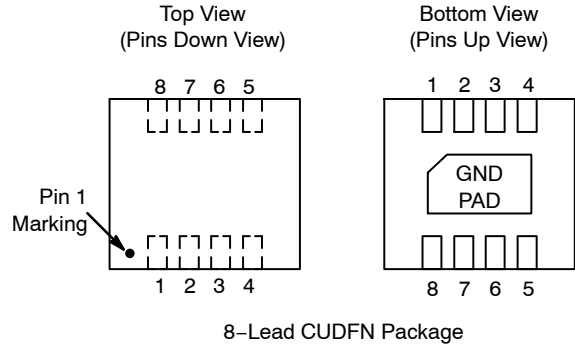
### ELECTRICAL SCHEMATIC



**Table 1. PIN DESCRIPTIONS**

8-Lead CUDFN Package		
Pin	Name	Description
1	Filter #1	Filter #1
2	NC	No connect
3	NC	No connect
4	Filter #2	Filter #2
5	Filter #2	Filter #2
6	NC	No connect
7	NC	No connect
8	Filter #1	Filter #1
GND PAD	GND	Ground

**PACKAGE / PINOUT DIAGRAMS**



**SPECIFICATIONS**

**Table 2. ABSOLUTE MAXIMUM RATINGS**

Parameter	Rating	Units
Storage Temperature Range	-65 to +150	°C
DC package power rating	0.5	W

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 R		61	68	75	Ω
R <sub>MATCH</sub>	Resistor-to-Resistor Matching	(Note 3)			5	%
C <sub>TOT</sub>	Total Channel Capacitance	2.5 V DC; 1 MHz, 30 mV AC	74	94	114	pF
C	Capacitance C			47		pF
I <sub>LEAK</sub>	Diode Leakage Current	V <sub>IN</sub> = ±5.0 V		0.1	1.0	μA
V <sub>SIG</sub>	Signal Clamp Voltage Positive Clamp Negative Clamp	I <sub>LOAD</sub> = 10 mA I <sub>LOAD</sub> = -10 mA	5 -15	7 -10	15 -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)	±15 ±8			kV
f <sub>C</sub>	Cut-off frequency Z <sub>SOURCE</sub> = 50 Ω, Z <sub>LOAD</sub> = 50 Ω	R = 68 Ω, C = 47 pF		60		MHz

- T<sub>A</sub> = 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 (i.e. if ESD is applied to pin 1 then clamping voltage is measured at pin 8).

# CM1682

## PERFORMANCE INFORMATION

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

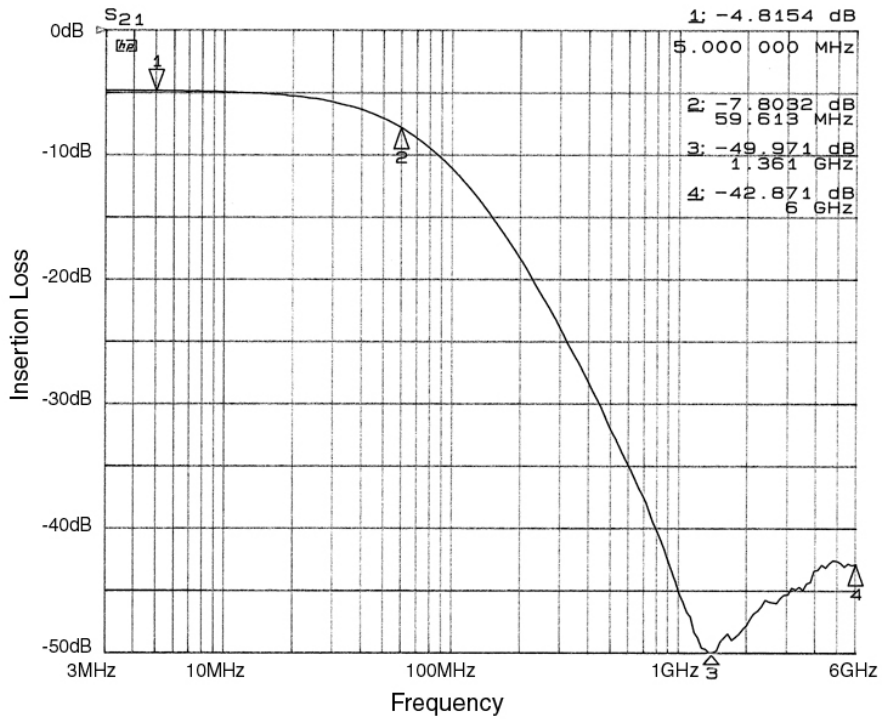


Figure 1. Insertion Loss vs. Frequency (Filter #1 to GND)

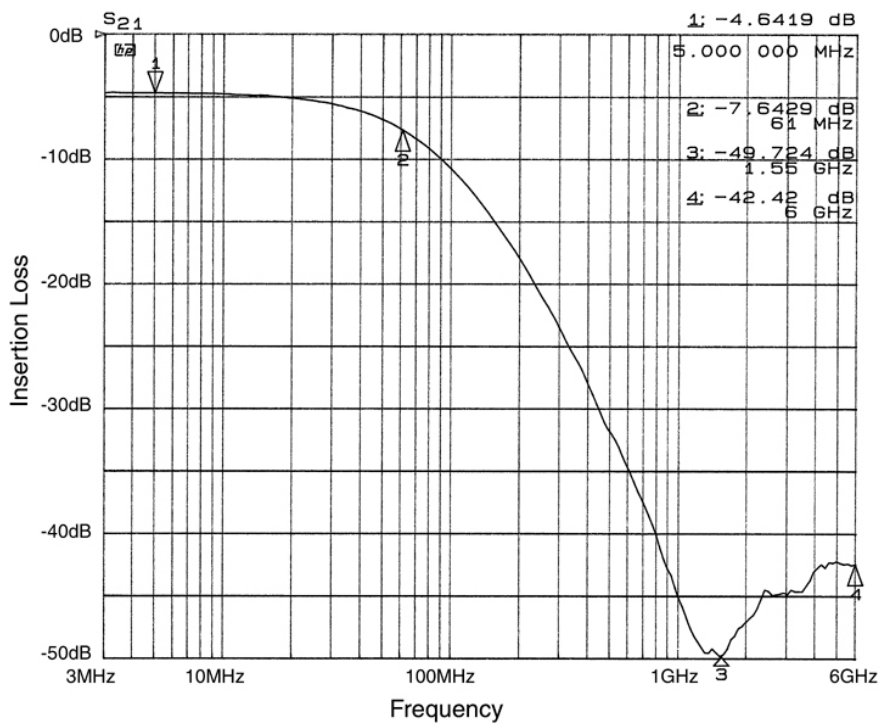
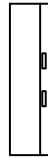
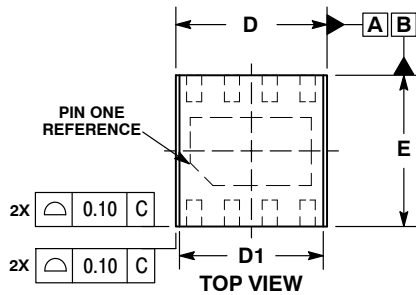


Figure 2. Insertion Loss vs. Frequency (Filter #2 to GND)

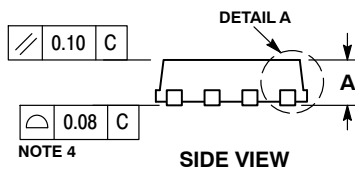
# CM1682

## PACKAGE DIMENSIONS

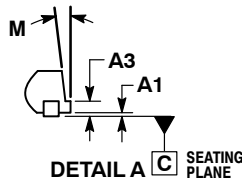
CUDFN8, 2x2, 0.5P  
CASE 505AF-01  
ISSUE O



END VIEW



SIDE VIEW

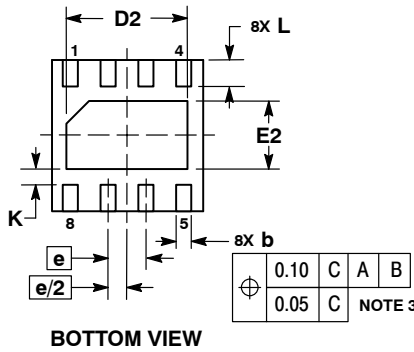


DETAIL A

NOTES:

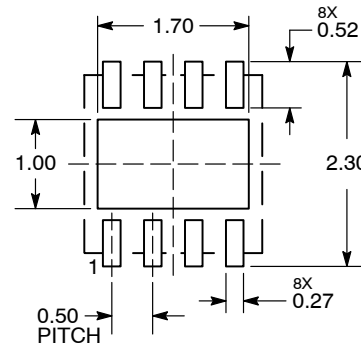
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.10 AND 0.20mm FROM THE TERMINAL TIP.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

DIM	MILLIMETERS	
	MIN	MAX
A	0.55	0.65
A1	0.00	0.05
A3	0.20 REF	
b	0.15	0.25
D	2.00 BSC	
D1	1.80 BSC	
D2	1.50	1.70
E	2.00 BSC	
E2	0.80	1.00
e	0.50 BSC	
K	0.20	---
L	0.25	0.35
M	---	10°



BOTTOM VIEW

### RECOMMENDED MOUNTING FOOTPRINT\*



DIMENSIONS: MILLIMETERS

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERM/D.

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