

CM1430-08DE

LCD and Camera EMI Filter Array with ESD Protection

Product Description

The CM1430 is a pi-style EMI filter array with ESD protection that integrates eight filters (C-R-C) in a small form factor TDFN 0.40 mm pitch package. The CM1430 has component values of 8.5 pF – 100 Ω – 8.5 pF per channel. The CM1430 has a cut-off frequency of 200 MHz and can be used in applications with data rates up to 80 Mbps. 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 ±15 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 ±30 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 CM1430 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 CM1430 is housed in space-saving, low-profile 16-lead WDFN packages with a 0.4 mm pitch and is available with lead-free finishing. This new small WDFN package provides up to 42% board space savings vs. the 0.50 mm pitch WDFN packages.

Features

- Eight Channels of EMI Filtering with Integrated ESD Protection
- 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)
- Greater than 20 dB Attenuation (Typical) at 1 GHz
- WDFN Package with 0.40 mm Lead Pitch:
 - 16-Lead: 3.3 mm x 1.35 mm
- Increased Robustness Against Vertical Impacts During Manufacturing Process
- These Devices are Pb-Free and are RoHS Compliant

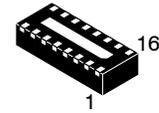
Applications

- 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



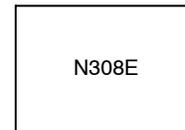
ON Semiconductor®

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WDFN16
DE SUFFIX
CASE 511AW

MARKING DIAGRAM



N308E = CM1430-08DE

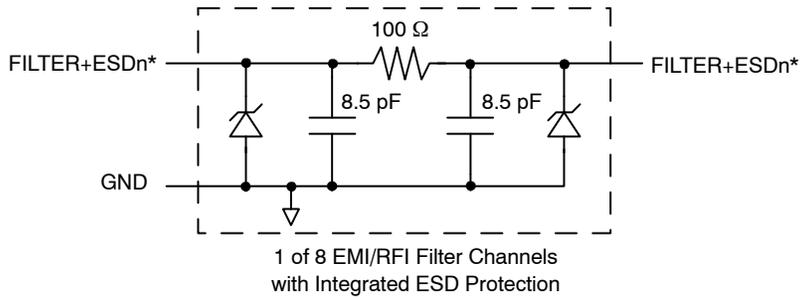
ORDERING INFORMATION

Device	Package	Shipping†
CM1430-08DE	WDFN-16 (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.

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BLOCK DIAGRAM

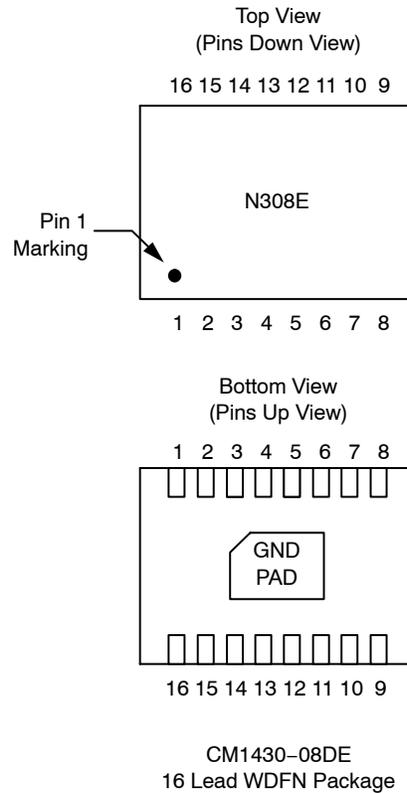


*See Package/Pinout Diagrams for expanded pin information.

Table 1. PIN DESCRIPTIONS

16-Lead WDFN Package		
Pin	Name	Description
1	FILTER1	Filter + ESD Channel 1
2	FILTER2	Filter + ESD Channel 2
3	FILTER3	Filter + ESD Channel 3
4	FILTER4	Filter + ESD Channel 4
5	FILTER5	Filter + ESD Channel 5
6	FILTER6	Filter + ESD Channel 6
7	FILTER7	Filter + ESD Channel 7
8	FILTER8	Filter + ESD Channel 8
GND PAD	GND	Device Ground
16	FILTER1	Filter + ESD Channel 1
15	FILTER2	Filter + ESD Channel 2
14	FILTER3	Filter + ESD Channel 3
13	FILTER4	Filter + ESD Channel 4
12	FILTER5	Filter + ESD Channel 5
11	FILTER6	Filter + ESD Channel 6
10	FILTER7	Filter + ESD Channel 7
9	FILTER8	Filter + ESD Channel 8

PACKAGE / PINOUT DIAGRAMS



SPECIFICATIONS

Table 2. 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

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

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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 _{TOTAL}	Total Channel Capacitance	At 2.5 VDC Reverse Bias, 1 MHz, 30 mVAC	14	17	22	pF
C	Capacitance	At 2.5 VDC Reverse Bias, 1 MHz, 30 mVAC	7	8.5	11	pF
I _{LEAK}	Diode Leakage Current (reverse bias)	V _{DIODE} = +3.3 V		0.1	1.0	μ A
V _{SIG}	Signal Clamp Voltage Positive Clamp Negative Clamp	I _{LOAD} = 10 mA I _{LOAD} = -10 mA	5.6 -0.4	6.8 -0.8		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	(Note 2)	\pm 30 \pm 15			kV

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

PERFORMANCE INFORMATION

Typical Diode Capacitance vs. Input Voltage

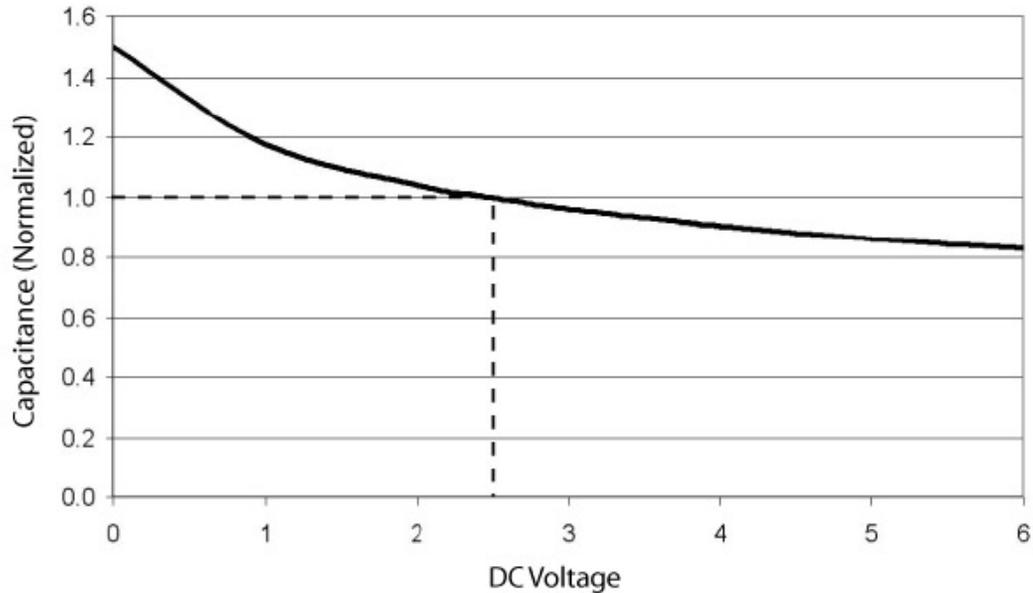


Figure 1. Filter Capacitance vs. Input Voltage
(normalized to capacitance at 2.5 VDC and 25°C)

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PERFORMANCE INFORMATION (Cont'd)

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

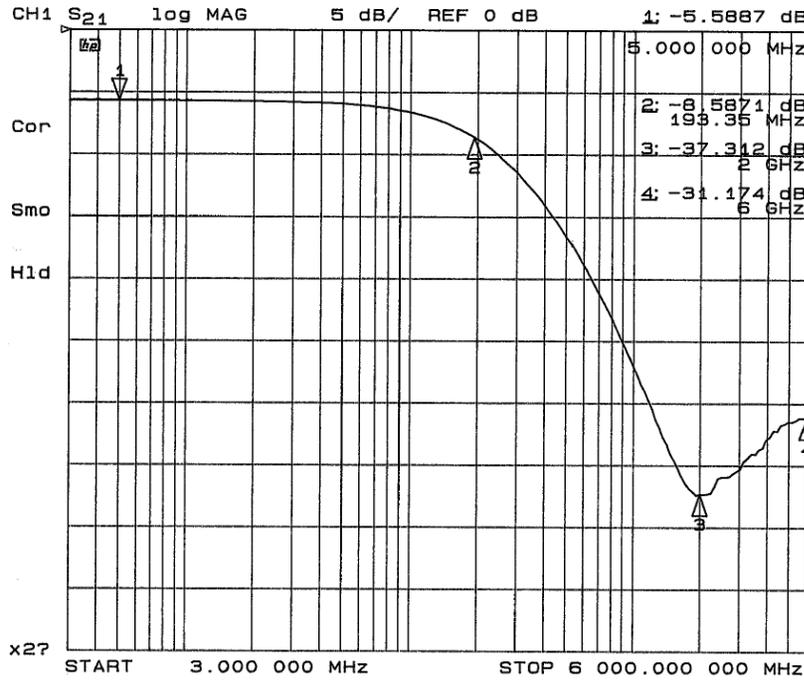


Figure 2. Insertion Loss vs. Frequency (FILTER1 Input to GND)

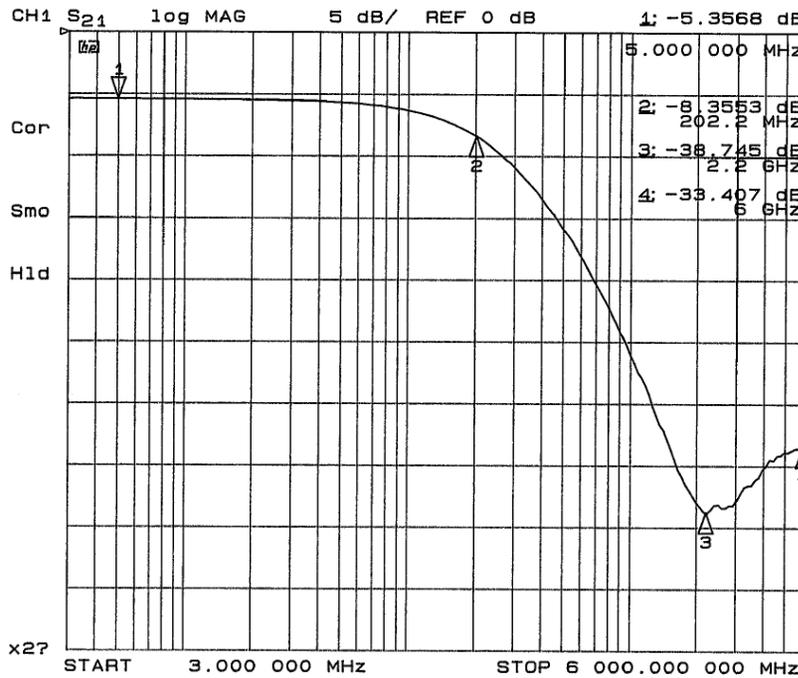


Figure 3. Insertion Loss vs. Frequency (FILTER2 Input to GND)

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PERFORMANCE INFORMATION (Cont'd)

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

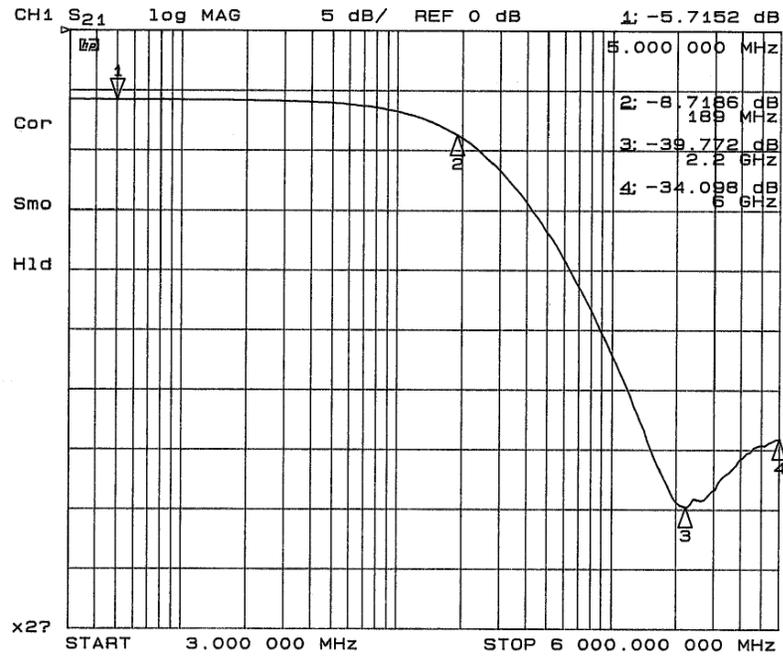


Figure 4. Insertion Loss vs. Frequency (FILTER3 Input to GND)

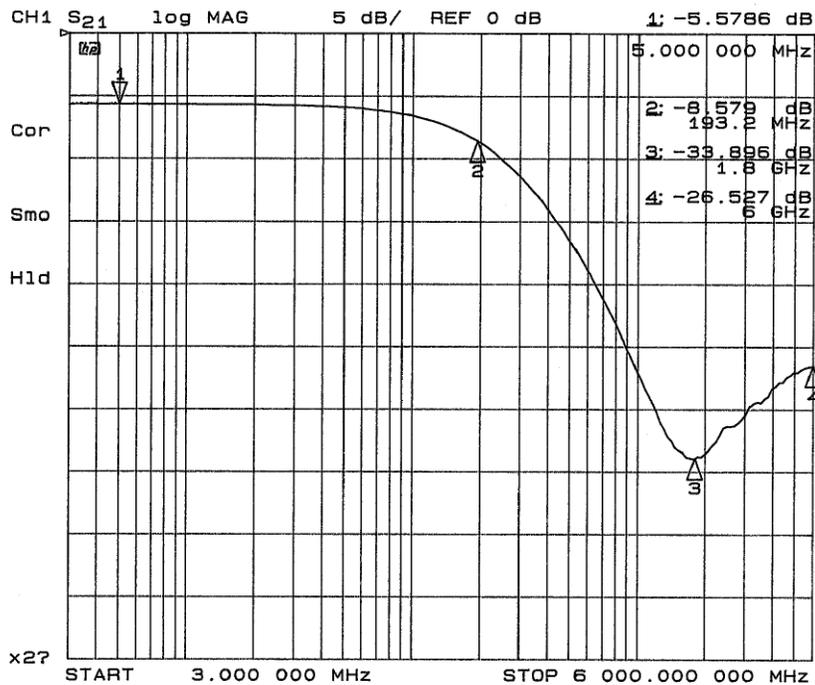


Figure 5. Insertion Loss vs. Frequency (FILTER4 Input to GND)

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PERFORMANCE INFORMATION (Cont'd)

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

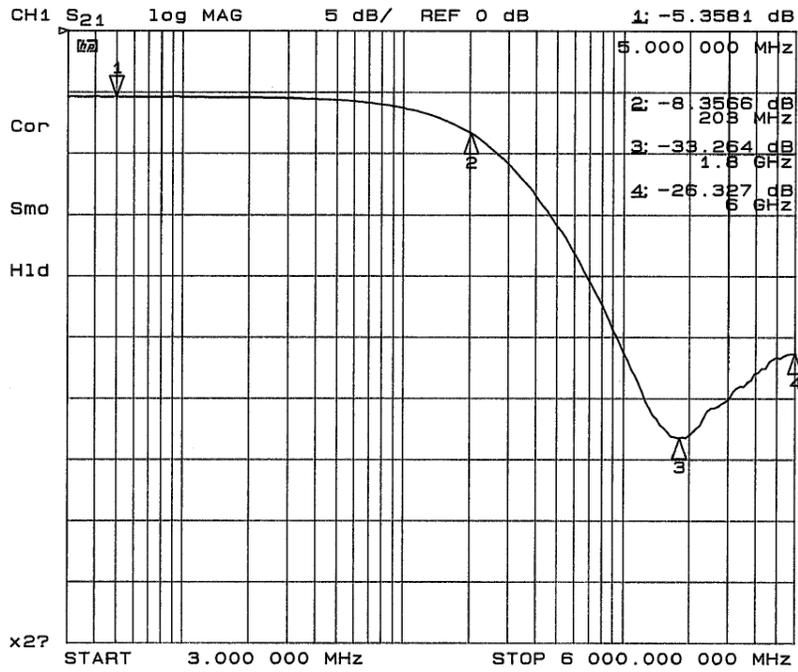


Figure 6. Insertion Loss vs. Frequency (FILTER5 Input to GND)

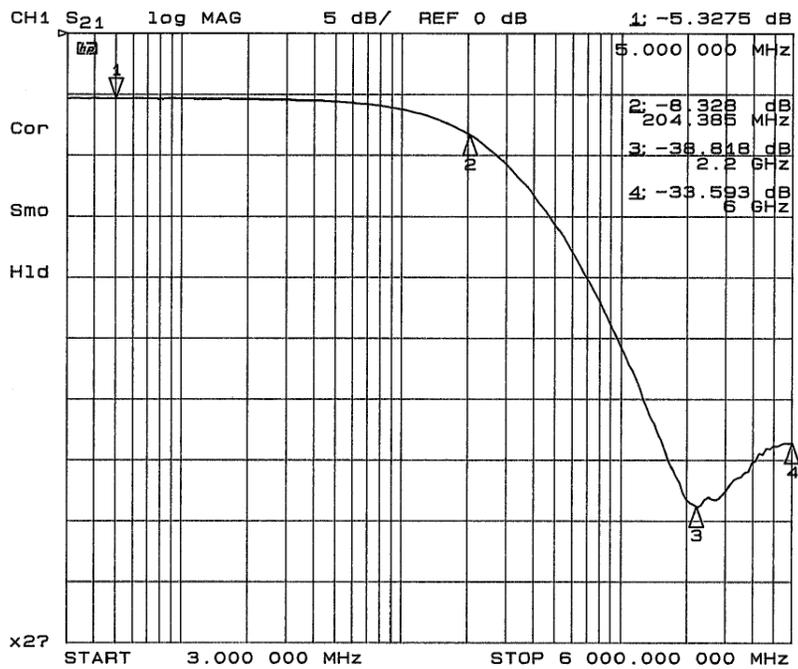


Figure 7. Insertion Loss vs. Frequency (FILTER6 Input to GND)

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PERFORMANCE INFORMATION (Cont'd)

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

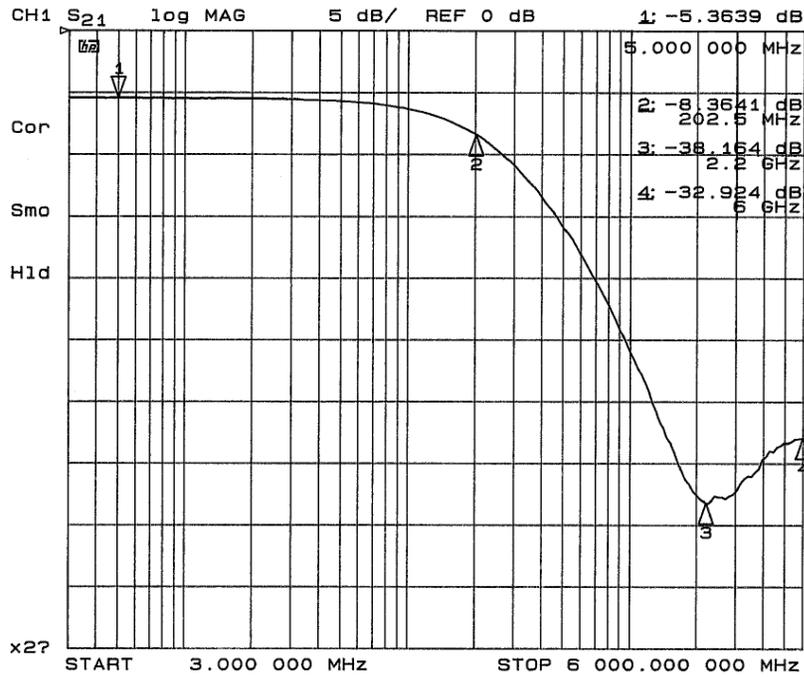


Figure 8. Insertion Loss vs. Frequency (FILTER7 Input to GND)

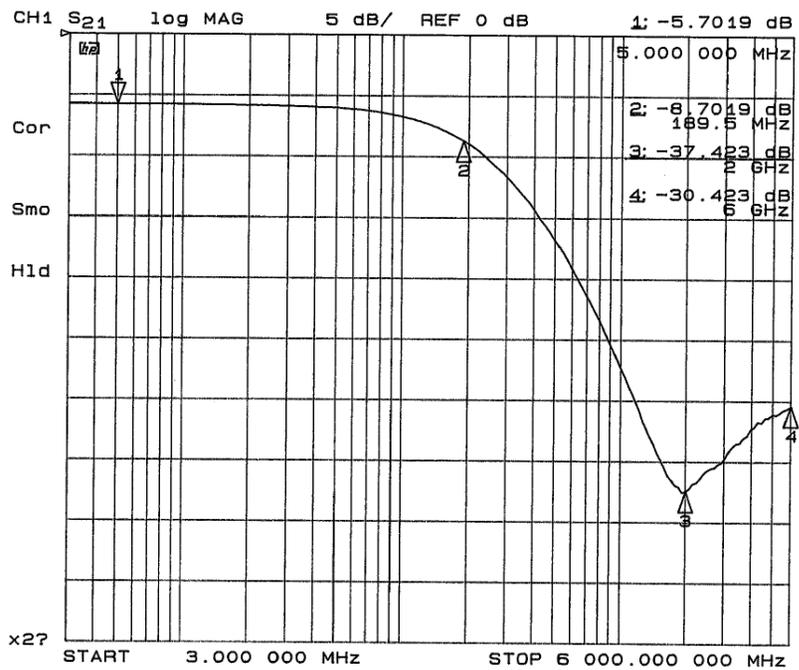
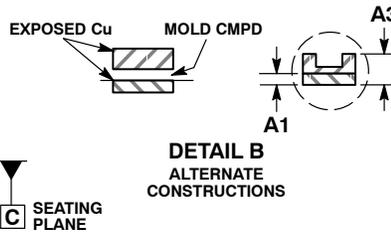
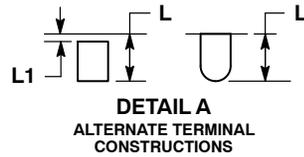
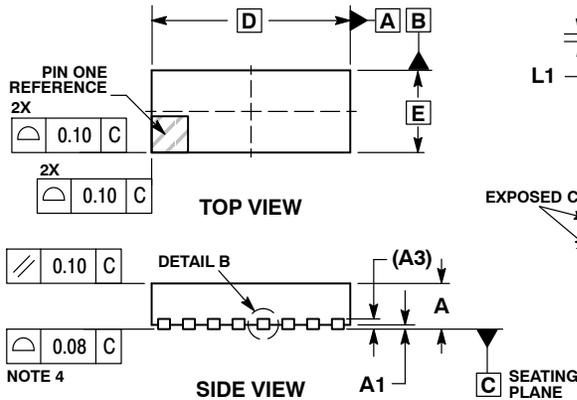


Figure 9. Insertion Loss vs. Frequency (FILTER8 Input to GND)

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PACKAGE DIMENSIONS

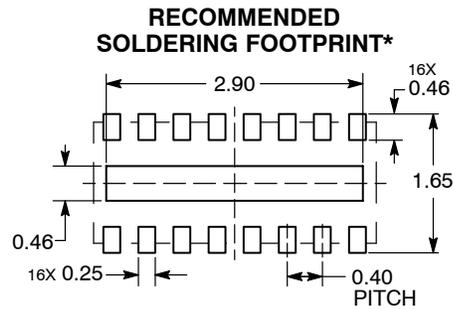
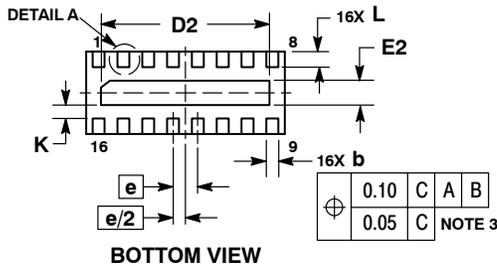
WDFN16, 3.3x1.35, 0.4P
CASE 511AW-01
ISSUE O



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 0.15 AND 0.30 MM FROM TERMINAL TIP.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

MILLIMETERS		
DIM	MIN	MAX
A	0.70	0.80
A1	0.00	0.05
A3	0.20	REF
b	0.15	0.25
D	3.30	BSC
D2	2.70	2.90
E	1.35	BSC
E2	0.30	0.50
e	0.40	BSC
K	0.22	REF
L	0.15	0.35
L1	---	0.15



DIMENSION: MILLIMETERS

*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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