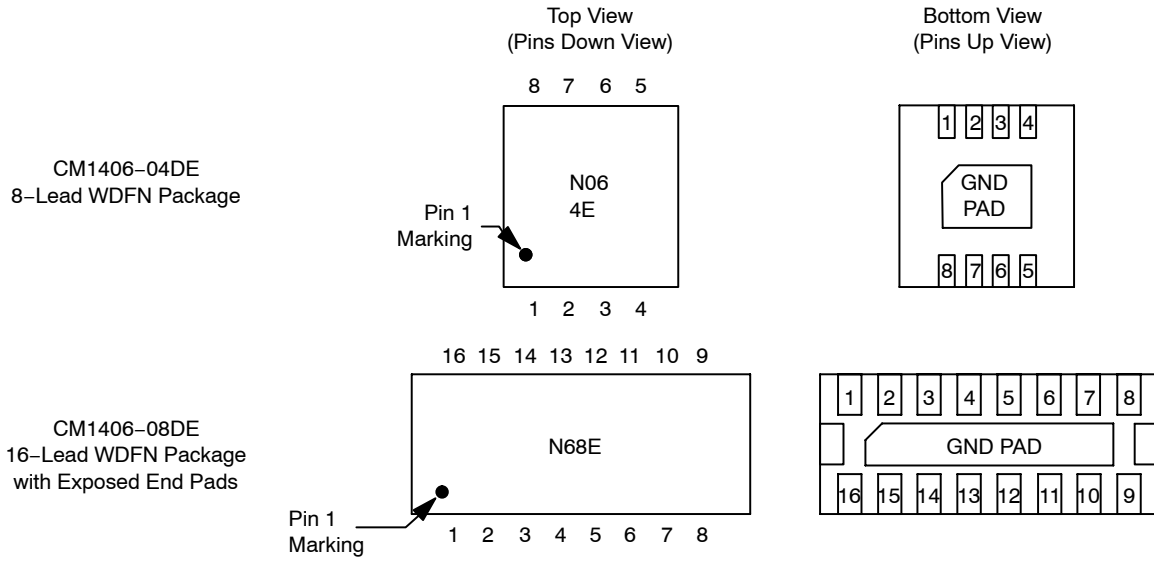


# CM1406

## PACKAGE / PINOUT DIAGRAMS



**Table 1. PIN DESCRIPTIONS**

| Pins      |           | Name    | Description      | Pins      |           | Name    | Description      |
|-----------|-----------|---------|------------------|-----------|-----------|---------|------------------|
| 1406-04Dx | 1406-08Dx |         |                  | 1406-04Dx | 1406-08Dx |         |                  |
| 1         | 1         | FILTER1 | Filter Channel 1 | 8         | 16        | FILTER1 | Filter Channel 1 |
| 2         | 2         | FILTER2 | Filter Channel 2 | 7         | 15        | FILTER2 | Filter Channel 2 |
| 3         | 3         | FILTER3 | Filter Channel 3 | 6         | 14        | FILTER3 | Filter Channel 3 |
| 4         | 4         | FILTER4 | Filter Channel 4 | 5         | 13        | FILTER4 | Filter Channel 4 |
|           | 5         | FILTER5 | Filter Channel 5 |           | 12        | FILTER5 | Filter Channel 5 |
|           | 6         | FILTER6 | Filter Channel 6 |           | 11        | FILTER6 | Filter Channel 6 |
|           | 7         | FILTER7 | Filter Channel 7 |           | 10        | FILTER7 | Filter Channel 7 |
|           | 8         | FILTER8 | Filter Channel 8 |           | 9         | FILTER8 | Filter Channel 8 |
| GND Pad   |           | GND     | Device Ground    |           |           |         |                  |

## SPECIFICATIONS

Table 2. ABSOLUTE MAXIMUM RATINGS

| Parameter                 | Rating      | Units |
|---------------------------|-------------|-------|
| Storage Temperature Range | -65 to +150 | °C    |
| DC Power per Resistor     | 100         | mW    |
| Package DC Power Rating   | 300         | 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    |

Table 4. ELECTRICAL OPERATING CHARACTERISTICS (Note 1)

| Symbol             | Parameter                                                                                                                                | Conditions                                              | Min         | Typ         | Max         | Units |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-------------|-------------|-------------|-------|
| R                  | Resistance                                                                                                                               |                                                         | 160         | 200         | 240         | Ω     |
| C                  | Capacitance                                                                                                                              | At 2.5 V DC, 1 MHz, 30 mV AC                            | 12          | 15          | 18          | pF    |
| V <sub>DIODE</sub> | Diode Standoff Voltage                                                                                                                   | I <sub>DIODE</sub> = 10 μA                              |             | 6.0         |             | V     |
| I <sub>LEAK</sub>  | Diode Leakage Current (Reverse Bias)                                                                                                     | V <sub>DIODE</sub> = 3.3 V                              |             | 0.1         | 1           | μA    |
| V <sub>SIG</sub>   | Signal Voltage<br>Positive Clamp<br>Negative Clamp                                                                                       | I <sub>LOAD</sub> = 10 mA<br>I <sub>LOAD</sub> = -10 mA | 5.6<br>-1.5 | 6.8<br>-0.8 | 9.0<br>-0.4 | V     |
| V <sub>ESD</sub>   | In-system ESD Withstand Voltage<br>a) Human Body Model, MIL-STD-883,<br>Method 3015<br>b) Contact Discharge per<br>IEC 61000-4-2 Level 4 | (Note 2)                                                | 30<br>15    |             |             | kV    |
| f <sub>C</sub>     | Cut-off Frequency<br>Z <sub>SOURCE</sub> = 50 Ω, Z <sub>LOAD</sub> = 50 Ω                                                                | R = 200 Ω, C = 15 pF                                    |             | 105         |             | MHz   |

1. T<sub>A</sub> = 25°C unless otherwise specified.
2. ESD applied to input and output pins with respect to GND, one at a time.

# CM1406

## PERFORMANCE INFORMATION

Typical Filter Performance (nominal conditions unless specified otherwise, 0 V DC Bias, 50  $\Omega$  Environment)

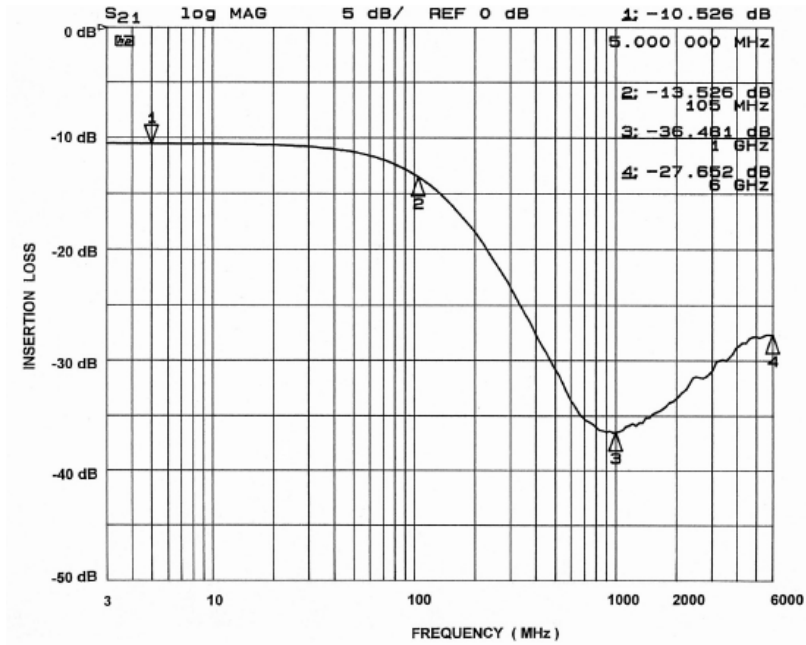


Figure 1. Channel 1 EMI Filter Performance (CM1406-04 only)

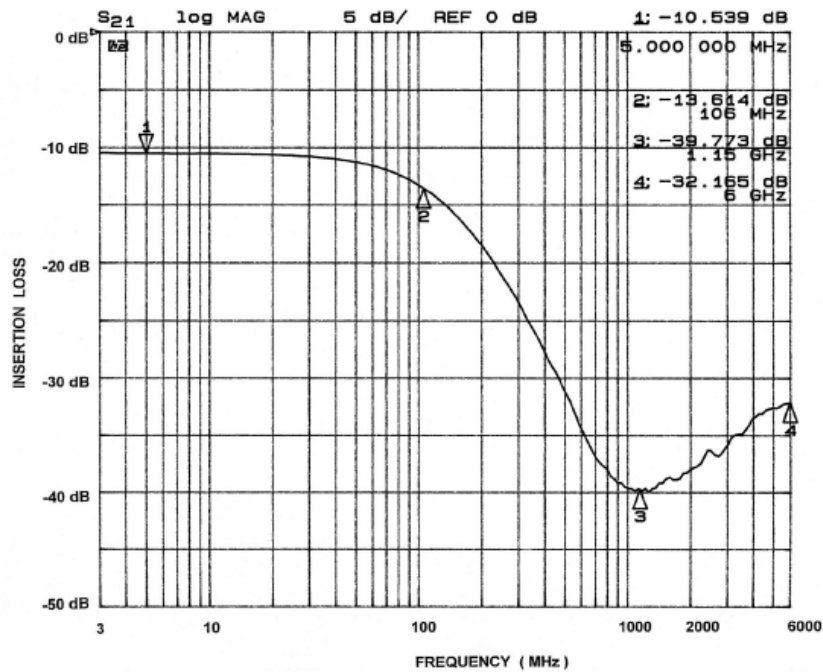


Figure 2. Channel 2 EMI Filter Performance (CM1406-04 only)

# CM1406

## PERFORMANCE INFORMATION (Cont'd)

Typical Filter Performance (nominal conditions unless specified otherwise, 0 V DC Bias, 50  $\Omega$  Environment)

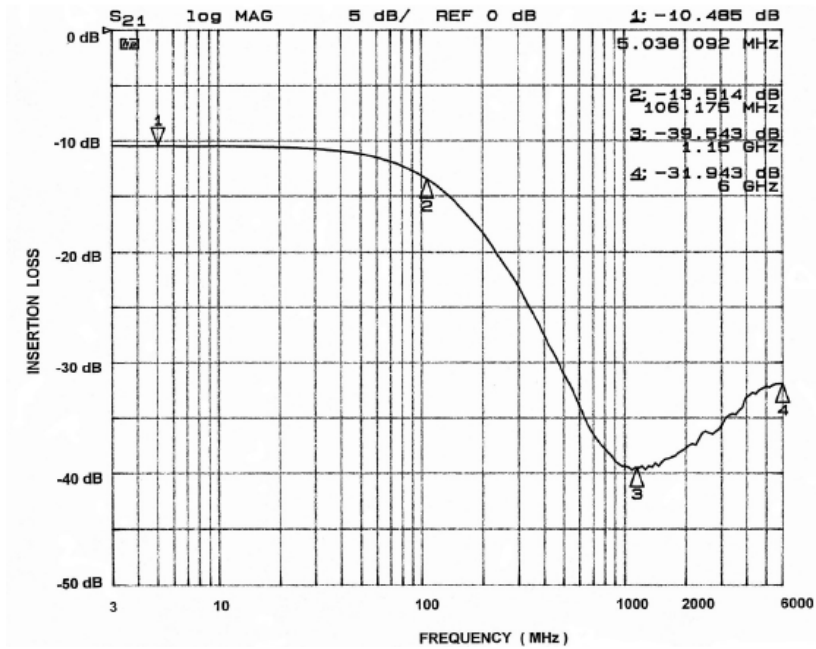


Figure 3. Channel 3 EMI Filter Performance (CM1406-04 only)

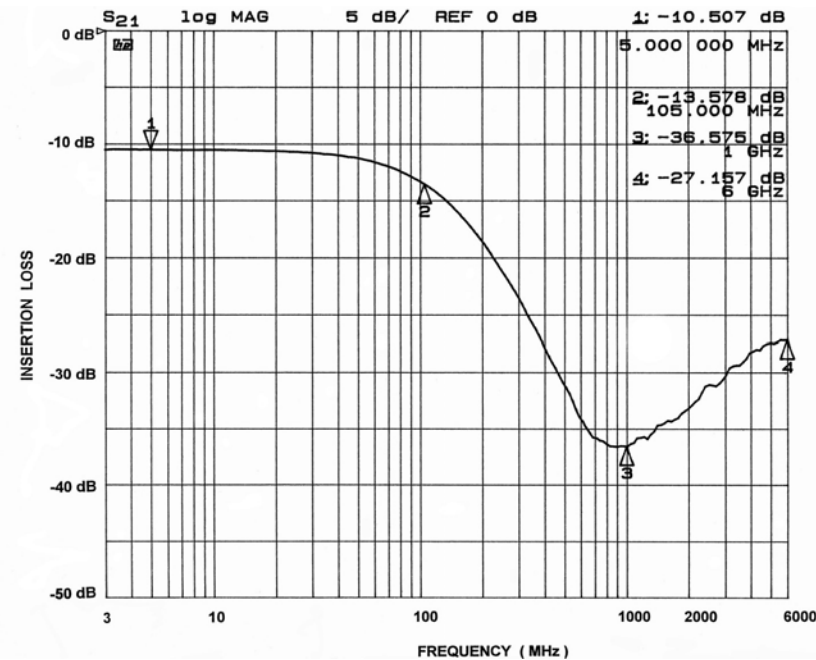


Figure 4. Channel 4 EMI Filter Performance (CM1406-04 only)

# CM1406

## PERFORMANCE INFORMATION (Cont'd)

Typical Filter Performance (nominal conditions unless specified otherwise, 0 V DC Bias, 50  $\Omega$  Environment)

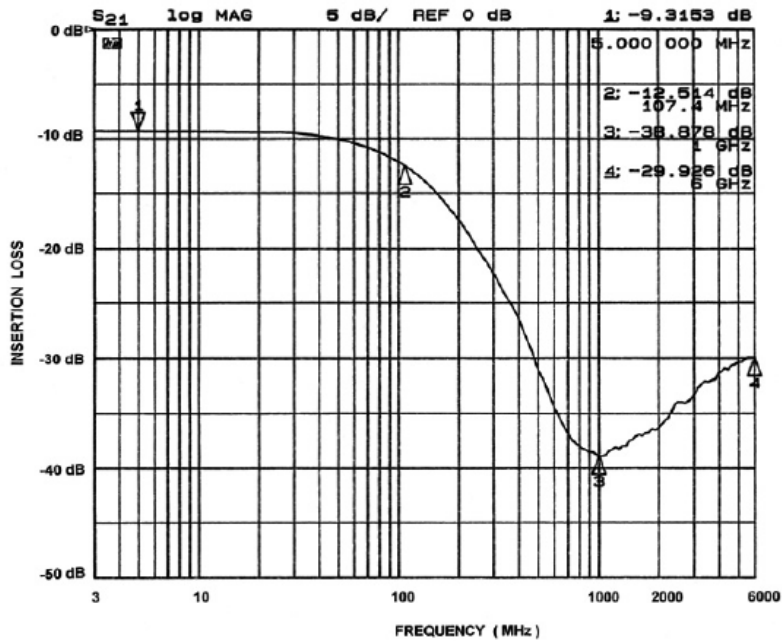


Figure 5. Channel 1 EMI Filter Performance (CM1406-08 only)

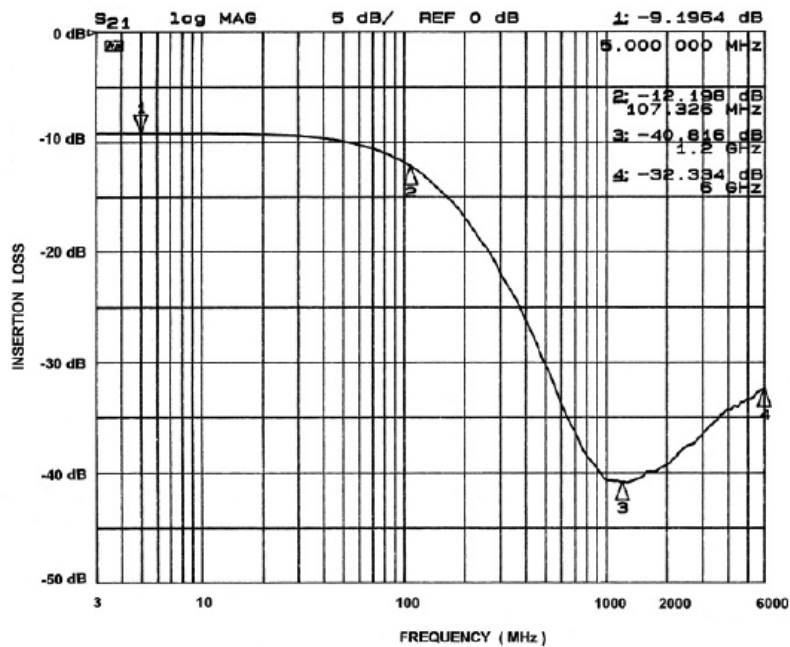


Figure 6. Channel 2 EMI Filter Performance (CM1406-08 only)

# CM1406

## PERFORMANCE INFORMATION (Cont'd)

Typical Filter Performance (nominal conditions unless specified otherwise, 0 V DC Bias, 50  $\Omega$  Environment)

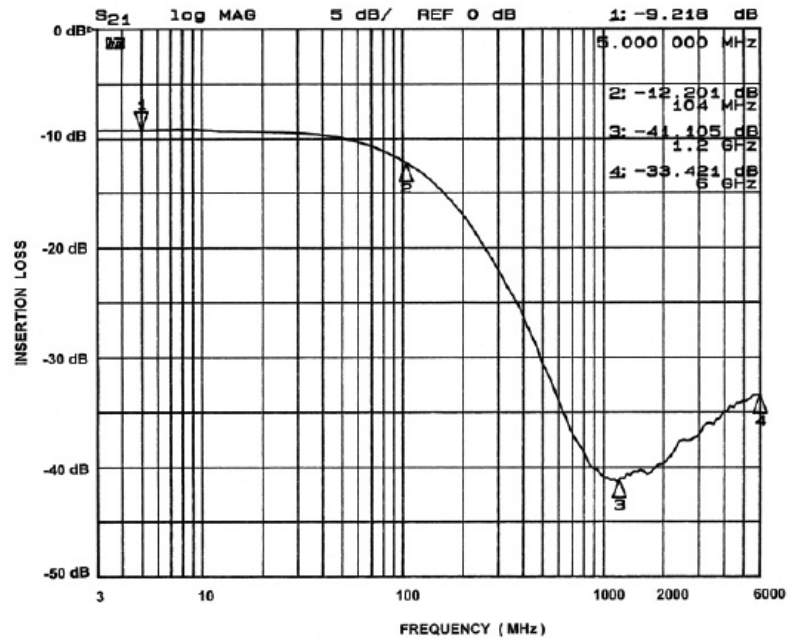


Figure 7. Channel 3 EMI Filter Performance (CM1406-08 only)

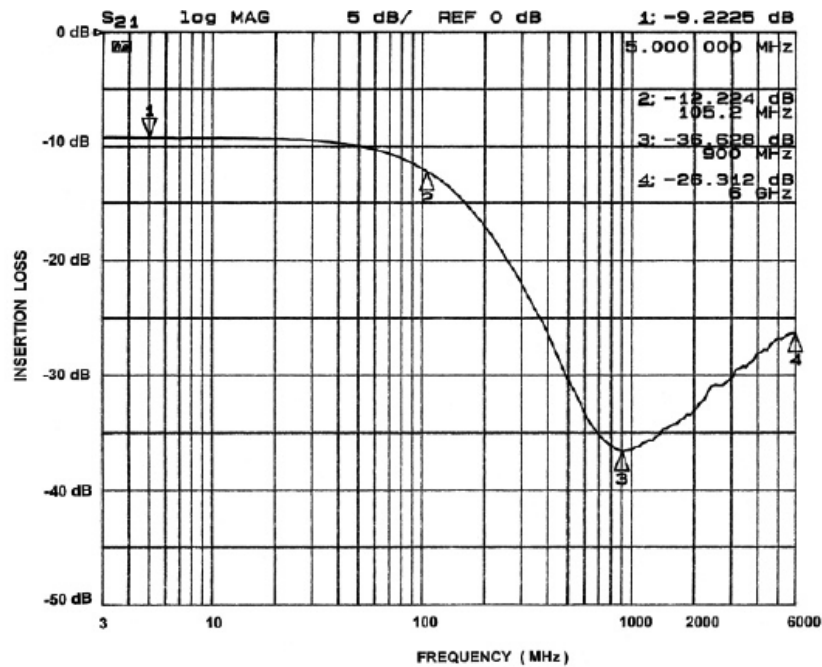


Figure 8. Channel 4 EMI Filter Performance (CM1406-08 only)

# CM1406

## PERFORMANCE INFORMATION (Cont'd)

Typical Filter Performance (nominal conditions unless specified otherwise, 0 V DC Bias, 50  $\Omega$  Environment)

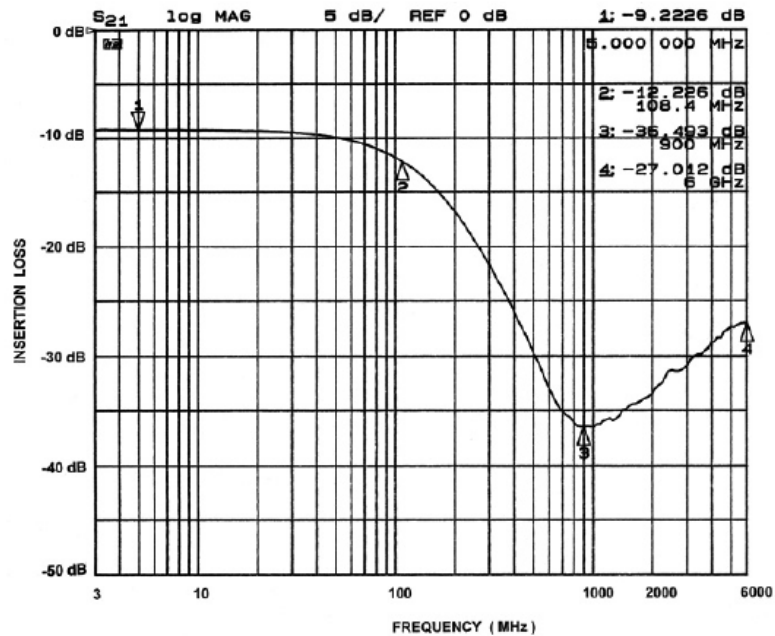


Figure 9. Channel 5 EMI Filter Performance (CM1406-08 only)

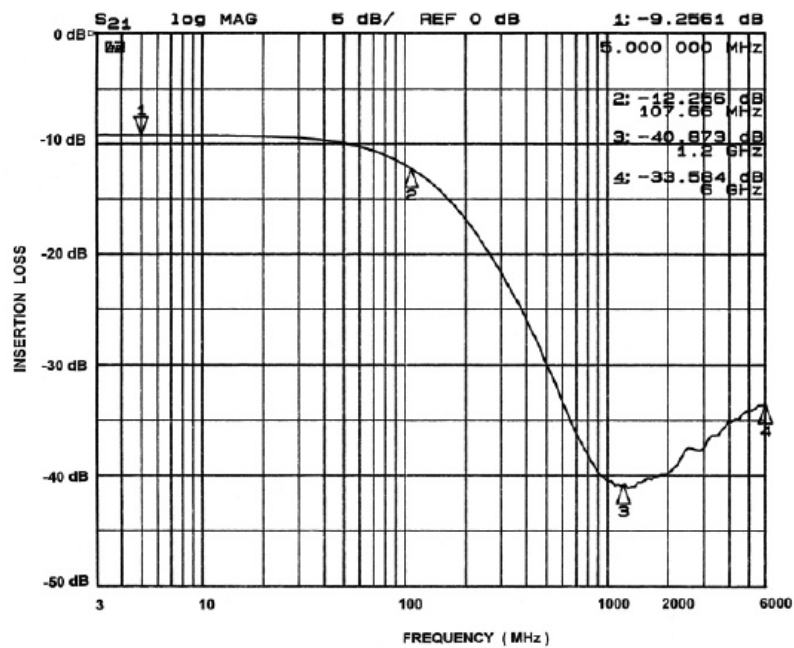


Figure 10. Channel 6 EMI Filter Performance (CM1406-08 only)



# CM1406

## PERFORMANCE INFORMATION (Cont'd)

Typical Filter Performance (nominal conditions unless specified otherwise, 0 V DC Bias, 50  $\Omega$  Environment)

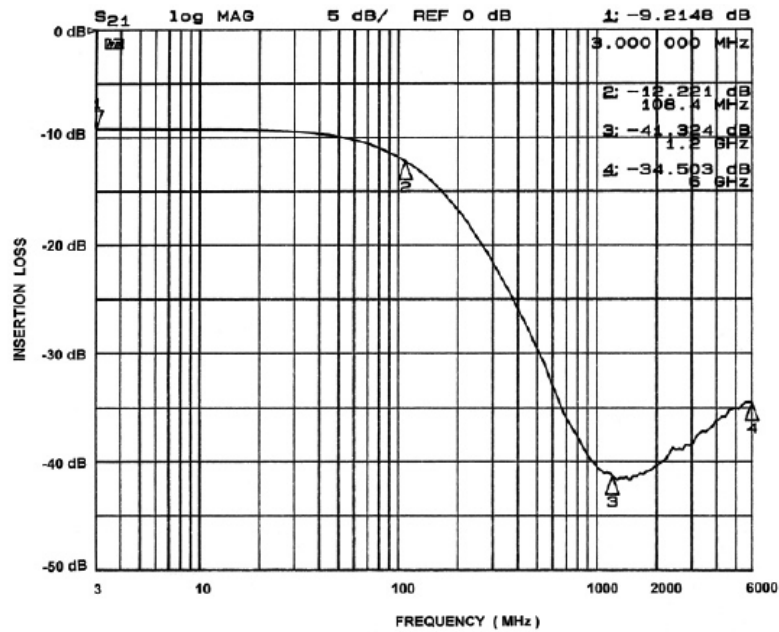


Figure 11. Channel 7 EMI Filter Performance (CM1406-08 only)

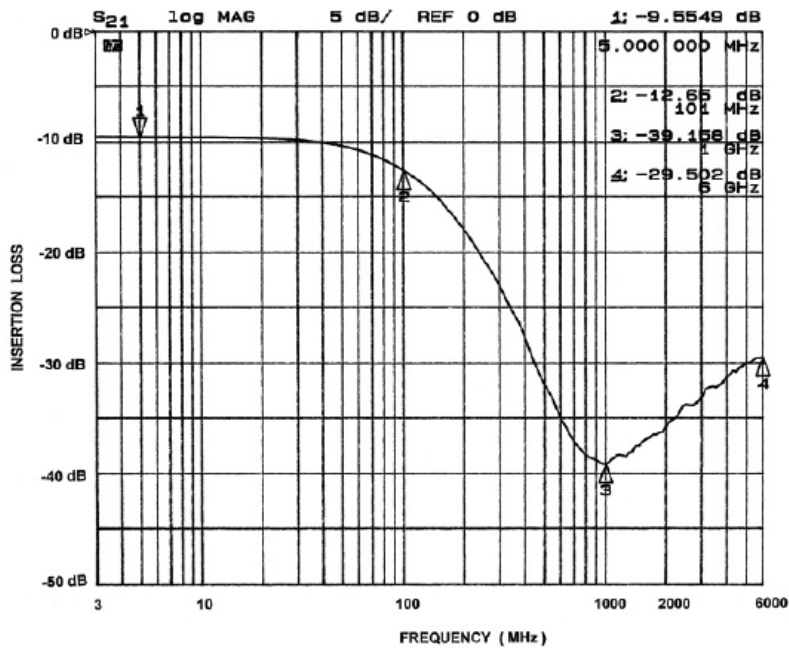
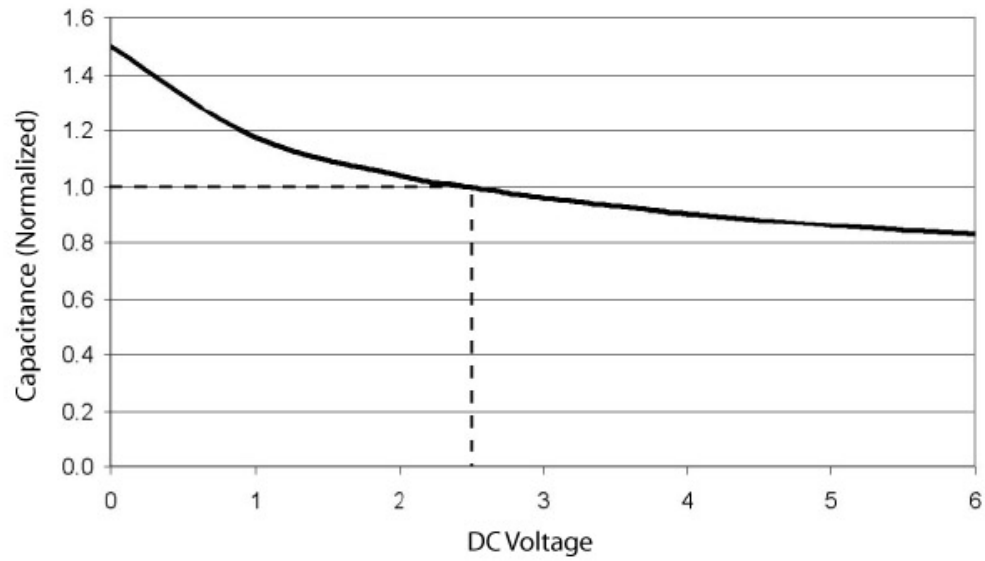


Figure 12. Channel 8 EMI Filter Performance (CM1406-08 only)



## PERFORMANCE INFORMATION (Cont'd)

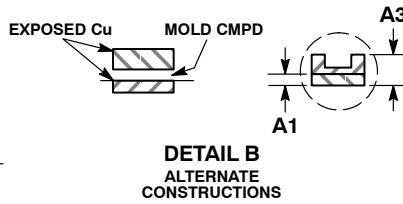
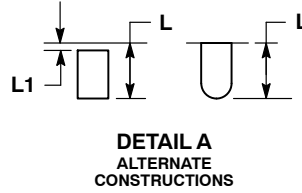
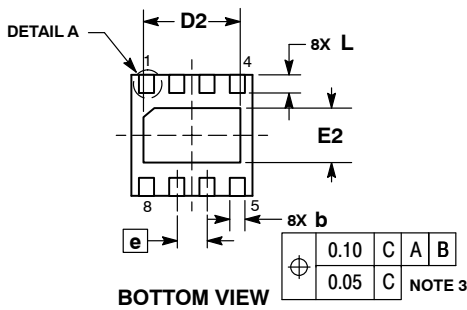
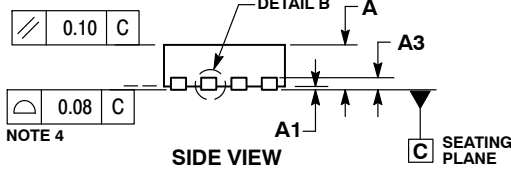
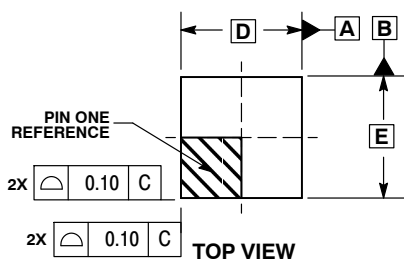


**Figure 13. Filter Capacitance vs. Input Voltage over Temperature  
(normalized to capacitance at 2.5 V DC and 25°C)**

# CM1406

## PACKAGE DIMENSIONS

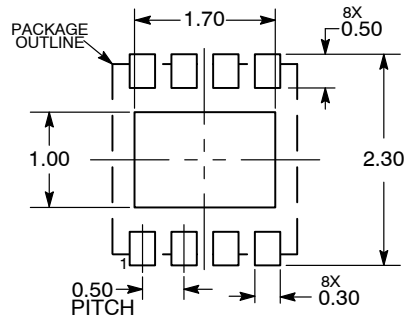
**WDFN8 2x2, 0.5P**  
CASE 511BE-01  
ISSUE O



- 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.

| DIM | MILLIMETERS |      |
|-----|-------------|------|
|     | MIN         | MAX  |
| A   | 0.70        | 0.80 |
| A1  | 0.00        | 0.05 |
| A3  | 0.20        | REF  |
| b   | 0.20        | 0.30 |
| D   | 2.00 BSC    |      |
| D2  | 1.50        | 1.70 |
| E   | 2.00 BSC    |      |
| E2  | 0.80        | 1.00 |
| e   | 0.50 BSC    |      |
| K   | 0.25 REF    |      |
| L   | 0.20        | 0.40 |
| L1  | ---         | 0.15 |

### RECOMMENDED SOLDERING FOOTPRINT\*



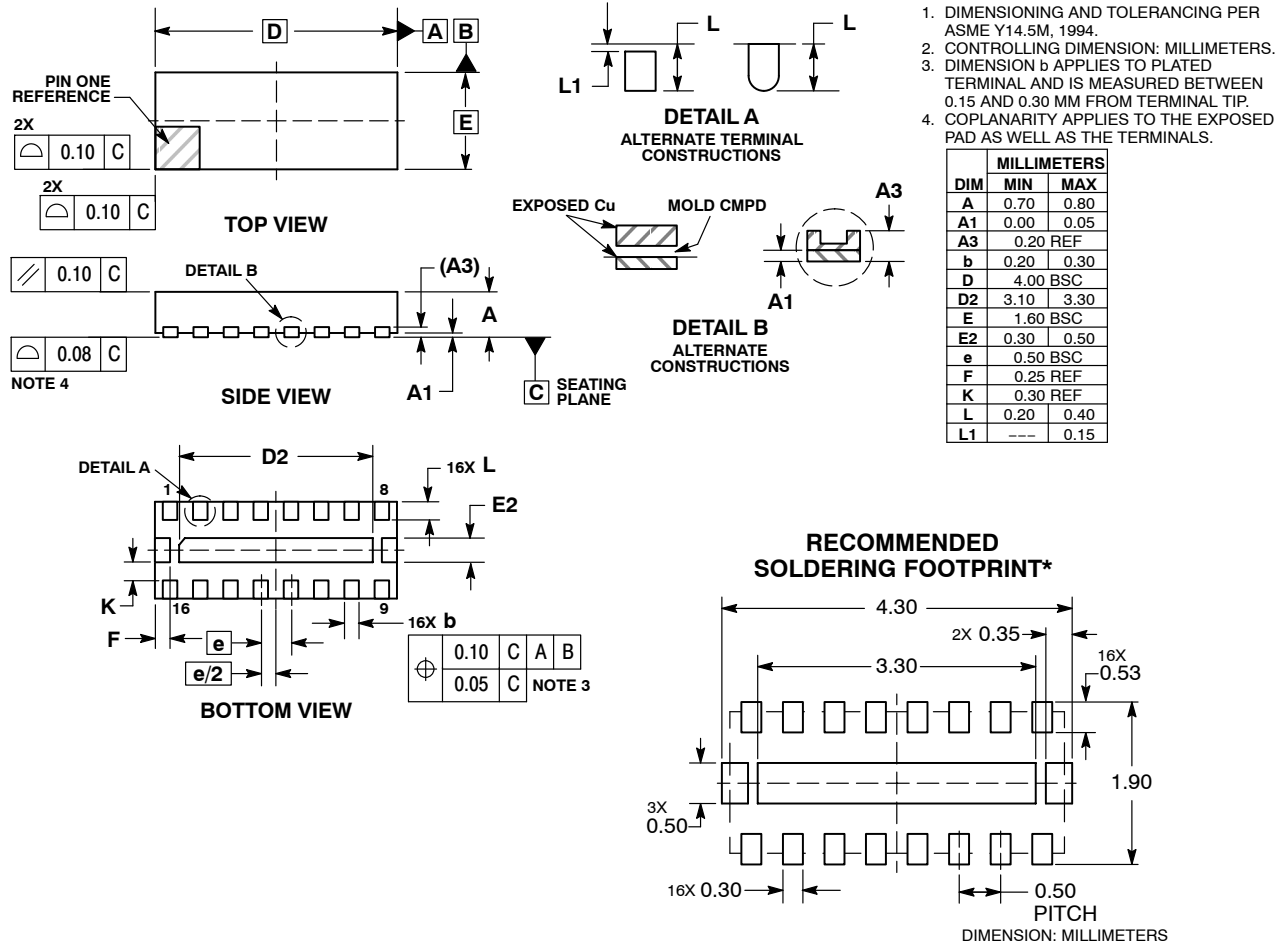
DIMENSIONS: MILLIMETERS

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

# CM1406

## PACKAGE DIMENSIONS

WDFN16, 4x1.6, 0.5P  
CASE 511AU-01  
ISSUE O



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