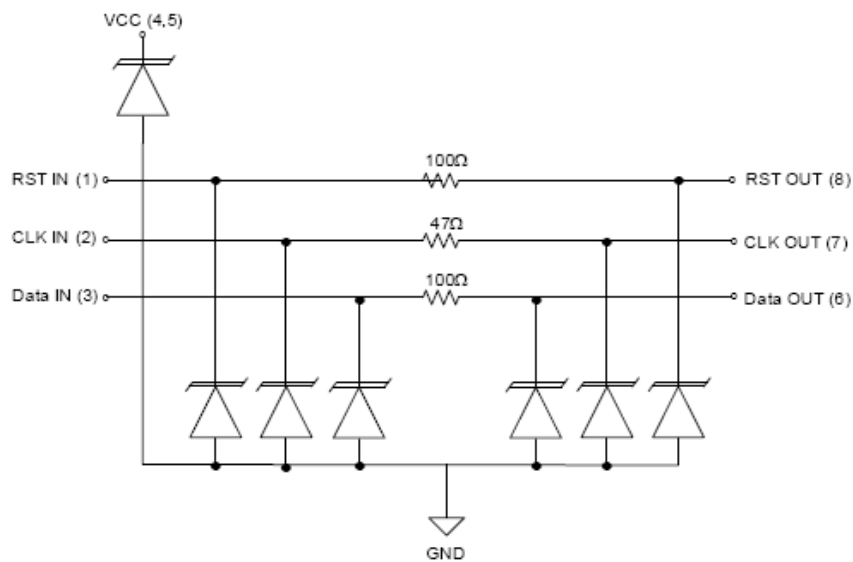




Features

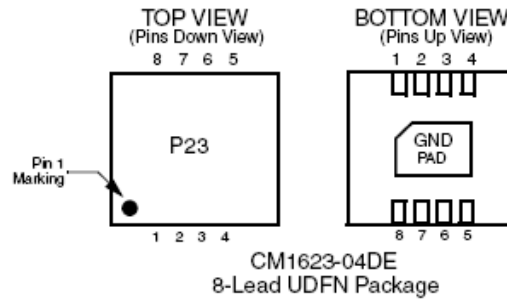
- 4-channel EMI filtering with integrated ESD protection
- Pi-style EMI filters in a capacitor-resistor-capacitor (C-R-C) network
- $\pm 15\text{kV}$ ESD protection on each channel (IEC 61000-4-2 Level 4, contact discharge)
- 8-lead UDFN package with 0.40mm pitch
- Tiny UDFN package size: 1.7mm x 1.35mm x 0.5mm
- Increased robustness against vertical impacts during manufacturing process
- RoHS compliant, lead-free finish

Electrical Schematic



* See Package/Pinout Diagram
for expanded pin information.

PACKAGE / PINOUT DIAGRAMS



Notes:
1) These drawings are not to scale.

Pin Information

PIN DESCRIPTIONS

| PIN | NAME | DESCRIPTION | PIN | NAME | DESCRIPTION |
|---------|------|------------------------|-----|------|------------------------|
| 1 | RST | Filter + ESD Channel 1 | 8 | RST | Filter + ESD Channel 1 |
| 2 | CLK | Filter + ESD Channel 2 | 7 | CLK | Filter + ESD Channel 2 |
| 3 | DATA | Filter + ESD Channel 3 | 6 | DATA | Filter + ESD Channel 3 |
| 4 | VCC | V External | 5 | VCC | V External |
| GND PAD | GND | Device Ground | | | |

Ordering Information

PART NUMBERING INFORMATION

| Pins | Package | Lead-free Finish | |
|------|---------|-----------------------------------|--------------|
| | | Ordering Part Number ¹ | Part Marking |
| 8 | UDFN-8 | CM1623-04DE | P23 |

Note 1: Parts are shipped in Tape and 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 NOTE 1)

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP | MAX | UNITS |
|------------|---|---|-------------|-------------|-------------|----------------|
| R1 | Reset Channel Resistance | | 80 | 100 | 120 | Ω |
| R2 | Clock Channel Resistance | | 37.6 | 47 | 56.4 | Ω |
| R3 | Data Channel Resistance | | 80 | 100 | 120 | Ω |
| C1 | Capacitance on Pins 1, 2, and 3 | At 1 MHz, $V_{IN}=0V$ | 16 | 20 | 24 | pF |
| C2 | Capacitance on Pins 4 and 5 | At 1 MHz, $V_{IN}=0V$ | | 18 | | pF |
| I_{LEAK} | Diode Leakage Current (Reverse Bias) | $V_{DIODE}=3.3V$ | | 0.1 | 1.0 | μA |
| V_{SIG} | Signal Clamp Voltage: a) Positive Clamp b) Negative Clamp | $I_{LOAD} = 10mA$ $I_{LOAD} = -10mA$ | 5.6 -1.5 | 6.8 -0.8 | 9.0 -0.4 | V V |
| V_{ESD} | ESD Peak Discharge Voltage Protection on All Pins In-system ESD Withstand Voltage: a) Contact Discharge per IEC 61000-4-2 Level 4 b) Air Discharge per IEC 61000-4-2 Level 4 | $T_A=25°C$; Note 2 | ±15 ±15 | ±15 ±15 | | kV kV kV |

Note 1: All parameters specified at $T_A=25°C$ unless otherwise noted.

Note 2: Standard IEC 61000-4-2 with $C_{Discharge} = 150pF$, $R_{Discharge} = 330Ω$.

Performance Information

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

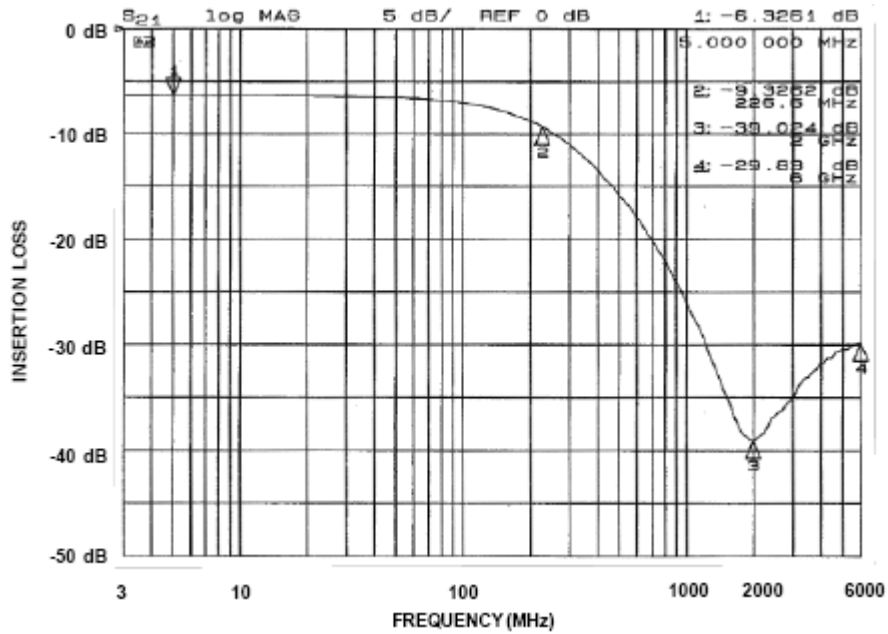


Figure 1. Insertion Loss vs. Frequency, Filter 1 (Pins 1 and 8)

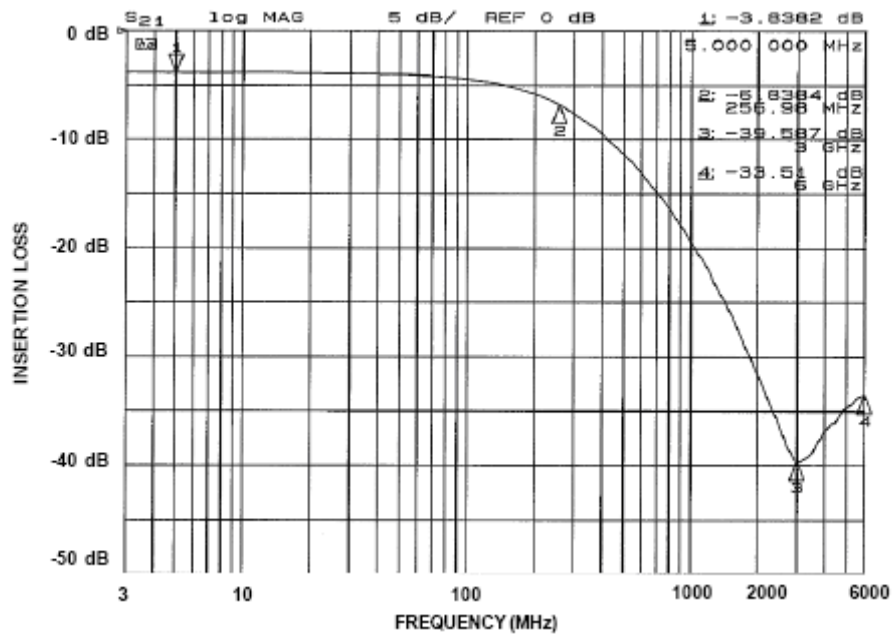


Figure 2. Insertion Loss vs. Frequency, Filter 2 (Pins 2 and 7)

Performance Information (Cont'd)

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

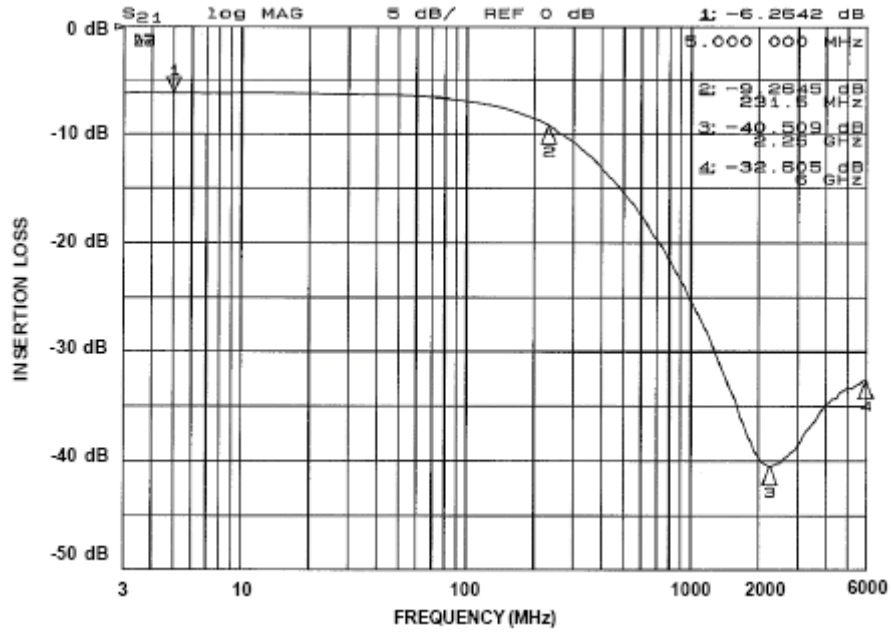


Figure 3. Insertion Loss vs. Frequency, Filter 3 (Pins 3 and 6)

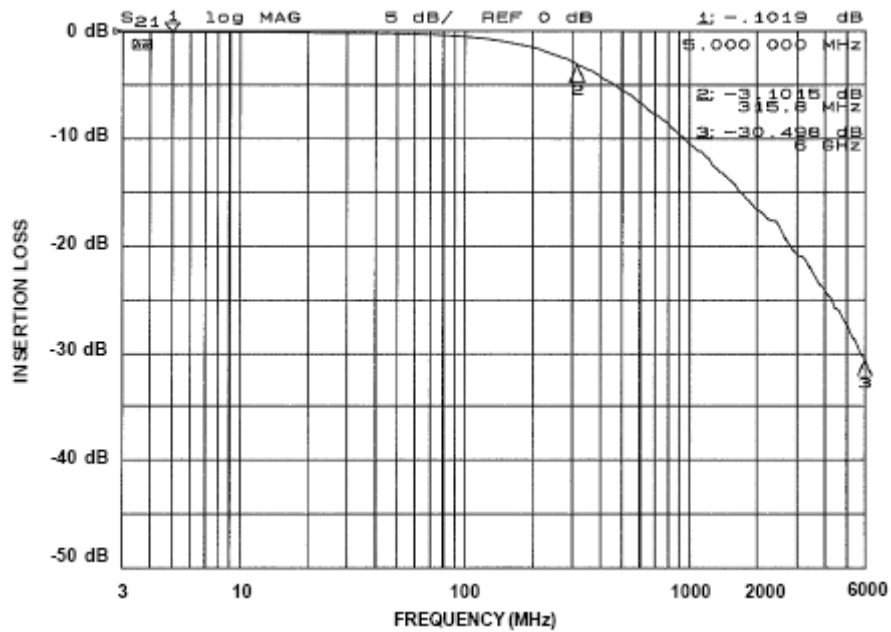


Figure 4. Insertion Loss vs. Frequency, Filter 4 (Pins 4 and 5)

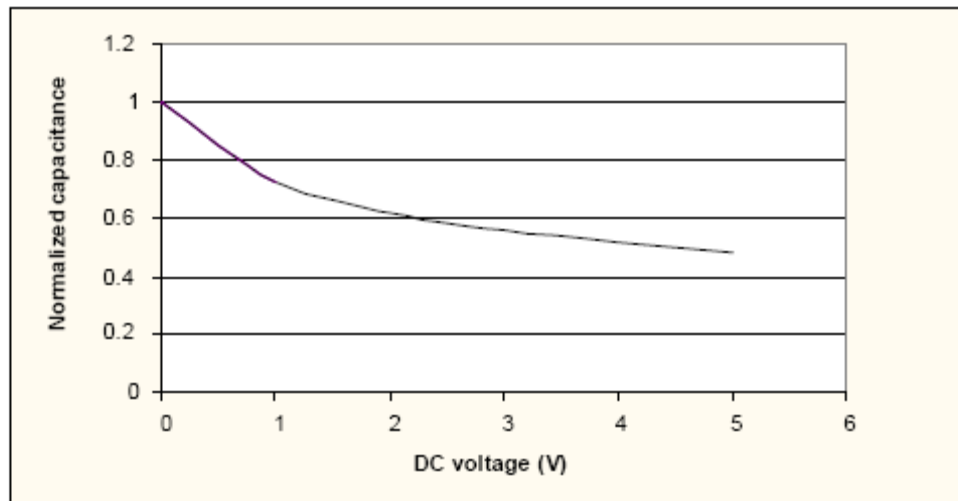


Figure 5. Diode Capacitance vs. Input Voltage (Normalized to Capacitance at 0VDC and 25°C)

CM1623

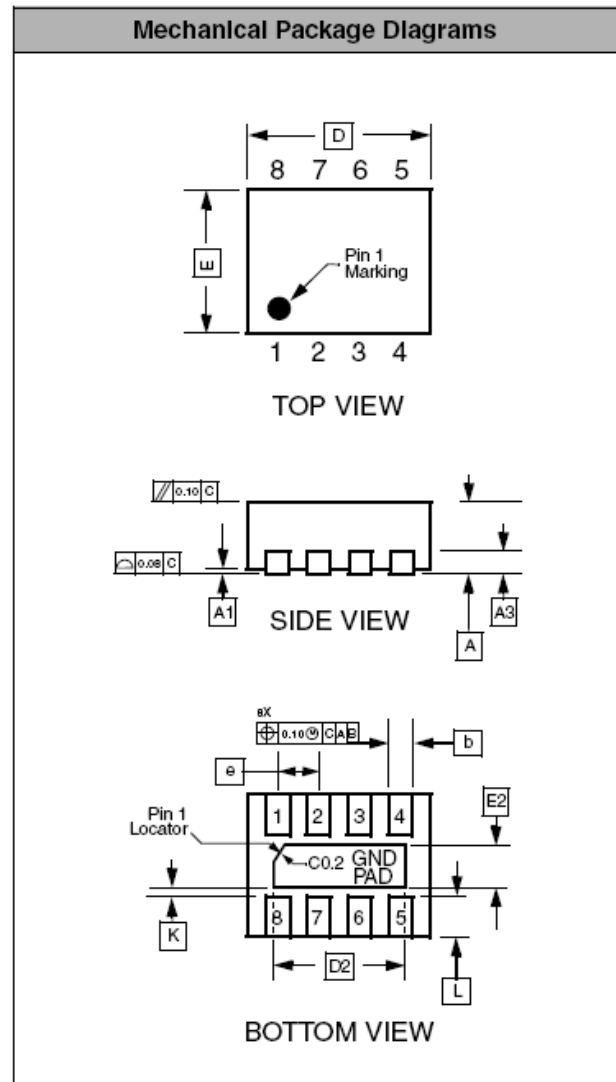
Mechanical Details

UDFN-08 Mechanical Specifications

Dimensions for the CM1623 supplied in a 8-lead, 0.4mm pitch UDFN package are presented below.

| PACKAGE DIMENSIONS | | | | | | |
|------------------------------------|----------------------|------|------|-----------|-------|-------|
| Package | UDFN | | | | | |
| JEDEC No. | MO-229C [†] | | | | | |
| Leads | 8 | | | | | |
| Dim. | Millimeters | | | Inches | | |
| | Min | Nom | Max | Min | Nom | Max |
| A | 0.45 | 0.50 | 0.55 | 0.018 | 0.020 | 0.022 |
| A1 | 0.00 | 0.02 | 0.05 | 0.000 | 0.001 | 0.002 |
| A3 | 0.127 REF | | | 0.005 REF | | |
| b | 0.15 | 0.20 | 0.25 | 0.006 | 0.008 | 0.010 |
| D | 1.60 | 1.70 | 1.80 | 0.063 | 0.067 | 0.071 |
| D2 | 1.10 | 1.20 | 1.30 | 0.043 | 0.047 | 0.051 |
| E | 1.25 | 1.35 | 1.45 | 0.049 | 0.053 | 0.057 |
| E2 | 0.30 | 0.40 | 0.50 | 0.012 | 0.016 | 0.020 |
| e | 0.40 BSC | | | 0.016 BSC | | |
| K | 0.22 | | | 0.009 | | |
| L | 0.15 | 0.25 | 0.35 | 0.006 | 0.010 | 0.014 |
| # per tape and reel | 3000 pieces | | | | | |
| Controlling dimension: millimeters | | | | | | |

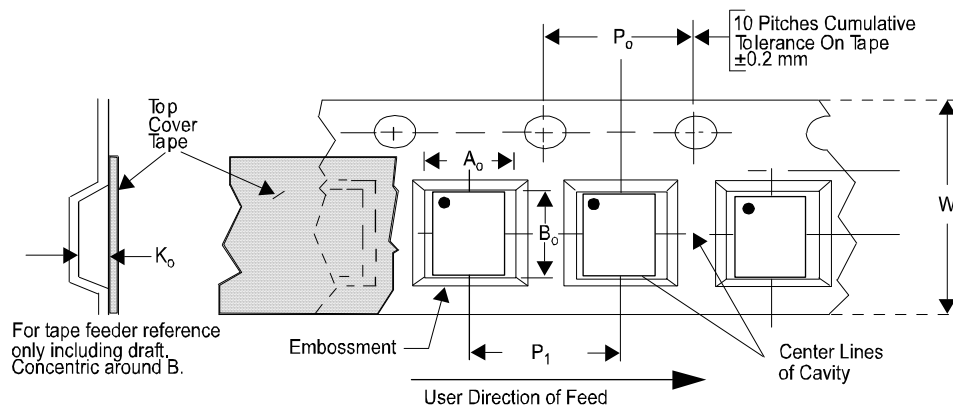
[†]This package is compliant with JEDEC standard MO-229C with the exception of the "D", "D2", "E", "E2", "K" and "L" dimensions as called out in the table above.




Dimensions for 8-Lead, 0.4mm pitch UDFN Package

Tape and Reel Specifications

| PART NUMBER | PACKAGE SIZE (mm) | POCKET SIZE (mm) $B_o \times A_o \times K_o$ | TAPE WIDTH W | REEL DIAMETER | QTY PER REEL | P_o | P_1 |
|-------------|--------------------|---|-----------------|---------------|--------------|-------|-------|
| CM1623 | 1.70 X 1.35 X 0.50 | 1.95 X 1.60 X 0.60 | 8mm | 178mm (7") | 3000 | 4mm | 4mm |



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