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LCD and Camera EMI Filter Array with ESD Protection

CM1622

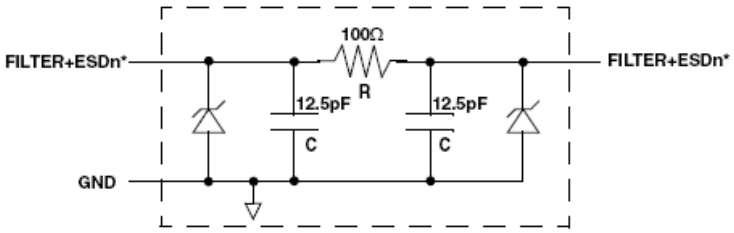
Features

- Eight channels of EMI filtering with integrated ESD protection
- Pi-style EMI filters in a capacitor-resistor-capacitor (C-R-C) network
- ±15kV ESD protection on each channel (IEC 61000-4-2 Level 4, contact discharge)
- ±30kV ESD protection on each channel (HBM)
- Greater than -35dB attenuation (typical) at 1GHz
- NuDFN package with 0.40mm lead pitch:
  - 16-lead: 3.5mm x 1.20mm x 0.50mm
- Lead-free finishing

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

Electrical Schematic



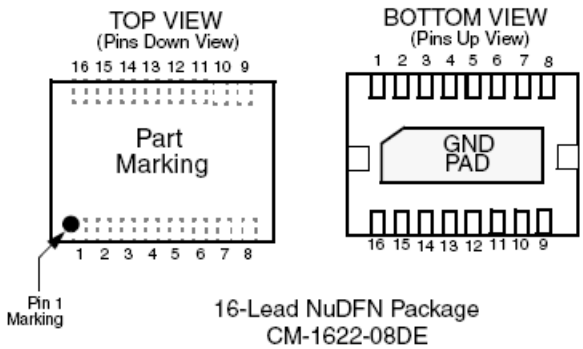
1 of 8 EMI/RFI + ESD Channels

* See Package/Pinout Diagram for expanded pin information.

May 2010 – Rev. 2

Publication Order Number:
CM1622/D

PACKAGE / PINOUT DIAGRAMS



16-Lead NuDFN Package
CM-1622-08DE

Note: These drawings are not to scale.

16-PIN DESCRIPTIONS

DEVICE PIN(s)	NAME	DESCRIPTION		DEVICE PIN(s)	NAME	DESCRIPTION
1	FILTER1	Filter + ESD Channel 1		16	FILTER1	Filter + ESD Channel 1
2	FILTER2	Filter + ESD Channel 2		15	FILTER2	Filter + ESD Channel 2
3	FILTER3	Filter + ESD Channel 3		14	FILTER3	Filter + ESD Channel 3
4	FILTER4	Filter + ESD Channel 4		13	FILTER4	Filter + ESD Channel 4
5	FILTER5	Filter + ESD Channel 5		12	FILTER5	Filter + ESD Channel 5
6	FILTER6	Filter + ESD Channel 6		11	FILTER6	Filter + ESD Channel 6
7	FILTER7	Filter + ESD Channel 7		10	FILTER7	Filter + ESD Channel 7
8	FILTER8	Filter + ESD Channel 8		9	FILTER8	Filter + ESD Channel 8
GND PAD	GND	Device Ground				

Ordering Information

PART NUMBERING INFORMATION			
		Lead-free Finish	
Pins	Package	Ordering Part Number[1]	Part Marking
16	NuDFN-16	CM1622 -08DE	P22

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 (NOTE1)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
R	Resistance	I_R= 20mA	85	100	115	Ω
C_{TOTAL}	Total Channel Capacitance	At 2.5VDC Reverse Bias, 1MHz, 30mVAC	20	25	30	pF
C	Capacitance C	At 2.5VDC Reverse Bias, 1MHz, 30mVAC		12.5		pF
V_{DIODE}	Standoff Voltage	I_{DIODE} = 10μA		6.0		V
I_{LEAK}	Diode Leakage Current (reverse bias)	V_{DIODE} = +3.3V		0.01	0.2	μA
V_{SIG}	Signal Clamp Voltage	I_{LOAD} = 1.0mA	6.0	7.0	8.0	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	See Note 2	 ±30 ±15			 kV kV
R_{DYN}	Dynamic Resistance Positive Negative			 2.3 0.9		 Ω Ω
f_C	Cut-off Frequency Z_{SOURCE} = 50Ω, Z_{LOAD} = 50Ω	Channel R = 100Ω, Channel C = 25pF		 115		 MHz
A_{1GHz}	Absolute Attenuation @ 1GHz from 0dB Level	Z_{SOURCE} = 50Ω, Z_{LOAD} = 50Ω, DC Bias = 0V; See Notes 1 and 3.		-35		dB
$A_{800MHz - 6GHz}$	Absolute Attenuation @ 800MHz to 6GHz from 0dB Level	Z_{SOURCE} = 50Ω, Z_{LOAD} = 50Ω, DC Bias = 0V; See Notes 1 and 3.		30		dB

Note 1: T_A=25°C unless otherwise specified.
Note 2: ESD applied to input and output pins with respect to GND, one at a time.
Note 3: Attenuation / RF curves characterized by a network analyzer using microprobes.

Performance Information

Typical Filter Performance (T_A=25°C, DC Bias=0V, 50 Ohm Environment)

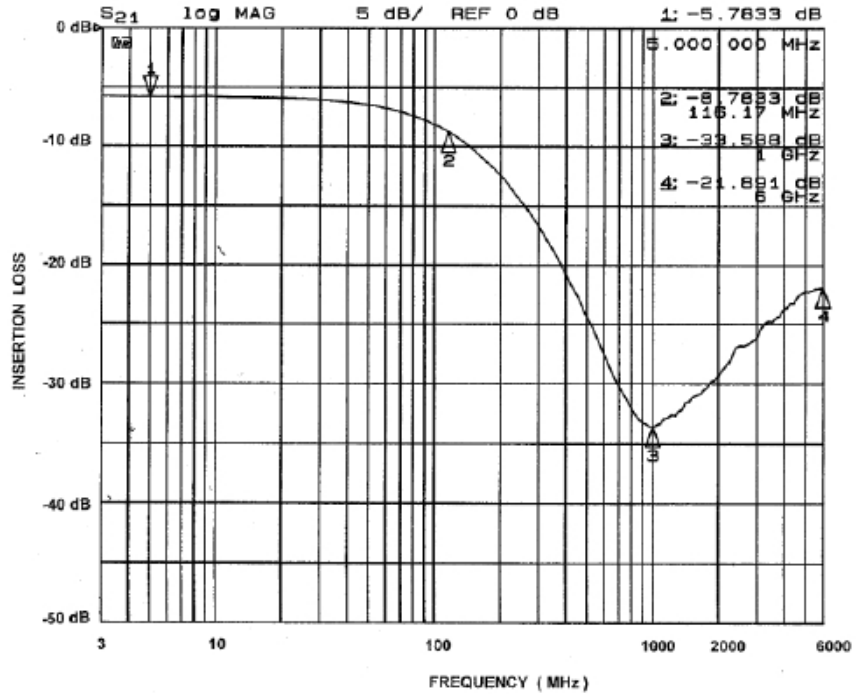


Figure 1. Insertion Loss vs. Frequency (FILTER1 Input to GND)

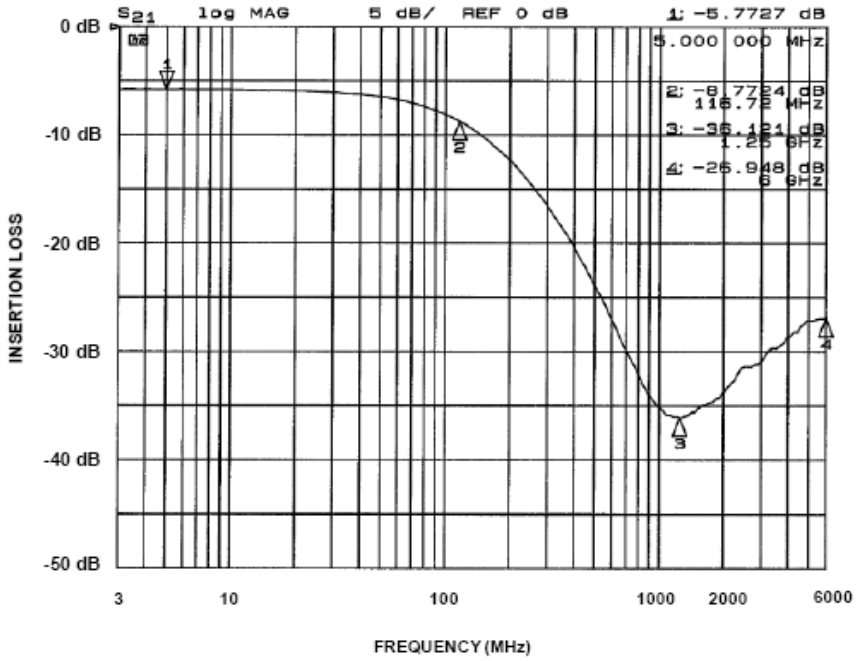


Figure 2. Insertion Loss vs. Frequency (FILTER2 Input to GND)

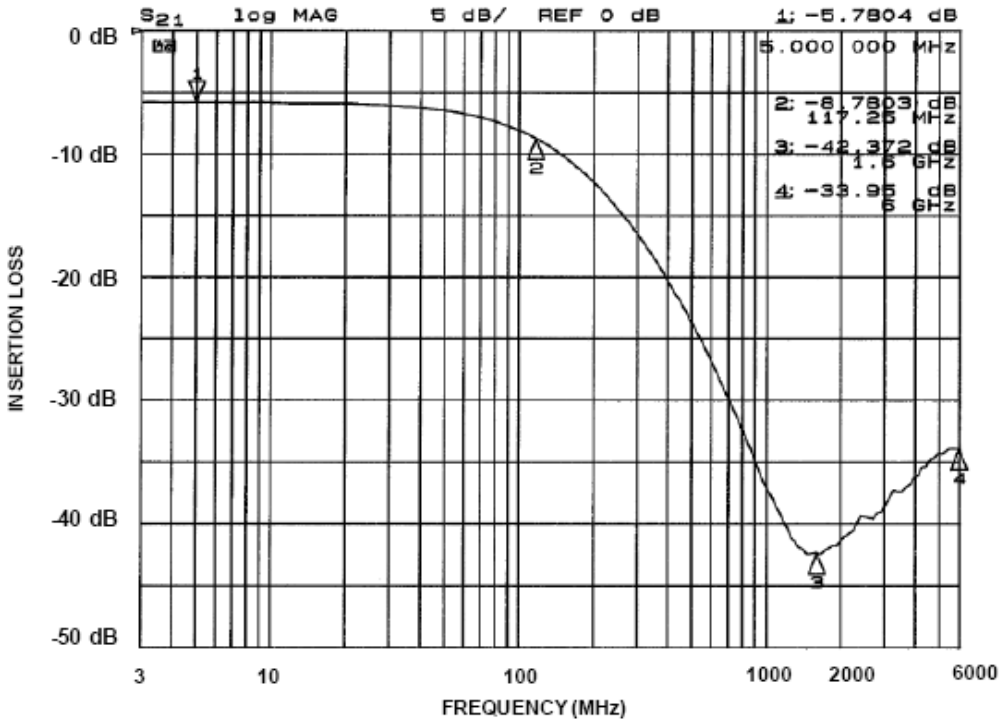


Figure 3. Insertion Loss vs. Frequency (FILTER3 Input to GND)

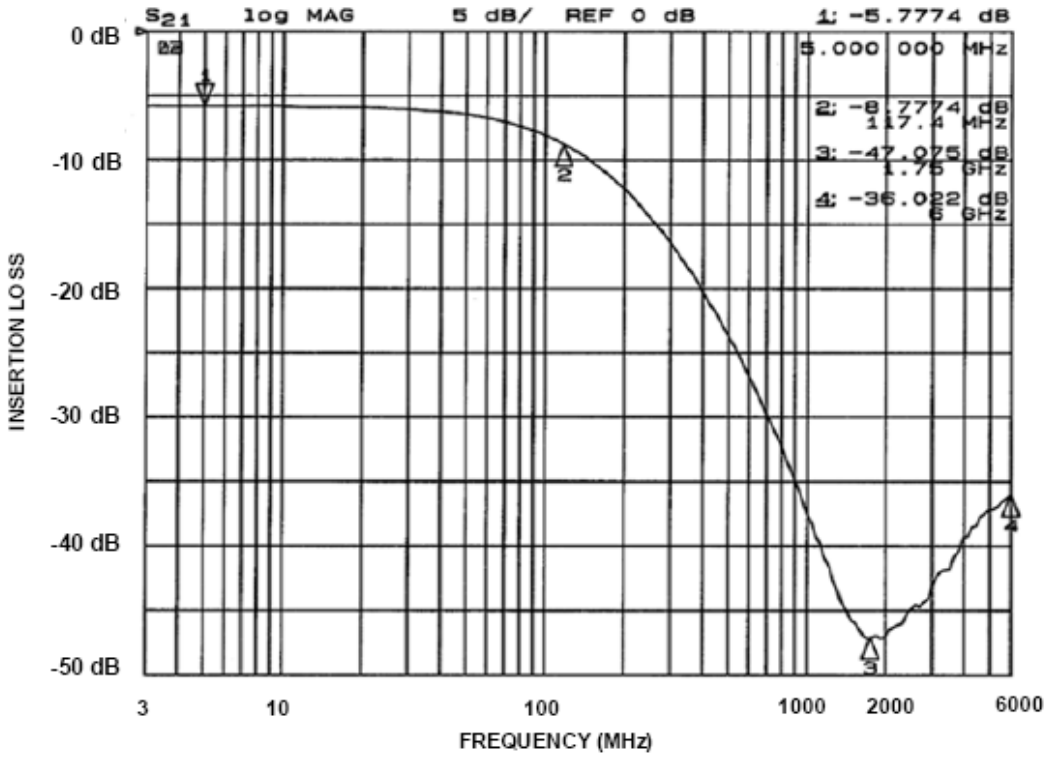


Figure 4. Insertion Loss vs. Frequency (FILTER4 Input to GND)

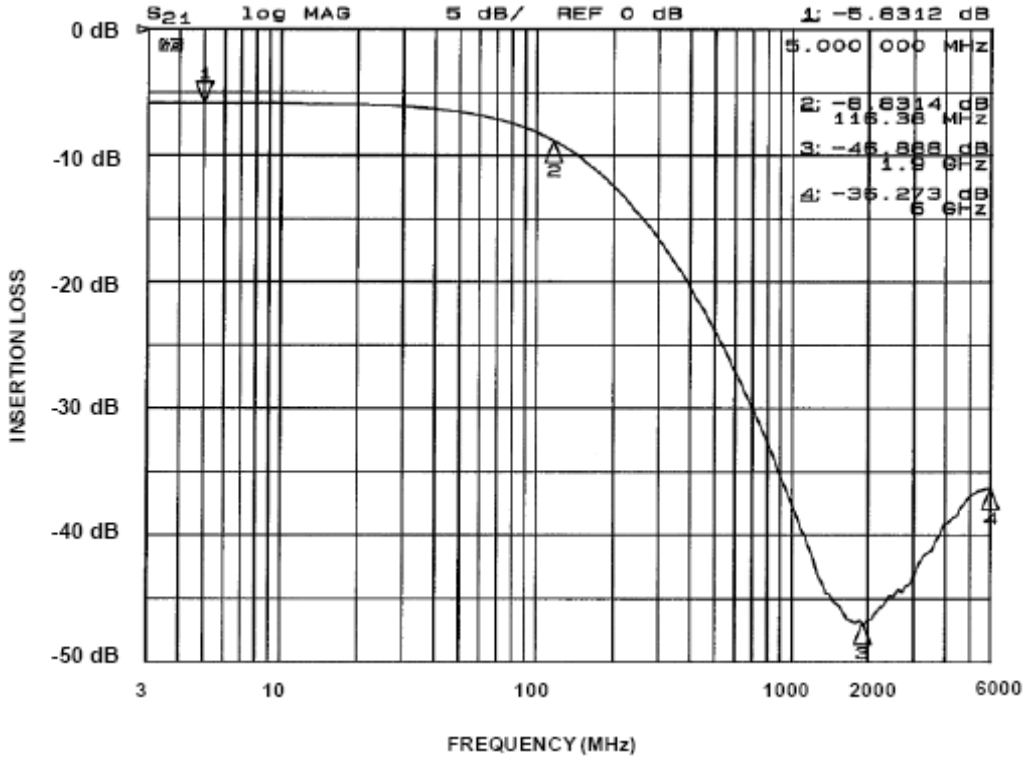


Figure 5. Insertion Loss vs. Frequency (FILTER5 Input to GND)

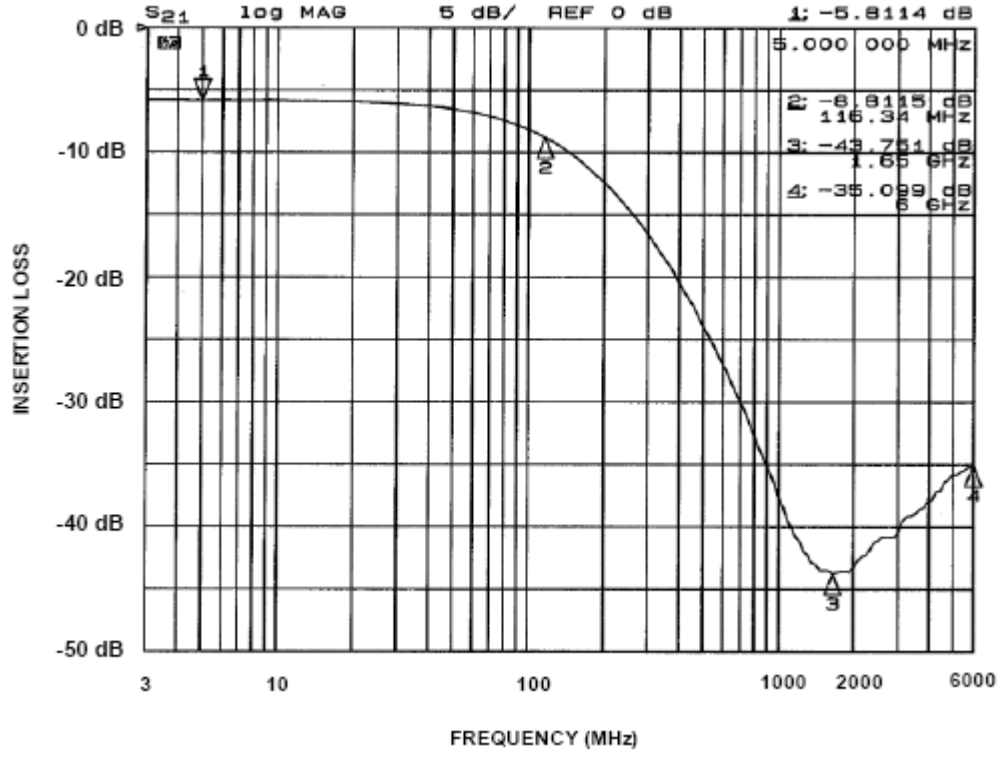


Figure 6. Insertion Loss vs. Frequency (FILTER6 Input to GND)

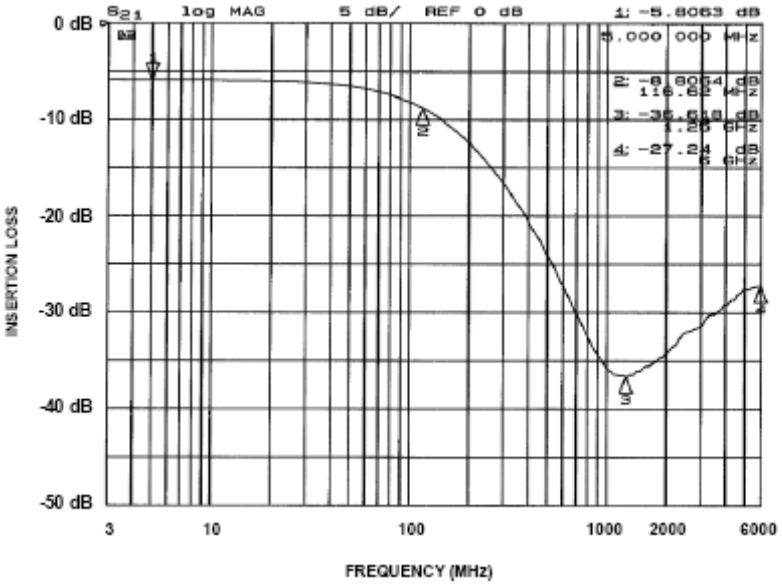


Figure 7. Insertion Loss vs. Frequency (FILTER7 Input to GND)

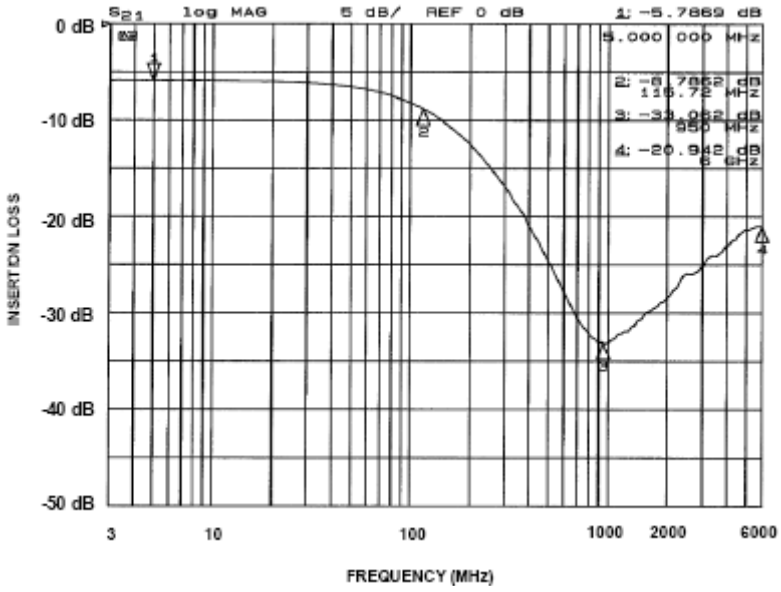


Figure 8. Insertion Loss vs. Frequency (FILTER8 Input to GND)

Typical Diode Capacitance vs. Input Voltage

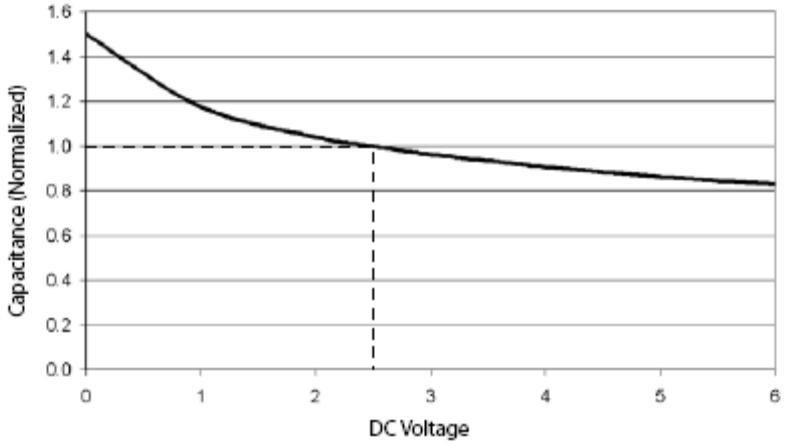


Figure 9. Filter Capacitance vs. Input Voltage (normalized to capacitance at 2.5VDC and 25°C)

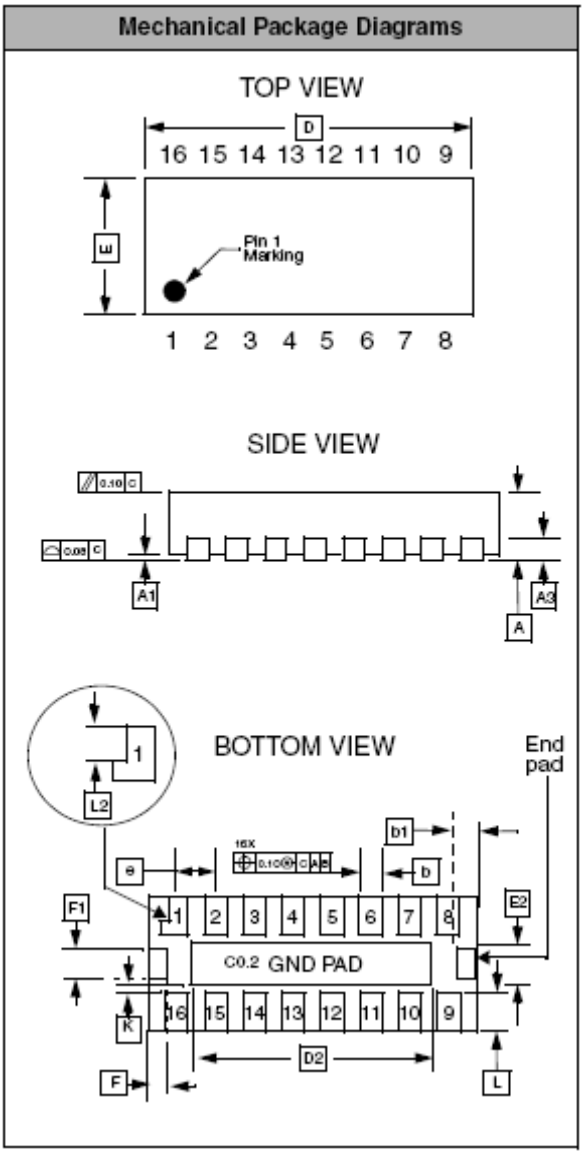
Mechanical Details

NuDFN-16 Mechanical Specifications, 0.4mm

Dimensions for the CM1622 supplied in a 16-lead, 0.4mm pitch NuDFN package are presented below.

PACKAGE DIMENSIONS							
Package	NuDFN						
JEDEC No.	MO-229C*						
Leads	16						
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	
b1	.20 BSC			0.008 BSC			
D	3.40	3.50	3.60	0.134	0.138	0.142	
D2	2.70	2.80	2.90	0.106	0.110	0.114	
E	1.10	1.20	1.30	0.043	0.047	0.051	
E2	0.20	0.30	0.40	0.008	0.012	0.016	
e	0.400 BSC			0.016 BSC			
F	0.20 REF			0.008 REF			
F1	0.30 REF			0.012 REF			
K	0.20 REF			0.008 REF			
L	0.20	0.25	0.30	0.008	0.010	0.012	
L2	0.15 REF			0.006 REF			
# per tape and reel	3000 pieces						
Controlling dimension: millimeters							

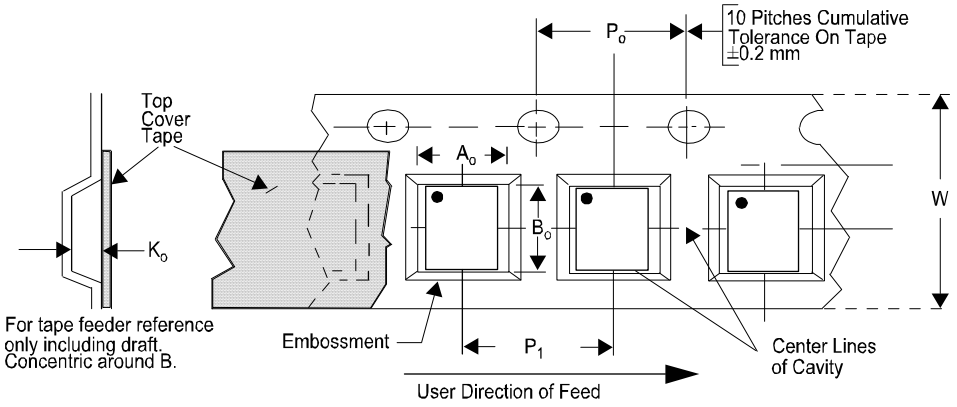
*This package is compliant with JEDEC standard MO-229C with the exception of the D, D2, E, E2, and L dimensions as called out in the table above.



Dimensions for 16-Lead, 0.4mm pitch NuDFN Package

Tape and Reel Specifications

PART NUMBER	PACKAGE SIZE (mm)	POCKET SIZE (mm) B_0 X A_0 X K_0	TAPE WIDTH W	REEL DIAMETER	QTY PER REEL	P_0	P_1
CM1622	3.50 X 1.20 X 0.50	3.75 X 1.45 X 0.70	12mm	178mm (7")	3000	4mm	4mm



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