CM1692

Praetorian® L-C LCD and Camera EMI Filter Array with ESD Protection

ON Semiconductor®

http://onsemi.com



UDFN8
DE SUFFIX
CASE 517BC



UDFN12
DE SUFFIX
CASE 517BD



UDFN16
DE SUFFIX
CASE 517BE

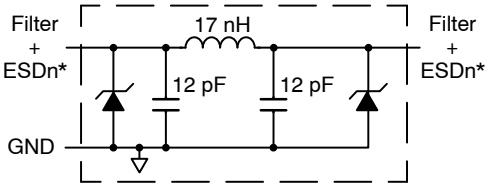
Features

- Four, Six and Eight Channels of EMI Filtering with Integrated ESD Protection
- Pi−Style EMI Filters in a Capacitor−Inductor−Capacitor (C−L−C) Network
- ±15 kV ESD Protection on Each Channel (IEC 61000−4−2 Level 4, Contact Discharge)
- Greater than 30 dB Attenuation (Typical) at 1 GHz
- 0.50 mm Thick μDFN Package with 0.40 mm Lead Pitch:
  - 4−channel = 8−lead μDFN
  - 6−channel = 12−lead μDFN
  - 8−channel = 16−lead μDFN
- Tiny μDFN Package Size:
  - 8−lead: 1.70 mm x 1.35 mm
  - 12−lead: 2.50 mm x 1.35 mm
  - 16−lead: 3.30 mm x 1.35 mm
- These Devices are Pb−Free and are RoHS Compliant

Applications

- LCD and Camera Data Lines in Mobile Handsets
- Wireless Handsets
- LCD and Camera Modules

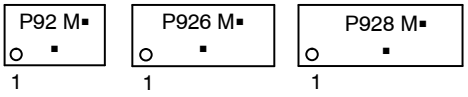
ELECTRICAL SCHEMATIC



1 of 4, 6 or 8 EMI/RFI Filter Channels with Integrated ESD Protection

* See Package/Pinout Diagrams for expanded pin information.

MARKING DIAGRAM



P92 = CM1692−04DE
P926 = CM1692−06DE
P928 = CM1692−08DE
M = Date Code
▪ = Pb−Free Package

(Note: Microdot may be in either location)

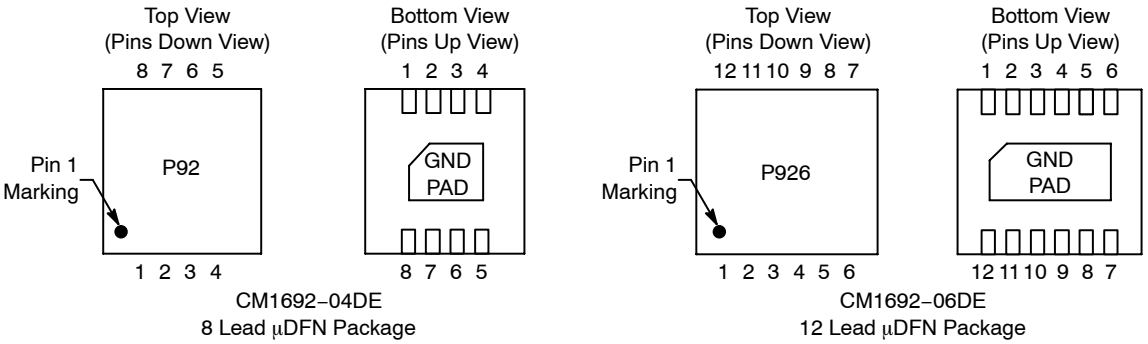
ORDERING INFORMATION

Device	Package	Shipping†
CM1692−04DE	μDFN−8 (Pb−Free)	3000/Tape & Reel
CM1692−06DE	μDFN−12 (Pb−Free)	3000/Tape & Reel
CM1692−08DE	μDFN−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.

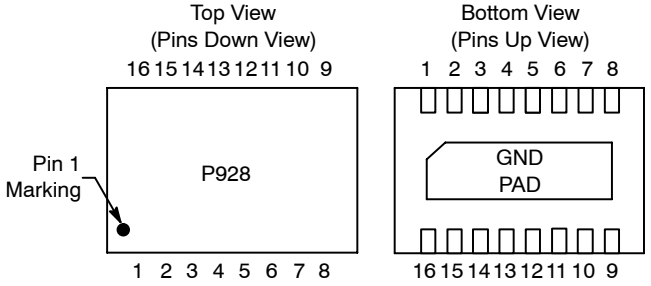
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PACKAGE / PINOUT DIAGRAMS



CM1692−04DE
8 Lead μDFN Package

CM1692−06DE
12 Lead μDFN Package



CM1692−08DE
16 Lead μDFN Package

Table 1. PIN DESCRIPTIONS

Device Pin(s)			Name	Description	Device Pin(s)			Name	Description
−04	−06	−08			−04	−06	−08		
1	1	1	FILTER1	Filter + ESD Channel 1	8	12	16	FILTER1	Filter + ESD Channel 1
2	2	2	FILTER2	Filter + ESD Channel 2	7	11	15	FILTER2	Filter + ESD Channel 2
3	3	3	FILTER3	Filter + ESD Channel 3	6	10	14	FILTER3	Filter + ESD Channel 3
4	4	4	FILTER4	Filter + ESD Channel 4	5	9	13	FILTER4	Filter + ESD Channel 4
−	5	5	FILTER5	Filter + ESD Channel 5	−	8	12	FILTER5	Filter + ESD Channel 5
−	6	6	FILTER6	Filter + ESD Channel 6	−	7	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	−	−	−	−	

SPECIFICATIONS

Table 2. ABSOLUTE MAXIMUM RATINGS

Parameter	Rating	Units
Storage Temperature Range	−65 to +150	°C
Current per Inductor	30	mA
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

Table 4. ELECTRICAL OPERATING CHARACTERISTICS (Note 1)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
L	Channel Inductance			17		nH
C_{TOTAL}	Total Channel Capacitance	At 2.5 V DC Reverse Bias, 1 MHz, 30 mV AC	18.8	23.5	28.2	pF
C	Capacitance C1	At 2.5 V DC Reverse Bias, 1 MHz, 30 mV AC		11.8		pF
V_{DIODE}	Stand−off Voltage	I_{DIODE} = 10 μA		6.0		V
I_{LEAK}	Diode Leakage Current (Reverse Bias)	V_{DIODE} = 3.3 V		0.1	1.0	μA
V_{SIG}	Signal Clamp Voltage Positive Clamp Negative Clamp	(Note 3) I_{LOAD} = 10 mA I_{LOAD} = −10 mA	 5.6 −1.5	 6.8 −0.8	 9.0 −0.4	V
V_{ESD}	In−system ESD Withstand Voltage Contact Discharge per IEC 61000−4−2 Standard, Level 4	(Notes 2 and 3)	 ±15			kV
R_{DYN}	Dynamic Resistance Positive Negative			 2.3 0.9		Ω
f_C	Roll−off Frequency at −6 dB Attenuation Z_{SOURCE} = 50 Ω, Z_{LOAD} = 50 Ω			 400		MHz

1. T_A = 25°C unless otherwise specified.
2. ESD applied to input and output pins with respect to GND, one at a time.
3. Clamping voltage is measured at the opposite side of the EMI filter to the ESD pin (i.e. if ESD is applied to pin A1 then clamping voltage is measured at pin C1). Unused pins are left open.

PERFORMANCE INFORMATION

Typical Diode Capacitance vs. Input Voltage

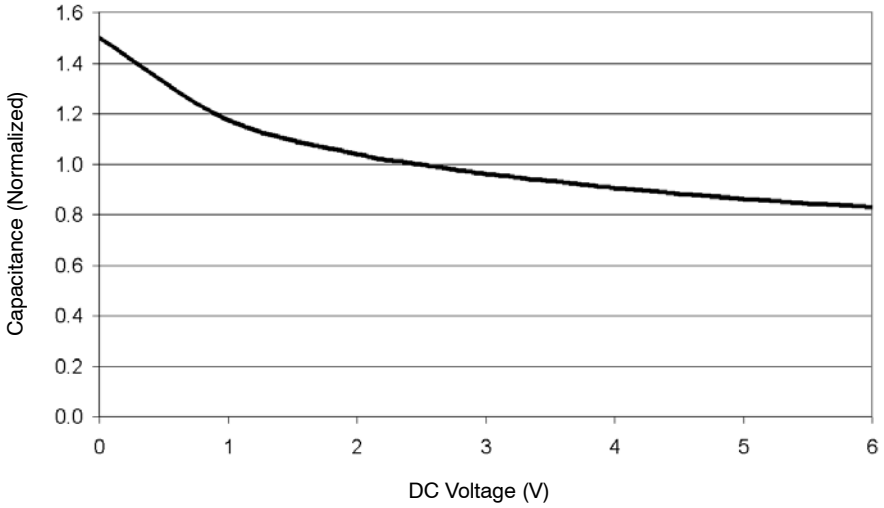


Figure 1. Filter Capacitance vs. Input Voltage (normalized to capacitance at 2.5 V DC and 25°C)

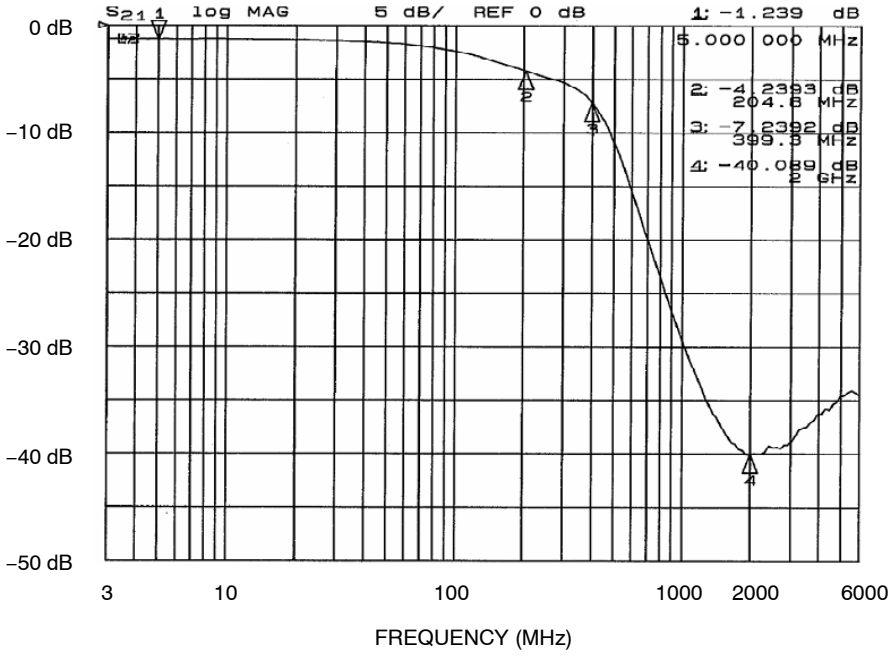
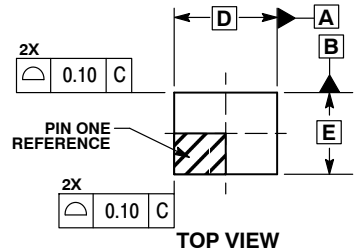


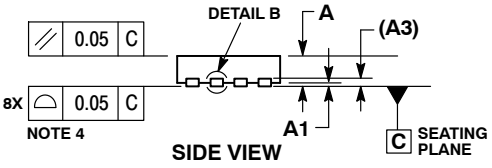
Figure 2. Typical Performance Curve

PACKAGE DIMENSIONS

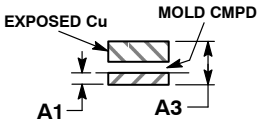
UDFN8, 1.7x1.35, 0.4P
CASE 517BC−01
ISSUE O



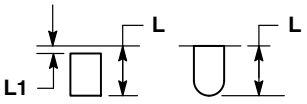
TOP VIEW



SIDE VIEW



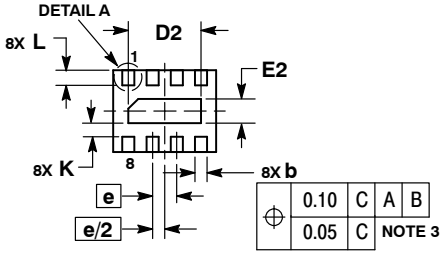
DETAIL B
ALTERNATE CONSTRUCTIONS



DETAIL A
ALTERNATE TERMINAL CONSTRUCTIONS

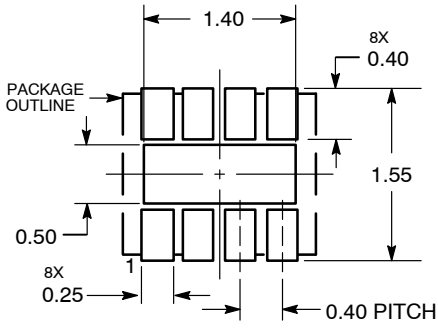
NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.25 mm FROM THE TERMINAL TIP.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

	MILLIMETERS	
DIM	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A3	0.13 REF	
b	0.15	0.25
D	1.70 BSC	
D2	1.10	1.30
E	1.35 BSC	
E2	0.30	0.50
e	0.40 BSC	
K	0.15	−−−
L	0.20	0.30
L1	−−−	0.05



BOTTOM VIEW

RECOMMENDED SOLDERING FOOTPRINT*

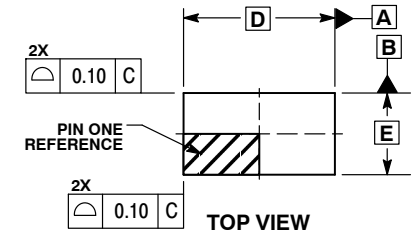


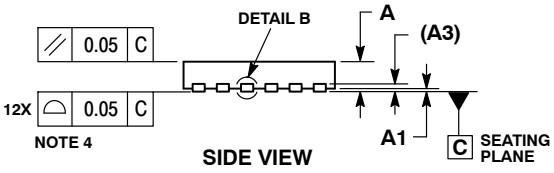
DIMENSIONS: MILLIMETERS

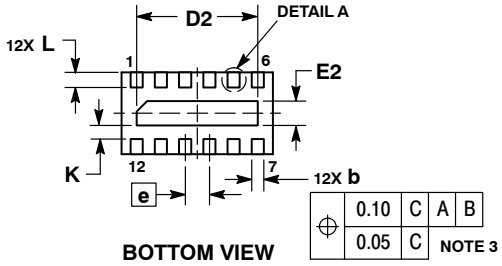
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

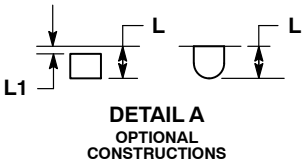
PACKAGE DIMENSIONS

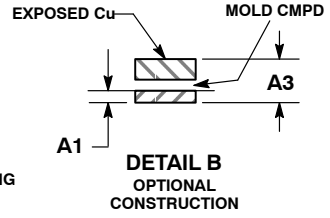
UDFN12, 2.5x1.35, 0.4P
CASE 517BD−01
ISSUE O







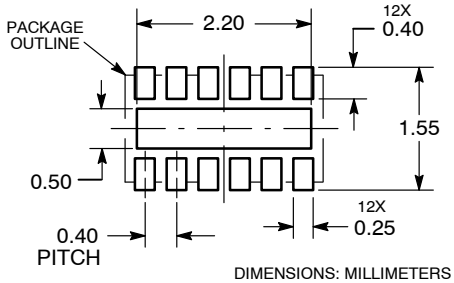




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	MILLIMETERS	
DIM	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A3	0.13 REF	
b	0.15	0.25
D	2.50 BSC	
D2	1.90	2.10
E	1.35 BSC	
E2	0.30	0.50
e	0.40 BSC	
K	0.15	−−−
L	0.20	0.30
L1	−−−	0.05

RECOMMENDED SOLDERING FOOTPRINT*

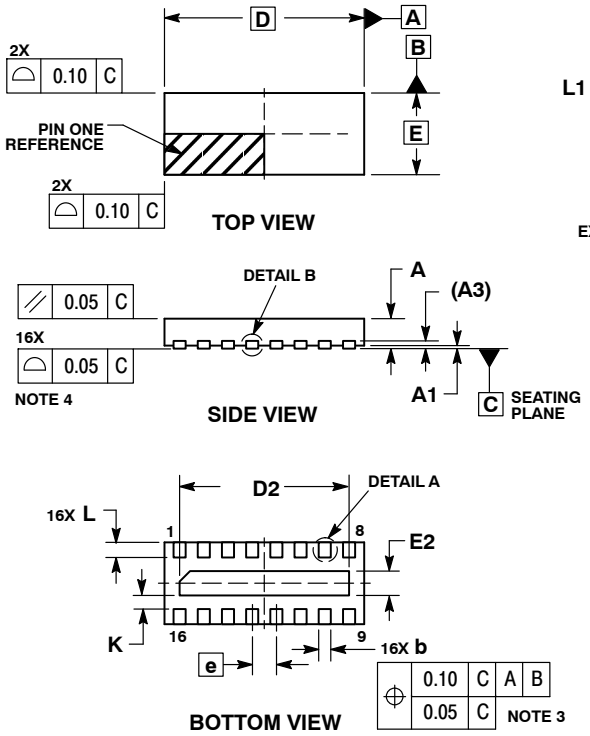


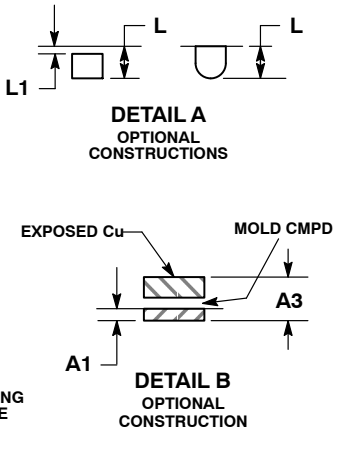
DIMENSIONS: MILLIMETERS

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

PACKAGE DIMENSIONS

UDFN16, 3.3x1.35, 0.4P
CASE 517BE−01
ISSUE O

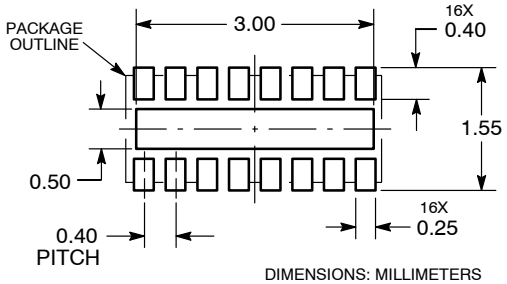




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D	3.30 BSC	
D2	2.70	2.90
E	1.35 BSC	
E2	0.30	0.50
e	0.40 BSC	
K	0.15	−−−
L	0.20	0.30
L1	−−−	0.05

RECOMMENDED SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

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