

CM1692-04DE

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

Features

- Four 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)
- ± 30 kV ESD Protection on Each Channel (HBM)
- Greater than -30 dB Attenuation (Typical) at 1 GHz
- 0.5 mm Thick μ DFN Package with 0.40 mm Lead Pitch:
 - 4-channel = 8-lead UDFN
- Tiny μ DFN Package Size:
 - 8-lead: 1.70 mm x 1.35 mm
- This is a Pb-Free Device

Applications

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



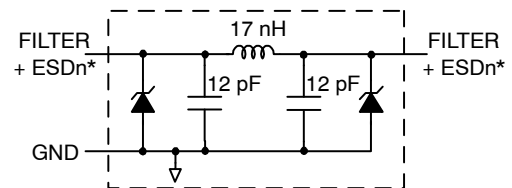
ON Semiconductor[®]

<http://onsemi.com>



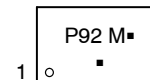
UDFN8
DE SUFFIX
CASE 517BC

ELECTRICAL SCHEMATIC



1 of 4 EMI/RFI Filter Channels
with Integrated ESD protection

MARKING DIAGRAM



P92 = Specific Device Code

M = Date Code

■ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping [†]
CM1692-04DE	UDFN-8 (Pb-Free)	3000/Tape & Reel

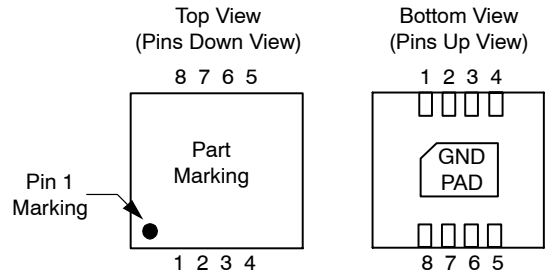
[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

CM1692-04DE

Table 1. PIN DESCRIPTIONS

Device Pins	Name	Description
1, 8	FILTER1	Filter + ESD Channel 1
2, 7	FILTER2	Filter + ESD Channel 2
3, 6	FILTER3	Filter + ESD Channel 3
4, 5	FILTER4	Filter + ESD Channel 4
GND PAD	GND	Device Ground

PACKAGE / PINOUT DIAGRAMS



CM1692-04DE
8-Lead μ DFN Package

SPECIFICATIONS

Table 2. ABSOLUTE MAXIMUM RATINGS

Parameter	Rating	Units
Storage Temperature Range	-65 to +150	$^{\circ}$ C
Current per Inductor	30	μ A
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	$^{\circ}$ 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 VDC Reverse Bias, 1 MHz, 30 mVAC	18.8	23.5	28.2	pF
C	Capacitance C1	At 2.5 VDC Reverse Bias, 1 MHz, 30 mVAC		11.8		pF
V _{DIODE}	Standoff Voltage	I _{DIODE} = 10 μ A		6.0		V
I _{LEAK}	Diode Leakage Current (reverse bias)	V _{DIODE} = +3.3 V		0.1	1.0	μ A
V _{SIG}	Signal Clamp Voltage (Note 3) Positive Clamp Negative Clamp	I _{LOAD} = 10 mA I _{LOAD} = -10 mA	5.6 -0.4	6.8 -0.8	9 -1.5	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	(Notes 2 and 3)	\pm 30 \pm 15			kV
R _{DYN}	Dynamic Resistance Positive Negative			2.3 0.9		
f _C	Roll-off Frequency at -6 dB Attenuation Z _{SOURCE} = 50 Ω , Z _{LOAD} = 50 Ω			400		MHz

- T_A = 25 $^{\circ}$ C unless otherwise specified.
- ESD applied to input and output pins with respect to GND, one at a time.
- 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.

CM1692-04DE

PERFORMANCE INFORMATION

Typical Diode Capacitance vs. Input Voltage

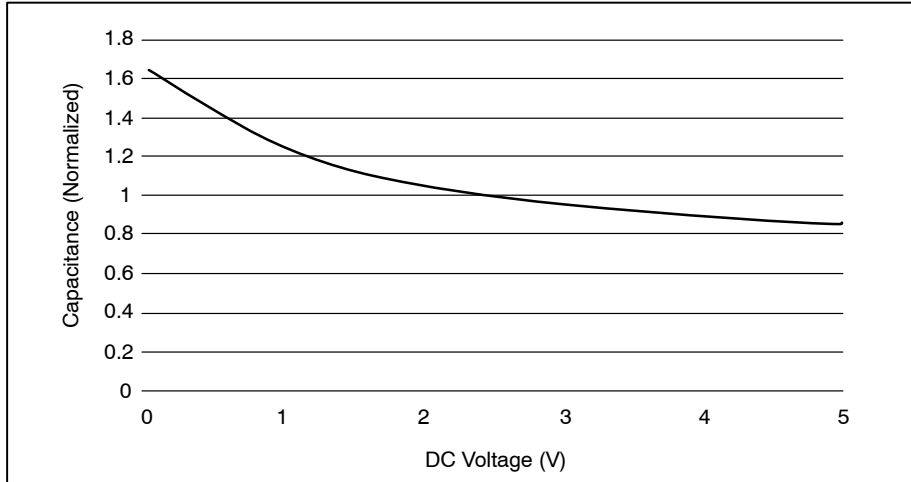


Figure 1. Filter Capacitance vs. Input Voltage
(Normalized to Capacitance at 2.5 VDC and 25 μ C)

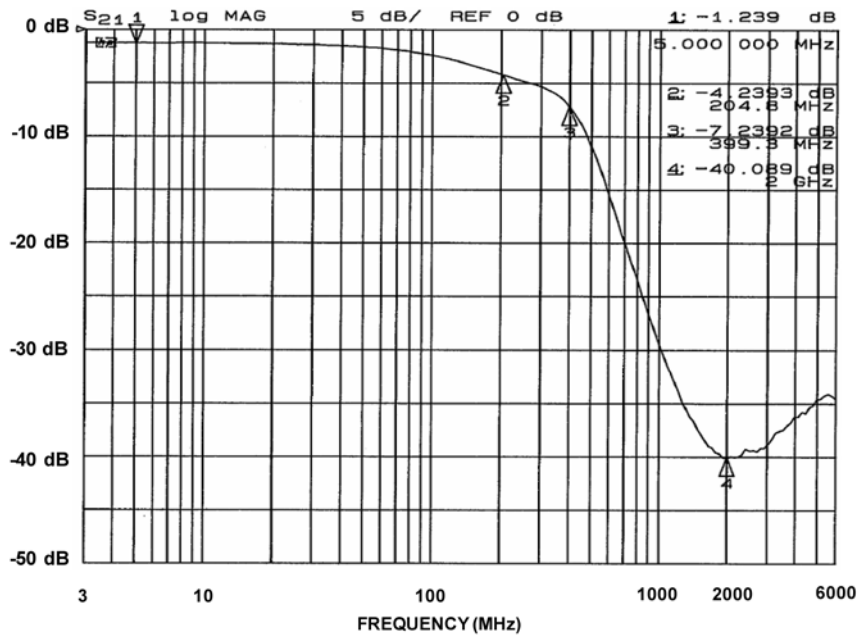
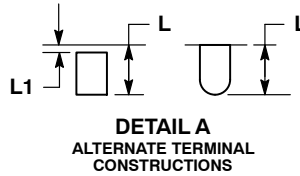
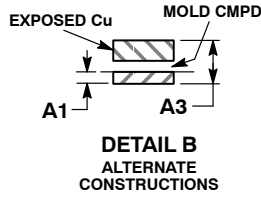
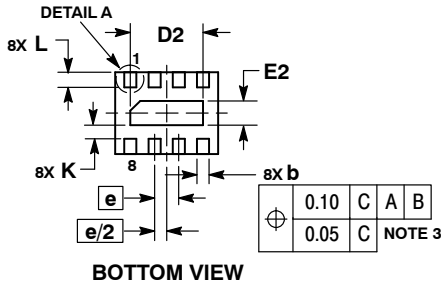
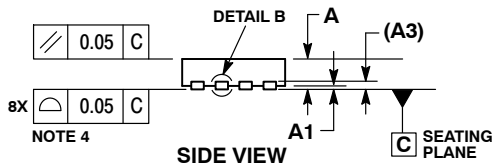
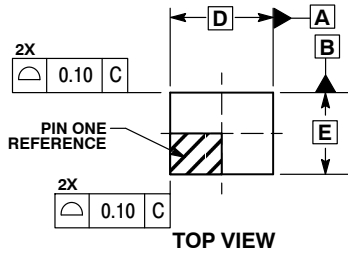


Figure 2. Typical Performance Curve

CM1692-04DE

PACKAGE DIMENSIONS

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

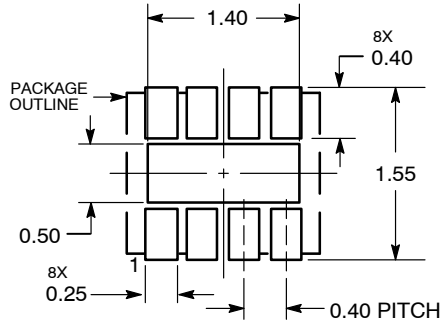


NOTES:

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 0.25 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

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.

PRAETORIAN is a registered trademark of Semiconductor Components Industries, LLC (SCILLC).

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5773-3850

ON Semiconductor Website: www.onsemi.com
Order Literature: <http://www.onsemi.com/orderlit>
For additional information, please contact your local Sales Representative