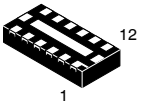
CM1621

LCD and Camera EMI Filter Array with ESD Protection

ON Semiconductor®

http://onsemi.com



UDFN12
DE SUFFIX
CASE 517AE

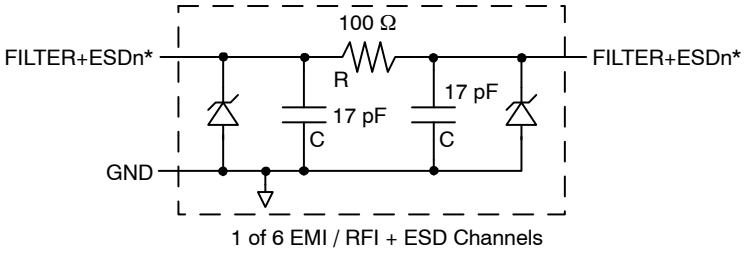
Features

- Six Channels of EMI Filtering with Integrated ESD Protection
- Pi−Style EMI Filters in a Capacitor−Resistor−Capacitor (C−R−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 40 dB Attenuation (Typical) at 1 GHz
- uDFN Package with 0.40 mm Lead Pitch:
  - 12−Lead: 2.50 mm x 1.20 mm x 0.50 mm
- These Devices are Pb−Free and are RoHS Compliant

Applications

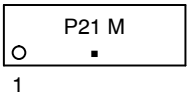
- LCD and Camera Data Lines in Mobile Handsets
- I/O Port Protection for Mobile Handsets, Notebook Computers, PDAs, etc.
- EMI Filtering for Data Ports in Cell Phones, PDAs or Notebook Computers
- Wireless Handsets
- Handheld PCs/PDAs

BLOCK DIAGRAM



*See Package/Pinout Diagrams for expanded pin information.

MARKING DIAGRAM



P21 = CM1621−06DE
M = Month Code
▪ = Pb−Free Package

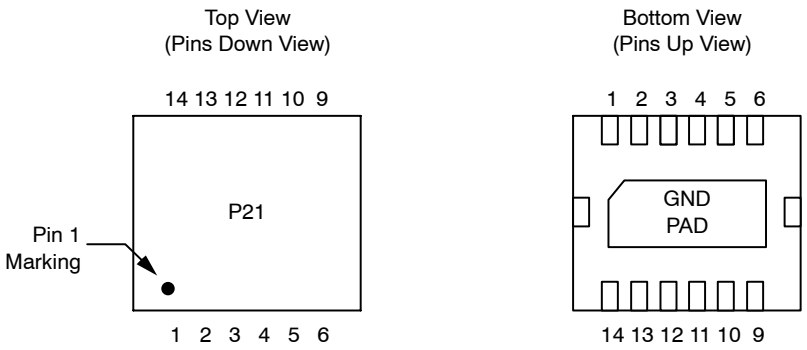
ORDERING INFORMATION

Device	Package	Shipping†
CM1621−06DE	uDFN−12 (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.

© Semiconductor Components Industries, LLC, 2011

PACKAGE / PINOUT DIAGRAMS



12−Lead UDFN Package

Table 1. PIN DESCRIPTIONS

Device Pin(s)	Name	Description		Device Pin(s)	Name	Description
1	FILTER1	Filter + ESD Channel 1		12	FILTER1	Filter + ESD Channel 1
2	FILTER2	Filter + ESD Channel 2		11	FILTER2	Filter + ESD Channel 2
3	FILTER3	Filter + ESD Channel 3		10	FILTER3	Filter + ESD Channel 3
4	FILTER4	Filter + ESD Channel 4		9	FILTER4	Filter + ESD Channel 4
5	FILTER5	Filter + ESD Channel 5		8	FILTER5	Filter + ESD Channel 5
6	FILTER6	Filter + ESD Channel 6		7	FILTER6	Filter + ESD Channel 6
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
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
R	Resistance		85	100	115	Ω
C_{TOTAL}	Total Channel Capacitance	At 2.5 VDC Reverse Bias, 1 MHz, 30 mVAC	27	34	41	pF
C	Capacitance C	At 2.5 VDC Reverse Bias, 1 MHz, 30 mVAC		17		pF
V_{DIODE}	Standoff Voltage	I_{DIODE} = 10 μA		6.0		V
I_{LEAK}	Diode Leakage Current (reverse bias)	V_{DIODE} = +3.3 V			100	nA
V_{SIG}	Signal Clamp Voltage	I_{LOAD} = 1.0 mA	6.0	7.0	8.0	V
V_{ESD}	In−system ESD Withstand Voltage a) Human Body Model (HBM), MIL−STD−883, Method 3015 b) Contact Discharge per IEC 61000−4−2 Level 4	(Note 2)	 ±30 ±15			kV
R_{DYN}	Dynamic Resistance Positive Negative			 2.3 0.9		Ω
f_C	Cut−off Frequency Z_{SOURCE} = 50 Ω, Z_{LOAD} = 50 Ω	Channel R = 100 Ω, Channel C = 15 pF		90	135 (Note 3)	MHz
A_{1GHz}	Absolute Attenuation at 1 GHz from 0 dB Level	Z_{SOURCE} = 50 Ω, Z_{LOAD} = 50 Ω, DC Bias = 0 V; (Notes 1 and 3)		−40		dB
$A_{800MHz - 3 GHz}$	Absolute Attenuation at 800 MHz to 3 Ghz from 0 dB Level	Z_{SOURCE} = 50 Ω, Z_{LOAD} = 50 Ω, DC Bias = 0 V; (Notes 1 and 3)		−35		dB

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. Attenuation / RF curves characterized by a network analyzer using microprobes.

PERFORMANCE INFORMATION

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

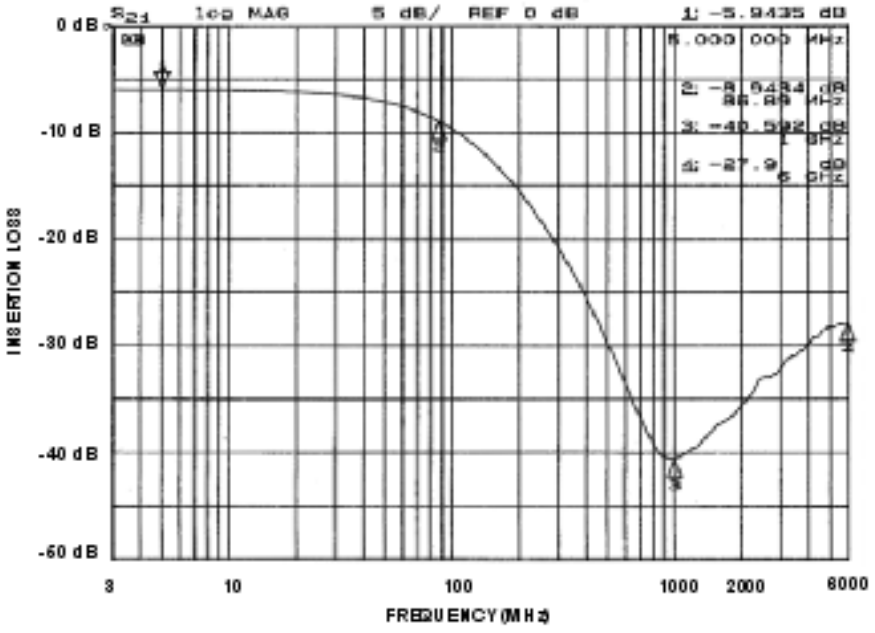


Figure 1. Insertion Loss vs. Frequency (FILTER1 Input to GND, CM1621−06DE)
Typical Diode Capacitance vs. Input Voltage

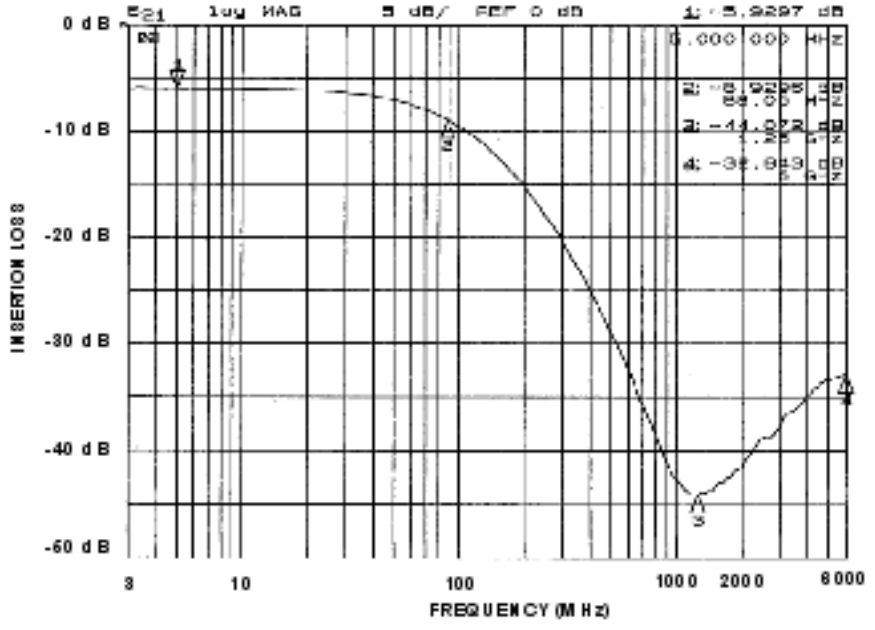


Figure 2. Insertion Loss vs. Frequency (FILTER2 Input to GND, CM1621−06DE)
Typical Diode Capacitance vs. Input Voltage

PERFORMANCE INFORMATION (Cont'd)

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

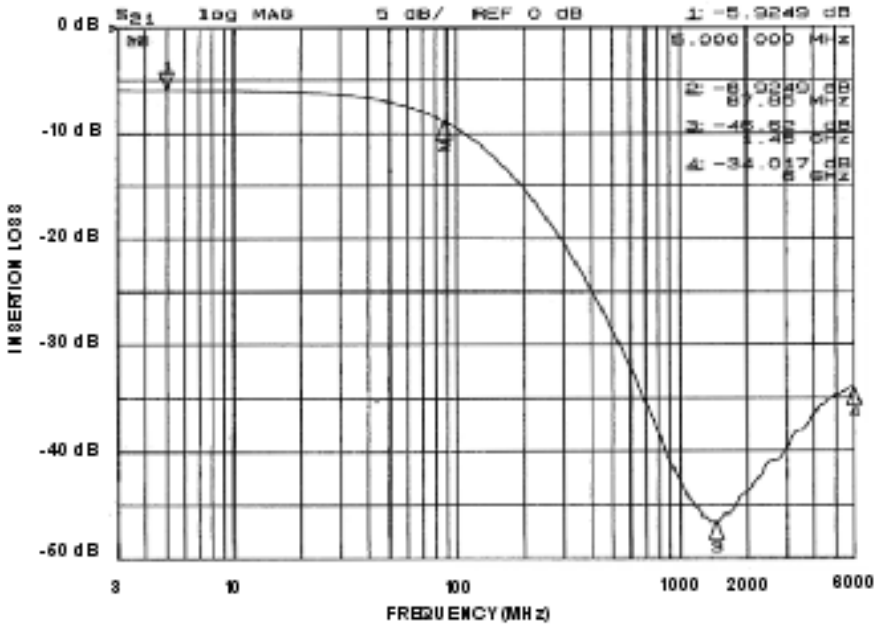


Figure 3. Insertion Loss vs. Frequency (FILTER3 Input to GND, CM1621−06DE)
Typical Diode Capacitance vs. Input Voltage

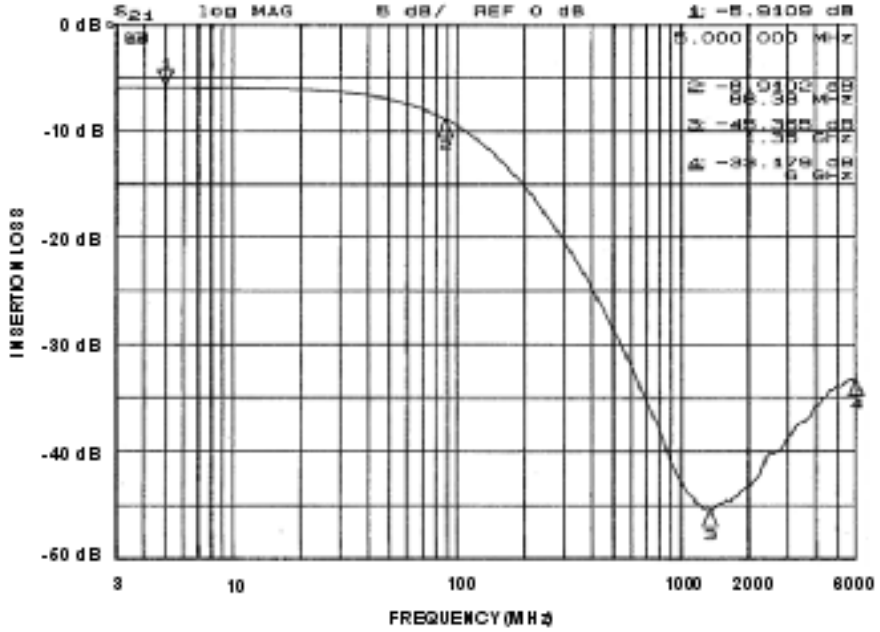


Figure 4. Insertion Loss vs. Frequency (FILTER4 Input to GND, CM1621−06DE)
Typical Diode Capacitance vs. Input Voltage

PERFORMANCE INFORMATION (Cont'd)

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

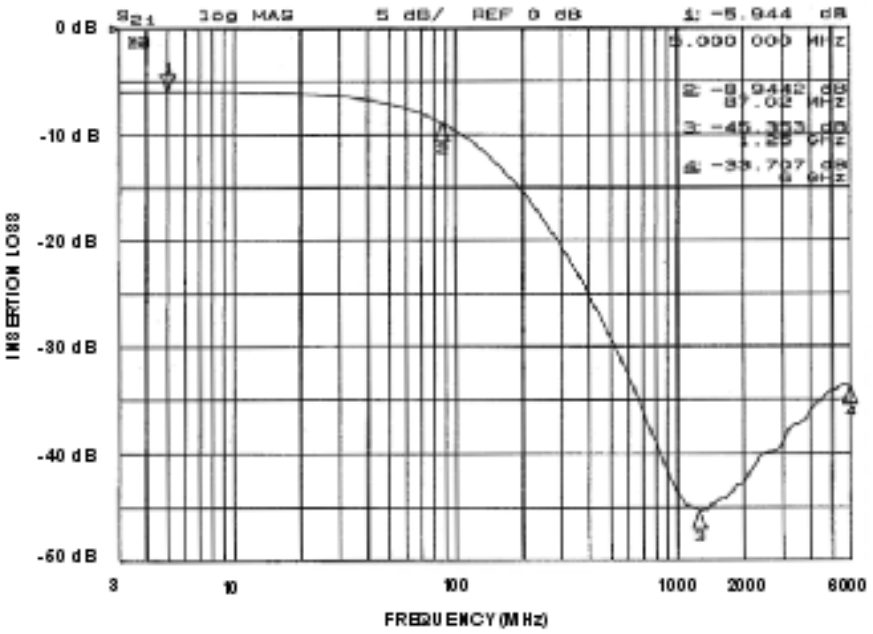


Figure 5. Insertion Loss vs. Frequency (FILTER5 Input to GND, CM1621−06DE)
Typical Diode Capacitance vs. Input Voltage

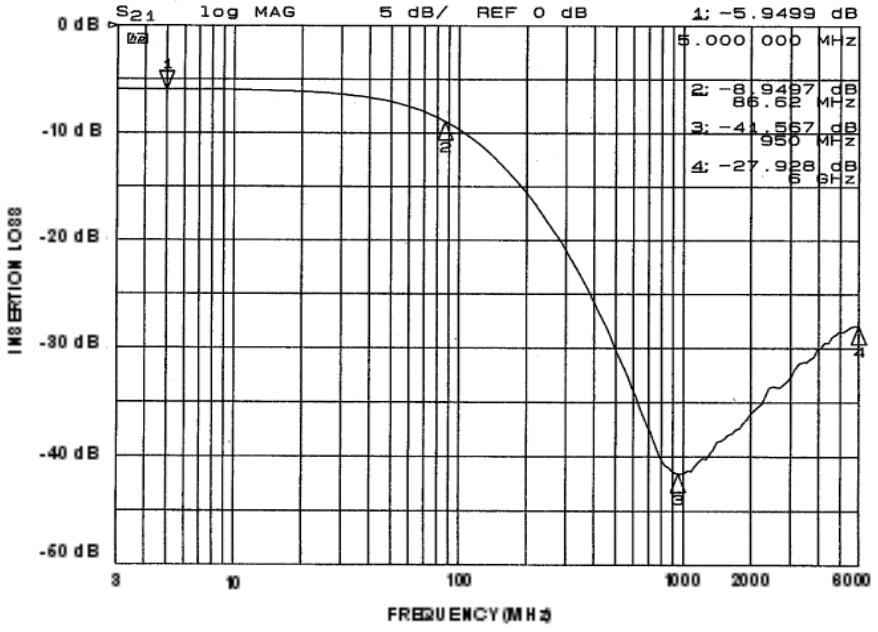


Figure 6. Insertion Loss vs. Frequency (FILTER6 Input to GND, CM1621−06DE)
Typical Diode Capacitance vs. Input Voltage

PERFORMANCE INFORMATION (Cont'd)

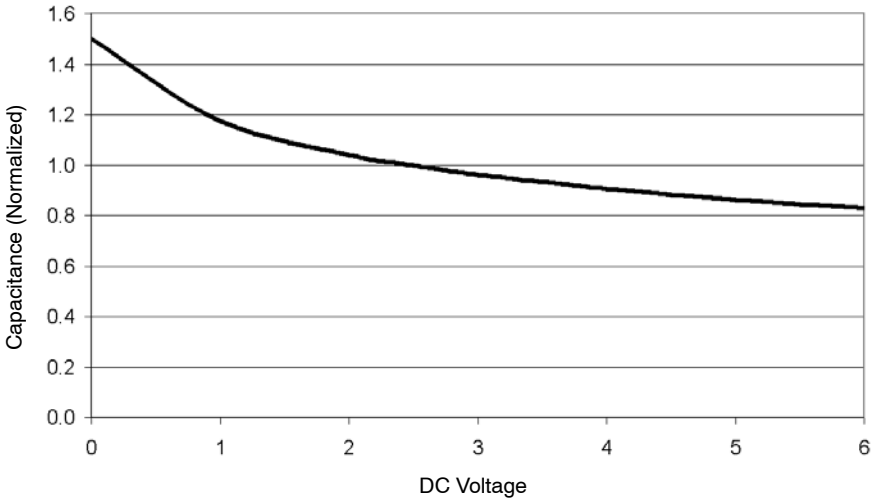
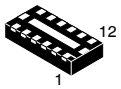


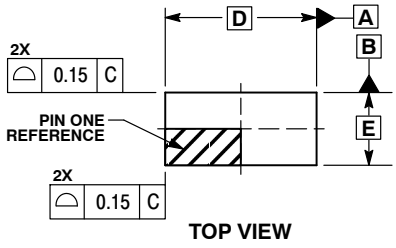
Figure 7. Filter Capacitance vs. Input Voltage (normalized to capacitance at 2.5 VDC and 25°C)

UDFN12 2.5x1.2, 0.4P
CASE 517AE
ISSUE C

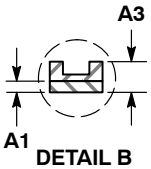
DATE 23 OCT 2012



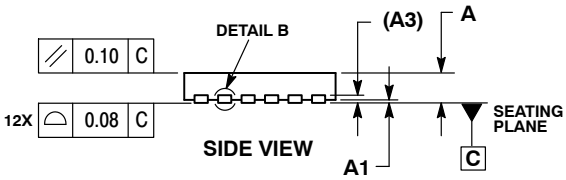
SCALE 4:1



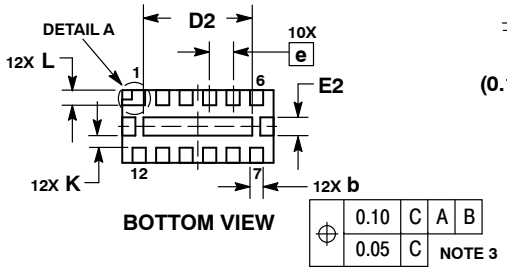
TOP VIEW



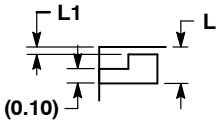
DETAIL B
OPTIONAL CONSTRUCTION



SIDE VIEW



BOTTOM VIEW

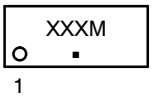


DETAIL A
OPTIONAL CONSTRUCTION

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 0.25 AND 0.30 mm FROM TERMINAL.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

	MILLIMETERS		
DIM	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	0.00	0.03	0.05
A3		0.127 REF	
b	0.15	0.20	0.25
D		2.50 BSC	
D2	1.70	1.80	1.90
E		1.20 BSC	
E2	0.20	0.30	0.40
e		0.40 BSC	
K		0.20 TYP	
L	0.20	0.25	0.30
L1	---	---	0.10

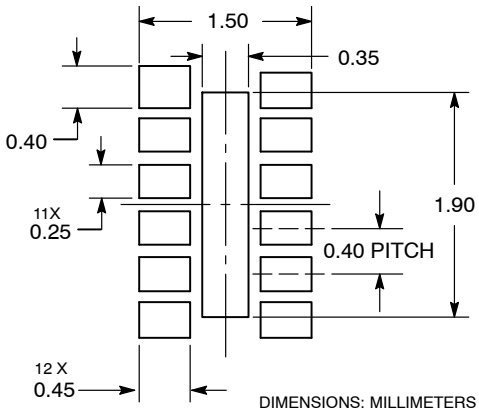
GENERIC MARKING DIAGRAM*



XXX = Specific Device Code
M = Month Code
▪ = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking.
Pb−Free indicator, “G” or microdot “ ▪”, may or may not be present.

SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

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

DOCUMENT NUMBER:	**98AON22155D**	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped “CONTROLLED COPY” in red.
DESCRIPTION:	**UDFN12 2.5X1.2, 0.4P**	**PAGE 1 OF 1**

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba **onsemi** or its subsidiaries in the United States and/or other countries. **onsemi** reserves the right to make changes without further notice to any products herein. **onsemi** makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does **onsemi** 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. **onsemi** does not convey any license under its patent rights nor the rights of others.

© Semiconductor Components Industries, LLC, 2011

onsemi, , and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent−Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as−is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** 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. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** 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. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** 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 **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:
Technical Library: www.onsemi.com/design/resources/technical−documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support
For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales