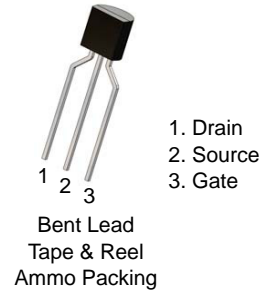


N-Channel RF Amplifier

J211, MMBFJ211

Description

This device is designed for HF/VHF mixer/amplifier and applications where process 50 is not adequate. Sufficient gain and low-noise for sensitive receivers. Sourced from process 90.



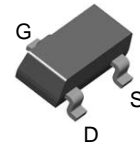
TO-92 3
CASE 135AR

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted) (Notes 1, 2)

Symbol	Parameter	Value	Unit
V _{DG}	Drain- Gate Voltage	25	V
V _{GS}	Gate- Source Voltage	-25	V
I _{GF}	Forward Gate Current	10	mA
T _J , T _{STG}	Operating and Storage Junction Temperature Range	-55 to 150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

- These ratings are based on a maximum junction temperature of 150°C.
- These are steady-state limits. onsemi should be consulted on applications involving pulsed or low-duty-cycle operations.



NOTE: Source & Drain are interchangeable

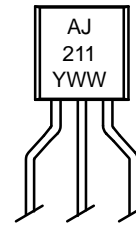
SOT-23
CASE 318-08

THERMAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

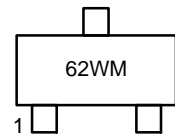
Symbol	Parameter	Max		Unit
		J211 (Note 3)	MMBFJ211 (Note 3)	
P _D	Total Device Dissipation	350	225	mW
	Derate Above 25°C	2.8	1.8	mW/°C
R _{θJC}	Thermal Resistance, Junction-to-Case	125	-	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient	357	556	°C/W

- Device mounted on FR-4 PCB 36 mm x 18 mm x 1.5 mm; mounting pad for the collector lead minimum 6 cm².

MARKING DIAGRAM



J211-D74Z



MMBFJ211

J211, 62W = Device Code
A = Assembly Site
WW = Work Week Number
Y = Year of Production
M = Date Code

ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

J211, MMBFJ211

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Max	Unit
--------	-----------	------------	-----	-----	------

OFF CHARACTERISTICS

$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	$I_G = 1.0 \mu\text{A}$, $V_{DS} = 0$	-25	-	V
I_{GSS}	Gate Reverse Current	$V_{GS} = 15 \text{ V}$, $V_{DS} = 0$	-	-100	pA
$V_{GS(off)}$	Gate-Source Cut-Off Voltage	$V_{DS} = 15 \text{ V}$, $I_D = 1.0 \text{ nA}$	-2.5	-4.5	V

ON CHARACTERISTICS

I_{DSS}	Zero-Gate Voltage Drain Current (Note 4)	$V_{DS} = 15 \text{ V}$, $V_{GS} = 0$	7.0	20	mA
-----------	--	--	-----	----	----

SMALL SIGNAL CHARACTERISTICS

g_{fs}	Common Source Forward Transconductance	$V_{DS} = 15 \text{ V}$, $V_{GS} = 0$, $f = 1.0 \text{ kHz}$	7000	12000	μmhos
g_{oss}	Common Source Output Conductance	$V_{DS} = 15 \text{ V}$, $V_{GS} = 0$, $f = 1.0 \text{ kHz}$	-	200	μmhos

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

4. Pulse test: pulse width $\leq 300 \mu\text{s}$

TYPICAL PERFORMANCE CHARACTERISTICS

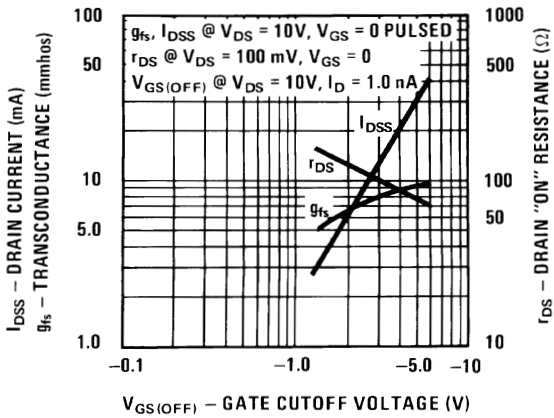


Figure 1. Parameter Interactions

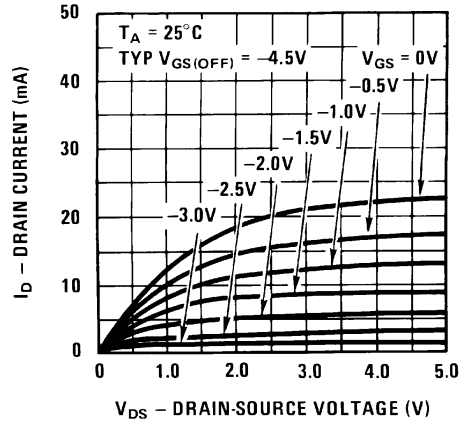


Figure 2. Common Drain-Source

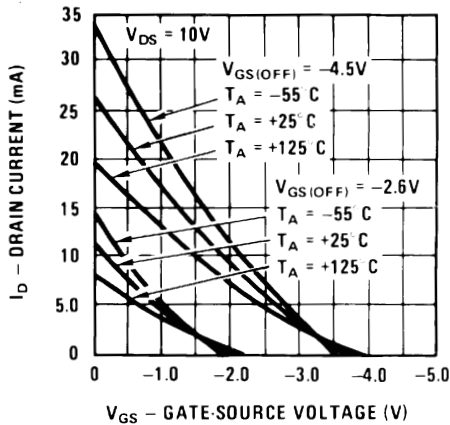


Figure 3. Transfer Characteristics

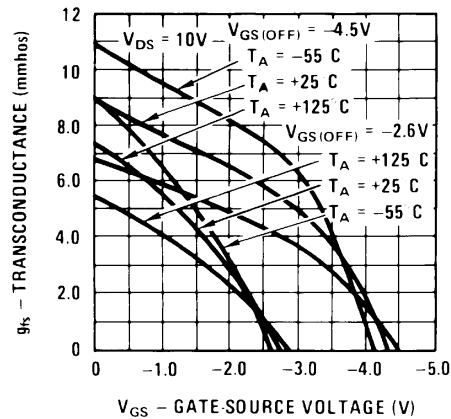


Figure 4. Transfer Characteristics

TYPICAL PERFORMANCE CHARACTERISTICS (continued)

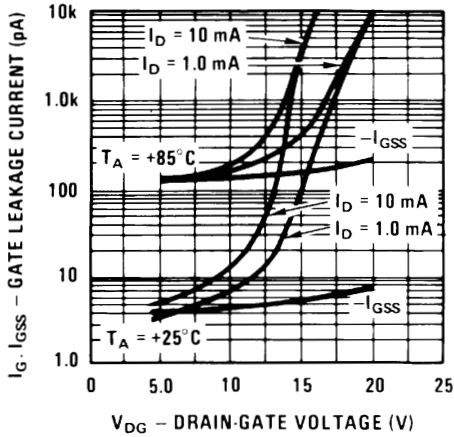


Figure 5. Leakage Current vs. Voltage

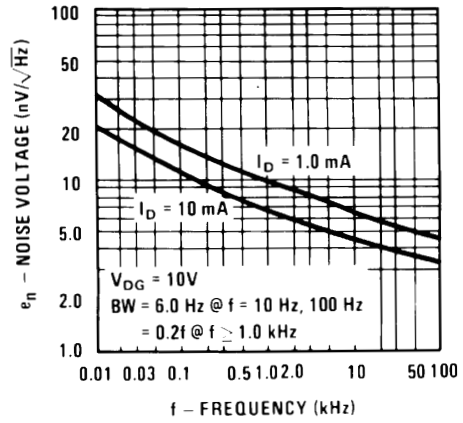


Figure 6. Noise Voltage vs. Frequency

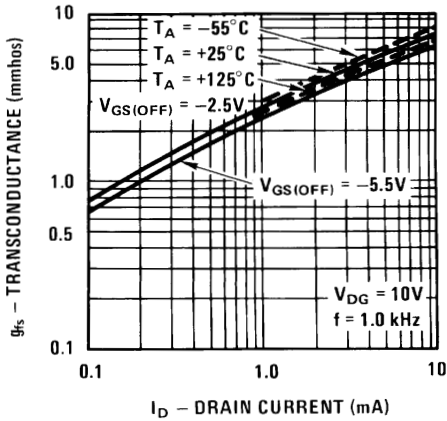


Figure 7. Transconductance vs. Drain Current

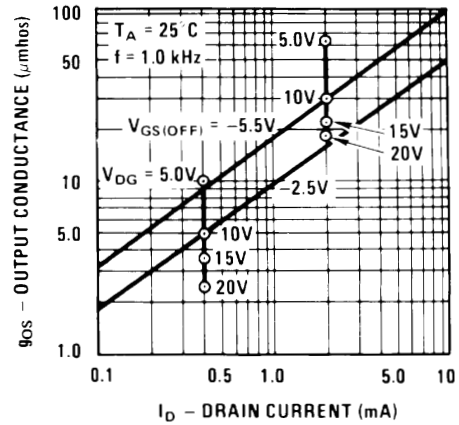


Figure 8. Output Conductance vs. Drain Current

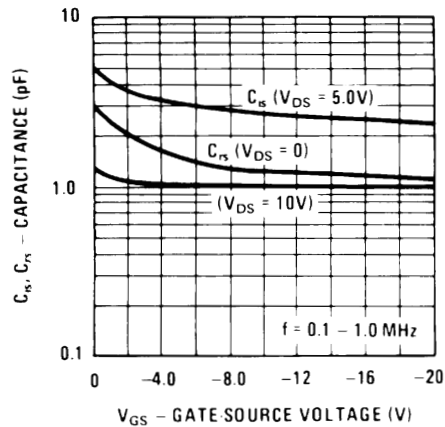


Figure 9. Capacitance vs. Voltage

COMMON SOURCE CHARACTERISTICS

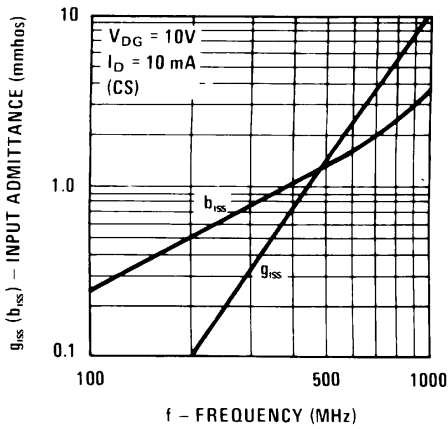


Figure 10. Input Admittance

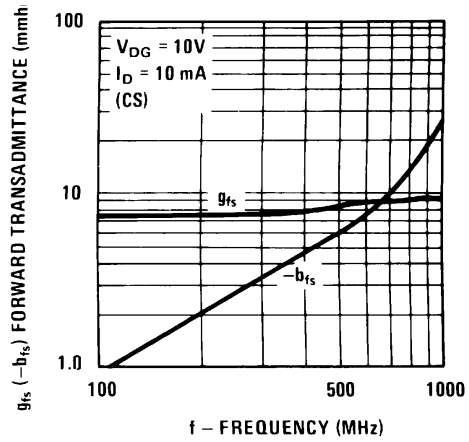


Figure 11. Forward Transadmittance

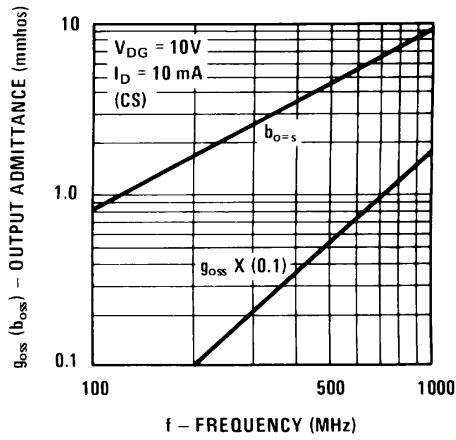


Figure 12. Output Admittance

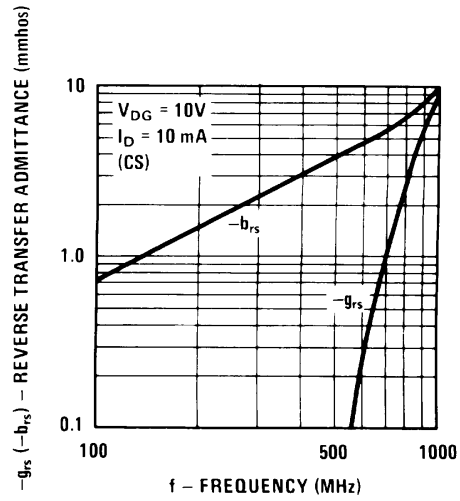


Figure 13. Reverse Transadmittance

J211, MMBFJ211

COMMON GATE CHARACTERISTICS

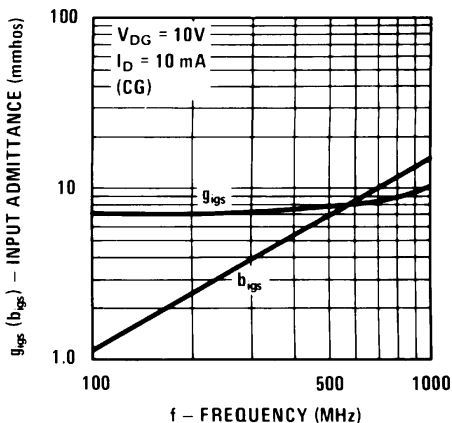


Figure 14. Input Admittance

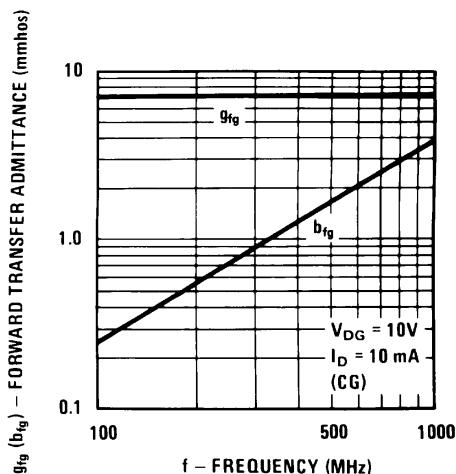


Figure 15. Forward Transadmittance

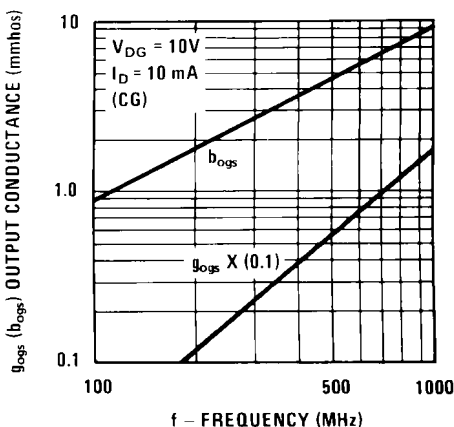


Figure 16. Output Admittance

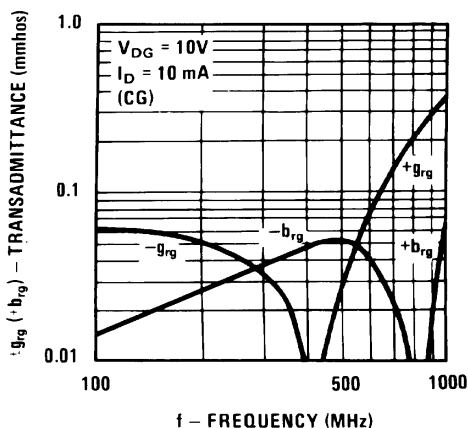


Figure 17. Reverse Transadmittance

ORDERING INFORMATION

Part Number	Top Mark	Package	Packing Method†
J211-D74Z	J211	TO-92 3L (Pb-Free)	Ammo
MMBFJ211	62W	SOT-23 3L (Pb-Free)	Tape and Reel

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

TO-92 3 4.83x4.76 LEADFORMED
CASE 135AR
ISSUE O

DATE 30 SEP 2016



NOTES: UNLESS OTHERWISE SPECIFIED

- A) DRAWING WITH REFERENCE TO JEDEC TO-92 RECOMMENDATIONS.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DRAWING CONFORMS TO ASME Y14.5M-1994

DOCUMENT NUMBER:	98AON13879G	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	TO-92 3 4.83X4.76 LEADFORMED	PAGE 1 OF 1

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

MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



SOT-23 (TO-236)
CASE 318
ISSUE AT

DATE 01 MAR 2023

SCALE 4:1



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M,1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

DIM	MILLIMETERS			INCHES		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.89	1.00	1.11	0.035	0.039	0.044
A1	0.01	0.06	0.10	0.000	0.002	0.004
b	0.37	0.44	0.50	0.015	0.017	0.020
c	0.08	0.14	0.20	0.003	0.006	0.008
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.080
L	0.30	0.43	0.55	0.012	0.017	0.022
L1	0.35	0.54	0.69	0.014	0.021	0.027
H _E	2.10	2.40	2.64	0.083	0.094	0.104
T	0°	---	10°	0°	---	10°

GENERIC MARKING DIAGRAM*



- XXX = Specific Device Code
- M = Date 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. Some products may not follow the Generic Marking.



RECOMMENDED MOUNTING FOOTPRINT

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

STYLES ON PAGE 2

DOCUMENT NUMBER:	98ASB42226B	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	SOT-23 (TO-236)	PAGE 1 OF 2

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.

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS



SOT-23 (TO-236)
CASE 318
ISSUE AT

DATE 01 MAR 2023

STYLE 1 THRU 5:
 CANCELLED

STYLE 6:
 PIN 1. BASE
 2. EMITTER
 3. COLLECTOR

STYLE 7:
 PIN 1. EMITTER
 2. BASE
 3. COLLECTOR

STYLE 8:
 PIN 1. ANODE
 2. NO CONNECTION
 3. CATHODE

STYLE 9:
 PIN 1. ANODE
 2. ANODE
 3. CATHODE

STYLE 10:
 PIN 1. DRAIN
 2. SOURCE
 3. GATE

STYLE 11:
 PIN 1. ANODE
 2. CATHODE
 3. CATHODE-ANODE

STYLE 12:
 PIN 1. CATHODE
 2. CATHODE
 3. ANODE

STYLE 13:
 PIN 1. SOURCE
 2. DRAIN
 3. GATE

STYLE 14:
 PIN 1. CATHODE
 2. GATE
 3. ANODE

STYLE 15:
 PIN 1. GATE
 2. CATHODE
 3. ANODE

STYLE 16:
 PIN 1. ANODE
 2. CATHODE
 3. CATHODE

STYLE 17:
 PIN 1. NO CONNECTION
 2. ANODE
 3. CATHODE

STYLE 18:
 PIN 1. NO CONNECTION
 2. CATHODE
 3. ANODE

STYLE 19:
 PIN 1. CATHODE
 2. ANODE
 3. CATHODE-ANODE

STYLE 20:
 PIN 1. CATHODE
 2. ANODE
 3. GATE

STYLE 21:
 PIN 1. GATE
 2. SOURCE
 3. DRAIN

STYLE 22:
 PIN 1. RETURN
 2. OUTPUT
 3. INPUT

STYLE 23:
 PIN 1. ANODE
 2. ANODE
 3. CATHODE

STYLE 24:
 PIN 1. GATE
 2. DRAIN
 3. SOURCE

STYLE 25:
 PIN 1. ANODE
 2. CATHODE
 3. GATE

STYLE 26:
 PIN 1. CATHODE
 2. ANODE
 3. NO CONNECTION

STYLE 27:
 PIN 1. CATHODE
 2. CATHODE
 3. CATHODE

STYLE 28:
 PIN 1. ANODE
 2. ANODE
 3. ANODE

DOCUMENT NUMBER:	98ASB42226B	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	SOT-23 (TO-236)	PAGE 2 OF 2

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.

onsemi, **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