

## 阅读申明

- 1.本站收集的数据手册和产品资料都来自互联网，版权归原作者所有。如读者和版权方有任何异议请及时告之，我们将妥善解决。
- 2.本站提供的中文数据手册是英文数据手册的中文翻译，其目的是协助用户阅读，该译文无法自动跟随原稿更新，同时也可能存在翻译上的不当。建议读者以英文原稿为参考以便获得更精准的信息。
- 3.本站提供的产品资料，来自厂商的技术支持或者使用者的心得体会等，其内容可能存在描述上的差异，建议读者做出适当判断。
- 4.如需与我们联系，请发邮件到marketing@iczoom.com，主题请标有“数据手册”字样。

## Read Statement

1. The datasheets and other product information on the site are all from network reference or other public materials, and the copyright belongs to the original author and original published source. If readers and copyright owners have any objections, please contact us and we will deal with it in a timely manner.
2. The Chinese datasheets provided on the website is a Chinese translation of the English datasheets. Its purpose is for reader's learning exchange only and do not involve commercial purposes. The translation cannot be automatically updated with the original manuscript, and there may also be improper translations. Readers are advised to use the English manuscript as a reference for more accurate information.
3. All product information provided on the website refer to solutions from manufacturers' technical support or users the contents may have differences in description, and readers are advised to take the original article as the standard.
4. If you have any questions, please contact us at marketing@iczoom.com and mark the subject with "Datasheets" .

# MC12026A

## 1.1 GHz Dual Modulus Prescaler

### Description

The MC12026A is a high frequency, low voltage dual modulus prescaler used in phase-locked loop (PLL) applications.

The MC12026A can be used with CMOS synthesizers requiring positive edges to trigger internal counters in a PLL to provide tuning signals up to 1.1 GHz in programmable frequency steps.

A Divide Ratio Control (SW) permits selection of an 8/9 or 16/17 divide ratio as desired.

The Modulus Control (MC) selects the proper divide number after SW has been biased to select the desired divide ratio.

### Features

- 1.1 GHz Toggle Frequency
- Supply Voltage 4.5 to 5.5 V
- Low Power 4.0 mA Typical
- Operating Temperature Range of  $-40$  to  $85^{\circ}\text{C}$
- The MC12026 is Pin Compatible with the MC12022
- Short Setup Time ( $t_{\text{set}}$ ) 6.0 ns Typical @ 1.1 GHz
- Modulus Control Input Level is Compatible with Standard CMOS and TTL
- These Devices are Pb-Free, Halogen Free and are RoHS Compliant

**Table 1. FUNCTIONAL TABLE**

SW	MC	Divide Ratio
H	H	8
H	L	9
L	H	16
L	L	17

1. SW: H =  $V_{\text{CC}}$ , L = Open. A logic L can also be applied by grounding this pin, but this is not recommended due to increased power consumption.
2. MC: H = 2.0 V to  $V_{\text{CC}}$ , L = GND to 0.8 V.

**Table 2. MAXIMUM RATINGS**

Characteristics	Symbol	Value	Unit
Power Supply Voltage, Pin 2	$V_{\text{CC}}$	$-0.5$ to $7.0$	Vdc
Operating Temperature Range	$T_{\text{A}}$	$-40$ to $85$	$^{\circ}\text{C}$
Storage Temperature Range	$T_{\text{stg}}$	$-65$ to $150$	$^{\circ}\text{C}$
Modulus Control Input, Pin 6	MC	$-0.5$ to $6.5$	Vdc
Maximum Output Current, Pin 4	$I_{\text{O}}$	10.0	mA

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.

NOTE: ESD data available upon request.



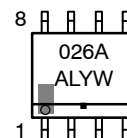
**ON Semiconductor**<sup>TM</sup>

[www.onsemi.com](http://www.onsemi.com)



**SOIC-8 NB  
D SUFFIX  
CASE  
751-07**

### MARKING DIAGRAM\*

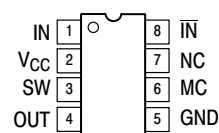


- A = Assembly Location
- L = Wafer Lot
- Y = Year
- W = Work Week
- = Pb-Free Package

(Note: Microdot may be in either location)

\*For additional marking information, refer to Application Note [AND8002/D](#).

### PIN CONNECTIONS



(Top View)

### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
MC12026ADG	SOIC-8 NB (Pb-Free)	98 Units/Tube
MC12026ADR2G	SOIC-8 NB (Pb-Free)	2500/Tape & Reel

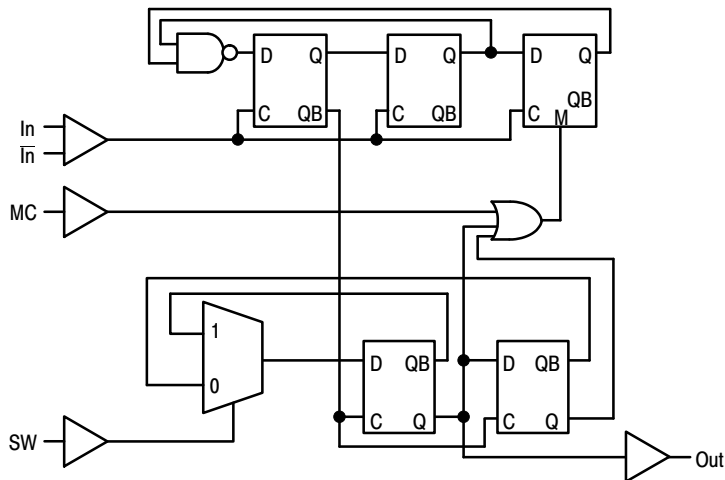
<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](#).

# MC12026A

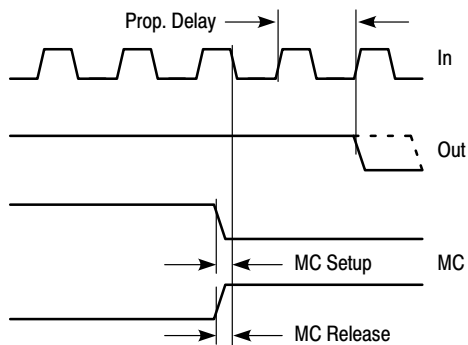
**Table 3. ELECTRICAL CHARACTERISTICS** ( $V_{CC} = 4.5$  to  $5.5$ ;  $T_A = -40$  to  $85^\circ\text{C}$ , unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Toggle Frequency (Sin Wave)	$f_t$	0.1	1.4	1.1	GHz
Supply Current Output Unloaded (Pin 2)	$I_{CC}$	-	4.0	5.3	mA
Modulus Control Input High (MC)	$V_{IH1}$	2.0	-	$V_{CC}$	V
Modulus Control Input Low (MC)	$V_{IL1}$	GND	-	0.8	V
Divide Ratio Control Input High (SW)	$V_{IH2}$	$V_{CC} - 0.5$ V	$V_{CC}$	$V_{CC} + 0.5$ V	V
Divide Ratio Control Input Low (SW)	$V_{IL2}$	OPEN	OPEN	OPEN	-
Output Voltage Swing ( $R_L = 560 \Omega$ ; $I_O = 5.5$ mA) (Note 1) ( $R_L = 1.1$ k $\Omega$ ; $I_O = 2.9$ mA) (Note 2)	$V_{out}$	1.0	1.6	-	$V_{pp}$
Modulus Setup Time MC to Out (Note 3)	$t_{SET}$	-	6.0	9.0	ns
Input Voltage Sensitivity 100–250 MHz 250–1100 MHz	$V_{in}$	400 100	- -	1000 1000	mVpp

1. Divide Ratio of +8/9 at 1.1 GHz,  $C_L = 8.0$  pF.
2. Divide Ratio of +16/17 at 1.1 GHz,  $C_L = 8.0$  pF.
3. Assuming  $R_L = 560 \Omega$  at 1.1 GHz.



**Figure 1. Logic Diagram (MC12026A)**



Modulus setup time MC to out is the MC setup or MC release plus the prop delay.

**Figure 2. Modulus Setup Time**

# MC12026A

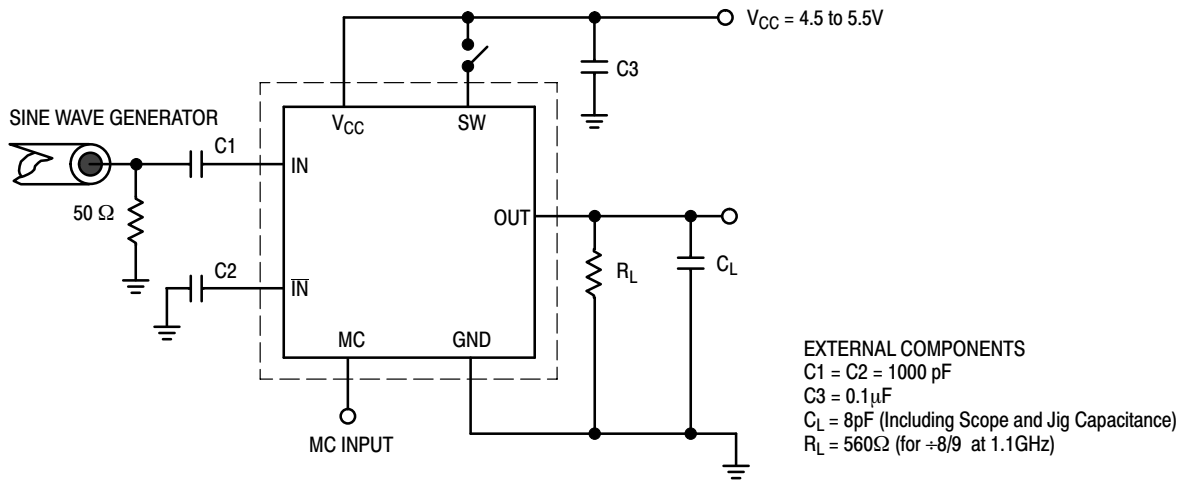


Figure 3. AC Test Circuit

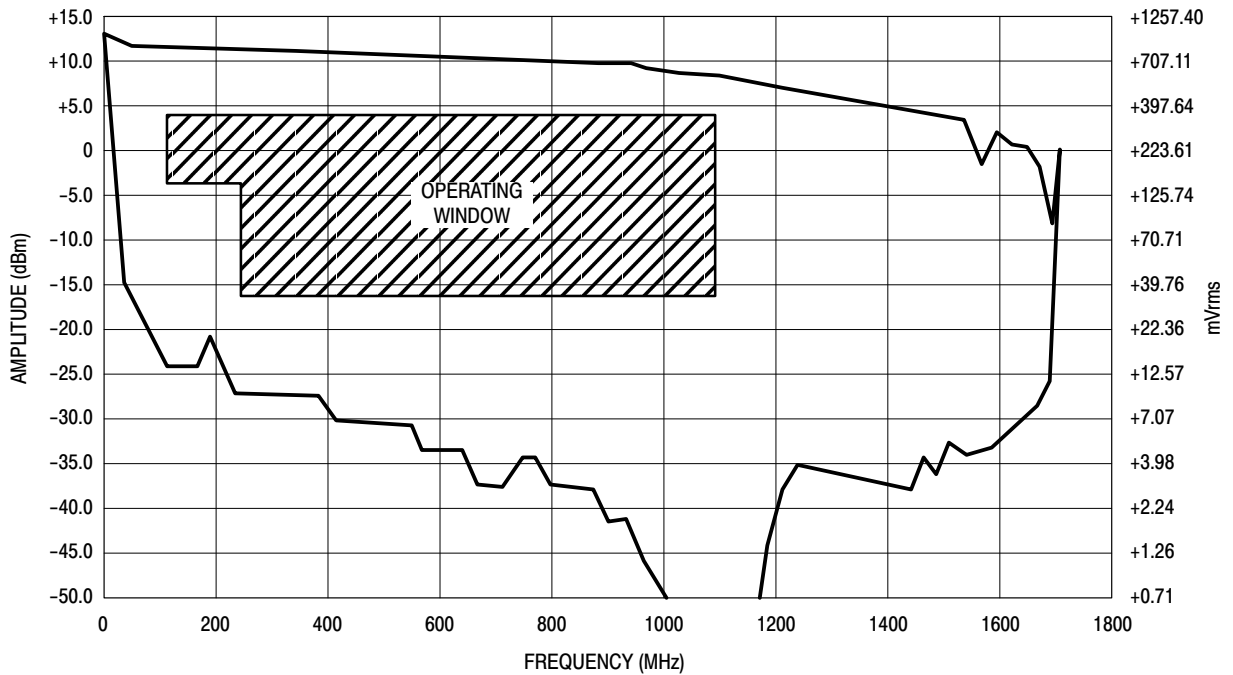


Figure 4. Input Signal Amplitude Versus Input Frequency

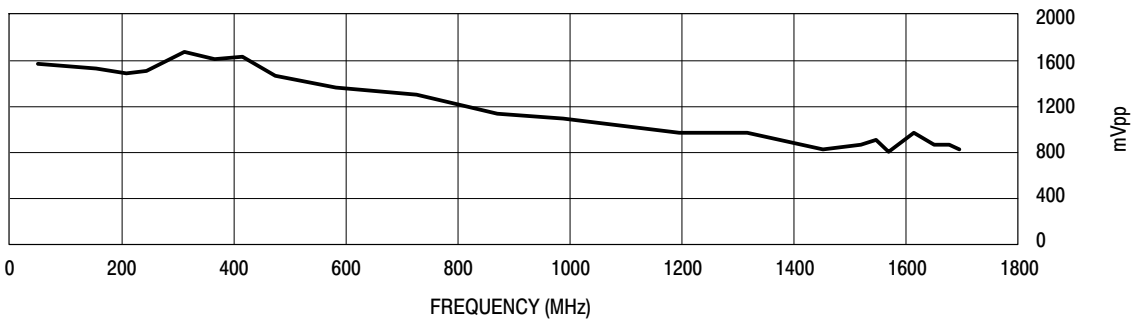
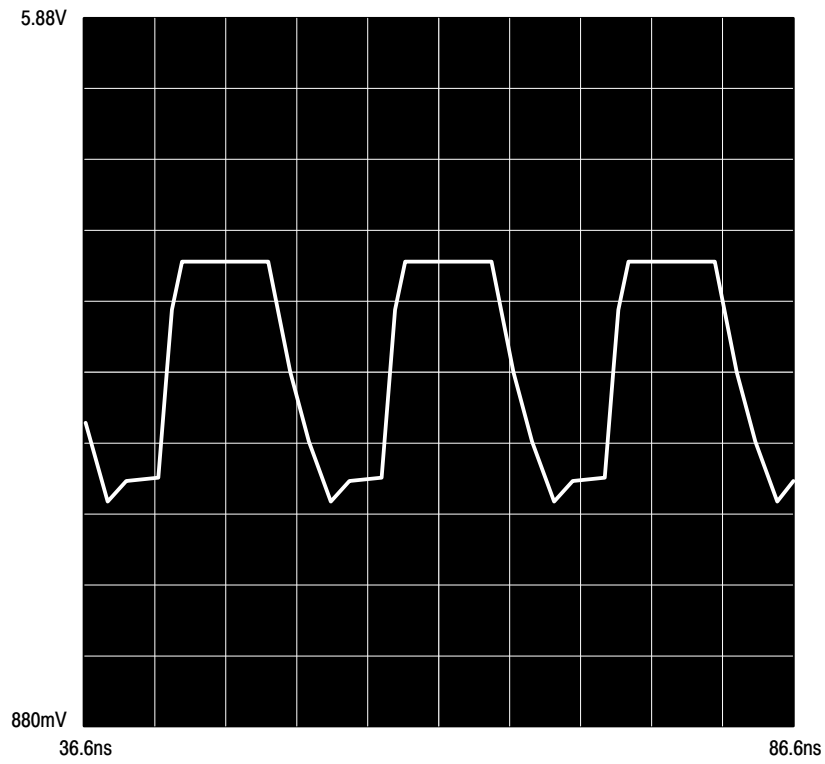


Figure 5. Output Amplitude Versus Input Frequency

# MC12026A



(±8, 1.1 GHz Input Frequency,  $V_{CC} = 5.0$ ,  $T_A = 25^\circ\text{C}$ , Output Loaded With 8.0pF)

**Figure 6. Typical Output Waveform**

# MC12026A

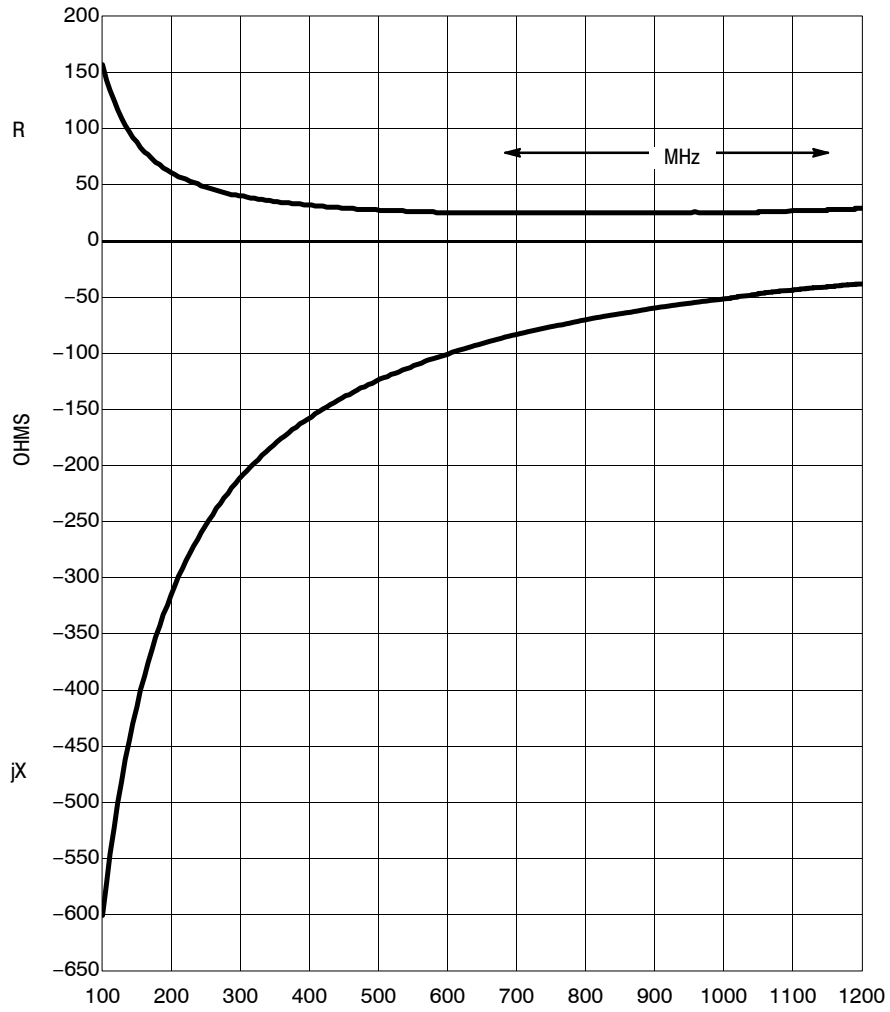
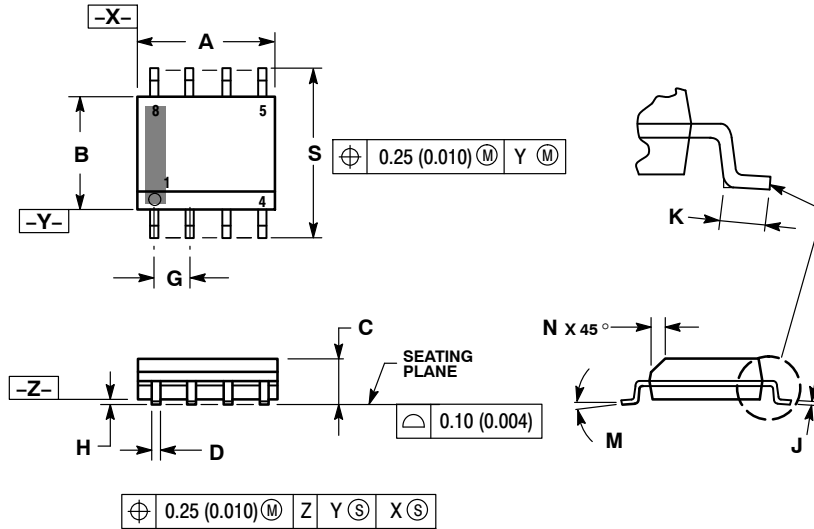


Figure 7. Typical Input Impedance Versus Input Frequency

# MC12026A

## PACKAGE DIMENSIONS

SOIC-8 NB  
CASE 751-07  
ISSUE AK

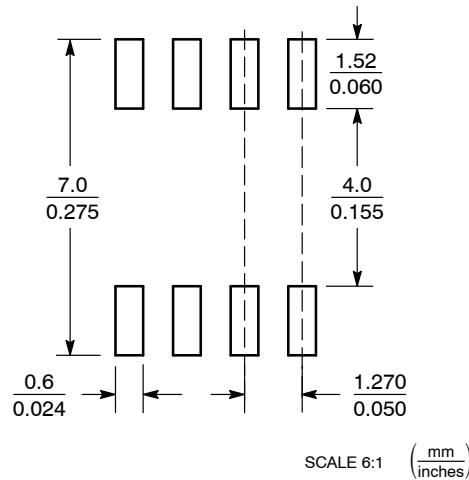


**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.
6. 751-01 THRU 751-06 ARE OBSOLETE. NEW STANDARD IS 751-07.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.80	5.00	0.189	0.197
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.053	0.069
D	0.33	0.51	0.013	0.020
G	1.27 BSC		0.050 BSC	
H	0.10	0.25	0.004	0.010
J	0.19	0.25	0.007	0.010
K	0.40	1.27	0.016	0.050
M	0°	8°	0°	8°
N	0.25	0.50	0.010	0.020
S	5.80	6.20	0.228	0.244

### SOLDERING FOOTPRINT\*



\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, [SOLDDERM/D](#).

ECLinPS is a registered trademark of Semiconductor Components Industries, LLC (SCILLC) or its subsidiaries in the United States and/or other countries.

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 owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). 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. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor 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. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor 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 ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor 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 ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor 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  
19521 E. 32nd Pkwy, Aurora, Colorado 80011 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](mailto: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: 81-3-5817-1050

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