

**SKYWORKS™**

101568C  
July 18, 2002

# Tape and Reel

Application Note

**Product Affected:** Power Amplifier Modules

## TAPE and REEL INFORMATION

Production quantities of Power Amplifier Modules (PAM) are shipped in standard tape and reel formats. The following illustrations show the various formats with tape and reel dimensions for current module sizes.



## Electrostatic Discharge Sensitivity

The electrical and triboelectrical properties of 3M™ Conductive 3000 Polycarbonate Carrier have been engineered to help provide protection of static-sensitive components through an effective balance between the electrostatic shielding and electrostatic decay properties of the carrier. The 3M 3000 Polycarbonate Carrier is electrically conductive, exhibiting a nominal surface resistivity in the pocket of  $\geq 10^4 \Omega/\text{square}$  and  $\leq 10^8 \Omega/\text{square}$ . The surface resistance of 3000 minimizes  $dV/dt$ , affording ESD protection to devices in Classes I through III. 3M 3000 Polycarbonate Carrier also exhibits triboelectrical properties, which may be appropriate for packaging electrostatically-sensitive components.

**Table 1. Classes of ESDS Parts**

ESD Model	ESD Class	(Voltage Range)
HBM	I	> 0 V–1,999 V
	II	2,000 V–3,999 V
	III	4000 V–15,999 V

**Table 2. Static Shielding Foil Moisture Vapor Barrier Bag**

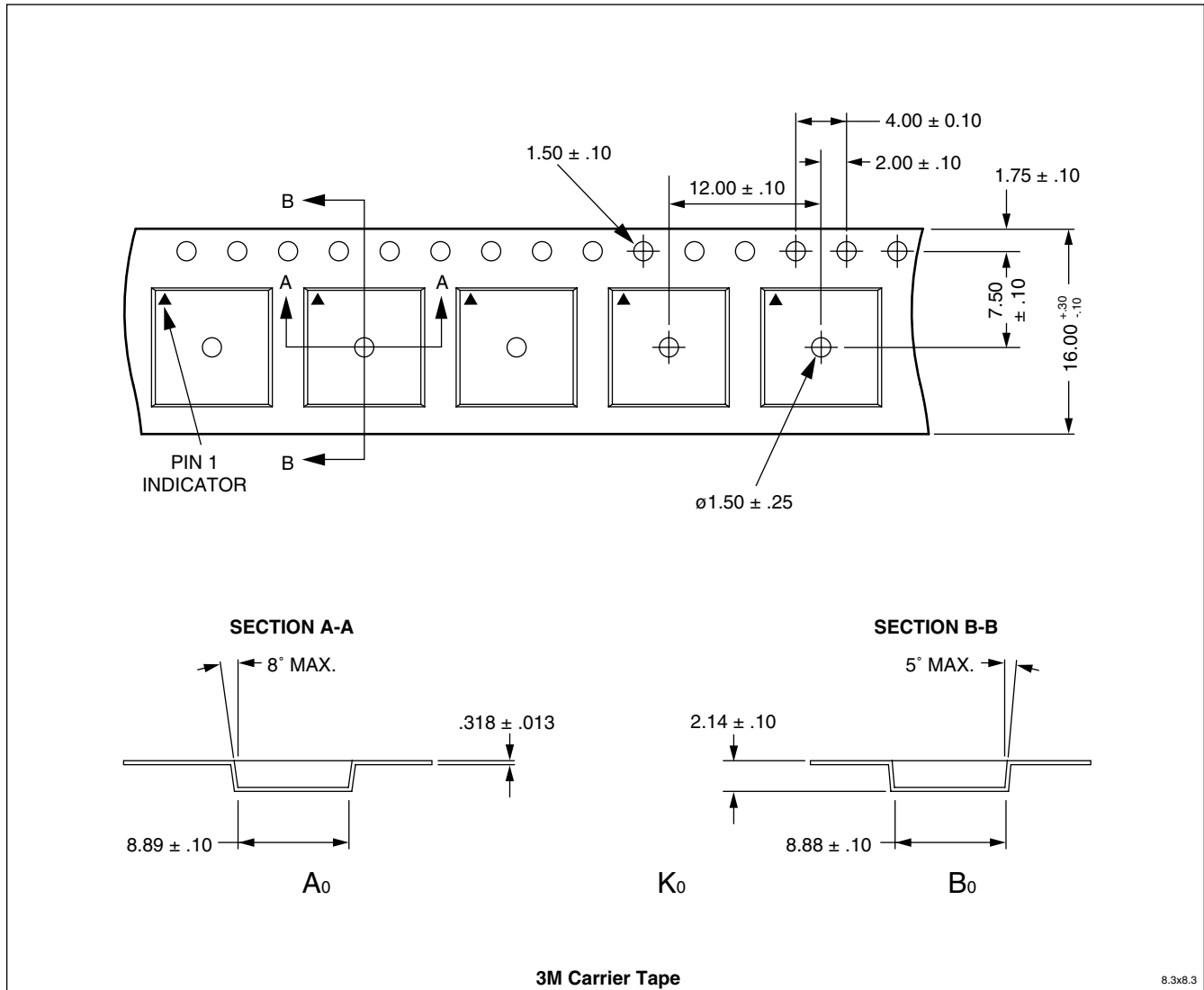
Electrical Properties	Method	Units	Typical Value
Surface Resistance	EOS/ESD S11.11	ohms	In 1.0E+11
			Out 1.0E+11
Static Decay	FTMS 101C/METHOD 4046	Sec.	+ 0.01 – 0.01
Energy Test	EOS/ESD S11.31	nano-Joules	10







Figure 3. Tape and Reel Format – 8.3 mm x 8.3 mm



3M Carrier Tape

8.3x8.3

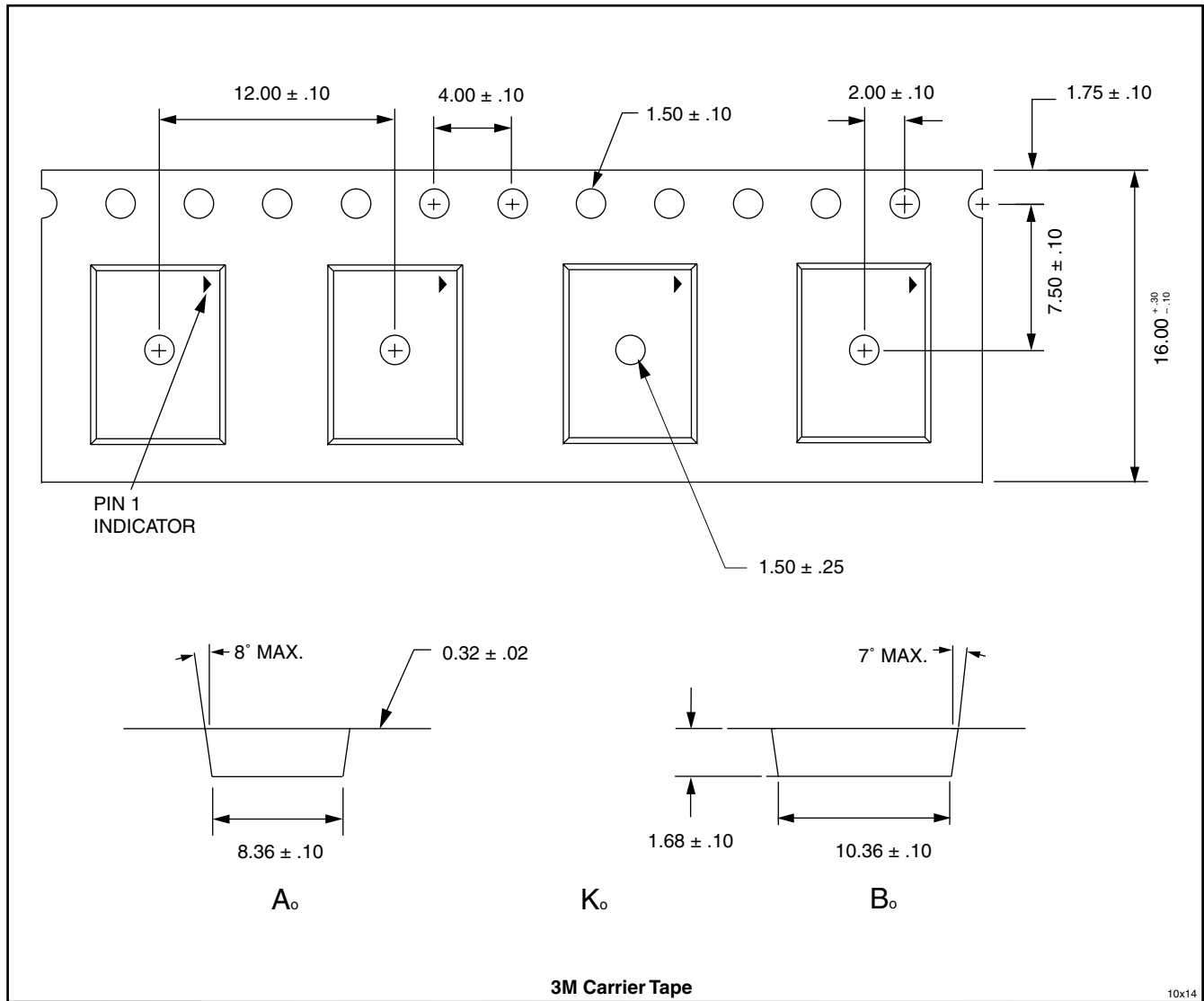
**NOTE(S):**

1. Carrier tape material: Black conductive polycarbonate
2. Carrier tape part number: US 039 321
3. Cover tape material: Conductive Pressure Sensitive Adhesive (PSA)
4. Cover tape width: 13.3 mm
5. Number of parts per 330 mm (diameter) x 16 mm wide reel: 2000
6. All diagram dimensions in millimeters

101568\_002



Figure 4. Tape and Reel Format – 8 mm x 10 mm



10x14

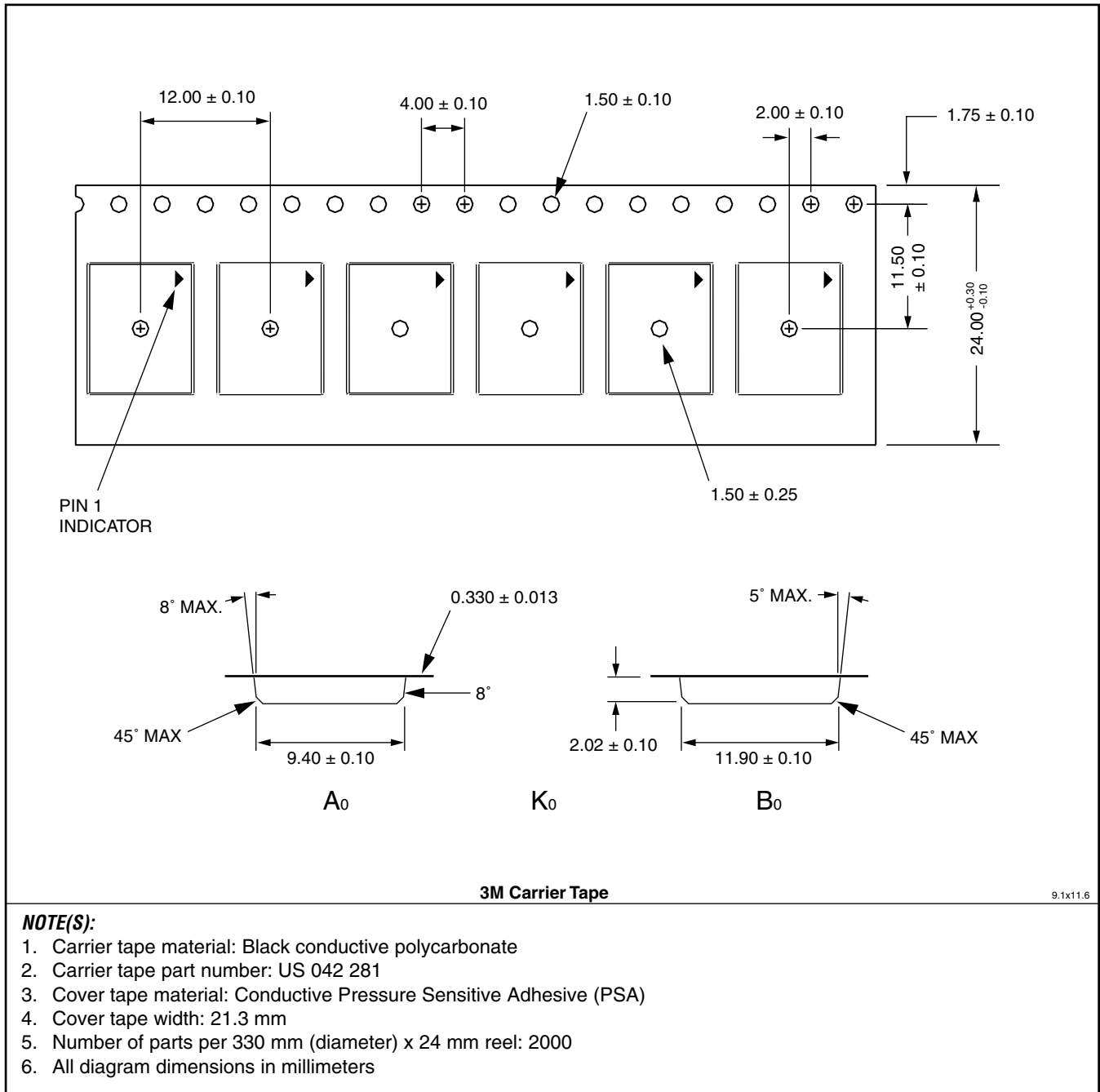
**NOTES:**

1. Carrier tape material: Black conductive polycarbonate.
2. Carrier tape part No.: 3M068051
3. Cover tape material: Conductive Pressure Sensitive Adhesive (PSA)
4. Cover tape width: 13.3 mm
5. Number of parts per 330 mm (diameter) x 16 mm reel: 2000
6. All diagram dimensions in millimeters

101568\_006



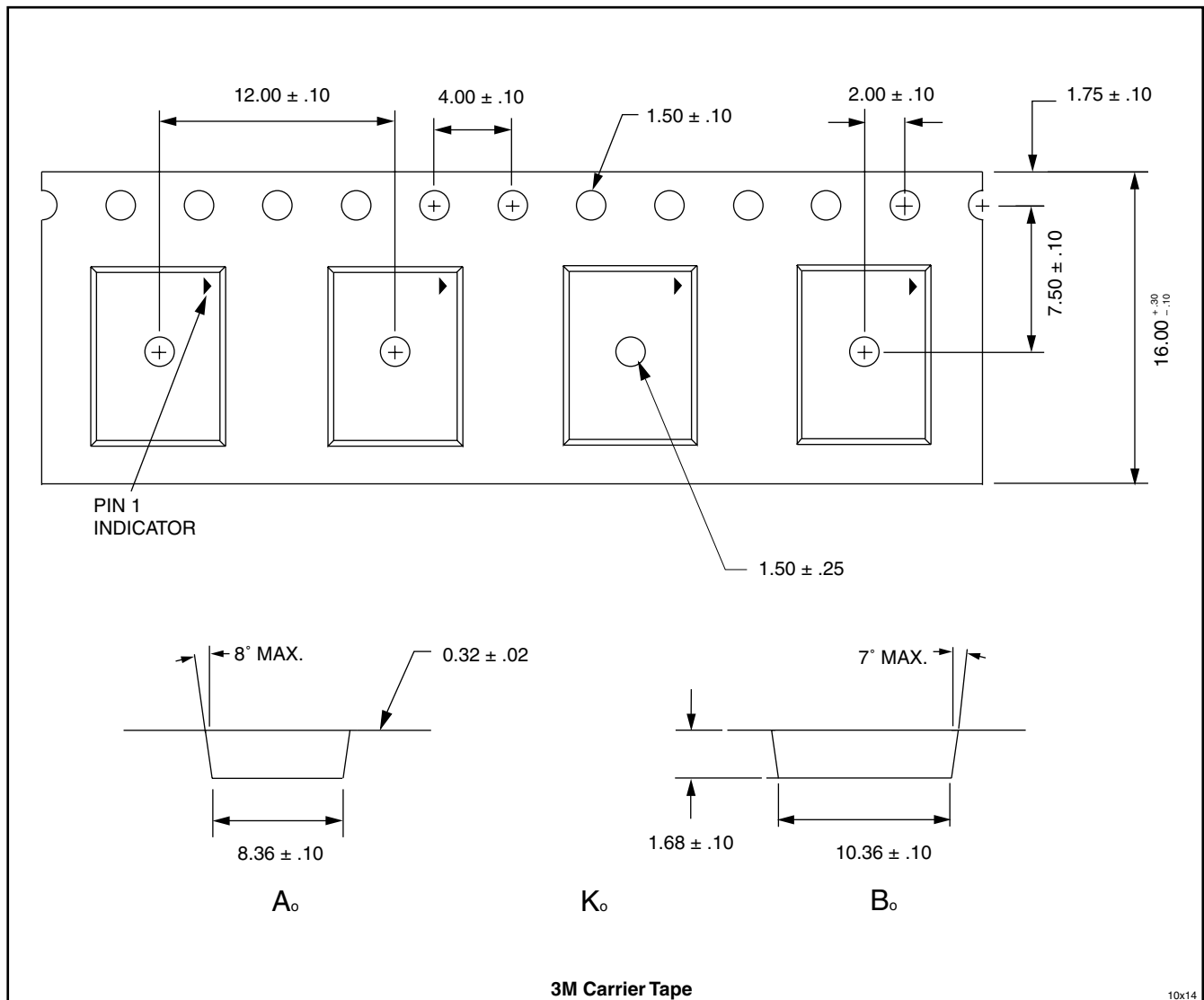
Figure 5. Tape and Reel Format – 9.1 mm x 11.6 mm



101568\_003



Figure 6. Tape and Reel Format – 10 mm x 14 mm



10x14

**NOTES:**

1. Carrier tape material: Black conductive polycarbonate.
2. Carrier tape part No.: 3M068051
3. Cover tape material: Conductive Pressure Sensitive Adhesive (PSA)
4. Cover tape width: 13.3 mm
5. Number of parts per 330 mm (diameter) x 16 mm reel: 2000
6. All diagram dimensions in millimeters

101568\_006





## Revision History

Revision	Level	Date	Description
A		April 24, 2002	Add: 4 x 4mm and 8 x 10 mm Tape and Reel Dwgs
B		May 10, 2002	Add: ESD information
C		July 12, 2002	Add: Table 2

## References

3M™ is a trademark of the 3M Company, Minnesota Mining and Manufacturing.

© 2001, 2002, Skyworks Solutions, Inc. All Rights Reserved.

Information in this document is provided in connection with Skyworks Solutions, Inc. ("Skyworks") products. These materials are provided by Skyworks as a service to its customers and may be used for informational purposes only. Skyworks assumes no responsibility for errors or omissions in these materials. Skyworks may make changes to its products, specifications and product descriptions at any time, without notice. Skyworks makes no commitment to update the information and shall have no responsibility whatsoever for conflicts, incompatibilities, or other difficulties arising from future changes to its products and product descriptions.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as may be provided in Skyworks' Terms and Conditions of Sale for such products, Skyworks assumes no liability whatsoever.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF SKYWORKS™ PRODUCTS INCLUDING WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, PERFORMANCE, QUALITY OR NON-INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. SKYWORKS FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. SKYWORKS SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS THAT MAY RESULT FROM THE USE OF THESE MATERIALS.

Skyworks™ products are not intended for use in medical, lifesaving or life-sustaining applications. Skyworks' customers using or selling Skyworks™ products for use in such applications do so at their own risk and agree to fully indemnify Skyworks for any damages resulting from such improper use or sale.

The following are trademarks of Skyworks Solutions, Inc.: Skyworks™, the Skyworks symbol, and "Breakthrough Simplicity"™. Product names or services listed in this publication are for identification purposes only, and may be trademarks of third parties. Third-party brands and names are the property of their respective owners.

Additional information, posted at [www.skyworksinc.com](http://www.skyworksinc.com), is incorporated by reference.



General Information:  
Skyworks Solutions, Inc.  
4311 Jamboree Rd.  
Newport Beach, CA. 92660-3007  
[www.skyworksinc.com](http://www.skyworksinc.com)

