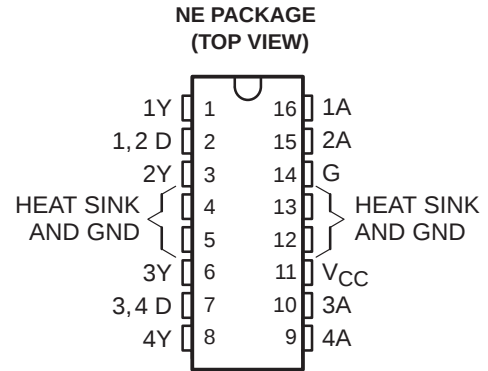


- **Saturating Outputs With Low On-State Resistance**
- **High-Impedance Inputs Compatible With CMOS and TTL Levels**
- **Very Low Standby Power . . . 21 mW Max**
- **High-Voltage Outputs . . . 70 V Min**
- **No Power-Up or Power-Down Output Glitch**
- **No Latch-Up Within Recommended Operating Conditions**
- **Output-Clamp Diodes for Transient Suppression**
- **Packaged in 2-W Power, Thermally Enhanced Plastic DIP**



## description

The SN75437A quadruple peripheral driver is designed for use in systems requiring high current, high voltage, and high load power. This device features four inverting open-collector outputs with a common-enable (G) input that, when taken low, disables all four outputs. The envelope of 1-V characteristics exceeds the specifications sufficiently to avoid high-current latch-up. Applications include driving relays, lamps, solenoids, motors, LEDs, transmission lines, hammers, and other high-power-demand devices.

The SN75437A is characterized for operation over the free-air temperature range of 0°C to 70°C.

**FUNCTION TABLE  
(each NAND driver)**

| INPUTS |   | OUTPUT |
|--------|---|--------|
| A      | G | Y      |
| H      | H | L      |
| L      | X | H      |
| X      | L | H      |

H = high level, L = low level,  
X = irrelevant



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

 **TEXAS  
INSTRUMENTS**

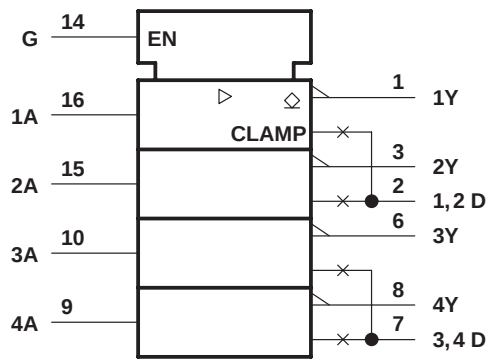
POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

Copyright © 2000, Texas Instruments Incorporated

SN75437A  
QUADRUPLE PERIPHERAL DRIVER

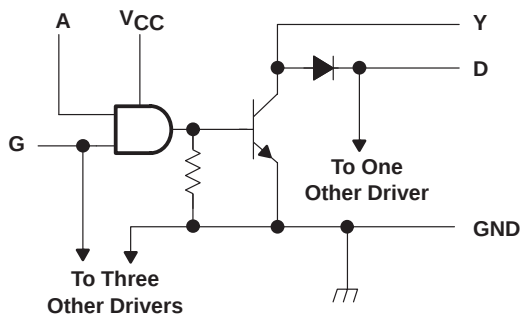
SLRS019B – DECEMBER 1986 – REVISED SEPTEMBER 2000

logic diagram (positive logic)<sup>†</sup>

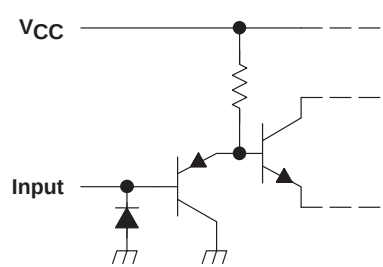


<sup>†</sup> This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC publication 617-12.

logic diagram (positive logic, each driver)



equivalent schematic of each input



absolute maximum ratings over operating temperature range (unless otherwise noted)

|                                                                                         |                |
|-----------------------------------------------------------------------------------------|----------------|
| Supply voltage, $V_{CC}$                                                                | 7 V            |
| Input voltage, $V_I$                                                                    | 30 V           |
| Output current (see Note 1)                                                             | 0.75 A         |
| Output clamp-diode current, $I_{OK}$                                                    | 1.25 A         |
| Output voltage, $V_O$ (off state)                                                       | 70 V           |
| Continuous total power dissipation at (or below) 25°C free-air temperature (see Note 2) | 2075 mW        |
| Lead temperature 1,6 mm (1/16-inch) from case for 10 seconds                            | 260°C          |
| Storage temperature range, $T_{stg}$                                                    | –65°C to 150°C |

- NOTES: 1. All four sections of these circuits may conduct rated current simultaneously; however, power dissipation averaged over a short time interval must fall within the continuous dissipation ratings.  
2. For operation above 25°C free-air temperature, derate linearly to 1328 mW at 70°C at the rate of 16.6 mW/°C.

recommended operating conditions

| PARAMETER                                                                  | MIN  | NOM | MAX  | UNIT |
|----------------------------------------------------------------------------|------|-----|------|------|
| Supply voltage, $V_{CC}$                                                   | 4.75 | 5   | 5.25 | V    |
| High-level input voltage, $V_{IH}$                                         | 2    |     |      | V    |
| Low-level input voltage, $V_{IL}$                                          |      |     | 0.8  | V    |
| Output supply voltage in inductive switching circuit (see Figure 2), $V_S$ |      |     | 35   | V    |
| Output current, $I_O$                                                      |      |     | 0.5  | A    |
| Operating free-air temperature, $T_A$                                      | 0    |     | 70   | °C   |

**electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)**

| PARAMETER         |                                    | TEST CONDITIONS                                       |                                                  | MIN   | TYP <sup>†</sup> | MAX | UNIT |
|-------------------|------------------------------------|-------------------------------------------------------|--------------------------------------------------|-------|------------------|-----|------|
| V <sub>IK</sub>   | Input clamp voltage                | V <sub>CC</sub> = 4.75 V,                             | I <sub>I</sub> = –12 mA                          | –0.9  | –1.5             |     | V    |
| V <sub>OL</sub>   | Low-level output voltage           | V <sub>CC</sub> = 4.75 V,<br>V <sub>IH</sub> = 2 V    | I <sub>OL</sub> = 250 mA                         | 0.14  | 0.25             |     | V    |
|                   |                                    |                                                       | I <sub>OL</sub> = 500 mA                         | 0.28  | 0.5              |     |      |
| V <sub>R(K)</sub> | Output clamp-diode reverse voltage | V <sub>CC</sub> = 4.75 V,                             | I <sub>R</sub> = 100 μA                          | 70    | 100              |     | V    |
| V <sub>F(K)</sub> | Output clamp-diode forward voltage | I <sub>F</sub> = 500 mA                               |                                                  | 1     | 1.6              |     | V    |
| I <sub>OH</sub>   | High-level output current          | V <sub>CC</sub> = 4.75 V,<br>V <sub>IL</sub> = 0.8 V, | V <sub>IH</sub> = 2 V,<br>V <sub>OH</sub> = 70 V | 1     | 100              |     | μA   |
| I <sub>IH</sub>   | High-level input current           | V <sub>CC</sub> = 5.25 V,                             | V <sub>I</sub> = 5.25 V                          | 0.1   | 10               |     | μA   |
| I <sub>IL</sub>   | Low-level input current            | V <sub>CC</sub> = 5.25 V,                             | V <sub>I</sub> = 0.8 V                           | –0.25 | –10              |     | μA   |
| I <sub>CCH</sub>  | Supply current, outputs high       | V <sub>CC</sub> = 5.25 V,                             | V <sub>I</sub> = 0                               | 1     | 4                |     | mA   |
| I <sub>CCL</sub>  | Supply current, outputs low        | V <sub>CC</sub> = 5.25 V,                             | V <sub>I</sub> = 5 V                             | 45    | 65               |     | mA   |

<sup>†</sup> All typical values are at V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C.

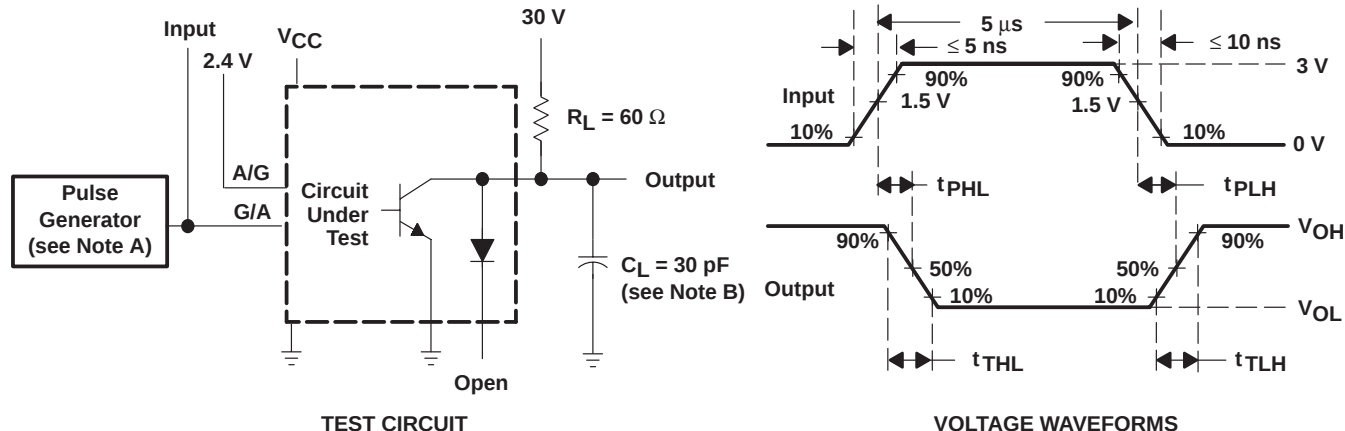
**switching characteristics, V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C**

| PARAMETER        |                                                  | TEST CONDITIONS                                                |                                          | MIN                 | TYP  | MAX  | UNIT |
|------------------|--------------------------------------------------|----------------------------------------------------------------|------------------------------------------|---------------------|------|------|------|
| t <sub>PLH</sub> | Propagation delay time, low-to-high-level output | C <sub>L</sub> = 30 pF, R <sub>L</sub> = 60 Ω,<br>See Figure 1 |                                          |                     | 1950 | 5000 | ns   |
| t <sub>PHL</sub> | Propagation delay time, high-to-low-level output |                                                                |                                          |                     | 150  | 500  | ns   |
| t <sub>TLH</sub> | Transition time, low-to-high-level output        |                                                                |                                          |                     | 40   |      | ns   |
| t <sub>THL</sub> | Transition time, high-to-low-level output        |                                                                |                                          |                     | 36   |      | ns   |
| V <sub>OH</sub>  | High-level output voltage after switching        | V <sub>S</sub> = 35 V,<br>R <sub>L</sub> = 70 Ω,               | I <sub>O</sub> ≈ 500 mA,<br>See Figure 2 | V <sub>S</sub> – 10 |      |      | mV   |

# SN75437A QUADRUPLE PERIPHERAL DRIVER

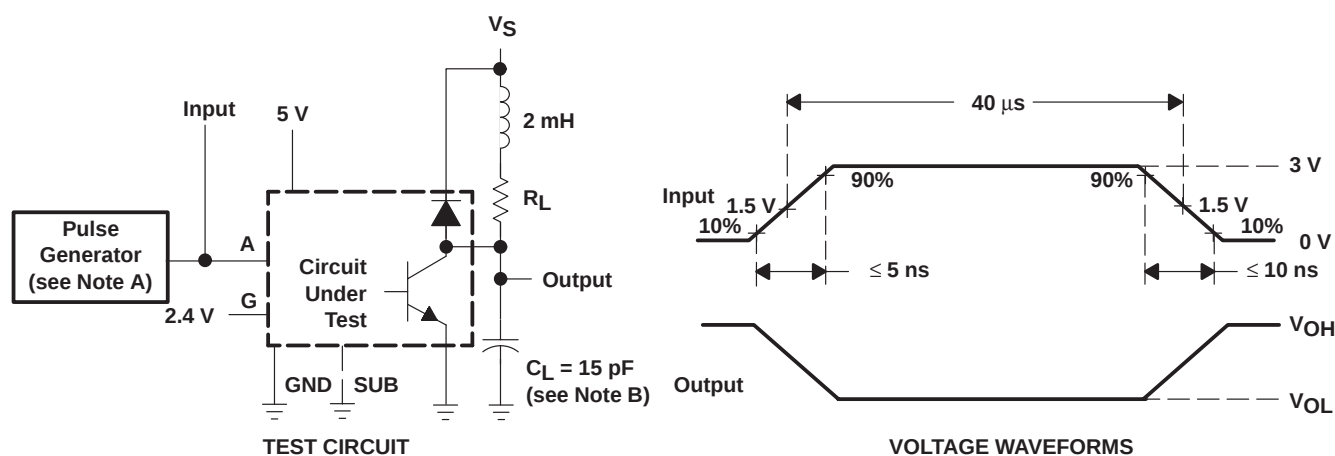
SLRS019B – DECEMBER 1986 – REVISED SEPTEMBER 2000

## PARAMETER MEASUREMENT INFORMATION



NOTES: A. The pulse generator has the following characteristics: PRR = 100 kHz,  $Z_O = 50 \Omega$ .  
B.  $C_L$  includes probe and jig capacitance.

Figure 1. Test Circuit and Voltage Waveforms



NOTES: A. The pulse generator has the following characteristics: PRR = 12.5 kHz,  $Z_O = 50 \Omega$ .  
B.  $C_L$  includes probe and jig capacitance.

Figure 2. Latch-Up Test Circuit and Voltage Waveforms

## PACKAGING INFORMATION

| Orderable Device | Status <sup>(1)</sup> | Package Type | Package Drawing | Pins | Package Qty | Eco Plan <sup>(2)</sup> | Lead/Ball Finish | MSL Peak Temp <sup>(3)</sup> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| SN75437ANE       | ACTIVE                | PDIP         | NE              | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |
| SN75437ANEE4     | ACTIVE                | PDIP         | NE              | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |

<sup>(1)</sup> The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSOLETE:** TI has discontinued the production of the device.

<sup>(2)</sup> Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

<sup>(3)</sup> MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

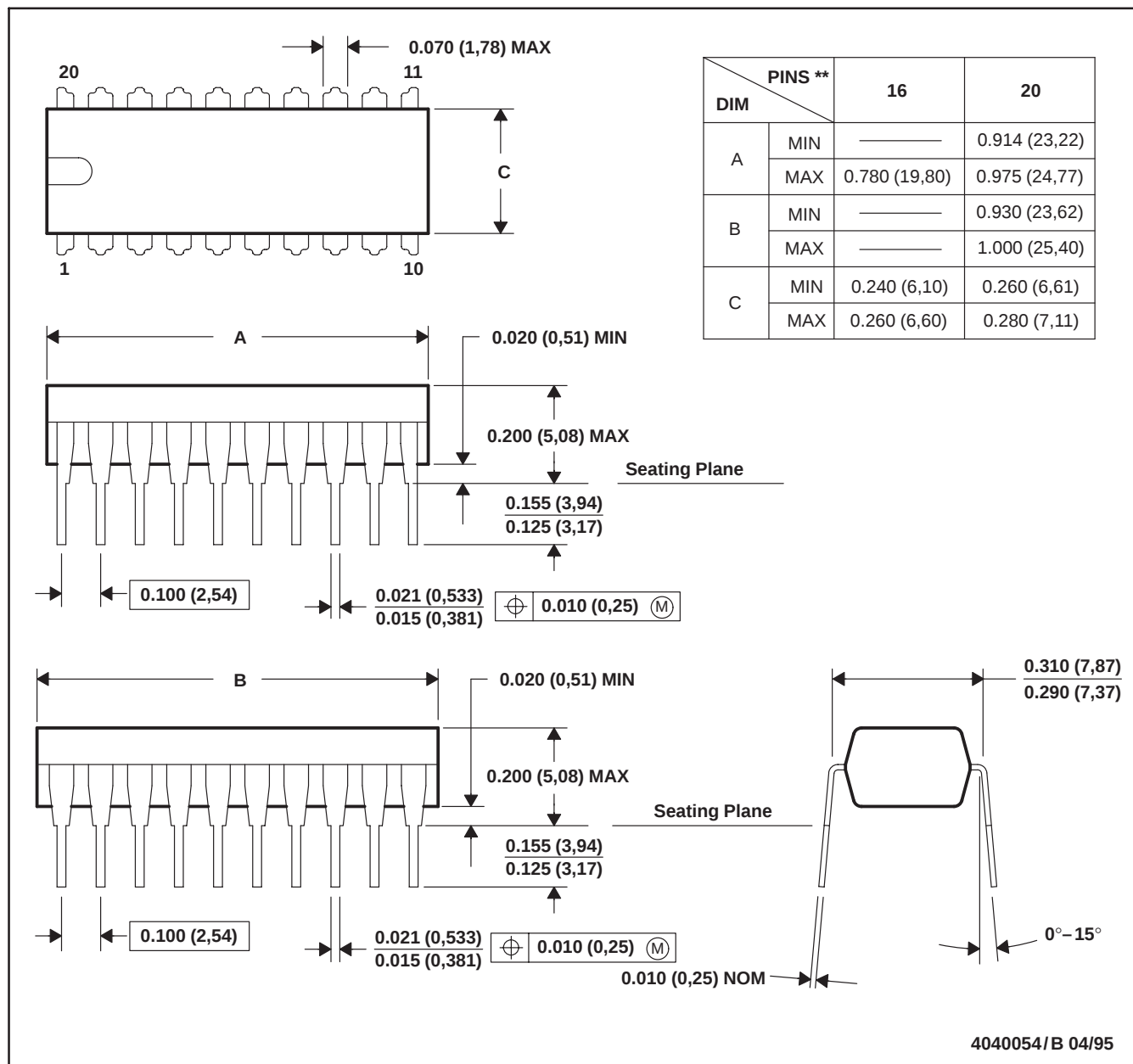
**Important Information and Disclaimer:** The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

## NE (R-PDIP-T\*\*)

## PLASTIC DUAL-IN-LINE PACKAGE

20 PIN SHOWN



- NOTES: A. All linear dimensions are in inches (millimeters).  
 B. This drawing is subject to change without notice.  
 C. Falls within JEDEC MS-001 (16 pin only)

## IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

| <b>Products</b>    |                                                                    | <b>Applications</b> |                                                                          |
|--------------------|--------------------------------------------------------------------|---------------------|--------------------------------------------------------------------------|
| Amplifiers         | <a href="http://amplifier.ti.com">amplifier.ti.com</a>             | Audio               | <a href="http://www.ti.com/audio">www.ti.com/audio</a>                   |
| Data Converters    | <a href="http://dataconverter.ti.com">dataconverter.ti.com</a>     | Automotive          | <a href="http://www.ti.com/automotive">www.ti.com/automotive</a>         |
| DSP                | <a href="http://dsp.ti.com">dsp.ti.com</a>                         | Broadband           | <a href="http://www.ti.com/broadband">www.ti.com/broadband</a>           |
| Interface          | <a href="http://interface.ti.com">interface.ti.com</a>             | Digital Control     | <a href="http://www.ti.com/digitalcontrol">www.ti.com/digitalcontrol</a> |
| Logic              | <a href="http://logic.ti.com">logic.ti.com</a>                     | Military            | <a href="http://www.ti.com/military">www.ti.com/military</a>             |
| Power Mgmt         | <a href="http://power.ti.com">power.ti.com</a>                     | Optical Networking  | <a href="http://www.ti.com/opticalnetwork">www.ti.com/opticalnetwork</a> |
| Microcontrollers   | <a href="http://microcontroller.ti.com">microcontroller.ti.com</a> | Security            | <a href="http://www.ti.com/security">www.ti.com/security</a>             |
| Low Power Wireless | <a href="http://www.ti.com/lpw">www.ti.com/lpw</a>                 | Telephony           | <a href="http://www.ti.com/telephony">www.ti.com/telephony</a>           |
|                    |                                                                    | Video & Imaging     | <a href="http://www.ti.com/video">www.ti.com/video</a>                   |
|                    |                                                                    | Wireless            | <a href="http://www.ti.com/wireless">www.ti.com/wireless</a>             |

Mailing Address: Texas Instruments  
Post Office Box 655303 Dallas, Texas 75265

Copyright © 2006, Texas Instruments Incorporated