

- Functionally Equivalent to AM29861 and AM29862
- Choice of True or Inverting Logic
- Power-Up High-Impedance State
- Package Options include Plastic Small Outline Packages, Plastic Chip Carriers, and Standard Plastic DIPs

description

These 10-bit bus transceivers are designed for asynchronous two-way communication between data buses. The control function implementation allows for maximum flexibility in timing.

These devices allow data transmission from the A bus to the B bus or from the B bus to the A bus depending upon the logic levels at the enable inputs (\overline{GAB} and \overline{GAB}).

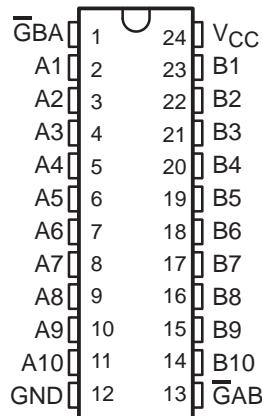
The enable inputs can be used to disable the device so that the buses are effectively isolated.

The SN74[®] family is characterized for operation from 0°C to 70°C.

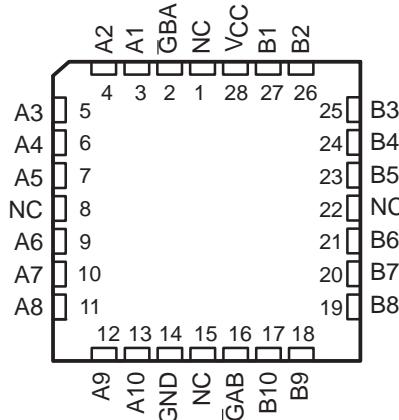
FUNCTION TABLE

INPUTS		OPERATION	
\overline{GAB}	\overline{GAB}	ALS29861	ALS29862
L	H	A to B	\overline{A} to B
H	L	B to A	\overline{B} to A
H	H	Isolation	Isolation
L	L	Latch A and B (A = B)	Latch A and B (A = \overline{B})

DW OR NT PACKAGE (TOP VIEW)



FN PACKAGE (TOP VIEW)

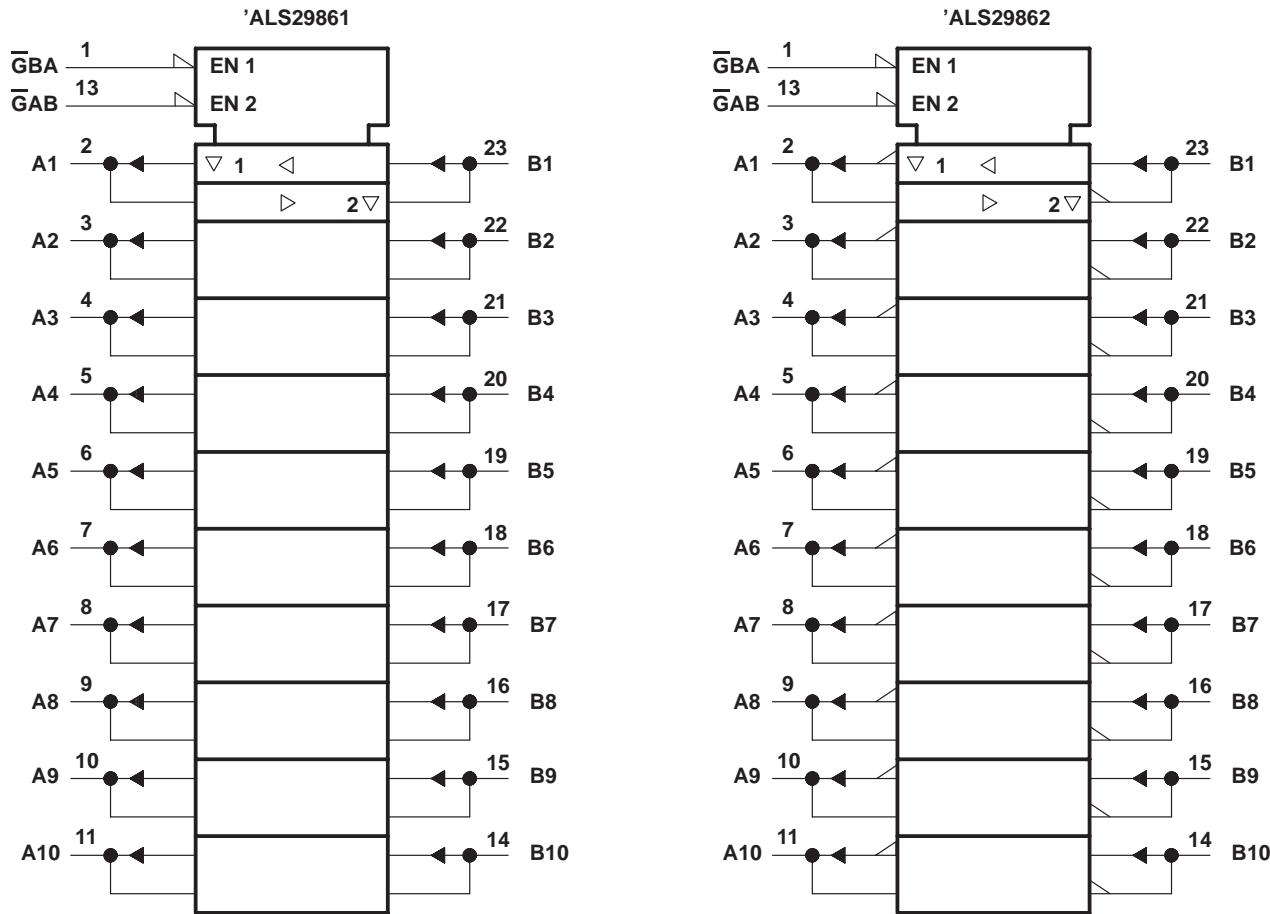


NC – No internal connection

SN74ALS29861, SN74ALS29862 10-BIT BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

SDAS097B – D2915, JANUARY 1986 – REVISED AUGUST 1988

logic symbols[†]



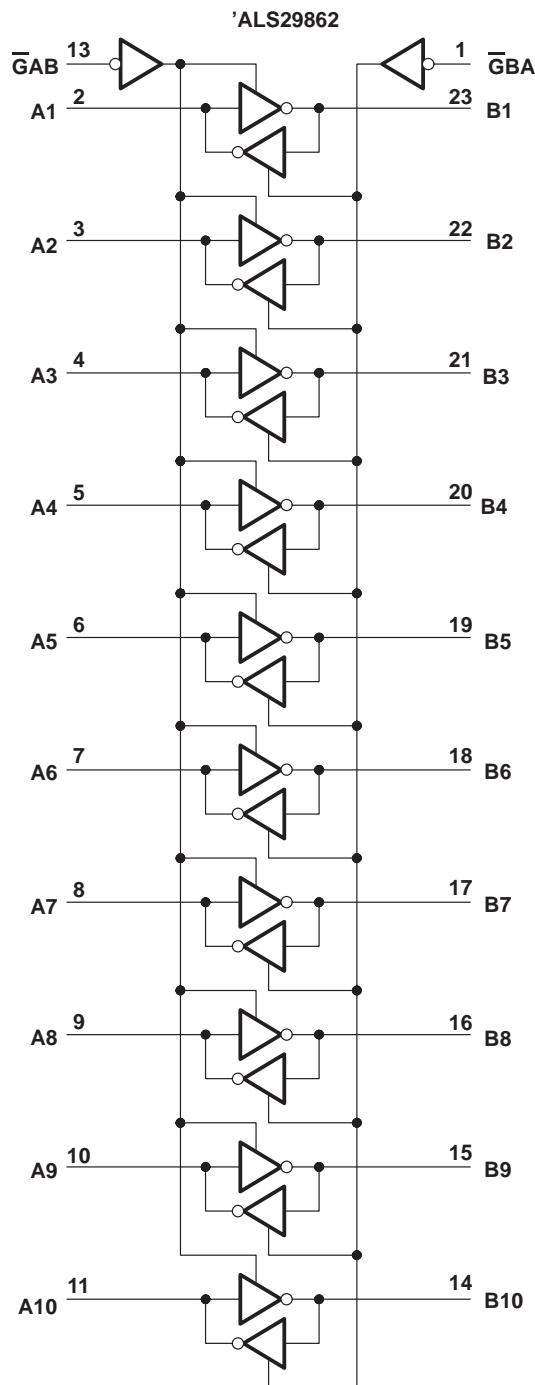
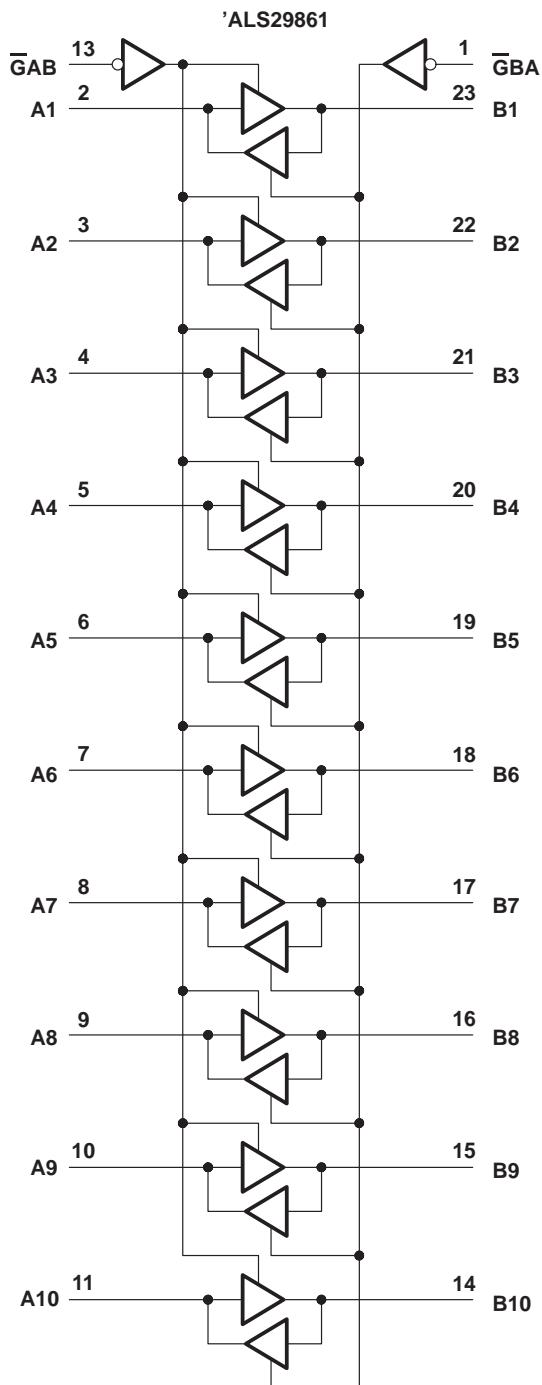
[†] These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

[‡] Pin numbers shown are for DW and NT packages.

SN74ALS29861, SN74ALS29862 10-BIT BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

SDAS097B - D2915, JANUARY 1986 - REVISED AUGUST 1988

logic diagrams



Pin numbers shown are for DW and NT packages.

SN74ALS29861, SN74ALS29862

10-BIT BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

SDAS097B – D2915, JANUARY 1986 – REVISED AUGUST 1988

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

Supply voltage, V_{CC}	7 V
Input voltage: All inputs and I/O ports	5.5 V
Operating free-air temperature range	0°C to 70°C
Storage temperature range	-65°C to 150°C

recommended operating conditions

		MIN	NOM	MAX	UNIT
V_{CC}	Supply voltage	4.75	5	5.25	V
V_{IH}	High-level input Voltage	2			V
V_{IL}	Low-level input Voltage			0.8	V
I_{OH}	High-level output current			-24	mA
I_{OL}	Low-level output current			48	mA
T_A	Operating free-air temperature	0		70	°C

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

PARAMETER	TEST CONDITIONS	MIN	TYP [†]	MAX	UNIT
V_{IK}	$V_{CC} = 4.75$ V, $I_I = -18$ mA			-1.2	V
V_{OH}	$V_{CC} = 4.75$ V, $I_{OH} = -15$ mA	2.4			V
	$V_{CC} = 4.75$ V, $I_{OH} = -24$ mA	2			
V_{OL}	$V_{CC} = 4.75$ V, $I_{OL} = 48$ mA	0.35	0.5		V
I_I	$V_{CC} = 5.25$ V, $V_I = 5.5$ V		0.1		mA
I_{IH}	Control inputs		20		μ A
	A or B ports [‡]		20		
I_{IL}	Control inputs		-0.1		mA
	A or B ports [‡]		-0.1		
$I_{OS}^§$	$V_{CC} = 5.25$ V, $V_O = 0$ V	-75	-250		mA
I_{CC}	'ALS29861		40	65	mA
	'ALS29862		40	65	

[†] All typical values are at $V_{CC} = 5$ V, $T_A = 25^\circ\text{C}$

[‡] For I/O ports, the parameters I_{IH} and I_{IL} include the off-state output current.

[§] Not more than one output should be shorted at a time and duration of the short circuit should not exceed one second.

SN74ALS29861, SN74ALS29862
10-BIT BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

SDAS097B – D2915, JANUARY 1986 – REVISED AUGUST 1988

SN74ALS29861 switching characteristics

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS See Figure 1	$V_{CC} = 5 \text{ V}$, $T_A = 25^\circ\text{C}$			UNIT
				MIN	TYP	MAX	
t_{PLH}	A or B	B or A	$C_L = 300 \text{ pF}$	8	11	15	ns
t_{PHL}				11	14	15	
t_{PLH}			$C_L = 50 \text{ pF}$	4.8	6	8	
t_{PHL}				5.2	6.2	8	
t_{PZH}	\overline{GAB} or \overline{GBA}	A or B	$C_L = 300 \text{ pF}$	11	17	20	ns
t_{PZL}				17	21	23	
t_{PZH}			$C_L = 50 \text{ pF}$	6.5	12	15	
t_{PZL}				9.5	12	15	
t_{PHZ}	\overline{GAB} or \overline{GBA}	A or B	$C_L = 50 \text{ pF}$	11.2	16	17	ns
t_{PLZ}				4.5	9	12	
t_{PHZ}			$C_L = 5 \text{ pF}$	3.5	8	9	
t_{PLZ}				3.5	8	9	

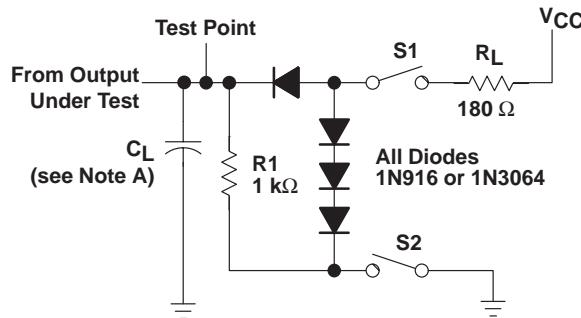
SN74ALS29862 switching characteristics

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS See Figure 1	$V_{CC} = 5 \text{ V}$, $T_A = 25^\circ\text{C}$			UNIT
				MIN	TYP	MAX	
t_{PLH}	A or B	B or A	$C_L = 300 \text{ pF}$	7.3	10	14	ns
t_{PHL}				10.5	12.9	14	
t_{PLH}			$C_L = 50 \text{ pF}$	4	5.2	7	
t_{PHL}				4.9	5.9	7.5	
t_{PZH}	\overline{GAB} or \overline{GBA}	A or B	$C_L = 300 \text{ pF}$	11	17	20	ns
t_{PZL}				17	21	23	
t_{PZH}			$C_L = 50 \text{ pF}$	6.5	12	15	
t_{PZL}				9.5	12	15	
t_{PHZ}	\overline{GAB} or \overline{GBA}	A or B	$C_L = 50 \text{ pF}$	11.2	16	17	ns
t_{PLZ}				4.5	9	12	
t_{PHZ}			$C_L = 5 \text{ pF}$	3.5	8	9	
t_{PLZ}				3.5	8	9	

SN74ALS29861, SN74ALS29862 10-BIT BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

SDAS097B – D2915, JANUARY 1986 – REVISED AUGUST 1988

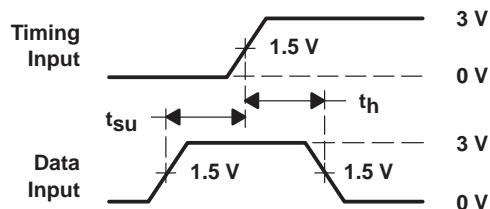
PARAMETER MEASUREMENT INFORMATION



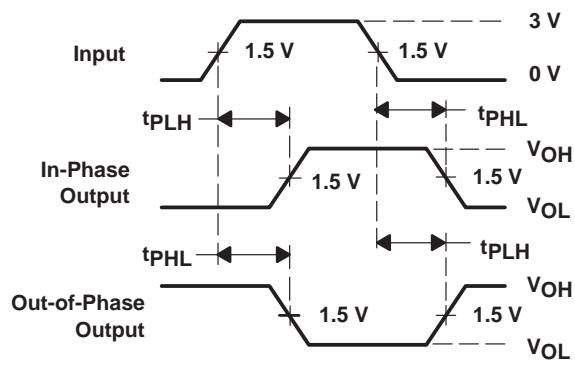
SWITCH POSITION TABLE

TEST	S1	S2
t_{PLH}	Closed	Closed
t_{PHL}	Closed	Closed
t_{PZH}	Open	Closed
t_{PZL}	Closed	Open
t_{PHZ}	Closed	Closed
t_{PLZ}	Closed	Closed

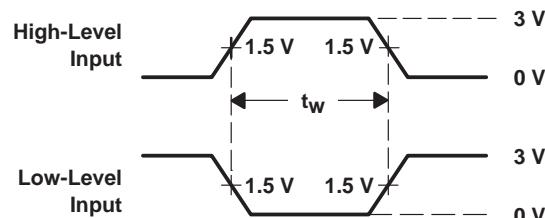
LOAD CIRCUIT



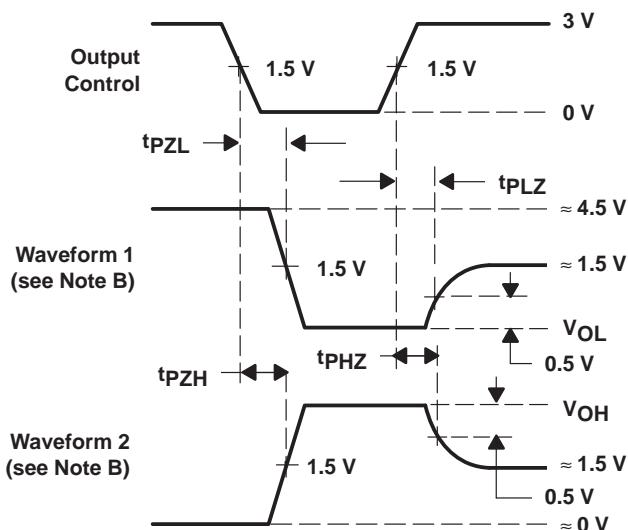
VOLTAGE WAVEFORMS SETUP AND HOLD TIMES



VOLTAGE WAVEFORMS PROPAGATION DELAY TIMES



VOLTAGE WAVEFORMS PULSE DURATIONS



VOLTAGE WAVEFORMS ENABLE AND DISABLE TIMES, 3-STATE OUTPUTS

NOTES: A. C_L includes probe and jig capacitance.

B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.

C. All input pulses are supplied by generators having the following characteristics: $PRR \leq 10 \text{ MHz}$, $Z_O = 50 \Omega$, $t_r \leq 2.5 \text{ ns}$, $t_f \leq 2.5 \text{ ns}$.

Figure 1

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
SN74ALS29861DW	OBsolete	SOIC	DW	24		TBD	Call TI	Call TI
SN74ALS29861DWR	OBsolete	SOIC	DW	24		TBD	Call TI	Call TI
SN74ALS29861DWR	OBsolete	SOIC	DW	24		TBD	Call TI	Call TI
SN74ALS29861NT	OBsolete	PDIP	NT	24		TBD	Call TI	Call TI
SN74ALS29861NT	OBsolete	PDIP	NT	24		TBD	Call TI	Call TI

⁽¹⁾ 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.

⁽²⁾ Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS) 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.

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)

⁽³⁾ 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.

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:

Products		Applications	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DSP	dsp.ti.com	Broadband	www.ti.com/broadband
Interface	interface.ti.com	Digital Control	www.ti.com/digitalcontrol
Logic	logic.ti.com	Military	www.ti.com/military
Power Mgmt	power.ti.com	Optical Networking	www.ti.com/opticalnetwork
Microcontrollers	microcontroller.ti.com	Security	www.ti.com/security
		Telephony	www.ti.com/telephony
		Video & Imaging	www.ti.com/video
		Wireless	www.ti.com/wireless

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

Copyright © 2006, Texas Instruments Incorporated