

SN54LS373, SN54LS374, SN54S373, SN54S374, SN74LS373, SN74LS374, SN74S373, SN74S374

OCTAL D-TYPE TRANSPARENT LATCHES AND EDGE-TRIGGERED FLIP-FLOPS

SDLS165B – OCTOBER 1975 – REVISED AUGUST 2002

- Choice of Eight Latches or Eight D-Type Flip-Flops in a Single Package
- 3-State Bus-Driving Outputs
- Full Parallel Access for Loading
- Buffered Control Inputs
- Clock-Enable Input Has Hysteresis to Improve Noise Rejection ('S373 and 'S374)
- P-N-P Inputs Reduce DC Loading on Data Lines ('S373 and 'S374)

description

These 8-bit registers feature 3-state outputs designed specifically for driving highly capacitive or relatively low-impedance loads. The high-impedance 3-state and increased high-logic-level drive provide these registers with the capability of being connected directly to and driving the bus lines in a bus-organized system without need for interface or pullup components. These devices are particularly attractive for implementing buffer registers, I/O ports, bidirectional bus drivers, and working registers.

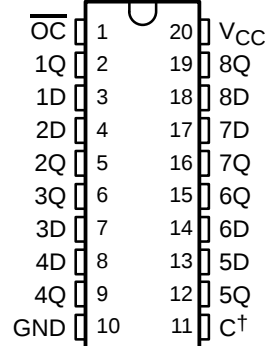
The eight latches of the 'LS373 and 'S373 are transparent D-type latches, meaning that while the enable (C or CLK) input is high, the Q outputs follow the data (D) inputs. When C or CLK is taken low, the output is latched at the level of the data that was set up.

The eight flip-flops of the 'LS374 and 'S374 are edge-triggered D-type flip-flops. On the positive transition of the clock, the Q outputs are set to the logic states that were set up at the D inputs.

Schmitt-trigger buffered inputs at the enable/clock lines of the 'S373 and 'S374 devices simplify system design as ac and dc noise rejection is improved by typically 400 mV due to the input hysteresis. A buffered output-control ($\overline{OC}$) input can be used to place the eight outputs in either a normal logic state (high or low logic levels) or the high-impedance state. In the high-impedance state, the outputs neither load nor drive the bus lines significantly.

$\overline{OC}$ does not affect the internal operation of the latches or flip-flops. That is, the old data can be retained or new data can be entered, even while the outputs are off.

SN54LS373, SN54LS374, SN54S373,
SN54S374 . . . J OR W PACKAGE
SN74LS373, SN74S374 . . . DW, N, OR NS PACKAGE
SN74LS374 . . . DB, DW, N, OR NS PACKAGE
SN74S373 . . . DW OR N PACKAGE
(TOP VIEW)



† C for 'LS373 and 'S373; CLK for 'LS374 and 'S374.

SN54LS373, SN54LS374, SN54S373,
SN54S374 . . . FK PACKAGE
(TOP VIEW)



† C for 'LS373 and 'S373; CLK for 'LS374 and 'S374.



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 © 2002, Texas Instruments Incorporated
On products compliant to MIL-PRF-38535, all parameters are tested unless otherwise noted. On all other products, production processing does not necessarily include testing of all parameters.

**SN54LS373, SN54LS374, SN54S373, SN54S374,
SN74LS373, SN74LS374, SN74S373, SN74S374
OCTAL D-TYPE TRANSPARENT LATCHES AND EDGE-TRIGGERED FLIP-FLOPS**

SDLS165B – OCTOBER 1975 – REVISED AUGUST 2002

ORDERING INFORMATION

T_A	PACKAGE[†]		ORDERABLE PART NUMBER	TOP-SIDE MARKING
0°C to 70°C	PDIP – N	Tube	SN74LS373N	SN74LS373N
		Tube	SN74LS374N	SN74LS374N
		Tube	SN74S373N	SN74S373N
		Tube	SN74S374N	SN74S374N
	SOIC – DW	Tube	SN74LS373DW	LS373
		Tape and reel	SN74LS373DWR	
		Tube	SN74LS374DW	LS374
		Tape and reel	SN74LS374DWR	
		Tube	SN74S373DW	S373
		Tape and reel	SN74S373DWR	
		Tube	SN74S374DW	S374
		Tape and reel	SN74S374DWR	
	SOP – NS	Tape and reel	SN74LS373NSR	74LS373
		Tape and reel	SN74LS374NSR	74LS374
		Tape and reel	SN74S374NSR	74S374
	SSOP – DB	Tape and reel	SN74LS374DBR	LS374A
–55°C to 125°C	CDIP – J	Tube	SN54LS373J	SN54LS373J
		Tube	SNJ54LS373J	SNJ54LS373J
		Tube	SN54LS374J	SN54LS374J
		Tube	SNJ54LS374J	SNJ54LS374J
		Tube	SN54S373J	SN54S373J
		Tube	SNJ54S373J	SNJ54S373J
		Tube	SN54S374J	SN54S374J
		Tube	SNJ54S374J	SNJ54S374J
	CFP – W	Tube	SNJ54LS373W	SNJ54LS373W
		Tube	SNJ54LS374W	SNJ54LS374W
		Tube	SNJ54S374W	SNJ54S374W
	LCCC – FK	Tube	SNJ54LS373FK	SNJ54LS373FK
		Tube	SNJ54LS374FK	SNJ54LS374FK
		Tube	SNJ54S373FK	SNJ54S373FK
		Tube	SNJ54S374FK	SNJ54S374FK

[†] Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.

SN54LS373, SN54LS374, SN54S373, SN54S374,
SN74LS373, SN74LS374, SN74S373, SN74S374

OCTAL D-TYPE TRANSPARENT LATCHES AND EDGE-TRIGGERED FLIP-FLOPS

SDLS165B – OCTOBER 1975 – REVISED AUGUST 2002

Function Tables

'LS373, 'S373
(each latch)

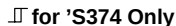
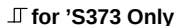
INPUTS			OUTPUT Q
$\overline{\text{OC}}$	C	D	
L	H	H	H
L	H	L	L
L	L	X	Q ₀
H	X	X	Z

'LS374, 'S374
(each latch)

INPUTS			OUTPUT Q
$\overline{\text{OC}}$	CLK	D	
L	↑	H	H
L	↑	L	L
L	L	X	Q ₀
H	X	X	Z

SDLS165B – OCTOBER 1975 – REVISED AUGUST 2002

'LS373, 'S373
Transparent Latches



4

SDLS165B – OCTOBER 1975 – REVISED AUGUST 2002

**SN54LS373, SN54LS374, SN54S373, SN54S374,
SN74LS373, SN74LS374, SN74S373, SN74S374
OCTAL D-TYPE TRANSPARENT LATCHES AND EDGE-TRIGGERED FLIP-FLOPS**

SDLS165B – OCTOBER 1975 – REVISED AUGUST 2002

**absolute maximum ratings over operating free-air temperature range (unless otherwise noted)[†]
(¹LS devices)**

Supply voltage, V_{CC} (see Note 1)	7 V
Input voltage, V_I	7 V
Off-state output voltage	5.5 V
Package thermal impedance, θ_{JA} (see Note 2): DB package	70°C/W
DW package	58°C/W
N package	69°C/W
NS package	60°C/W
Storage temperature range, T_{stg}	–65°C to 150°C

[†] Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

- NOTES: 1. Voltage values are with respect to network ground terminal.
2. The package thermal impedance is calculated in accordance with JESD 51-7.

recommended operating conditions

			SN54LS'			SN74LS'			UNIT
			MIN	NOM	MAX	MIN	NOM	MAX	
V _{CC}	Supply voltage		4.5	5	5	4.75	5	5.25	V
V _{OH}	High-level output voltage		5.5			5.5			V
I _{OH}	High-level output current		−1			−2.6			mA
I _{OL}	Low-level output current		12			24			mA
t _w	Pulse duration	CLK high	15			15			ns
		CLK low	15			15			
t _{su}	Data setup time	'LS373	5↓			5↓			ns
		'LS374	20↑			20↑			
t _h	Data hold time	'LS373	20↓			20↓			ns
		'LS374‡	5↑			0↑			
T _A	Operating free-air temperature		−55			125			°C

[‡] The t_h specification applies only for data frequency below 10 MHz. Designs above 10 MHz should use a minimum of 5 ns (commercial only).



SN54LS373, SN54LS374, SN54S373, SN54S374,
SN74LS373, SN74LS374, SN74S373, SN74S374

OCTAL D-TYPE TRANSPARENT LATCHES AND EDGE-TRIGGERED FLIP-FLOPS

SDLS165B – OCTOBER 1975 – REVISED AUGUST 2002

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

PARAMETER		TEST CONDITIONS†		SN54LS'			SN74LS'			UNIT
				MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V _{IH}	High-level input voltage			2		2				V
V _{IL}	Low-level input voltage			0.7		0.8				V
V _{IK}	Input clamp voltage	V _{CC} = MIN, I _I = −18 mA		−1.5		−1.5				V
V _{OH}	High-level output voltage	V _{CC} = MIN, V _{IH} = 2 V, V _{IL} = V _{IL} max, I _{OH} = MAX		2.4	3.4	2.4		3.1		V
V _{OL}	Low-level output voltage	V _{CC} = MIN, V _{IL} = V _{IL} max	V _{IH} = 2 V, I _{OL} = 12 mA	0.25		0.4		0.25		V
			I _{OL} = 24 mA			0.35		0.5		
I _{OZH}	Off-state output current, high-level voltage applied	V _{CC} = MAX, V _O = 2.7 V, V _{IH} = 2 V,		20		20				μA
I _{OZL}	Off-state output current, low-level voltage applied	V _{CC} = MAX, V _O = 0.4 V, V _{IH} = 2 V,		−20		−20				μA
I _I	Input current at maximum input voltage	V _{CC} = MAX, V _I = 7 V		0.1		0.1				mA
I _{IH}	High-level input current	V _{CC} = MAX, V _I = 2.7 V		20		20				μA
I _{IL}	Low-level input current	V _{CC} = MAX, V _I = 0.4 V		−0.4		−0.4				mA
I _{OS}	Short-circuit output current§	V _{CC} = MAX		−30		−130		−30		mA
I _{CC}	Supply current	V _{CC} = MAX, Output control at 4.5 V	'LS373	24		40		24		mA
			'LS374	27		40		27		

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

‡ All typical values are at V_{CC} = 5 V, T_A = 25°C.

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

switching characteristics, V_{CC} = 5 V, T_A = 25°C (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	'LS373			'LS374			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
f _{max}			R _L = 667 Ω, C _L = 45 pF, See Note 3				35	50		MHz
t _{PLH}	Data	Any Q	R _L = 667 Ω, C _L = 45 pF, See Note 3		12	18				ns
t _{PHL}					12	18				
t _{PLH}	C or CLK	Any Q	R _L = 667 Ω, C _L = 45 pF, See Note 3		20	30		15	28	ns
t _{PHL}					18	30		19	28	
t _{PZH}	$\overline{OC}$	Any Q	R _L = 667 Ω, C _L = 45 pF, See Note 3		15	28		20	26	ns
t _{PZL}					25	36		21	28	
t _{PHZ}	$\overline{OC}$	Any Q	R _L = 667 Ω, C _L = 5 pF		15	25		15	28	ns
t _{PLZ}					12	20		12	20	

NOTE 3: Maximum clock frequency is tested with all outputs loaded.

f_{max} = maximum clock frequency

t_{PLH} = propagation delay time, low-to-high-level output

t_{PHL} = propagation delay time, high-to-low-level output

t_{PZH} = output enable time to high level

t_{PZL} = output enable time to low level

t_{PHZ} = output disable time from high level

t_{PLZ} = output disable time from low level

**SN54LS373, SN54LS374, SN54S373, SN54S374,
SN74LS373, SN74LS374, SN74S373, SN74S374
OCTAL D-TYPE TRANSPARENT LATCHES AND EDGE-TRIGGERED FLIP-FLOPS**

SDLS165B – OCTOBER 1975 – REVISED AUGUST 2002

schematic of inputs and outputs

'S373 and 'S374

'S373 and 'S374



SN54LS373, SN54LS374, SN54S373, SN54S374,
SN74LS373, SN74LS374, SN74S373, SN74S374

OCTAL D-TYPE TRANSPARENT LATCHES AND EDGE-TRIGGERED FLIP-FLOPS

SDLS165B – OCTOBER 1975 – REVISED AUGUST 2002

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)[†]
('S devices)

Supply voltage, V_{CC} (see Note 1)	7 V
Input voltage, V_I	5.5 V
Off-state output voltage	5.5 V
Package thermal impedance, θ_{JA} (see Note 2): DW package	58°C/W
N package	69°C/W
NS package	60°C/W
Storage temperature range, T_{Stg}	–65°C to 150°C

[†] Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTES: 1. Voltage values are with respect to network ground terminal.
2. The package thermal impedance is calculated in accordance with JESD 51-7.

recommended operating conditions

			SN54S'			SN74S'			UNIT
			MIN	NOM	MAX	MIN	NOM	MAX	
V _{CC}	Supply voltage		4.5	5	5.5	4.75	5	5.25	V
V _{OH}	High-level output voltage		5.5			5.5			V
I _{OH}	High-level output current		−2			−6.5			mA
t _w	Pulse duration, clock/enable	High	6			6			ns
		Low	7.3			7.3			
t _{su}	Data setup time	'S373	0↓			0↓			ns
		'S374	5↑			5↑			
t _h	Data hold time	'S373	10↓			10↓			ns
		'S374	2↑			2↑			
T _A	Operating free-air temperature		−55			125			°C



**SN54LS373, SN54LS374, SN54S373, SN54S374,
SN74LS373, SN74LS374, SN74S373, SN74S374
OCTAL D-TYPE TRANSPARENT LATCHES AND EDGE-TRIGGERED FLIP-FLOPS**

SDLS165B – OCTOBER 1975 – REVISED AUGUST 2002

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted) (SN54S373, SN54S374, SN74S373, SN74S374)

PARAMETER		TEST CONDITIONS†			MIN	TYP‡	MAX	UNIT
V _{IH}					2			V
V _{IL}							0.8	V
V _{IK}		V _{CC} = MIN, I _I = −18 mA					−1.2	V
V _{OH}	SN54S'	V _{CC} = MIN, V _{IH} = 2 V, V _{IL} = 0.8 V, I _{OH} = MAX			2.4	3.4		V
	SN74S'				2.4	3.1		
V _{OL}		V _{CC} = MIN, V _{IH} = 2 V, V _{IL} = 0.8 V, I _{OL} = 20 mA					0.5	V
I _{OZH}		V _{CC} = MAX, V _{IH} = 2 V, V _O = 2.4 V					50	μA
I _{OZL}		V _{CC} = MAX, V _{IH} = 2 V, V _O = 0.5 V					−50	μA
I _I		V _{CC} = MAX, V _I = 5.5 V					1	mA
I _{IH}		V _{CC} = MAX, V _I = 2.7 V					50	μA
I _{IL}		V _{CC} = MAX, V _I = 0.5 V					−250	μA
I _{OS} §		V _{CC} = MAX			−40		−100	mA
I _{CC}	V _{CC} = MAX	'S373	Outputs high				160	mA
			Outputs low				160	
			Outputs disabled				190	
		'S374	Outputs high				110	
			Outputs low				140	
			Outputs disabled				160	
			CLK and $\overline{OC}$ at 4 V, D inputs at 0 V				180	

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

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

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

switching characteristics, $V_{CC} = 5 \text{ V}, T_A = 25^\circ\text{C}$ (see Figure 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	'S373			'S374			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
f_{max}			$R_L = 280 \Omega, C_L = 15 \text{ pF},$ See Note 3				75	100		MHz
t_{PLH}	Data	Any Q	$R_L = 280 \Omega, C_L = 15 \text{ pF},$ See Note 3		7	12				ns
t_{PHL}					7	12				
t_{PLH}	C or CLK	Any Q	$R_L = 280 \Omega, C_L = 15 \text{ pF},$ See Note 3		7	14		8	15	ns
t_{PHL}					12	18		11	17	
t_{PZH}	$\overline{OC}$	Any Q	$R_L = 280 \Omega, C_L = 15 \text{ pF},$ See Note 3		8	15		8	15	ns
t_{PZL}					11	18		11	18	
t_{PHZ}	$\overline{OC}$	Any Q	$R_L = 280 \Omega, C_L = 5 \text{ pF}$		6	9		5	9	ns
t_{PLZ}					8	12		7	12	

NOTE 3. Maximum clock frequency is tested with all outputs loaded.

f_{max} = maximum clock frequency

t_{PLH} = propagation delay time, low-to-high-level output

t_{PHL} = propagation delay time, high-to-low-level output

t_{PZH} = output enable time to high level

t_{PZL} = output enable time to low level

t_{PHZ} = output disable time from high level

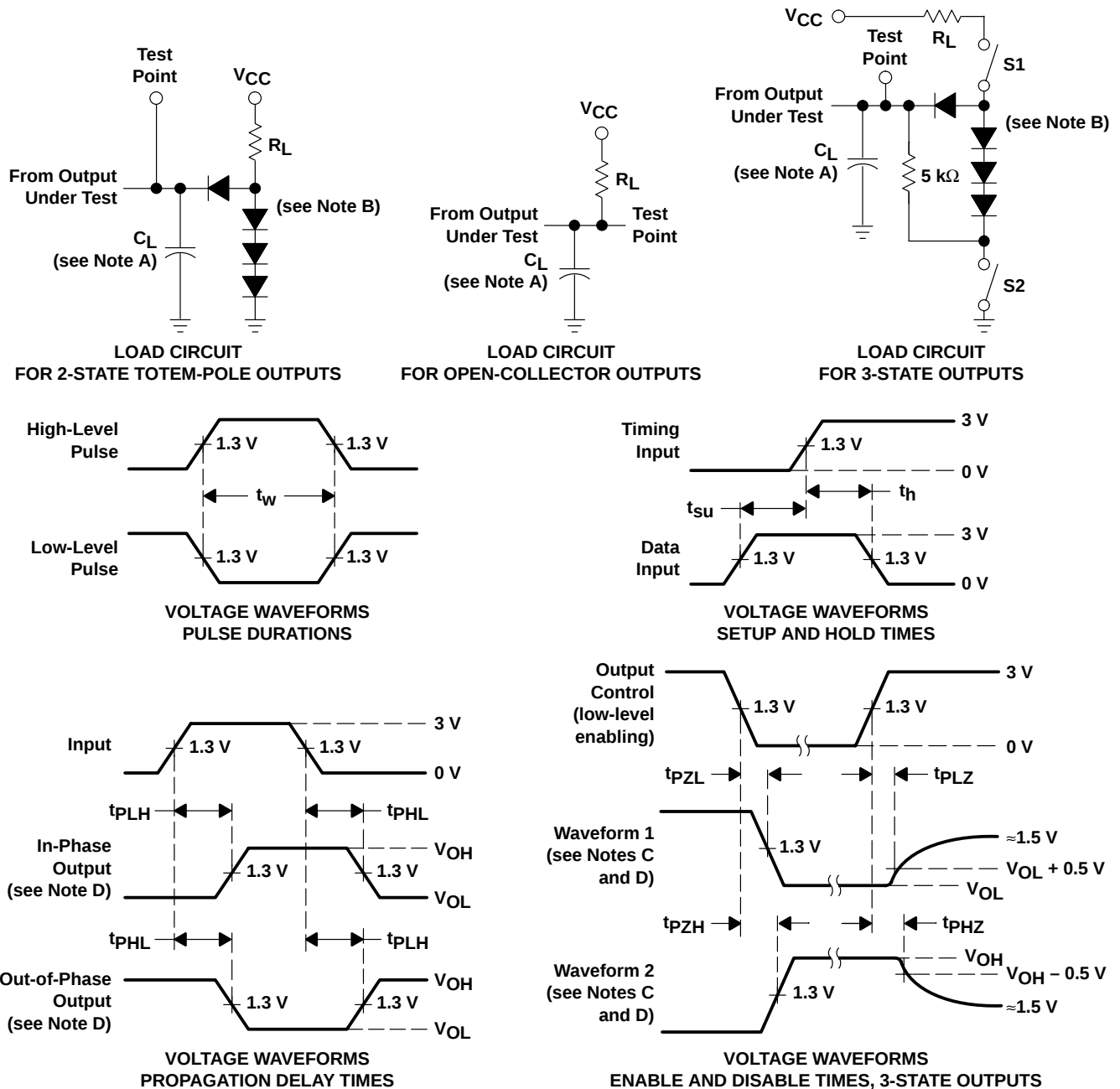
t_{PLZ} = output disable time from low level



**SN54LS373, SN54LS374, SN54S373, SN54S374,
SN74LS373, SN74LS374, SN74S373, SN74S374**
OCTAL D-TYPE TRANSPARENT LATCHES AND EDGE-TRIGGERED FLIP-FLOPS

SDLS165B – OCTOBER 1975 – REVISED AUGUST 2002

**PARAMETER MEASUREMENT INFORMATION
SERIES 54LS/74LS DEVICES**



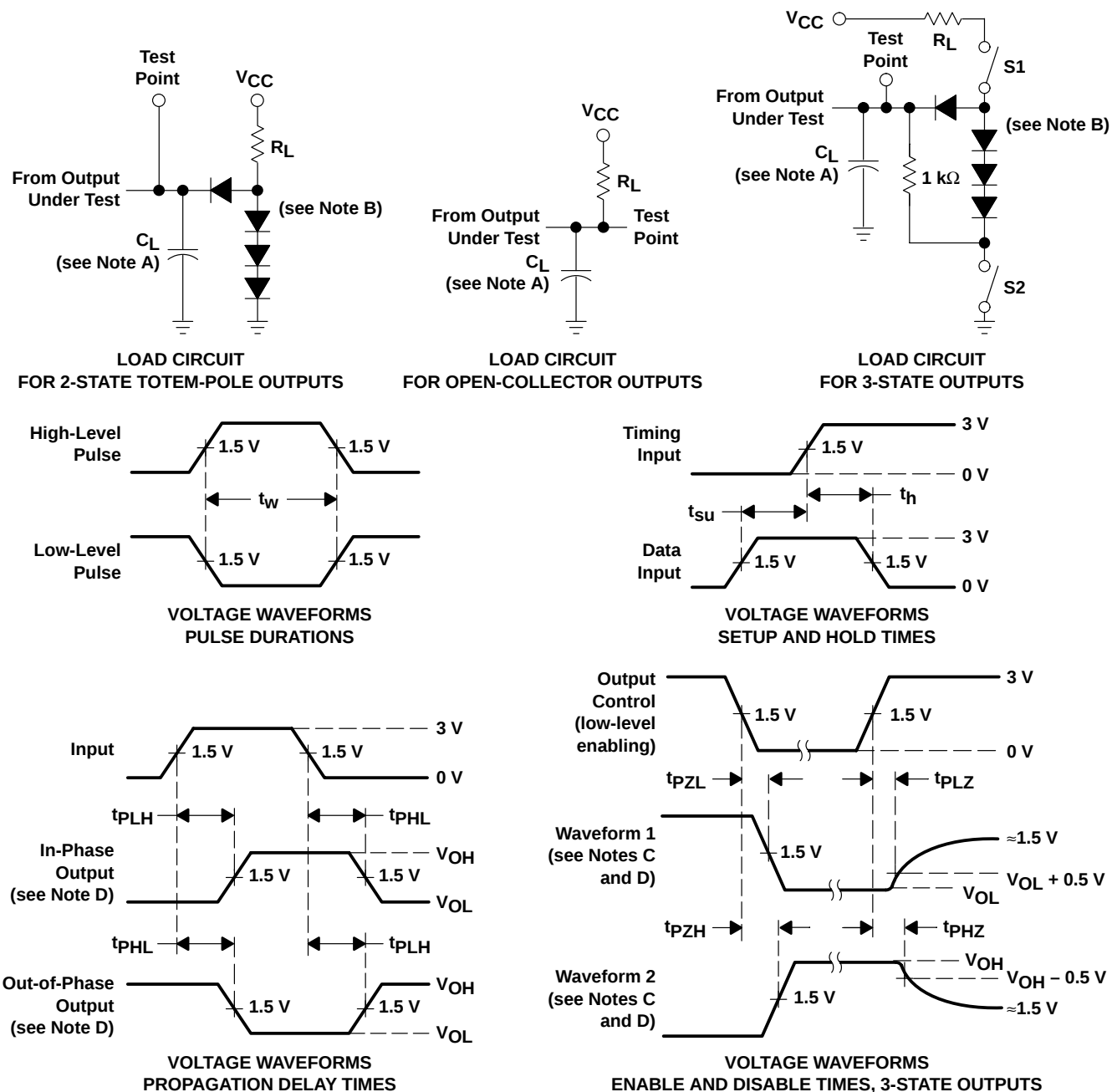
- NOTES: A. C_L includes probe and jig capacitance.
B. All diodes are 1N3064 or equivalent.
C. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
D. S1 and S2 are closed for t_{PLH} , t_{PHL} , t_{PHZ} , and t_{PLZ} ; S1 is open and S2 is closed for t_{PZH} ; S1 is closed and S2 is open for t_{PZL} .
E. Phase relationships between inputs and outputs have been chosen arbitrarily for these examples.
F. All input pulses are supplied by generators having the following characteristics: $PRR \leq 1$ MHz, $Z_O \approx 50 \Omega$, $t_r \leq 1.5$ ns, $t_f \leq 2.6$ ns.
G. The outputs are measured one at a time with one input transition per measurement.
H. All parameters and waveforms are not applicable to all devices.

Figure 1. Load Circuits and Voltage Waveforms

SN54LS373, SN54LS374, SN54S373, SN54S374, SN74LS373, SN74LS374, SN74S373, SN74S374 OCTAL D-TYPE TRANSPARENT LATCHES AND EDGE-TRIGGERED FLIP-FLOPS

SDLS165B – OCTOBER 1975 – REVISED AUGUST 2002

PARAMETER MEASUREMENT INFORMATION SERIES 54S/74S DEVICES



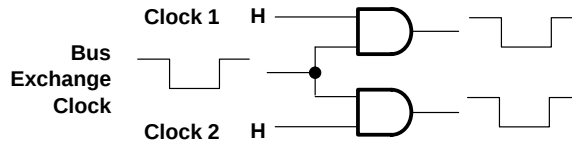
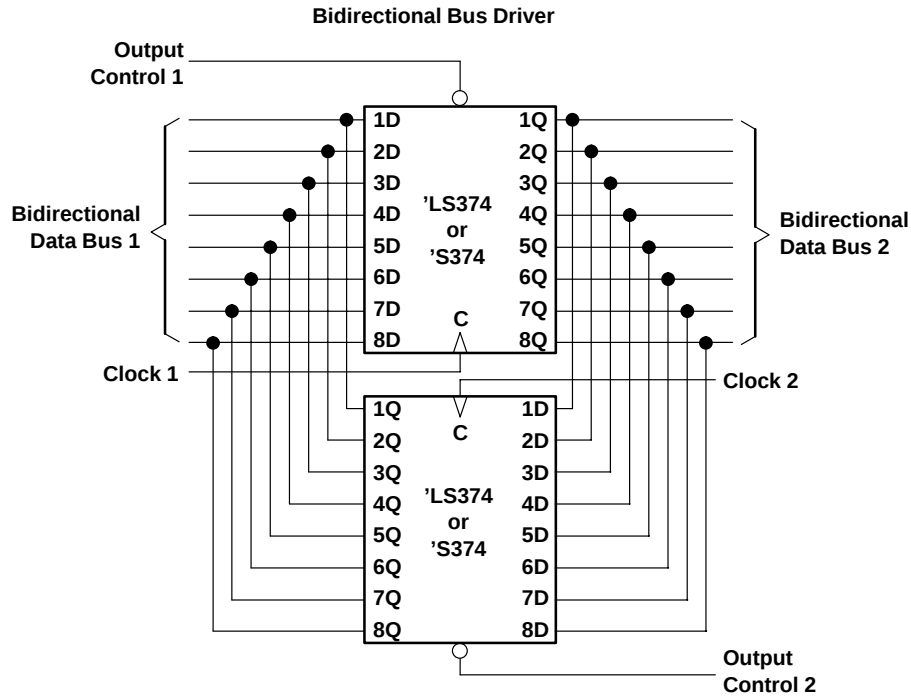
- NOTES: A. C_L includes probe and jig capacitance.
B. All diodes are 1N3064 or equivalent.
C. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
D. S1 and S2 are closed for t_{PLH} , t_{PHL} , t_{PHZ} , and t_{PLZ} ; S1 is open and S2 is closed for t_{PZH} ; S1 is closed and S2 is open for t_{PZL} .
E. All input pulses are supplied by generators having the following characteristics: $PRR \leq 1$ MHz, $Z_O \approx 50 \Omega$; t_r and $t_f \leq 7$ ns for Series 54/74 devices and t_r and $t_f \leq 2.5$ ns for Series 54S/74S devices.
F. The outputs are measured one at a time with one input transition per measurement.
G. All parameters and waveforms are not applicable to all devices.

Figure 2. Load Circuits and Voltage Waveforms

**SN54LS373, SN54LS374, SN54S373, SN54S374,
SN74LS373, SN74LS374, SN74S373, SN74S374**
OCTAL D-TYPE TRANSPARENT LATCHES AND EDGE-TRIGGERED FLIP-FLOPS

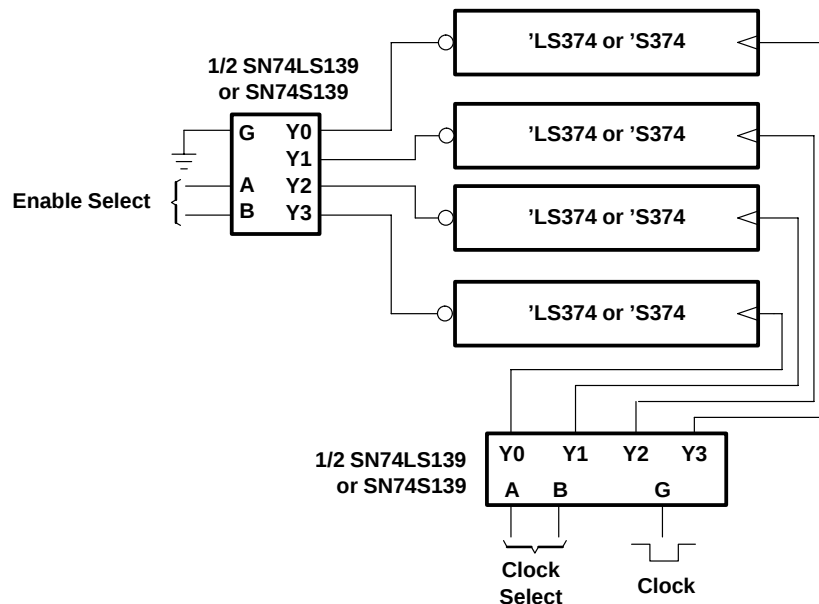
SDLS165B – OCTOBER 1975 – REVISED AUGUST 2002

TYPICAL APPLICATION DATA



Clock Circuit for Bus Exchange

Expandable 4-Word by 8-Bit General Register File



PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
5962-7801102VRA	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
5962-7801102VSA	ACTIVE	CFP	W	20	1	TBD	Call TI	Level-NC-NC-NC
78011022A	ACTIVE	LCCC	FK	20	1	TBD	Call TI	Level-NC-NC-NC
7801102RA	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
7801102SA	ACTIVE	CFP	W	20	1	TBD	Call TI	Level-NC-NC-NC
JM38510/32502B2A	ACTIVE	LCCC	FK	20	1	TBD	Call TI	Level-NC-NC-NC
JM38510/32502BRA	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
JM38510/32502BSA	ACTIVE	CFP	W	20	1	TBD	Call TI	Level-NC-NC-NC
JM38510/32502SRA	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
JM38510/32502SSA	ACTIVE	CFP	W	20	1	TBD	Call TI	Level-NC-NC-NC
JM38510/32503B2A	ACTIVE	LCCC	FK	20	1	TBD	Call TI	Level-NC-NC-NC
JM38510/32503BRA	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
JM38510/32503BSA	ACTIVE	CFP	W	20	1	TBD	Call TI	Level-NC-NC-NC
SN54LS373J	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
SN54LS374J	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
SN54S373J	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
SN54S374J	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
SN74LS373DW	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS373DWE4	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS373DWR	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS373DWRE4	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS373N	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
SN74LS373N3	OBSOLETE	PDIP	N	20		TBD	Call TI	Call TI
SN74LS373NSR	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS373NSRE4	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS374DBR	ACTIVE	SSOP	DB	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS374DBRE4	ACTIVE	SSOP	DB	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS374DW	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS374DWG4	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS374DWR	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS374DWG4	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS374J	OBSOLETE	CDIP	J	20		TBD	Call TI	Call TI
SN74LS374N	ACTIVE	PDIP	N	20	20	Pb-Free	CU NIPDAU	Level-NC-NC-NC

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
(RoHS)								
SN74LS374N3	OBSOLETE	PDIP	N	20		TBD	Call TI	Call TI
SN74LS374NE4	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
SN74LS374NSR	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS374NSRE4	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74S373DW	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74S373DWE4	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74S373DWR	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74S373DWRE4	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74S373J	OBSOLETE	CDIP	J	20		TBD	Call TI	Call TI
SN74S373N	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
SN74S373N3	OBSOLETE	PDIP	N	20		TBD	Call TI	Call TI
SN74S374DW	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74S374DWE4	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74S374DWR	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74S374DWRE4	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74S374J	OBSOLETE	CDIP	J	20		TBD	Call TI	Call TI
SN74S374N	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
SN74S374N3	OBSOLETE	PDIP	N	20		TBD	Call TI	Call TI
SN74S374NE4	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
SN74S374NSR	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74S374NSRE4	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SNJ54LS373FK	ACTIVE	LCCC	FK	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54LS373J	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54LS373W	ACTIVE	CFP	W	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54LS374FK	ACTIVE	LCCC	FK	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54LS374J	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54LS374W	ACTIVE	CFP	W	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54S373FK	ACTIVE	LCCC	FK	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54S373J	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54S374FK	ACTIVE	LCCC	FK	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54S374J	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
SNJ54S374W	ACTIVE	CFP	W	20	1	TBD	Call TI	Level-NC-NC-NC

⁽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.

J (R-GDIP-T**)

14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



PINS ** DIM	14	16	18	20
A	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC
B MAX	0.785 (19,94)	.840 (21,34)	0.960 (24,38)	1.060 (26,92)
B MIN	—	—	—	—
C MAX	0.300 (7,62)	0.300 (7,62)	0.310 (7,87)	0.300 (7,62)
C MIN	0.245 (6,22)	0.245 (6,22)	0.220 (5,59)	0.245 (6,22)

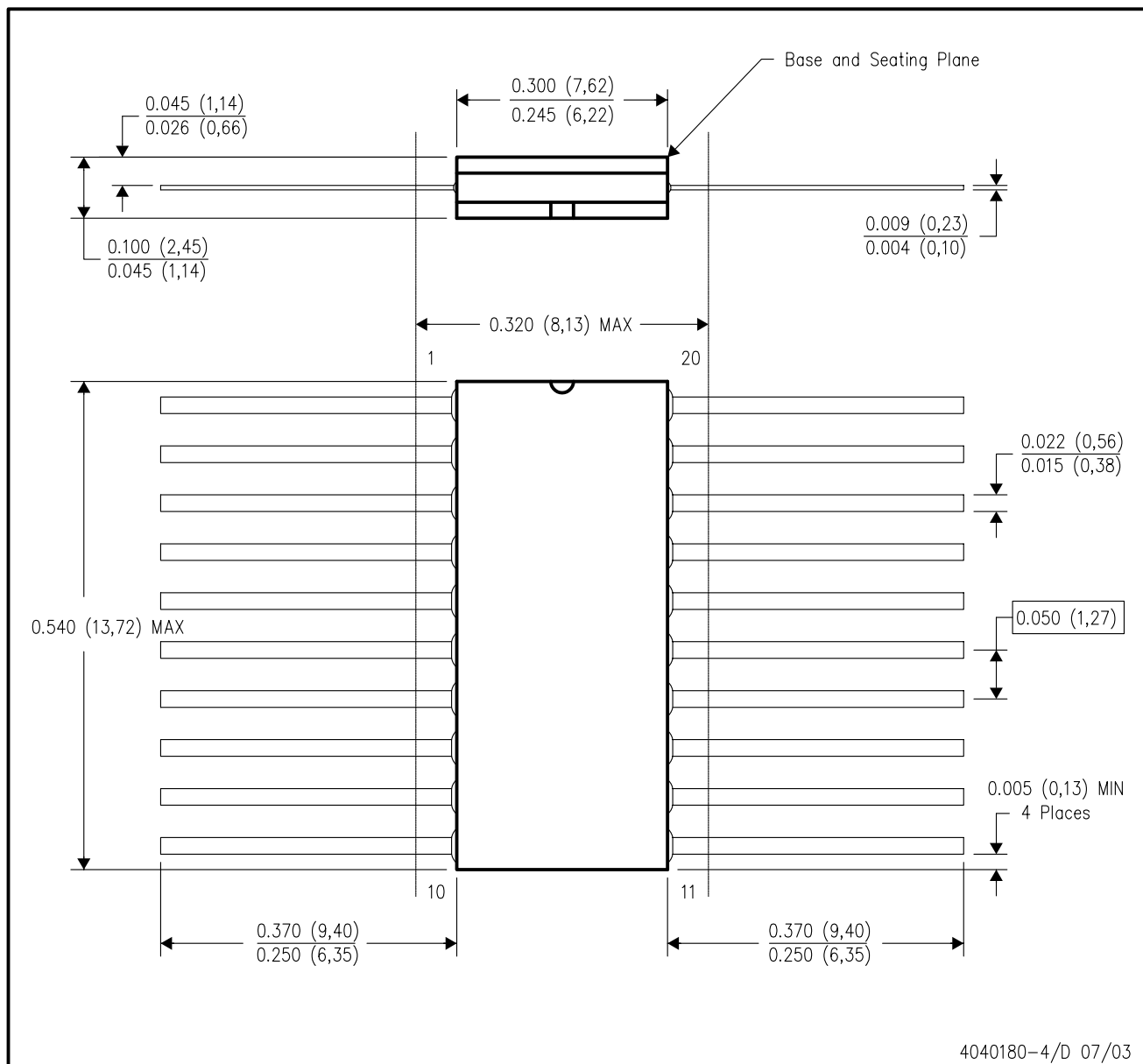


4040083/F 03/03

- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. This package is hermetically sealed with a ceramic lid using glass frit.
 - D. Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
 - E. Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

W (R-GDFP-F20)

CERAMIC DUAL FLATPACK

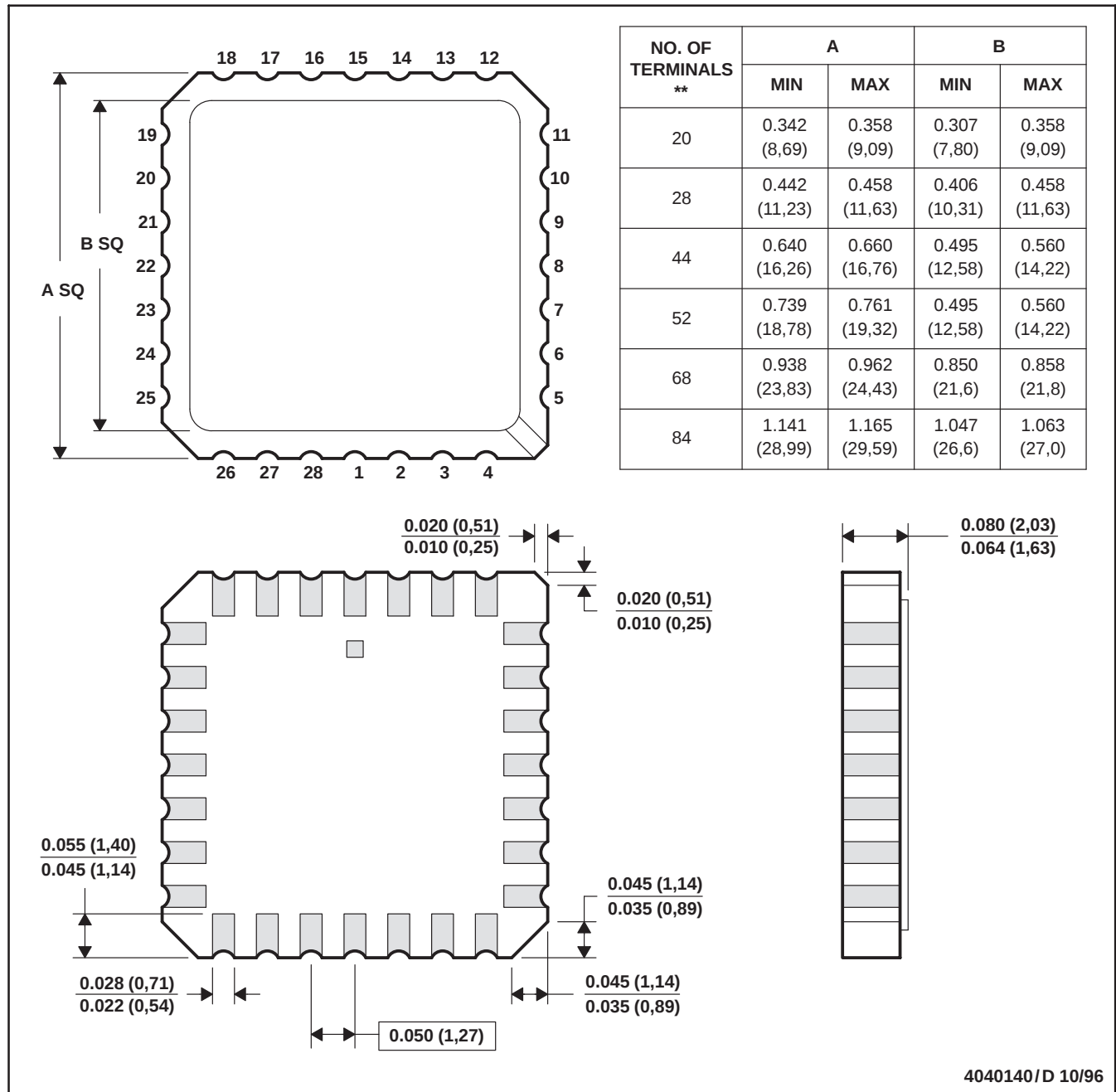


- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - This package can be hermetically sealed with a ceramic lid using glass frit.
 - Index point is provided on cap for terminal identification only.
 - Falls within Mil-Std 1835 GDFP2-F20

FK (S-CQCC-N**)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - This package can be hermetically sealed with a metal lid.
 - The terminals are gold plated.
 - Falls within JEDEC MS-004

N (R-PDIP-T**)

16 PINS SHOWN

PLASTIC DUAL-IN-LINE PACKAGE



PINS **	14	16	18	20
DIM				
A MAX	0.775 (19,69)	0.775 (19,69)	0.920 (23,37)	1.060 (26,92)
A MIN	0.745 (18,92)	0.745 (18,92)	0.850 (21,59)	0.940 (23,88)
MS-001 VARIATION	AA	BB	AC	AD



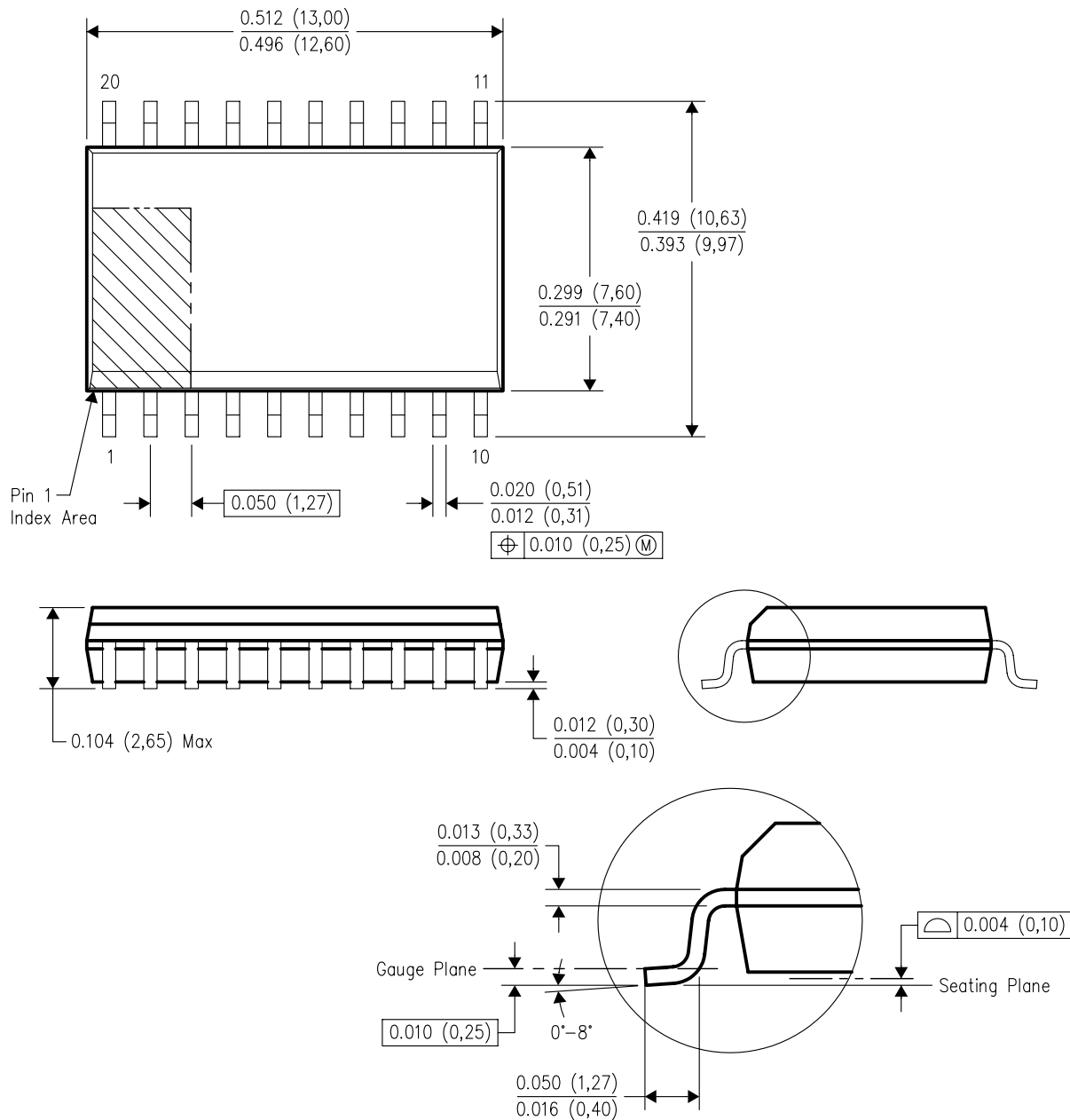
14/18 Pin Only
20 Pin vendor option

4040049/E 12/2002

- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
 - The 20 pin end lead shoulder width is a vendor option, either half or full width.

DW (R-PDSO-G20)

PLASTIC SMALL-OUTLINE PACKAGE



4040000-4/F 06/2004

- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
 - D. Falls within JEDEC MS-013 variation AC.

MECHANICAL DATA

NS (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

14-PINS SHOWN

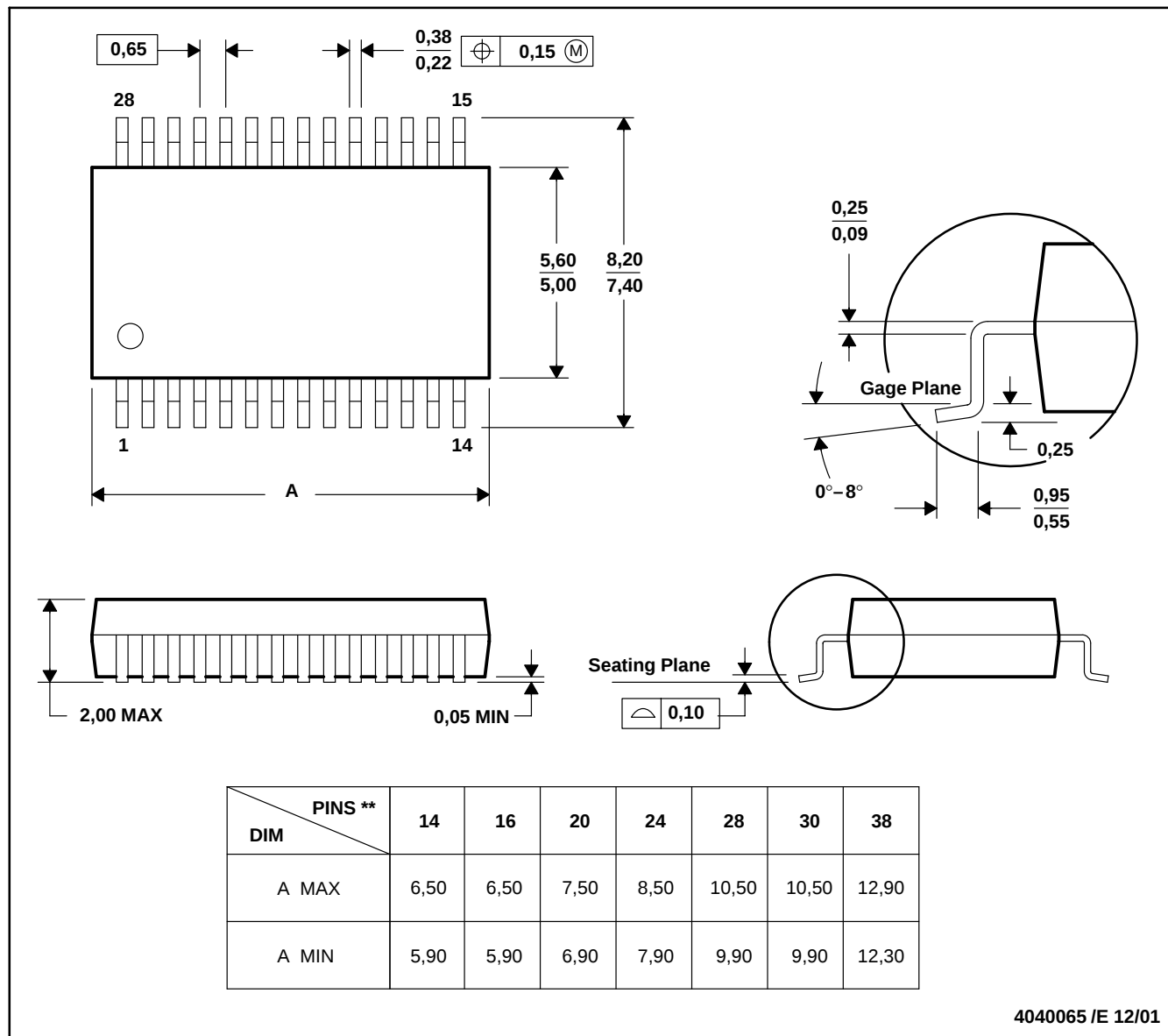


- NOTES:
- All linear dimensions are in millimeters.
 - This drawing is subject to change without notice.
 - Body dimensions do not include mold flash or protrusion, not to exceed 0,15.

DB (R-PDSO-G**)

PLASTIC SMALL-OUTLINE

28 PINS SHOWN



- NOTES: A. All linear dimensions are in millimeters.
 B. This drawing is subject to change without notice.
 C. Body dimensions do not include mold flash or protrusion not to exceed 0,15.
 D. Falls within JEDEC MO-150

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 © 2005, Texas Instruments Incorporated