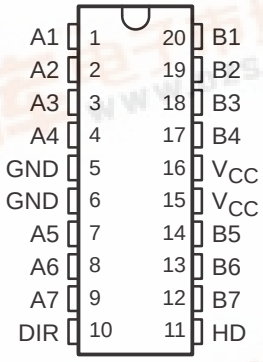
查询ACT1284供应商 捷多邦，专业PCB打样工厂，24小时极速

SN54ACT1284, SN74ACT1284
7-BIT BUS INTERFACES WITH 3-STATE OUTPUTS

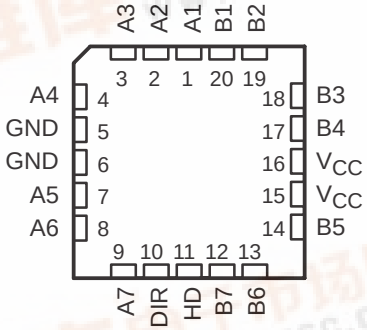
SCAS459D – NOVEMBER 1994 – REVISED OCTOBER 2003

- 4.5-V to 5.5-V V_{CC} Operation
- Inputs Accept Voltages to 5.5 V
- Max t_{pd} of 20 ns at 5 V
- 3-State Outputs Directly Drive Bus Lines
- Flow-Through Architecture Optimizes PCB Layout
- Center-Pin V_{CC} and GND Configurations Minimize High-Speed Switching Noise
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 200-V Machine Model (A115-A)
- Designed for the IEEE 1284-I (Level-1 Type) and IEEE 1284-II (Level-2 Type) Electrical Specifications

SN54ACT1284 . . . J OR W PACKAGE
SN74ACT1284 . . . DB, DW, NS, OR PW PACKAGE
(TOP VIEW)



SN54ACT1284 . . . FK PACKAGE
(TOP VIEW)



description/ordering information

The ’ACT1284 devices are designed for asynchronous two-way communication between data buses. The control function minimizes external timing requirements.

The devices allow data transmission in either the A-to-B or the B-to-A direction for bits 1, 2, 3, and 4, depending on the logic level at the direction-control (DIR) input. Bits 5, 6, and 7, however, always transmit in the A-to-B direction.

The output drive for each mode is determined by the high-drive (HD) control pin. When HD is high, the high drive is delivered by the totem-pole configuration, and when HD is low, the outputs are open drain. This meets the drive requirements as specified in the IEEE 1284-I (level-1 type) and the IEEE 1284-II (level-2 type) parallel peripheral-interface specification.

ORDERING INFORMATION

T_A	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
0°C to 70°C	SOIC – DW	Tube	SN74ACT1284DW	ACT1284
		Tape and reel	SN74ACT1284DWR	
	SOP – NS	Tape and reel	SN74ACT1284NSR	ACT1284
	SSOP – DB	Tape and reel	SN74ACT1284DBR	AU284
	TSSOP – PW	Tube	SN74ACT1284PW	AU284
		Tape and reel	SN74ACT1284PWR	
−55°C to 125°C	CDIP – J	Tube	SNJ54ACT1284J	SNJ54ACT1284J
	CFP – W	Tube	SNJ54ACT1284W	SNJ54ACT1284W
	LCCC – FK	Tube	SNJ54ACT1284FK	SNJ54ACT1284FK

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

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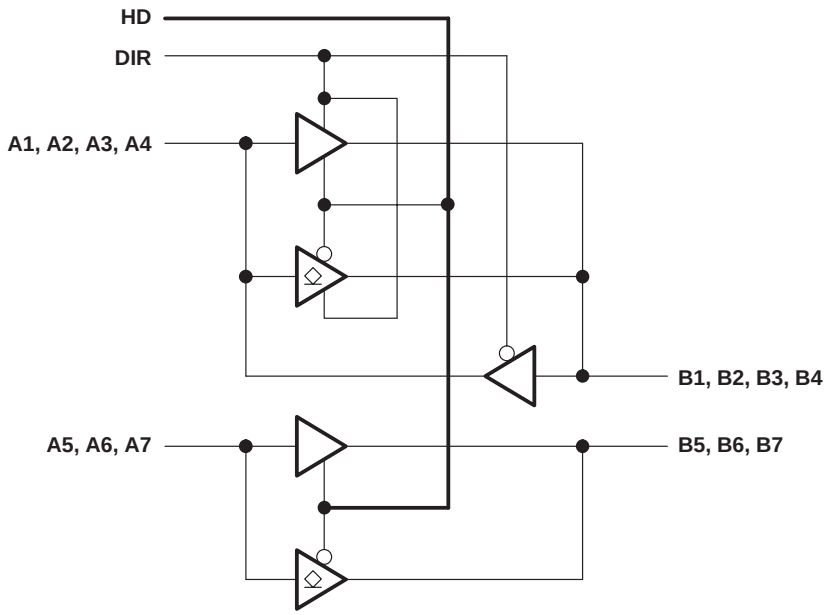
FUNCTION TABLE

INPUTS		OUTPUT	MODE
DIR	HD		
L	L	Open drain	A to B: Bits 5, 6, 7
		Totem pole	B to A: Bits 1, 2, 3, 4
L	H	Totem pole	B to A: Bits 1, 2, 3, 4 and A to B: Bits 5, 6, 7
H	L	Open drain	A to B: Bits 1, 2, 3, 4, 5, 6, 7
H	H	Totem pole	A to B: Bits 1, 2, 3, 4, 5, 6, 7

logic diagram (positive logic)



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

Supply voltage range, V_{CC} . . . . . −0.5 V to 7 V
B-port input and output voltage range, V_I and V_O (see Notes 1 and 2) . . . . . −2 V to 7 V
A-port input and output voltage range, V_I and V_O (see Note 1) . . . . . −0.5 V to V_{CC} + 0.5 V
Input clamp current, I_{IK} (V_I < 0 or V_I > V_{CC}) . . . . . ±20 mA
Output clamp current, I_{OK} (V_O < 0 or V_O > V_{CC}) . . . . . ±50 mA
Continuous output current, I_O (V_O = 0 to V_{CC}) . . . . . ±50 mA
Continuous current through V_{CC} or GND . . . . . ±200 mA
Package thermal impedance, θ_{JA} (see Note 3): DB package . . . . . 70°C/W
DW package . . . . . 58°C/W
NS package . . . . . 60°C/W
PW package . . . . . 83°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. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.
2. The ac input voltage pulse duration is limited to 20 ns if the input voltage goes more negative than −0.5 V.
3. The package thermal impedance is calculated in accordance with JESD 51-7.

recommended operating conditions (see Note 4)

			SN54ACT1284		SN74ACT1284		UNIT
			MIN	MAX	MIN	MAX	
V_{CC}	Supply voltage		4.7	5.5	4.7	5.5	V
V_{IH}	High-level input voltage		2		2		V
V_{IL}	Low-level input voltage			0.8		0.8	V
V_I	Input voltage		0	V_{CC}	0	V_{CC}	V
V_O	Open-drain output voltage	HD low	0	5.5	0	5.5	V
I_{OH}	High-level output current	B port, HD high		−14		−14	mA
		A port		−4		−4	
I_{OL}	Low-level output current	B port		14		14	mA
		A port		4		4	
T_A	Operating free-air temperature		−55	125	0	70	°C

PRODUCT PREVIEW

NOTE 4: All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation. Refer to the TI application report, *Implications of Slow or Floating CMOS Inputs*, literature number SCBA004.

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electrical characteristics over recommended ranges of operating free-air temperature and supply voltage (unless otherwise noted)

PARAMETER		TEST CONDITIONS	V_{CC}†	SN54ACT1284			SN74ACT1284			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
V_{hys}	Input hysteresis	$V_{IT+} - V_{IT-}$ for all inputs	5 V	0.4			0.4			V
			4.7 V	0.2			0.2			
V_{OH}	B port	I_{OH} = −14 mA	4.7 V	2.4			2.4			V
	A port	I_{OH} = −50 µA	MIN to MAX	V_{CC}−0.2			V_{CC}−0.2			
		I_{OH} = −4 mA	4.7 V	3.7			3.7			
V_{OL}	B port	I_{OL} = 14 mA	4.7 V			0.4			0.4	V
	A port	I_{OL} = 50 µA				0.2			0.2	
		I_{OL} = 4 mA				0.4			0.4	
I_I		$V_I = V_{CC}$ or GND	5.5 V			±1			±1	µA
I_{OZ}	A or B ports‡	$V_O = V_{CC}$ or GND	5.5 V			±20			±20	µA
I_{off}	B port	V_I or $V_O \le 7$ V	0 V			±100			±100	µA
I_{CC}		$V_I = V_{CC}$ or GND, I_O = 0	5.5 V			1.5			1.5	mA
C_i	Control inputs	$V_I = V_{CC}$ or GND	5 V		4			4		pF
C_{io}	A or B ports	$V_O = V_{CC}$ or GND	5 V		12			12		pF
Z_O	B port	I_{OH} = −20 mA, I_{OH} = −50 mA	5 V	8		30	8		30	Ω

† For I/O ports, the parameter I_{OZ} includes the input leakage current I_I.
‡ For conditions shown as MIN or MAX, use the appropriate values under recommended operating conditions.

PRODUCT PREVIEW

switching characteristics over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted) (see Figure 1)

PARAMETER		FROM (INPUT)	TO (OUTPUT)	SN54ACT1284		SN74ACT1284		UNIT
				MIN	MAX	MIN	MAX	
t_{PLH}	Totem pole	A or B	B or A	1	20	1	20	ns
t_{PHL}				1	20	1	20	
SR	Totem pole	B output		0.05	0.4	0.05	0.4	V/ns
t_{pd}(EN)	Totem pole	HD	B	1	20	1	20	ns
t_{pd}(DIS)				1	20	1	20	
t_r, t_f	Open drain	A	B		120		120	ns

PRODUCT PREVIEW

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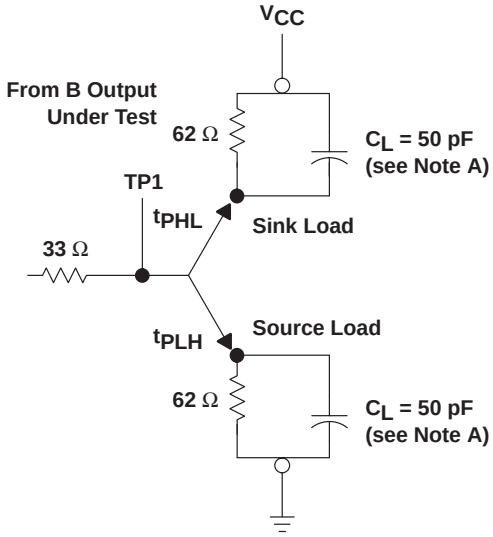
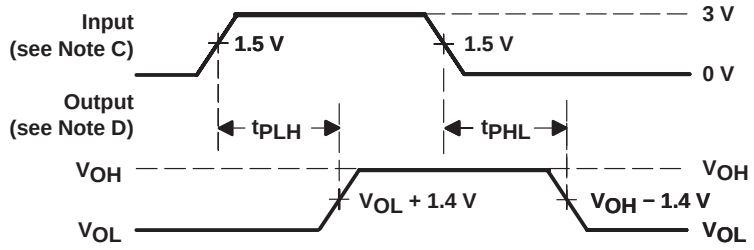
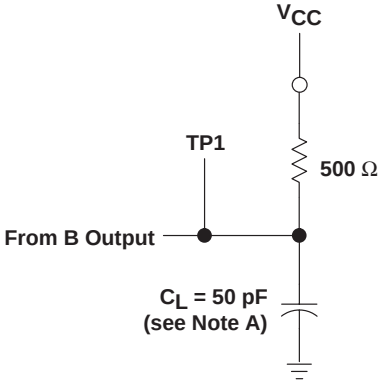
PARAMETER MEASUREMENT INFORMATION



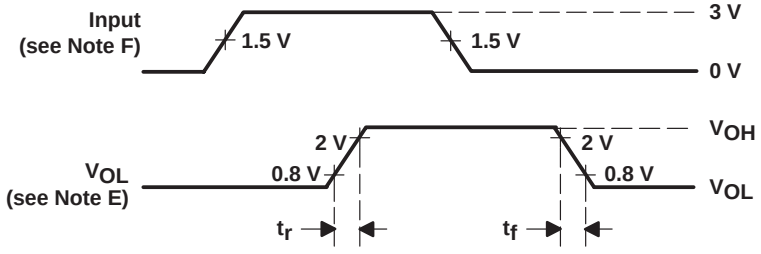
A-TO-B LOAD (totem pole)



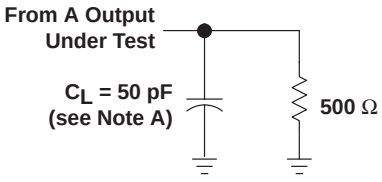
VOLTAGE WAVEFORMS MEASURED AT TP1
PROPAGATION DELAY TIMES (A to B)



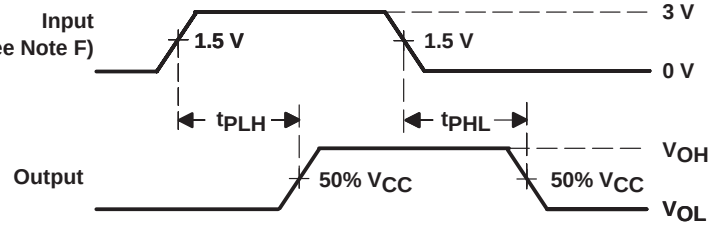
A-TO-B LOAD (open drain)



VOLTAGE WAVEFORMS MEASURED AT TP1 (B SIDE)



B-TO-A LOAD (totem pole)



VOLTAGE WAVEFORMS
PROPAGATION DELAY TIMES (B to A)

NOTES: A. CL includes probe and jig capacitance.
B. The outputs are measured one at a time with one transition per measurement.
C. Input rise and fall times are 3 ns, 150 ns < pulse duration <10 μs for both low-to-high and high-to-low transitions.
D. Slew rate is defined as 10% and 90% of the transition times.
E. Rise and fall times, open drain, are <120 ns.
F. Input rise and fall times are 3 ns.

Figure 1. Load Circuits and Voltage Waveforms

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)
SN74ACT1284DBLE	OBSOLETE	SSOP	DB	20		TBD	Call TI	Call TI
SN74ACT1284DBR	ACTIVE	SSOP	DB	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74ACT1284DBRE4	ACTIVE	SSOP	DB	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74ACT1284DW	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74ACT1284DWE4	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74ACT1284DWR	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74ACT1284DWRE4	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74ACT1284NSR	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74ACT1284NSRE4	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74ACT1284PW	ACTIVE	TSSOP	PW	20	70	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74ACT1284PWE4	ACTIVE	TSSOP	PW	20	70	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74ACT1284PWR	ACTIVE	TSSOP	PW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74ACT1284PWRE4	ACTIVE	TSSOP	PW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM

(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), 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)

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

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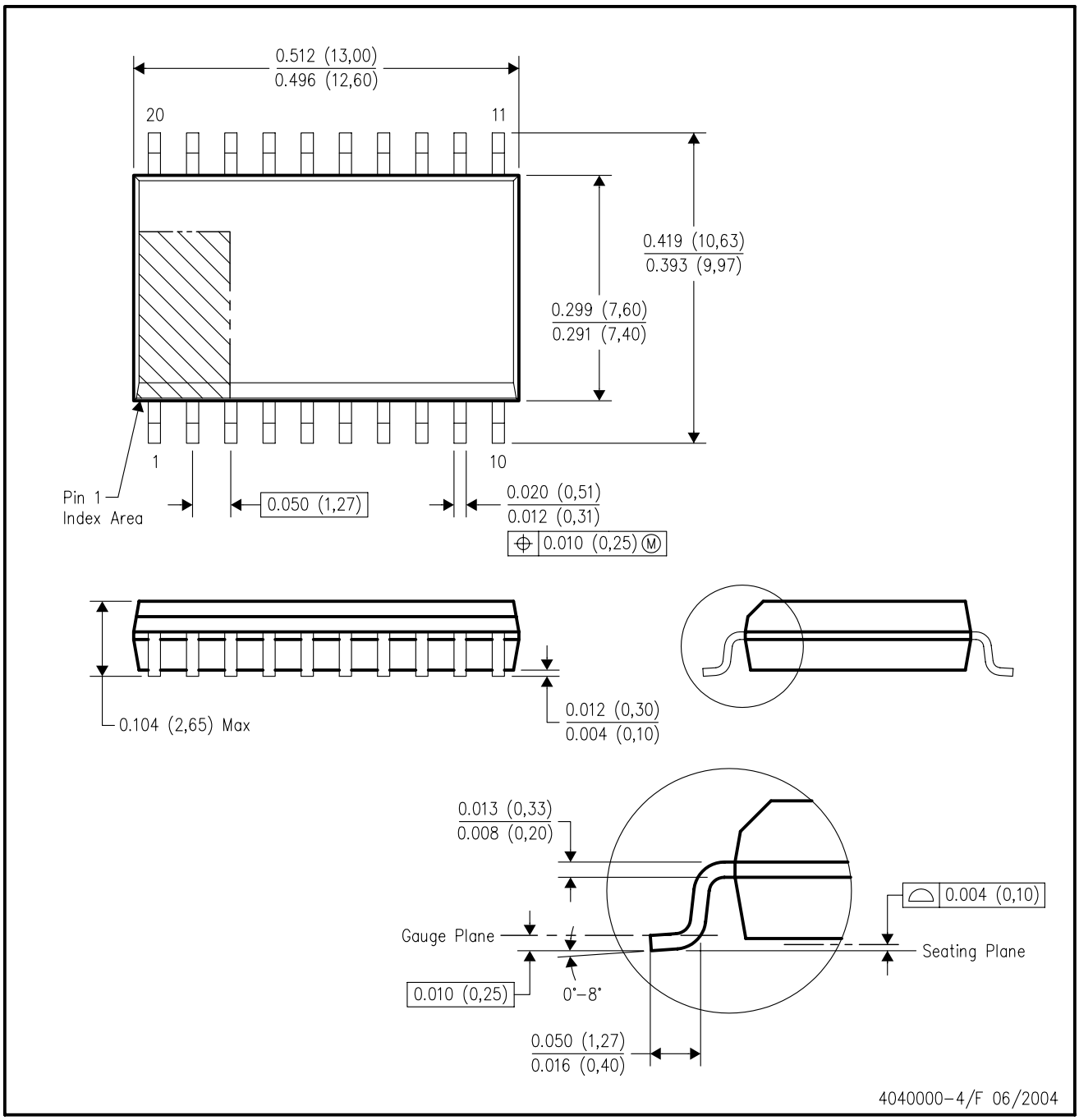
DW (R–PDSO–G20) PLASTIC SMALL–OUTLINE PACKAGE

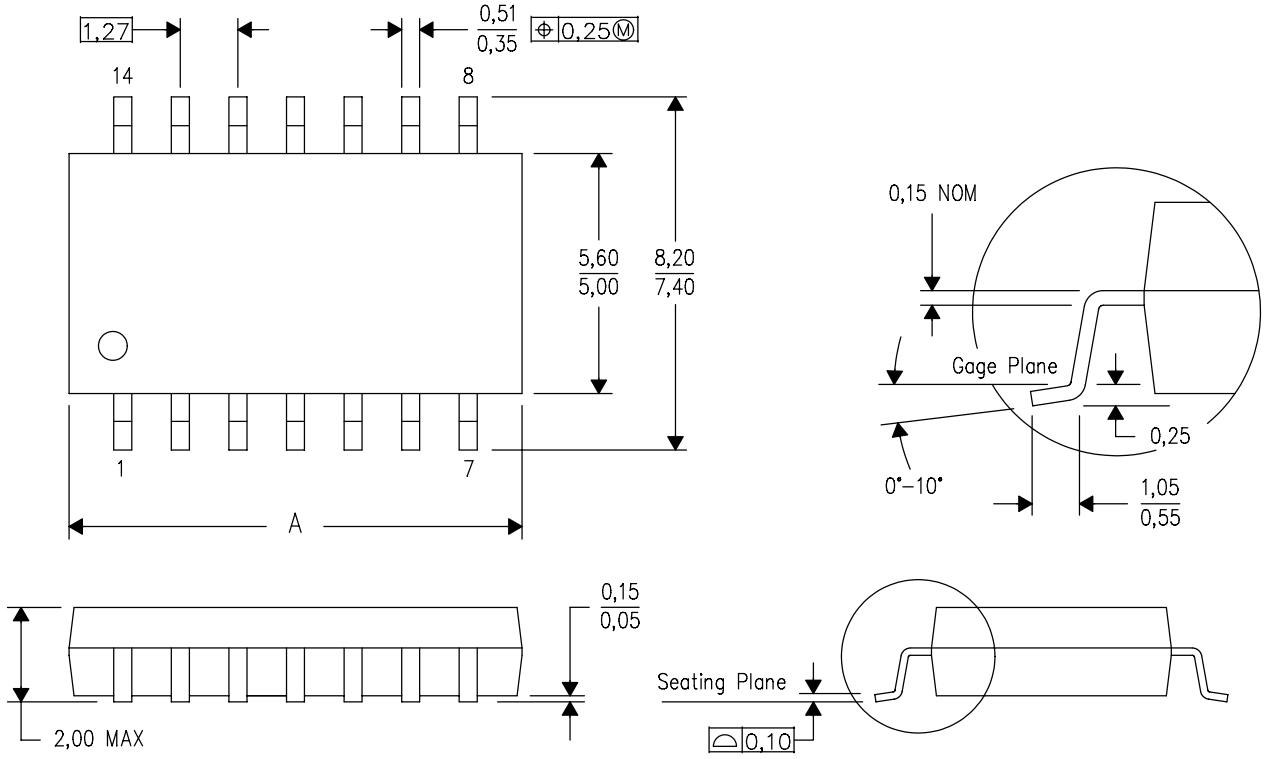


NOTES:
A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
D. Falls within JEDEC MS–013 variation AC.

MECHANICAL DATA

NS (R-PDSO-G)** **PLASTIC SMALL-OUTLINE PACKAGE**

14-PINS SHOWN



DIM \ PINS **	14	16	20	24
A MAX	10,50	10,50	12,90	15,30
A MIN	9,90	9,90	12,30	14,70

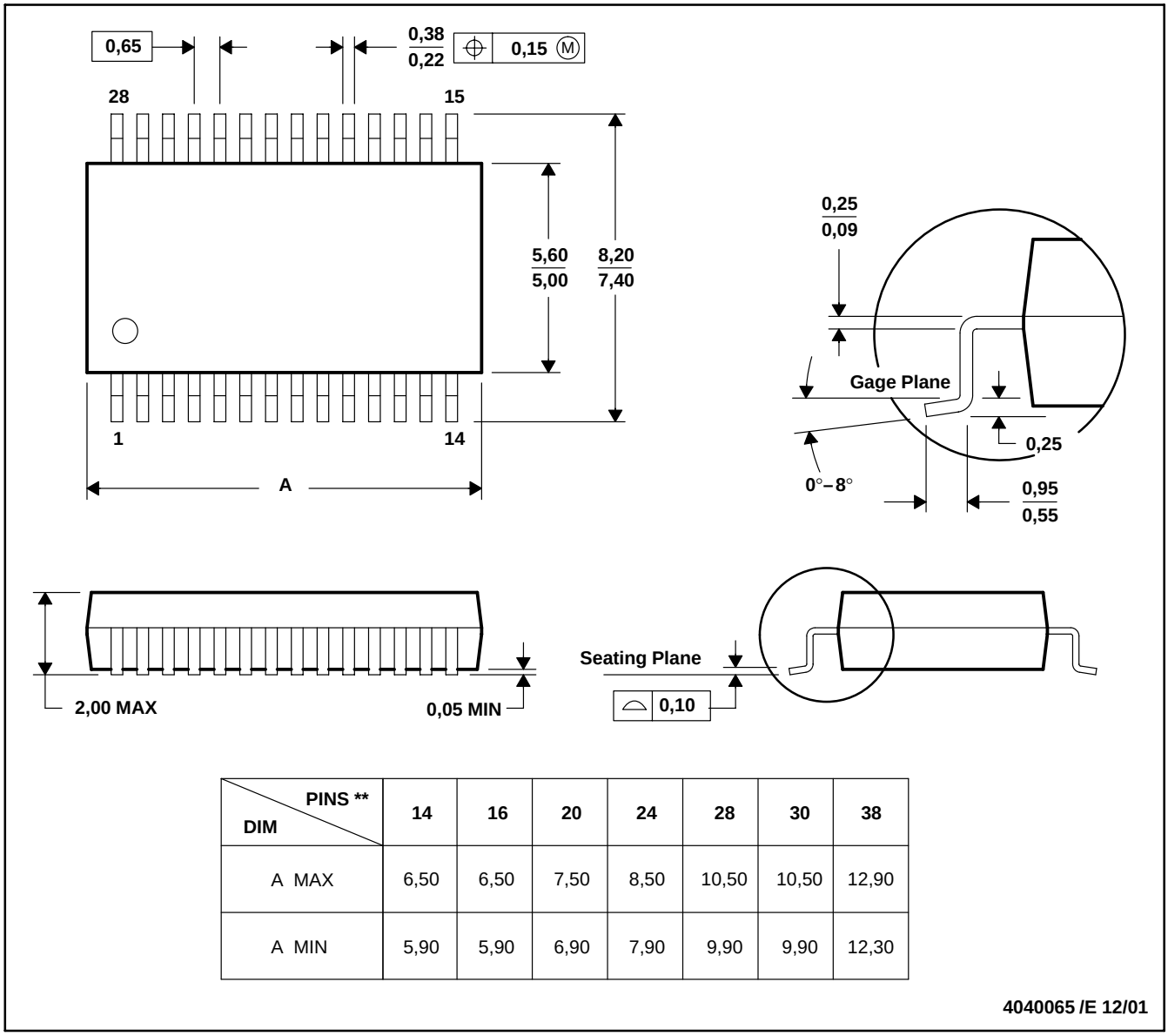
4040062/C 03/03

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.

MSSO002E – JANUARY 1995 – REVISED DECEMBER 2001

DB (R-PDSO-G)** **PLASTIC SMALL-OUTLINE**

28 PINS SHOWN



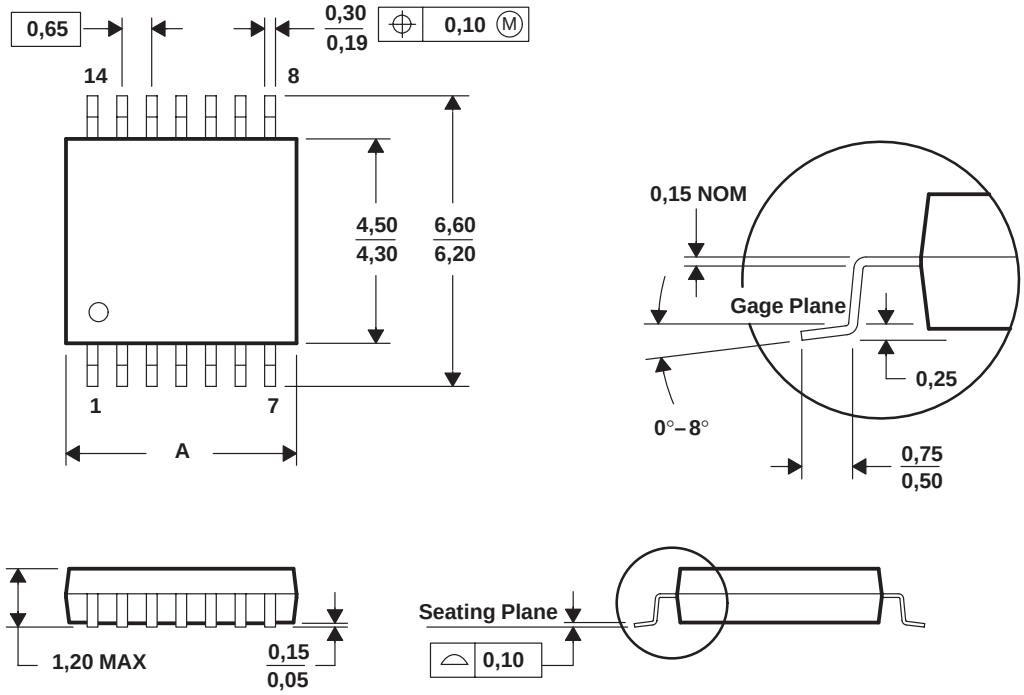
DIM \ PINS **	14	16	20	24	28	30	38
A MAX	6,50	6,50	7,50	8,50	10,50	10,50	12,90
A MIN	5,90	5,90	6,90	7,90	9,90	9,90	12,30

4040065 /E 12/01

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

PW (R-PDSO-G)** **PLASTIC SMALL-OUTLINE PACKAGE**

14 PINS SHOWN



DIM \ PINS **	8	14	16	20	24	28
A MAX	3,10	5,10	5,10	6,60	7,90	9,80
A MIN	2,90	4,90	4,90	6,40	7,70	9,60

4040064/F 01/97

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-153

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

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