

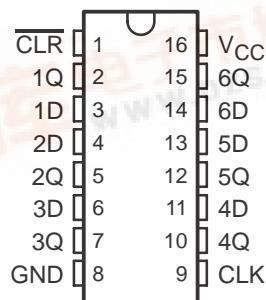
- 2-V to 5.5-V  $V_{CC}$  Operation
- Max  $t_{pd}$  of 8.5 ns at 5 V
- Typical  $V_{OLP}$  (Output Ground Bounce)  
<0.8 V at  $V_{CC}$  = 3.3 V,  $T_A$  = 25°C
- Typical  $V_{OHV}$  (Output  $V_{OH}$  Undershoot)  
>2.3 V at  $V_{CC}$  = 3.3 V,  $T_A$  = 25°C
- Support Mixed-Mode Voltage Operation on All Ports
- Latch-Up Performance Exceeds 250 mA Per JESD 17
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 200-V Machine Model (A115-A)
  - 1000-V Charged-Device Model (C101)

#### description/ordering information

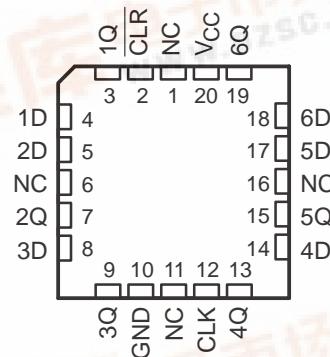
The 'LV174A devices are hex D-type flip-flops designed for 2-V to 5.5-V  $V_{CC}$  operation.

These devices are positive-edge-triggered flip-flops with a direct clear (CLR) input. Information at the data (D) inputs meeting the setup time requirements is transferred to the outputs on the positive-going edge of the clock pulse. Clock triggering occurs at a particular voltage level and is not directly related to the transition time of the positive-going edge of the clock pulse. When the clock (CLK) input is at either the high or low level, the D-input signal has no effect at the output.

SN54LV174A ... J OR W PACKAGE  
SN74LV174A ... D, DB, DGV, NS, OR PW PACKAGE  
(TOP VIEW)



SN54LV174A ... FK PACKAGE  
(TOP VIEW)



NC – No internal connection

#### ORDERING INFORMATION

$T_A$	PACKAGE <sup>†</sup>	ORDERABLE PART NUMBER	TOP-SIDE MARKING
$-40^{\circ}\text{C}$ to $85^{\circ}\text{C}$	SOIC – D	Tube of 40	SN74LV174AD
		Reel of 2500	SN74LV174ADR
	SOP – NS	Reel of 2000	SN74LV174ANSR
	SSOP – DB	Reel of 2000	SN74LV174ADBR
	TSSOP – PW	Tube of 90	SN74LV174APW
		Reel of 2000	SN74LV174APWR
		Reel of 250	SN74LV174APWT
$-55^{\circ}\text{C}$ to $125^{\circ}\text{C}$	TVSOP – DGV	Reel of 2000	SN74LV174ADGVR
	CDIP – J	Tube of 25	SNJ54LV174AJ
		Tube of 150	SNJ54LV174AW
	LCCC – FK	Tube of 55	SNJ54LV174AFK

<sup>†</sup> Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at [www.ti.com/sc/package](http://www.ti.com/sc/package).

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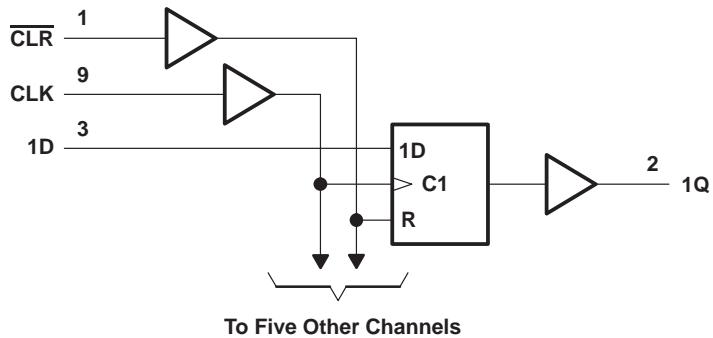
# SN54LV174A, SN74LV174A HEX D-TYPE FLIP-FLOPS WITH CLEAR

SCLS401G – APRIL 1998 – REVISED APRIL 2005

FUNCTION TABLE

INPUTS			OUTPUT
CLR	CLK	D	Q
L	X	X	L
H	↑	H	H
H	↑	L	L
H	L	X	Q <sub>0</sub>

## logic diagram (positive logic)



Pin numbers shown are for the D, DB, DGV, J, NS, PW, and W packages.

## absolute maximum ratings over operating free-air temperature range (unless otherwise noted)<sup>†</sup>

Supply voltage range, V <sub>CC</sub> .....	-0.5 V to 7 V
Input voltage range, V <sub>I</sub> (see Note 1) .....	-0.5 V to 7 V
Voltage range applied to any output in the high-impedance or power-off state, V <sub>O</sub> (see Note 1) .....	-0.5 V to 7 V
Output voltage range, V <sub>O</sub> (see Notes 1 and 2) .....	-0.5 V to V <sub>CC</sub> + 0.5 V
Input clamp current, I <sub>IK</sub> (V <sub>I</sub> < 0) .....	-20 mA
Output clamp current, I <sub>OK</sub> (V <sub>O</sub> < 0) .....	-50 mA
Continuous output current, I <sub>O</sub> (V <sub>O</sub> = 0 to V <sub>CC</sub> ) .....	±25 mA
Continuous current through V <sub>CC</sub> or GND .....	±50 mA
Package thermal impedance, θ <sub>JA</sub> (see Note 3): D package .....	73°C/W
DB package .....	82°C/W
DGV package .....	120°C/W
NS package .....	64°C/W
PW package .....	108°C/W
Storage temperature range, T <sub>stg</sub> .....	-65°C to 150°C

<sup>†</sup> 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 negative-voltage ratings may be exceeded if the input and output current ratings are observed.
2. This value is limited to 5.5 V maximum.
3. The package thermal impedance is calculated in accordance with JESD 51-7.

**SN54LV174A, SN74LV174A  
HEX D-TYPE FLIP-FLOPS  
WITH CLEAR**

SCLS401G – APRIL 1998 – REVISED APRIL 2005

**recommended operating conditions (see Note 4)**

		SN54LV174A		SN74LV174A		UNIT
		MIN	MAX	MIN	MAX	
$V_{CC}$	Supply voltage	2	5.5	2	5.5	V
$V_{IH}$	High-level input voltage	$V_{CC} = 2\text{ V}$	1.5	1.5	1.5	V
		$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	$V_{CC} \times 0.7$	$V_{CC} \times 0.7$	$V_{CC} \times 0.7$	
		$V_{CC} = 3\text{ V to }3.6\text{ V}$	$V_{CC} \times 0.7$	$V_{CC} \times 0.7$	$V_{CC} \times 0.7$	
		$V_{CC} = 4.5\text{ V to }5.5\text{ V}$	$V_{CC} \times 0.7$	$V_{CC} \times 0.7$	$V_{CC} \times 0.7$	
$V_{IL}$	Low-level input voltage	$V_{CC} = 2\text{ V}$	0.5	0.5	0.5	V
		$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	$V_{CC} \times 0.3$	$V_{CC} \times 0.3$	$V_{CC} \times 0.3$	
		$V_{CC} = 3\text{ V to }3.6\text{ V}$	$V_{CC} \times 0.3$	$V_{CC} \times 0.3$	$V_{CC} \times 0.3$	
		$V_{CC} = 4.5\text{ V to }5.5\text{ V}$	$V_{CC} \times 0.3$	$V_{CC} \times 0.3$	$V_{CC} \times 0.3$	
$V_I$	Input voltage	0	5.5	0	5.5	V
$V_O$	Output voltage	0	$V_{CC}$	0	$V_{CC}$	V
$I_{OH}$	High-level output current	$V_{CC} = 2\text{ V}$	-50	-50	-50	$\mu\text{A}$
		$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	-2	-2	-2	mA
		$V_{CC} = 3\text{ V to }3.6\text{ V}$	-6	-6	-6	
		$V_{CC} = 4.5\text{ V to }5.5\text{ V}$	-12	-12	-12	
$I_{OL}$	Low-level output current	$V_{CC} = 2\text{ V}$	50	50	50	$\mu\text{A}$
		$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	2	2	2	mA
		$V_{CC} = 3\text{ V to }3.6\text{ V}$	6	6	6	
		$V_{CC} = 4.5\text{ V to }5.5\text{ V}$	12	12	12	
$\Delta t/\Delta v$	Input transition rise or fall rate	$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	200	200	200	ns/V
		$V_{CC} = 3\text{ V to }3.6\text{ V}$	100	100	100	
		$V_{CC} = 4.5\text{ V to }5.5\text{ V}$	20	20	20	
$T_A$	Operating free-air temperature	-55	125	-40	85	$^{\circ}\text{C}$

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.

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

PARAMETER	TEST CONDITIONS	$V_{CC}$	SN54LV174A			UNIT
			MIN	TYP	MAX	
$V_{OH}$	$I_{OH} = -50\text{ }\mu\text{A}$	2 V to 5.5 V	$V_{CC} - 0.1$		$V_{CC} - 0.1$	V
	$I_{OH} = -2\text{ mA}$	2.3 V	2		2	
	$I_{OH} = -6\text{ mA}$	3 V	2.48		2.48	
	$I_{OH} = -12\text{ mA}$	4.5 V	3.8		3.8	
$V_{OL}$	$I_{OL} = 50\text{ }\mu\text{A}$	2 V to 5.5 V	0.1		0.1	V
	$I_{OL} = 2\text{ mA}$	2.3 V	0.4		0.4	
	$I_{OL} = 6\text{ mA}$	3 V	0.44		0.44	
	$I_{OL} = 12\text{ mA}$	4.5 V	0.55		0.55	
$I_I$	$V_I = 5.5\text{ V or GND}$	0 to 5.5 V	$\pm 1$		$\pm 1$	$\mu\text{A}$
$I_{CC}$	$V_I = V_{CC}$ or GND, $I_O = 0$	5.5 V	20		20	$\mu\text{A}$
$I_{off}$	$V_I$ or $V_O = 0$ to 5.5 V	0	5		5	$\mu\text{A}$
$C_J$	$V_I = V_{CC}$ or GND	3.3 V	1.7		1.7	pF

**SN54LV174A, SN74LV174A  
HEX D-TYPE FLIP-FLOPS  
WITH CLEAR**

SCLS401G – APRIL 1998 – REVISED APRIL 2005

**timing requirements over recommended operating free-air temperature range,  $V_{CC} = 2.5 \text{ V} \pm 0.2 \text{ V}$  (unless otherwise noted) (see Figure 1)**

		$T_A = 25^\circ\text{C}$			SN54LV174A		SN74LV174A		UNIT
		MIN	TYP	MAX	MIN	MAX	MIN	MAX	
$t_W$	Pulse duration	CLR low	6		6.5		6.5		ns
		CLK high or low	7		7		7		
$t_{SU}$	Setup time before $CLK^\uparrow$	Data	8.5		9.5		9.5		ns
		CLR inactive	4		4		4		
$t_h$	Hold time, data after $CLK^\uparrow$		-0.5		0		0		ns

**timing requirements over recommended operating free-air temperature range,  $V_{CC} = 3.3 \text{ V} \pm 0.3 \text{ V}$  (unless otherwise noted) (see Figure 1)**

		$T_A = 25^\circ\text{C}$			SN54LV174A		SN74LV174A		UNIT
		MIN	TYP	MAX	MIN	MAX	MIN	MAX	
$t_W$	Pulse duration	CLR low	5		5		5		ns
		CLK high or low	5		5		5		
$t_{SU}$	Setup time before $CLK^\uparrow$	Data	5		6		6		ns
		CLR inactive	3		3		3		
$t_h$	Hold time, data after $CLK^\uparrow$		0		0		0		ns

**timing requirements over recommended operating free-air temperature range,  $V_{CC} = 5 \text{ V} \pm 0.5 \text{ V}$  (unless otherwise noted) (see Figure 1)**

		$T_A = 25^\circ\text{C}$			SN54LV174A		SN74LV174A		UNIT
		MIN	TYP	MAX	MIN	MAX	MIN	MAX	
$t_W$	Pulse duration	CLR low	5		5		5		ns
		CLK high or low	5		5		5		
$t_{SU}$	Setup time before $CLK^\uparrow$	Data	4.5		4.5		4.5		ns
		CLR inactive	2.5		2.5		2.5		
$t_h$	Hold time, data after $CLK^\uparrow$		0.5		0.5		0.5		ns

**switching characteristics over recommended operating free-air temperature range,  $V_{CC} = 2.5 \text{ V} \pm 0.2 \text{ V}$  (unless otherwise noted) (see Figure 1)**

PARAMETER	FROM (INPUT)	TO (OUTPUT)	LOAD CAPACITANCE	$T_A = 25^\circ\text{C}$			SN54LV174A		SN74LV174A		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
$f_{max}$			$C_L = 15 \text{ pF}$	55*	115*		50*		50		MHz
				45	90		40		40		
$t_{pd}$	$\overline{CLR}$	Q	$C_L = 15 \text{ pF}$	6.3*	17.3*		1*	19.5*	1	19.5	ns
	CLK			8.4*	17.1*		1*	19*	1	19	
$t_{pd}$	$\overline{CLR}$	Q	$C_L = 50 \text{ pF}$	8.2	21.9		1	23.5	1	23.5	ns
	CLK			10.8	20.6		1	23	1	23	
$t_{sk(o)}$						2				2	

\* On products compliant to MIL-PRF-38535, this parameter is not production tested.

**SN54LV174A, SN74LV174A  
HEX D-TYPE FLIP-FLOPS  
WITH CLEAR**

SCLS401G – APRIL 1998 – REVISED APRIL 2005

switching characteristics over recommended operating free-air temperature range,  $V_{CC} = 3.3 \text{ V} \pm 0.3 \text{ V}$  (unless otherwise noted) (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	LOAD CAPACITANCE	TA = 25°C			SN54LV174A		SN74LV174A		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
f <sub>max</sub>			C <sub>L</sub> = 15 pF	95*	170*		80*		80		MHz
			C <sub>L</sub> = 50 pF	55	130		50		50		
t <sub>pd</sub>	CLR	Q	C <sub>L</sub> = 15 pF		4.5*	11.4*	1*	13.5*	1	13.5	ns
	CLK				5.8*	11*	1*	13*	1	13	
t <sub>pd</sub>	CLR	Q	C <sub>L</sub> = 50 pF		6	14.9	1	17	1	17	ns
	CLK				7.5	14.5	1	16.5	1	16.5	
t <sub>sk(o)</sub>						1.5				1.5	

\* On products compliant to MIL-PRF-38535, this parameter is not production tested.

switching characteristics over recommended operating free-air temperature range,  $V_{CC} = 5 \text{ V} \pm 0.5 \text{ V}$  (unless otherwise noted) (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	LOAD CAPACITANCE	TA = 25°C			SN54LV174A		SN74LV174A		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
f <sub>max</sub>			C <sub>L</sub> = 15 pF	130*	240*		110*		110		MHz
			C <sub>L</sub> = 50 pF	90	180		80		80		
t <sub>pd</sub>	CLR	Q	C <sub>L</sub> = 15 pF		3*	7.6*	1*	9*	1	9	ns
	CLK				4.1*	7.2*	1*	8.5*	1	8.5	
t <sub>pd</sub>	CLR	Q	C <sub>L</sub> = 50 pF		4.2	9.6	1	11	1	11	ns
	CLK				5.5	9.2	1	10.5	1	10.5	
t <sub>sk(o)</sub>						1				1	

\* On products compliant to MIL-PRF-38535, this parameter is not production tested.

noise characteristics,  $V_{CC} = 3.3 \text{ V}$ ,  $C_L = 50 \text{ pF}$ ,  $T_A = 25^\circ\text{C}$  (see Note 5)

PARAMETER		SN74LV174A			UNIT
		MIN	TYP	MAX	
V <sub>OL(P)</sub>	Quiet output, maximum dynamic V <sub>OL</sub>		0.34	0.8	V
V <sub>OL(V)</sub>	Quiet output, minimum dynamic V <sub>OL</sub>		-0.3	-0.8	V
V <sub>OH(V)</sub>	Quiet output, minimum dynamic V <sub>OH</sub>		3.02		V
V <sub>IH(D)</sub>	High-level dynamic input voltage		2.31		V
V <sub>IL(D)</sub>	Low-level dynamic input voltage		0.99		V

NOTE 5: Characteristics are for surface-mount packages only.

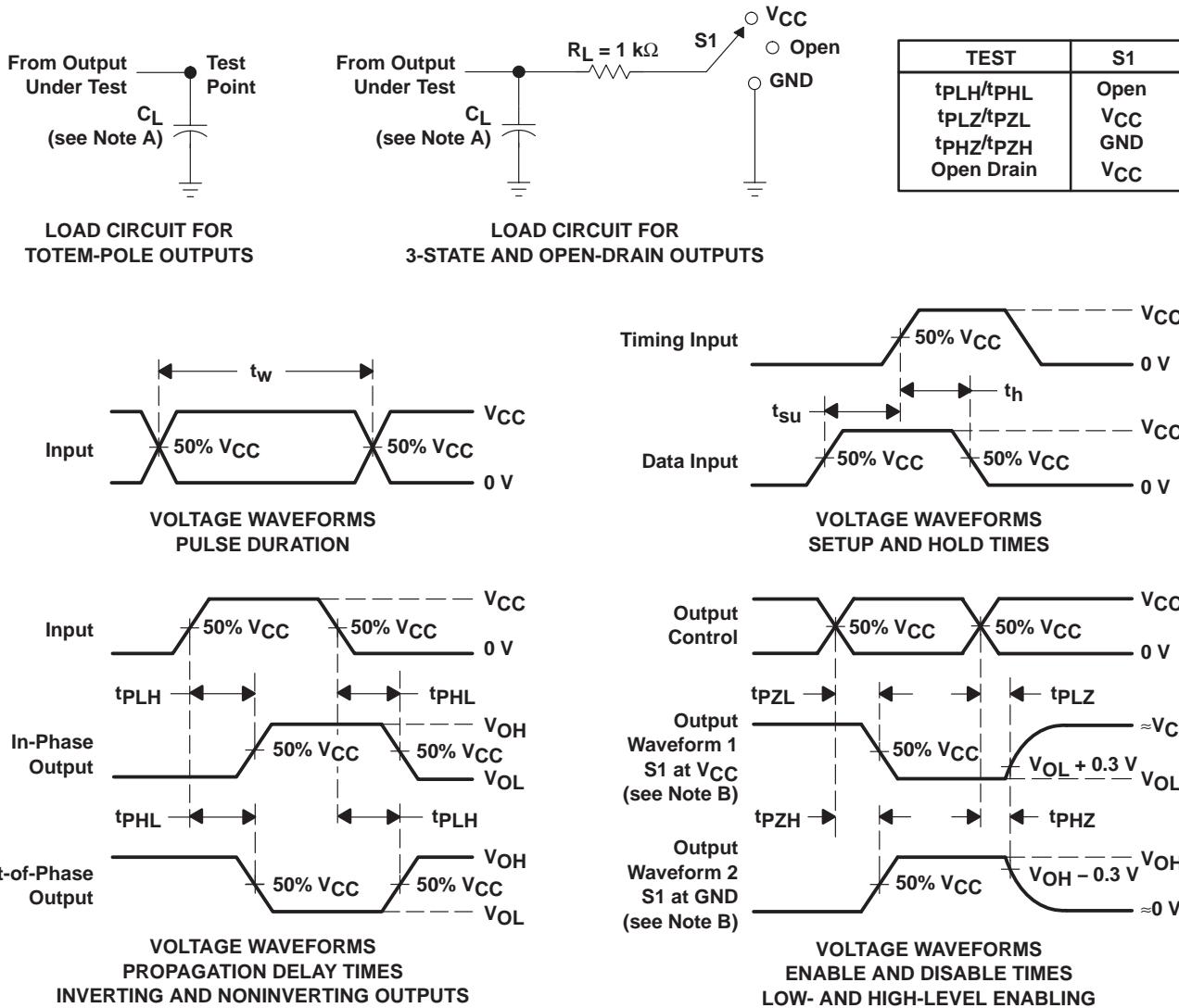
operating characteristics,  $T_A = 25^\circ\text{C}$

PARAMETER		TEST CONDITIONS		V <sub>CC</sub>	TYP	UNIT
		CL = 50 pF	f = 10 MHz			
C <sub>pd</sub>	Power dissipation capacitance			3.3 V	14	pF
				5 V	15.1	

# **SN54LV174A, SN74LV174A HEX D-TYPE FLIP-FLOPS WITH CLEAR**

SCLS401G – APRIL 1998 – REVISED APRIL 2005

## PARAMETER MEASUREMENT INFORMATION



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:  $PRR \leq 1$  MHz,  $Z_O = 50 \Omega$ ,  $t_r \leq 3$  ns,  $t_f \leq 3$  ns.
- D. The outputs are measured one at a time, with one input transition per measurement.
- E.  $t_{PLZ}$  and  $t_{PHZ}$  are the same as  $t_{dis}$ .
- F.  $t_{PZL}$  and  $t_{PZH}$  are the same as  $t_{en}$ .
- G.  $t_{PHL}$  and  $t_{PLH}$  are the same as  $t_{pd}$ .
- H. All parameters and waveforms are not applicable to all devices.

**Figure 1. Load Circuit and Voltage Waveforms**

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**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>
SN74LV174AD	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174ADBR	ACTIVE	SSOP	DB	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174ADBRE4	ACTIVE	SSOP	DB	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174ADB RG4	ACTIVE	SSOP	DB	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174ADE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174ADG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174ADGVR	ACTIVE	TVSOP	DGV	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174ADGVRE4	ACTIVE	TVSOP	DGV	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174ADGVRG4	ACTIVE	TVSOP	DGV	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174ADR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174ADRE4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174ADRG4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174ANSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174ANSRE4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174ANSRG4	ACTIVE	SO	NS	16	2000	TBD	Call TI	Call TI
SN74LV174APW	ACTIVE	TSSOP	PW	16	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174APWE4	ACTIVE	TSSOP	PW	16	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174APWG4	ACTIVE	TSSOP	PW	16	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174APWR	ACTIVE	TSSOP	PW	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174APWRE4	ACTIVE	TSSOP	PW	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174APWRG4	ACTIVE	TSSOP	PW	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174APWT	ACTIVE	TSSOP	PW	16	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174APWTE4	ACTIVE	TSSOP	PW	16	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV174APWTG4	ACTIVE	TSSOP	PW	16	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM

<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.

**(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.

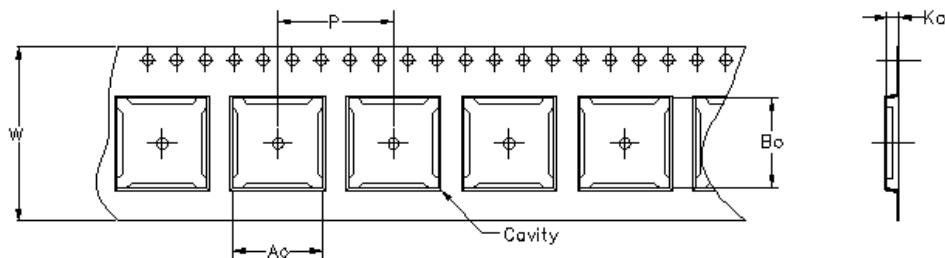
**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**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.

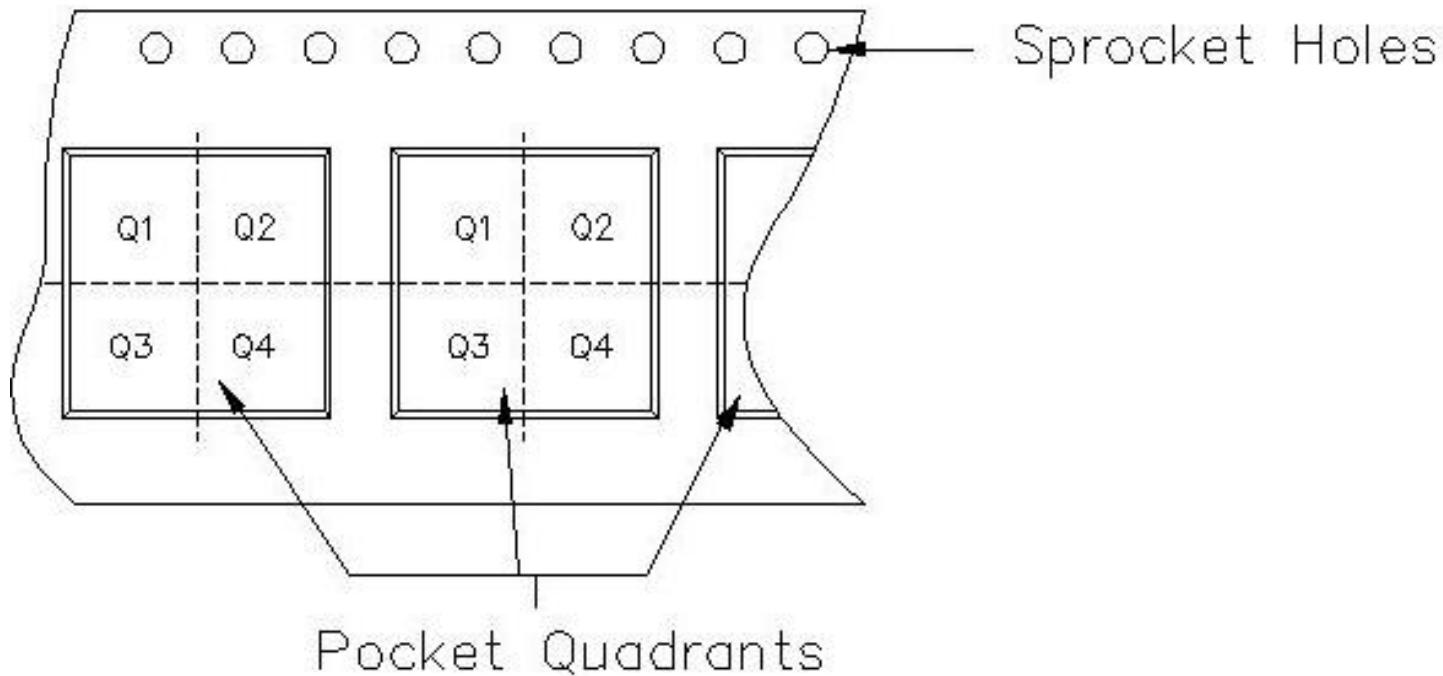
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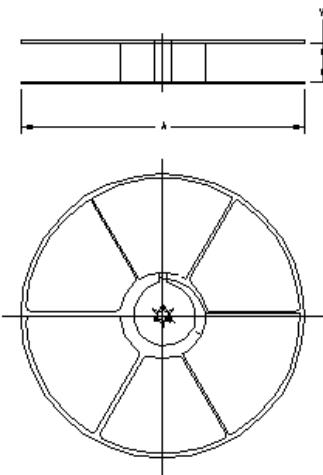
Carrier tape design is defined largely by the component length, width, and thickness.

$A_0$ = Dimension designed to accommodate the component width.
$B_0$ = Dimension designed to accommodate the component length.
$K_0$ = Dimension designed to accommodate the component thickness.
$W$ = Overall width of the carrier tape.
$P$ = Pitch between successive cavity centers.

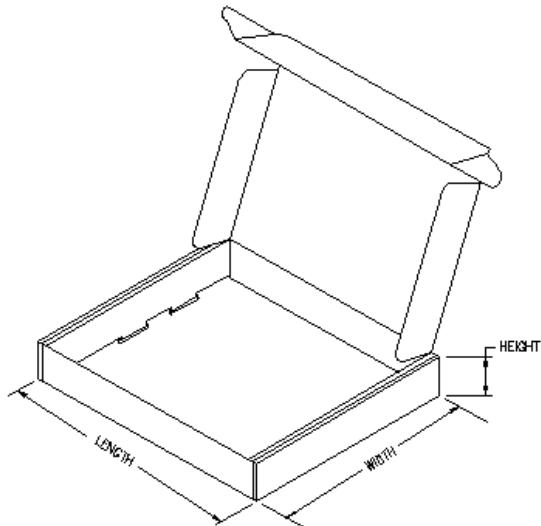


#### TAPE AND REEL INFORMATION

Device	Package	Pins	Site	Reel Diameter (mm)	Reel Width (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74LV174ADBR	DB	16	MLA	330	16	8.2	6.6	2.5	12	16	Q1
SN74LV174ADGVR	DGV	16	MLA	330	12	6.8	4.0	1.6	8	16	Q1
SN74LV174ADR	D	16	FMX	0	16	6.5	10.3	12.1	2	16	Q1
SN74LV174ANSR	NS	16	MLA	330	16	8.2	10.5	2.5	12	16	Q1
SN74LV174APWR	PW	16	MLA	330	12	7.0	5.6	1.6	8	12	Q1


**TAPE AND REEL BOX INFORMATION**

Device	Package	Pins	Site	Length (mm)	Width (mm)	Height (mm)
SN74LV174ADBR	DB	16	MLA	342.9	336.6	28.58
SN74LV174ADGVR	DGV	16	MLA	338.1	340.5	20.64
SN74LV174ADR	D	16	FMX	342.9	336.6	28.58
SN74LV174ANSR	NS	16	MLA	342.9	336.6	28.58
SN74LV174APWR	PW	16	MLA	338.1	340.5	20.64



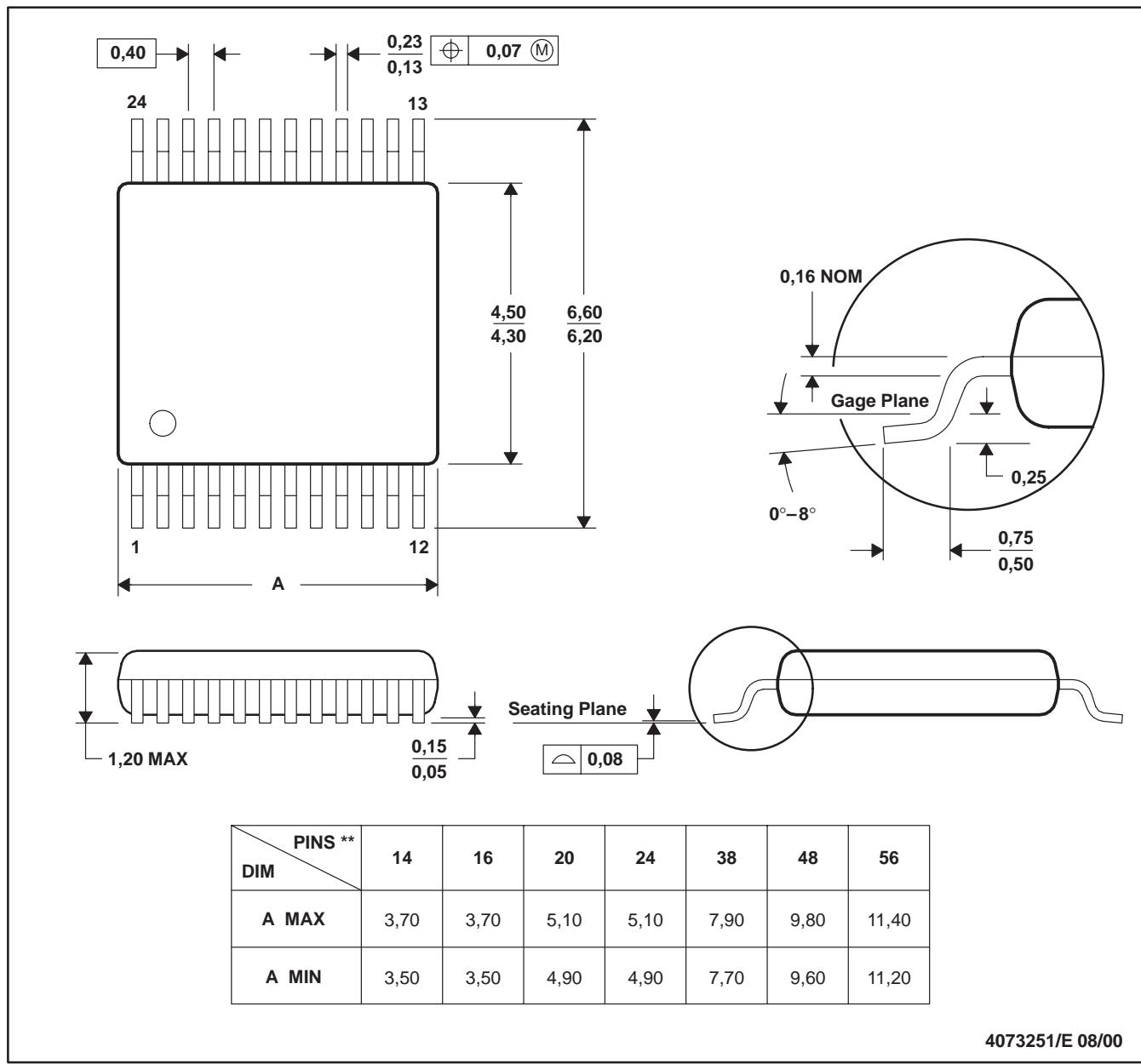
# MECHANICAL DATA

MPDS006C – FEBRUARY 1996 – REVISED AUGUST 2000

DGV (R-PDSO-G\*\*)

24 PINS SHOWN

PLASTIC SMALL-OUTLINE

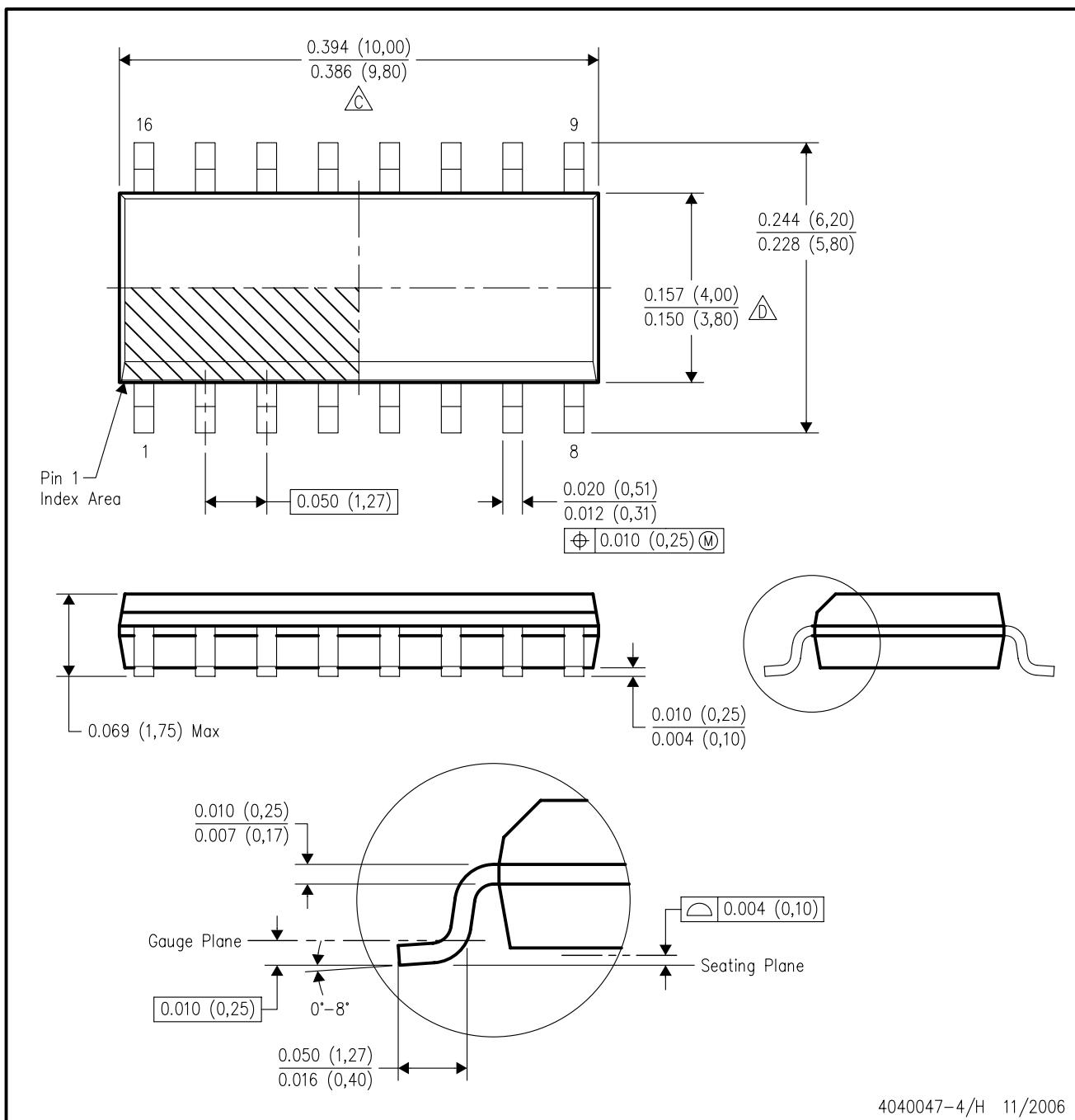


NOTES: A. All linear dimensions are in millimeters.  
 B. This drawing is subject to change without notice.  
 C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15 per side.  
 D. Falls within JEDEC: 24/48 Pins – MO-153  
 14/16/20/56 Pins – MO-194

## MECHANICAL DATA

D (R-PDSO-G16)

PLASTIC SMALL-OUTLINE PACKAGE



4040047-4/H 11/2006

NOTES: A. All linear dimensions are in inches (millimeters).

B. This drawing is subject to change without notice.

C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed .006 (0,15) per end.

D. Body width does not include interlead flash. Interlead flash shall not exceed .017 (0,43) per side.

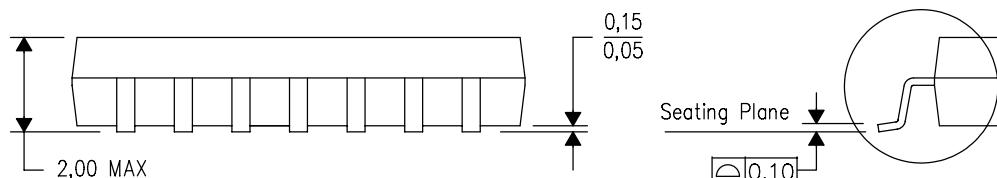
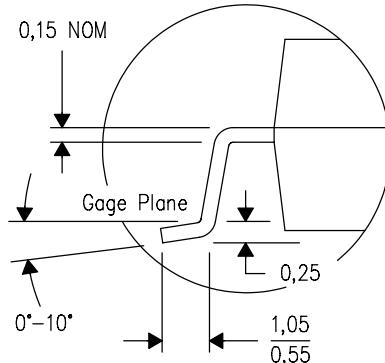
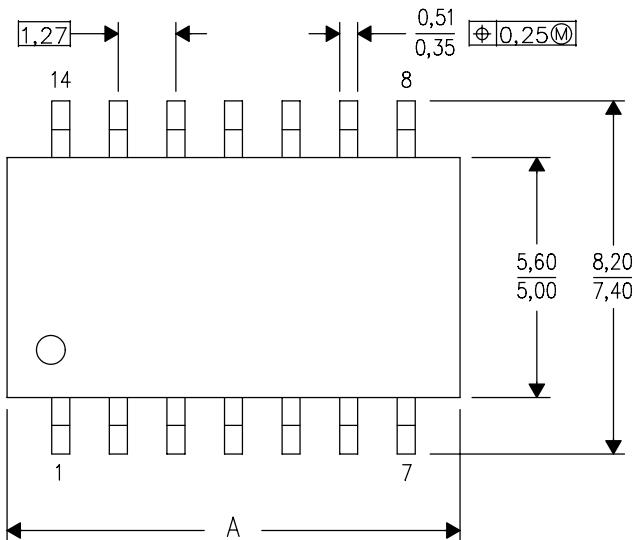
E. Reference JEDEC MS-012 variation AC.

## MECHANICAL DATA

NS (R-PDSO-G\*\*)

14-PINS SHOWN

PLASTIC SMALL-OUTLINE PACKAGE



PINS ** DIM	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.

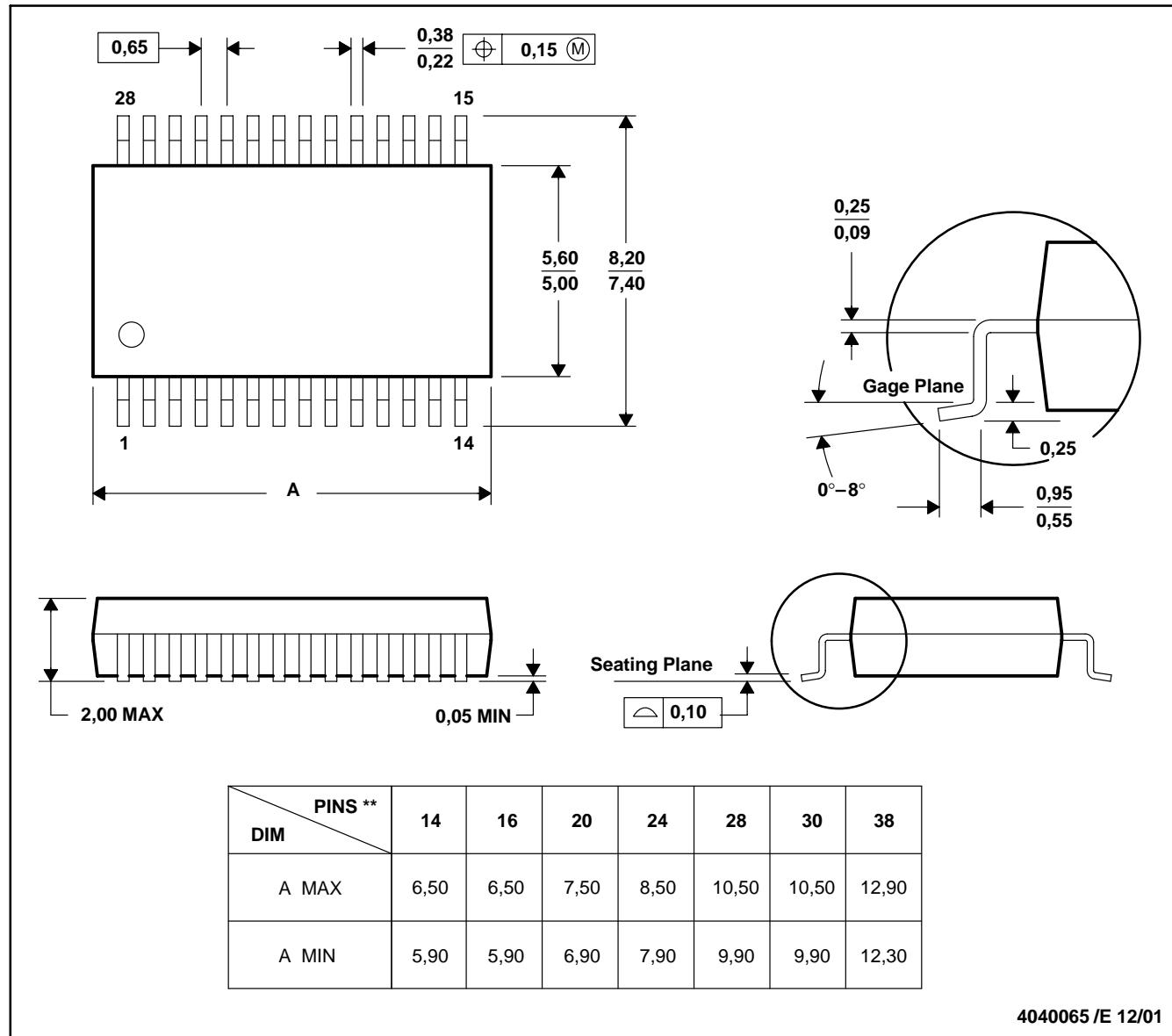
# MECHANICAL DATA

MSS002E – JANUARY 1995 – REVISED DECEMBER 2001

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

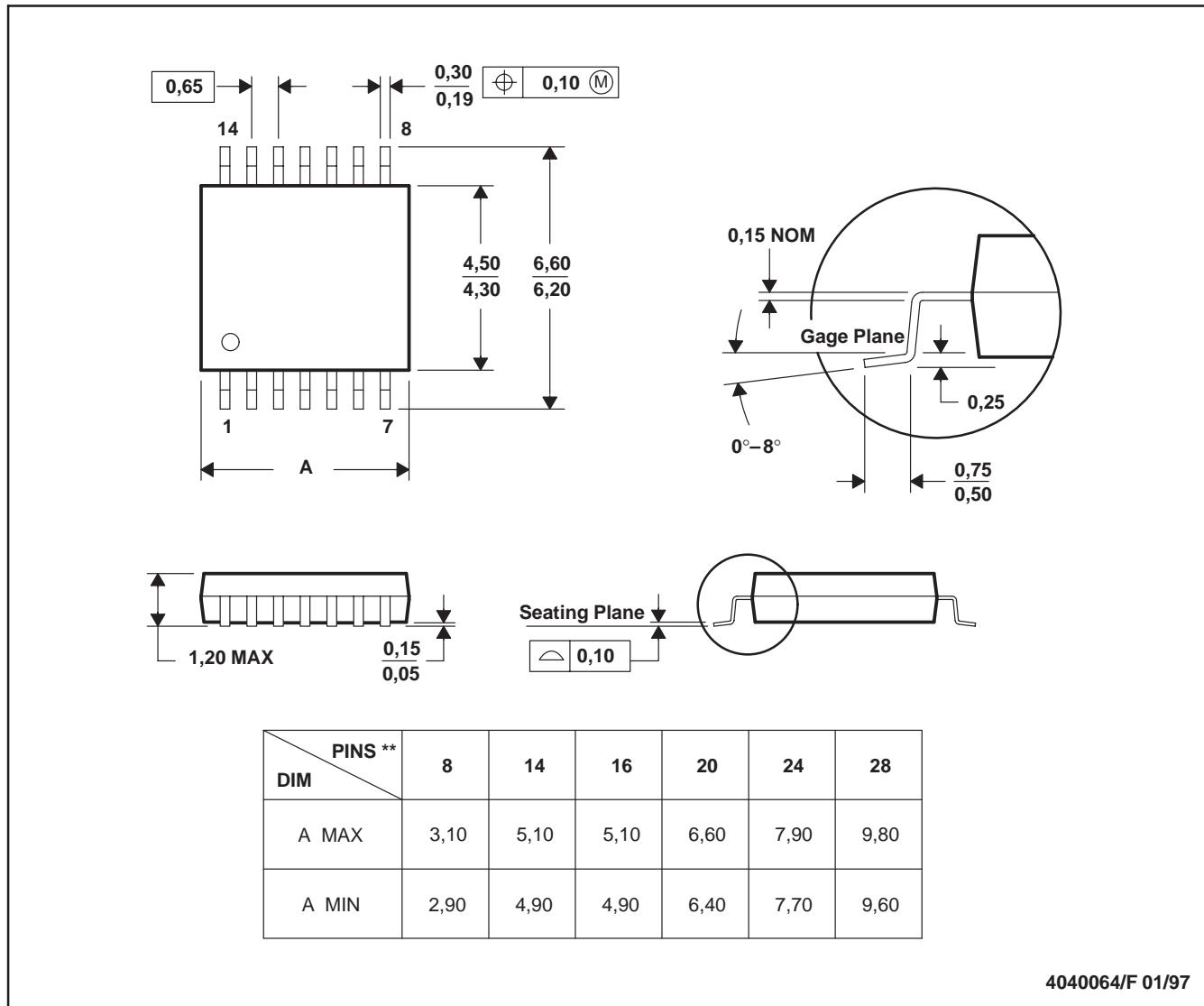
# MECHANICAL DATA

MTSS001C – JANUARY 1995 – REVISED FEBRUARY 1999

PW (R-PDSO-G\*\*)

14 PINS SHOWN

PLASTIC SMALL-OUTLINE PACKAGE



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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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>
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