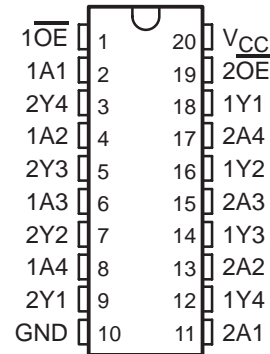


# SN54LV240A, SN74LV240A OCTAL BUFFERS/DRIVERS WITH 3-STATE OUTPUTS

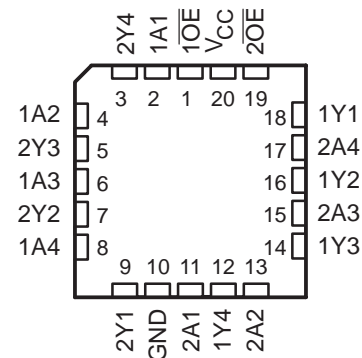
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- 2-V to 5.5-V  $V_{CC}$  Operation
- Max  $t_{pd}$  of 6.5 ns at 5 V
- Typical  $V_{OLP}$  (Output Ground Bounce)  
<0.8 V at  $V_{CC} = 3.3$  V,  $T_A = 25^\circ\text{C}$
- Typical  $V_{OHV}$  (Output  $V_{OH}$  Undershoot)  
>2.3 V at  $V_{CC} = 3.3$  V,  $T_A = 25^\circ\text{C}$
- 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)

SN54LV240A . . . J OR W PACKAGE  
SN74LV240A . . . DB, DGV, DW, NS, OR PW PACKAGE  
(TOP VIEW)



SN54LV240A . . . FK PACKAGE  
(TOP VIEW)



## description/ordering information

These octal buffers/drivers are designed for 2-V to 5.5-V  $V_{CC}$  operation.

The 'LV240A devices are designed specifically to improve both the performance and density of 3-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters.

These devices are organized as two 4-bit buffers/line drivers with separate output-enable ( $\overline{OE}$ ) inputs. When  $\overline{OE}$  is low, the device passes data from the A inputs to the Y outputs. When  $\overline{OE}$  is high, the outputs are in the high-impedance state.

## ORDERING INFORMATION

$T_A$	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
-40°C to 85°C	SOIC – DW	Tube of 25	SN74LV240ADW	LV240A
		Reel of 2000	SN74LV240ADWR	
	SOP – NS	Reel of 2000	SN74LV240ANSR	74LV240A
	SSOP – DB	Reel of 2000	SN74LV240ADBR	LV240A
	TSSOP – PW	Tube of 70	SN74LV240APW	LV240A
		Reel of 2000	SN74LV240APWR	
Reel of 250		SN74LV240APWT		
TVSOP – DGV	Reel of 2000	SN74LV240ADGVR	LV240A	
-55°C to 125°C	CDIP – J	Tube of 20	SNJ54LV240AJ	SNJ54LV240AJ
	CFP – W	Tube of 85	SNJ54LV240AW	SNJ54LV240AW
	LCCC – FK	Tube of 55	SNJ54LV240AFK	SNJ54LV240AFK

† 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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 **TEXAS  
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# SN54LV240A, SN74LV240A OCTAL BUFFERS/DRIVERS WITH 3-STATE OUTPUTS

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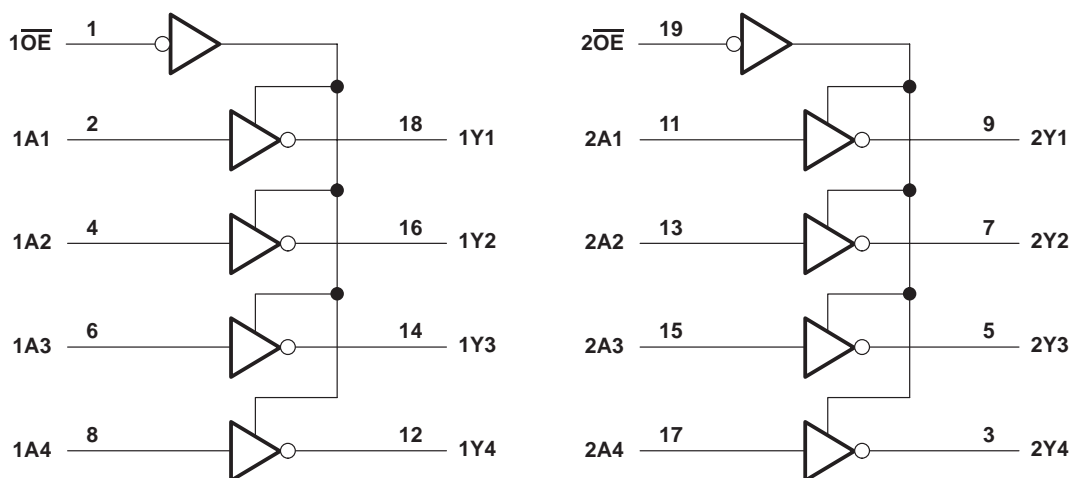
## description/ordering information (continued)

To ensure the high-impedance state during power up or power down,  $\overline{OE}$  should be tied to  $V_{CC}$  through a pullup resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver.

FUNCTION TABLE  
(each buffer)

INPUTS		OUTPUT
$\overline{OE}$	A	Y
L	H	L
L	L	H
H	X	Z

## logic diagram (positive logic)





# SN54LV240A, SN74LV240A OCTAL BUFFERS/DRIVERS WITH 3-STATE OUTPUTS

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## recommended operating conditions (see Note 4)

		SN54LV240A		SN74LV240A		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		V	
		$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	$V_{CC} \times 0.7$	$V_{CC} \times 0.7$			
		$V_{CC} = 3\text{ V to }3.6\text{ V}$	$V_{CC} \times 0.7$	$V_{CC} \times 0.7$			
		$V_{CC} = 4.5\text{ V to }5.5\text{ V}$	$V_{CC} \times 0.7$	$V_{CC} \times 0.7$			
$V_{IL}$	Low-level input voltage	$V_{CC} = 2\text{ V}$	0.5		0.5	V	
		$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	$V_{CC} \times 0.3$		$V_{CC} \times 0.3$		
		$V_{CC} = 3\text{ V to }3.6\text{ V}$	$V_{CC} \times 0.3$		$V_{CC} \times 0.3$		
		$V_{CC} = 4.5\text{ V to }5.5\text{ V}$	$V_{CC} \times 0.3$		$V_{CC} \times 0.3$		
$V_I$	Input voltage	0	5.5	0	5.5	V	
$V_O$	Output voltage	High or low state	0	$V_{CC}$	0	$V_{CC}$	V
		3-state	0	5.5	0	5.5	
$I_{OH}$	High-level output current	$V_{CC} = 2\text{ V}$	-50		-50	$\mu\text{A}$	
		$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	-2		-2	mA	
		$V_{CC} = 3\text{ V to }3.6\text{ V}$	-8		-8		
		$V_{CC} = 4.5\text{ V to }5.5\text{ V}$	-16		-16		
$I_{OL}$	Low-level output current	$V_{CC} = 2\text{ V}$	50		50	$\mu\text{A}$	
		$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	2		2	mA	
		$V_{CC} = 3\text{ V to }3.6\text{ V}$	8		8		
		$V_{CC} = 4.5\text{ V to }5.5\text{ V}$	16		16		
$\Delta t/\Delta v$	Input transition rise or fall rate	$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	200		200	ns/V	
		$V_{CC} = 3\text{ V to }3.6\text{ V}$	100		100		
		$V_{CC} = 4.5\text{ V to }5.5\text{ V}$	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	$V_{CC}$	SN54LV240A			SN74LV240A			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
$V_{OH}$	$I_{OH} = -50\ \mu\text{A}$	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				
	$I_{OH} = -8\ \text{mA}$	3 V	2.48		2.48				
	$I_{OH} = -16\ \text{mA}$	4.5 V	3.8		3.8				
$V_{OL}$	$I_{OL} = 50\ \mu\text{A}$	2 V to 5.5 V			0.1			V	
	$I_{OL} = 2\ \text{mA}$	2.3 V			0.4				
	$I_{OL} = 8\ \text{mA}$	3 V			0.44				
	$I_{OL} = 16\ \text{mA}$	4.5 V			0.55				
$I_I$	$V_I = 5.5\text{ V or GND}$	0 to 5.5 V			$\pm 1$			$\mu\text{A}$	
$I_{OZ}$	$V_O = V_{CC}\text{ or GND}$	5.5 V			$\pm 5$			$\mu\text{A}$	
$I_{CC}$	$V_I = V_{CC}\text{ or GND, } I_O = 0$	5.5 V			20			$\mu\text{A}$	
$I_{off}$	$V_I\text{ or }V_O = 0\text{ to }5.5\text{ V}$	0			5			$\mu\text{A}$	
$C_i$	$V_I = V_{CC}\text{ or GND}$	3.3 V	2.3		2.3			pF	

PRODUCT PREVIEW information concerns products in the formative or design phase of development. Characteristic data and other specifications are design goals. Texas Instruments reserves the right to change or discontinue these products without notice.



# SN54LV240A, SN74LV240A OCTAL BUFFERS/DRIVERS WITH 3-STATE OUTPUTS

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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	$T_A = 25^\circ\text{C}$			SN54LV240A		SN74LV240A		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
$t_{pd}$	A	Y	$C_L = 15\text{ pF}$	6.3*	11.6*		1*	14*	1	14	ns
$t_{en}$	$\overline{OE}$	Y		8.5*	14.6*		1*	17*	1	17	
$t_{dis}$	$\overline{OE}$	Y		9.7*	14.1*		1*	16*	1	16	
$t_{pd}$	A	Y	$C_L = 50\text{ pF}$	8.2	14.4		1	17	1	17	ns
$t_{en}$	$\overline{OE}$	Y		10.3	17.8		1	21	1	21	
$t_{dis}$	$\overline{OE}$	Y		14.2	19.2		1	21	1	21	
$t_{sk(o)}$						2				2	

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

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	$T_A = 25^\circ\text{C}$			SN54LV240A		SN74LV240A		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
$t_{pd}$	A	Y	$C_L = 15\text{ pF}$	4.6*	7.5*		1*	9*	1	9	ns
$t_{en}$	$\overline{OE}$	Y		6.2*	10.6*		1*	12.5*	1	12.5	
$t_{dis}$	$\overline{OE}$	Y		8.3*	12.5*		1*	13.5*	1	13.5	
$t_{pd}$	A	Y	$C_L = 50\text{ pF}$	5.9	11		1	12.5	1	12.5	ns
$t_{en}$	$\overline{OE}$	Y		7.5	14.1		1	16	1	16	
$t_{dis}$	$\overline{OE}$	Y		11.8	15		1	17	1	17	
$t_{sk(o)}$						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	$T_A = 25^\circ\text{C}$			SN54LV240A		SN74LV240A		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
$t_{pd}$	A	Y	$C_L = 15\text{ pF}$	3.4*	5.5*		1*	6.5*	1	6.5	ns
$t_{en}$	$\overline{OE}$	Y		4.6*	7.3*		1*	8.5*	1	8.5	
$t_{dis}$	$\overline{OE}$	Y		7.4*	12.2*		1*	13.5*	1	13.5	
$t_{pd}$	A	Y	$C_L = 50\text{ pF}$	4.4	7.5		1	8.5	1	8.5	ns
$t_{en}$	$\overline{OE}$	Y		5.6	9.3		1	10.5	1	10.5	
$t_{dis}$	$\overline{OE}$	Y		9.7	14.2		1	15.5	1	15.5	
$t_{sk(o)}$						1				1	

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

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**SN54LV240A, SN74LV240A**  
**OCTAL BUFFERS/DRIVERS**  
**WITH 3-STATE OUTPUTS**

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

PARAMETER	SN74LV240A			UNIT
	MIN	TYP	MAX	
$V_{OL(P)}$ Quiet output, maximum dynamic $V_{OL}$		0.56		V
$V_{OL(V)}$ Quiet output, minimum dynamic $V_{OL}$		-0.49		V
$V_{OH(V)}$ Quiet output, minimum dynamic $V_{OH}$		2.82		V
$V_{IH(D)}$ High-level dynamic input voltage	2.31			V
$V_{IL(D)}$ Low-level dynamic input voltage			0.99	V

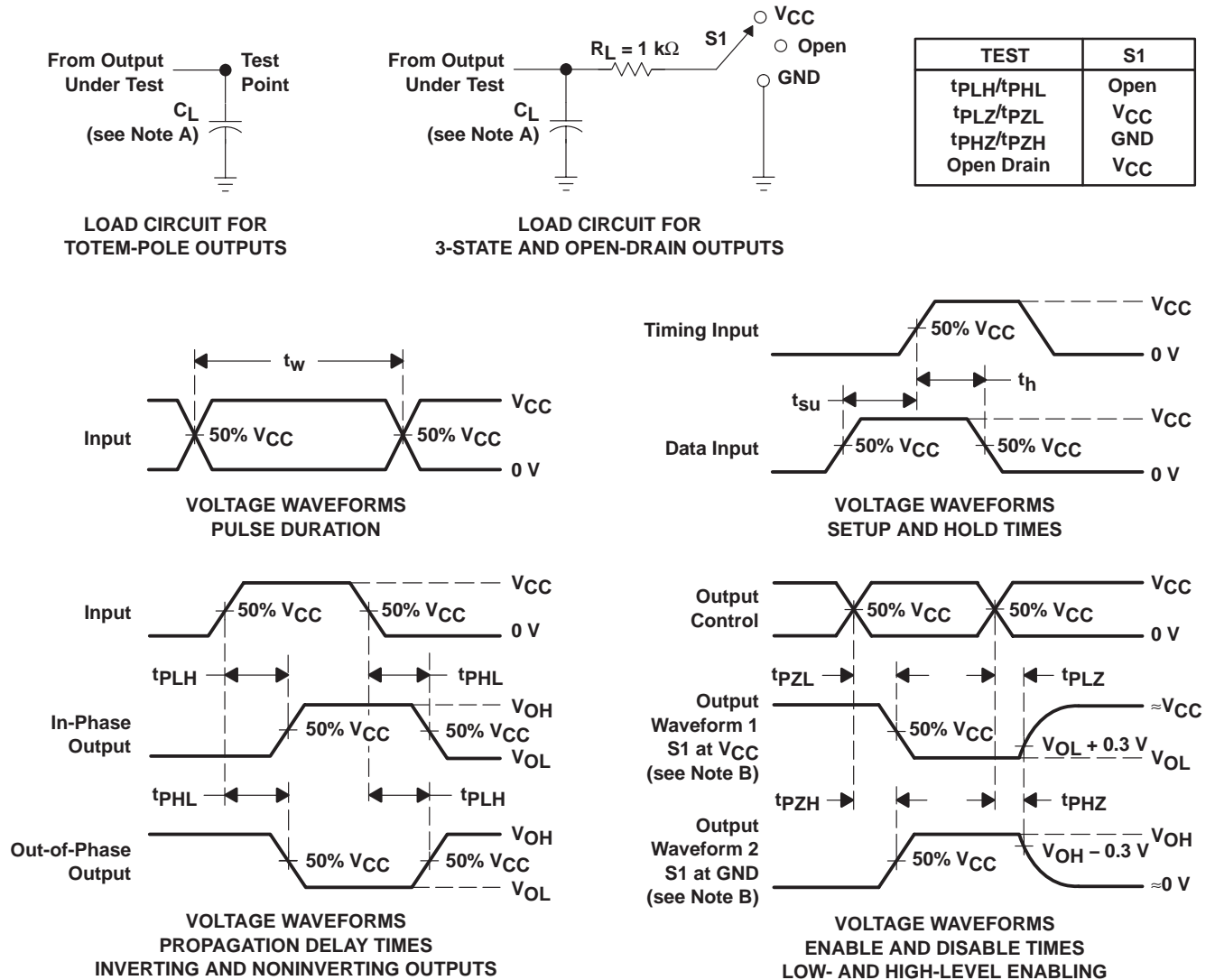
NOTE 5: Characteristics are for surface-mount packages only.

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

PARAMETER	TEST CONDITIONS	$V_{CC}$	TYP	UNIT
$C_{pd}$ Power dissipation capacitance	$C_L = 50\text{ pF}$ , $f = 10\text{ MHz}$	3.3 V	14	pF
		5 V	16.4	



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:  $PRR \leq 1\text{ MHz}$ ,  $Z_O = 50\ \Omega$ ,  $t_r \leq 3\text{ ns}$ ,  $t_f \leq 3\text{ ns}$ .
  - 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

**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>
SN74LV240ADBLE	OBSOLETE	SSOP	DB	20		TBD	Call TI	Call TI
SN74LV240ADBR	ACTIVE	SSOP	DB	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240ADBRE4	ACTIVE	SSOP	DB	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240ADBRG4	ACTIVE	SSOP	DB	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240ADGVR	ACTIVE	TVSOP	DGV	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240ADGVRE4	ACTIVE	TVSOP	DGV	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240ADGVRG4	ACTIVE	TVSOP	DGV	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240ADW	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240ADWE4	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240ADWG4	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240ADWR	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240ADWRE4	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240ADWRG4	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240ANSR	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240ANSRE4	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240ANSRG4	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240APW	ACTIVE	TSSOP	PW	20	70	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240APWE4	ACTIVE	TSSOP	PW	20	70	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240APWG4	ACTIVE	TSSOP	PW	20	70	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240APWLE	OBSOLETE	TSSOP	PW	20		TBD	Call TI	Call TI
SN74LV240APWR	ACTIVE	TSSOP	PW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240APWRE4	ACTIVE	TSSOP	PW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240APWRG4	ACTIVE	TSSOP	PW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240APWT	ACTIVE	TSSOP	PW	20	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240APWTE4	ACTIVE	TSSOP	PW	20	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV240APWTG4	ACTIVE	TSSOP	PW	20	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM

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>
no Sb/Br)								

<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.

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**TAPE AND REEL INFORMATION**
**REEL DIMENSIONS**

**TAPE DIMENSIONS**


A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

**TAPE AND REEL INFORMATION**

\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74LV240ADBR	SSOP	DB	20	2000	330.0	16.4	8.2	7.5	2.5	12.0	16.0	Q1
SN74LV240ADGVR	TVSOP	DGV	20	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1
SN74LV240ADWR	SOIC	DW	20	2000	330.0	24.4	10.8	13.0	2.7	12.0	24.0	Q1
SN74LV240ANSR	SO	NS	20	2000	330.0	24.4	8.2	13.0	2.5	12.0	24.0	Q1
SN74LV240APWR	TSSOP	PW	20	2000	330.0	16.4	6.95	7.1	1.6	8.0	16.0	Q1
SN74LV240APWR	TSSOP	PW	20	2000	330.0	16.4	6.95	7.1	1.6	8.0	16.0	Q1
SN74LV240APWRG4	TSSOP	PW	20	2000	330.0	16.4	6.95	7.1	1.6	8.0	16.0	Q1
SN74LV240APWT	TSSOP	PW	20	250	330.0	16.4	6.95	7.1	1.6	8.0	16.0	Q1

**TAPE AND REEL BOX DIMENSIONS**


\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74LV240ADBR	SSOP	DB	20	2000	367.0	367.0	38.0
SN74LV240ADGVR	TVSOP	DGV	20	2000	367.0	367.0	35.0
SN74LV240ADWR	SOIC	DW	20	2000	367.0	367.0	45.0
SN74LV240ANSR	SO	NS	20	2000	367.0	367.0	45.0
SN74LV240APWR	TSSOP	PW	20	2000	364.0	364.0	27.0
SN74LV240APWR	TSSOP	PW	20	2000	367.0	367.0	38.0
SN74LV240APWRG4	TSSOP	PW	20	2000	367.0	367.0	38.0
SN74LV240APWT	TSSOP	PW	20	250	367.0	367.0	38.0

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

PLASTIC SMALL-OUTLINE

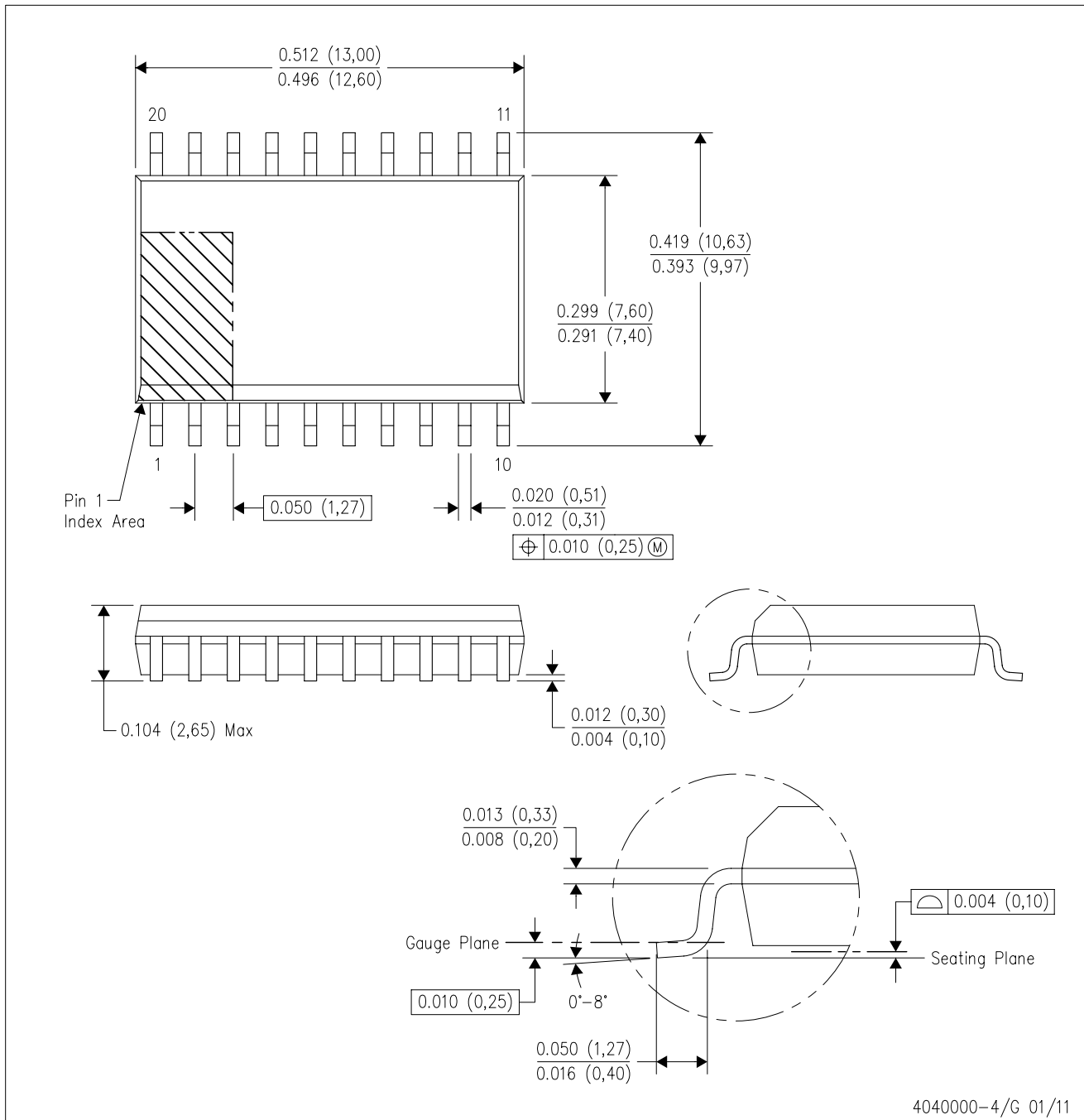
24 PINS SHOWN



- 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 per side.  
 D. Falls within JEDEC: 24/48 Pins – MO-153  
 14/16/20/56 Pins – MO-194

DW (R-PDSO-G20)

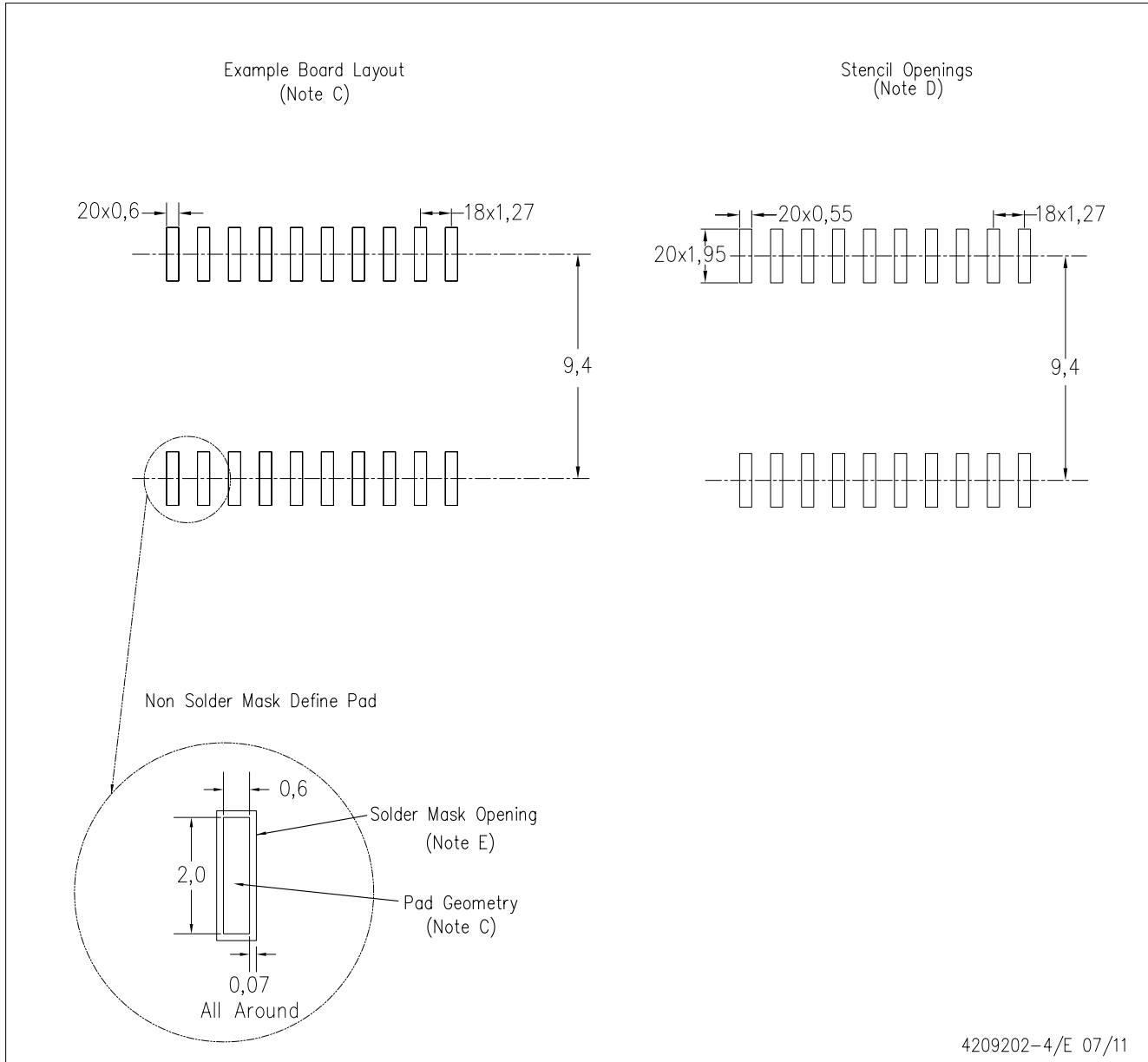
PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in inches (millimeters). Dimensioning and tolerancing per ASME Y14.5M-1994.
  - 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.

DW (R-PDSO-G20)

PLASTIC SMALL OUTLINE



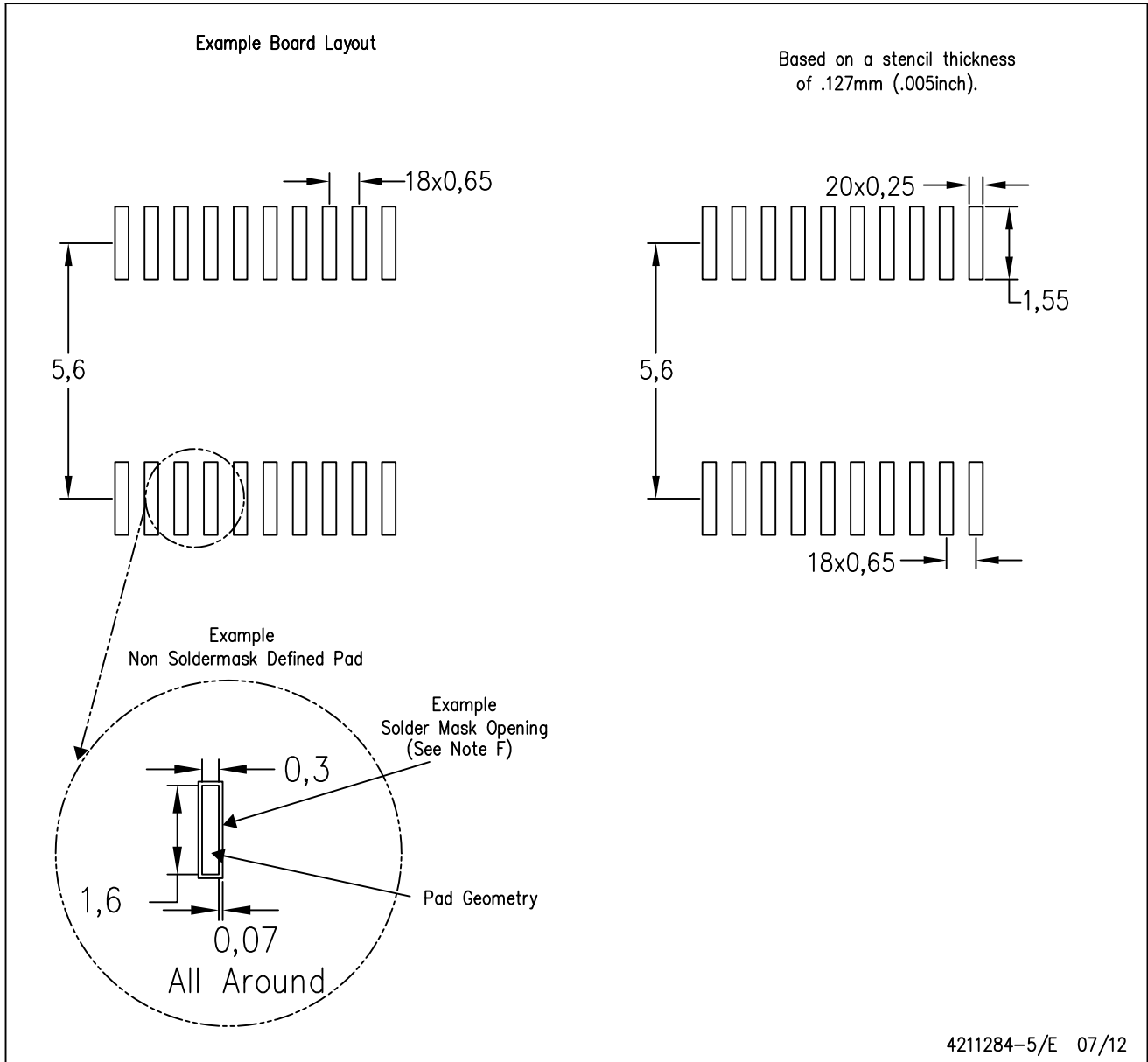
4209202-4/E 07/11

- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. Refer to IPC7351 for alternate board design.
  - D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525
  - E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.



PW (R-PDSO-G20)

PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. Publication IPC-7351 is recommended for alternate design.
  - D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
  - E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

# MECHANICAL DATA

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

PLASTIC SMALL-OUTLINE PACKAGE

14-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.

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

4040065 /E 12/01

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