#### 捷多邦,专业PCB打样**ISN54LV时26A出SN74LV126A** QUADRUPLE BUS BUFFER GATES WITH 3-STATE OUTPUTS

SCES131H - MARCH 1998 - REVISED APRIL 2005

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

These quadruple bus buffer gates are designed for 2-V to 5.5-V V<sub>CC</sub> operation.

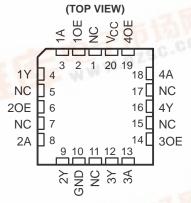
The 'LV126A devices feature independent line drivers with 3-state outputs. Each output is disabled when the associated output-enable (OE) input is low.

To ensure the high-impedance state during power up or power down, OE should be tied to GND through a pulldown resistor; the minimum value of the resistor is determined by the current-sourcing capability of the driver.

SN54LV126A . . . J OR W PACKAGE SN74LV126A...D, DB, DGV, NS, OR PW PACKAGE (TOP VIEW)



SN54LV126A . . . FK PACKAGE



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#### **ORDERING INFORMATION**

TA	PACKAGET		ORDERABLE PART NUMBER	TOP-SIDE MARKING
AL ALL	0010 D	Tube of 50	SN74LV126AD	11/4004
1	SOIC - D	Reel of 2500	SN74LV126ADR	LV126A
	SOP - NS	Reel of 2000	SN74LV126ANSR	74LV126A
400C to 050C	SSOP – DB	Reel of 2000	SN74LV126ADBR	LV126A
–40°C to 85°C		Tube of 90	SN74LV126APW	E DIS
	TSSOP - PW	Reel of 2000	SN74LV126APWR	LV126A
		Reel of 250	SN74LV126APWT	
	TVSOP - DGV	Reel of 2000	SN74LV126ADGVR	LV126A
100	CDIP – J	Tube of 25	SNJ54LV126AJ	SNJ54LV126AJ
-55°C to 125°C	CFP – W	Tube of 150	SNJ54LV126AW	SNJ54LV126AW
M.M.	LCCC - FK	Tube of 55	SNJ54LV126AFK	SNJ54LV126AFK

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

Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of



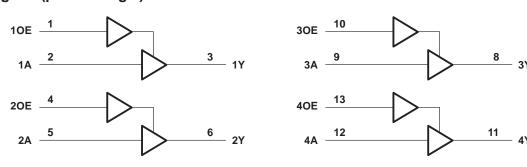
#### SN54LV126A, SN74LV126A QUADRUPLE BUS BUFFER GATES WITH 3-STATE OUTPUTS

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## FUNCTION TABLE (each buffer)

INP	JTS	OUTPUT
OE	Α	Υ
Н	Н	Н
Н	L	L
L	Χ	Z

#### 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)†

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, VO (see Note 1)		–0.5 V to 7 V
Output voltage range, VO (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, $I_O$ ( $V_O = 0$ to $V_{CC}$ )		±35 mA
Continuous current through V <sub>CC</sub> or GND		±70 mA
Package thermal impedance, θ <sub>JA</sub> (see Note 3):	D package	86°C/W
	DB package	96°C/W
	DGV package	127°C/W
	NS package	76°C/W
	PW package	113°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.



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

			SN54I	V126A	SN74L	V126A	
			MIN	MAX	MIN	MAX	UNIT
VCC	Supply voltage		2	5.5	2	5.5	V
		V <sub>CC</sub> = 2 V	1.5		1.5		
.,	I Park Town I Secret well a me	$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	V <sub>CC</sub> × 0.7		$V_{CC} \times 0.7$		.,
VIH	High-level input voltage	V <sub>CC</sub> = 3 V to 3.6 V	V <sub>CC</sub> ×0.7		$V_{CC} \times 0.7$		V
		V <sub>CC</sub> = 4.5 V to 5.5 V	V <sub>CC</sub> ×0.7		$V_{CC} \times 0.7$		
		V <sub>CC</sub> = 2 V		0.5		0.5	
V	Law layel input valtage	$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$		$V_{CC} \times 0.3$		$V_{CC} \times 0.3$	V
VIL	Low-level input voltage	V <sub>CC</sub> = 3 V to 3.6 V		$V_{CC} \times 0.3$		$V_{CC} \times 0.3$	V
		$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$		$V_{CC} \times 0.3$		$V_{CC} \times 0.3$	
٧ <sub>I</sub>	Input voltage		0	5.5	0	5.5	V
\/ -	Output valtage	High or low state	0	V <sub>C</sub> C	0	VCC	V
VO	Output voltage	3-state	0	5.5	0	5.5	V
		V <sub>CC</sub> = 2 V	5	-50		-50	μΑ
1	High lovel output ourrest	$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	20	-2		-2	
ЮН	High-level output current	$V_{CC} = 3 V \text{ to } 3.6 V$	Q	-8		-8	mA
		V <sub>CC</sub> = 4.5 V to 5.5 V		-16		-16	
		V <sub>CC</sub> = 2 V		50		50	μΑ
1	Law layed autout aumant	$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$		2		2	
lOL	Low-level output current	$V_{CC} = 3 \text{ V to } 3.6 \text{ V}$		8		8	mA
		V <sub>CC</sub> = 4.5 V to 5.5 V		16		16	
		V <sub>CC</sub> = 2.3 V to 2.7 V		200		200	
Δt/Δν	Input transition rise or fall rate	$V_{CC} = 3 V \text{ to } 3.6 V$		100		100	ns/V
		V <sub>CC</sub> = 4.5 V to 5.5 V		20		20	
TA	Operating free-air temperature		-55	125	-40	85	°C

NOTE 4: All unused inputs of the device must be held at V<sub>CC</sub> 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)

DADAMETER	TEST CONDITIONS	,,	SN54	LV126A		SN74	LV126A	1	LINUT	
PARAMETER	TEST CONDITIONS	VCC	MIN	TYP	MAX	MIN	TYP	MAX	UNIT	
	I <sub>OH</sub> = -50 μA	2 V to 5.5 V	V <sub>CC</sub> -0.1			V <sub>CC</sub> -0.1				
V	$I_{OH} = -2 \text{ mA}$	2.3 V	2			2			V	
VOH	$I_{OH} = -8 \text{ mA}$	3 V	2.48			2.48			V	
	$I_{OH} = -16 \text{ mA}$	4.5 V	3.8	N. S.	,	3.8				
	$I_{OL} = 50 \mu A$	2 V to 5.5 V		N.	0.1			0.1		
V	I <sub>OL</sub> = 2 mA	2.3 V		Q.	0.4			0.4	V	
VOL	I <sub>OL</sub> = 8 mA	3 V	ć	4	0.44			0.44	44 V	
	I <sub>OL</sub> = 16 mA	4.5 V	30		0.55			0.55		
lį	$V_I = 5.5 \text{ V or GND}$	0 to 5.5 V	0%		±1			±1	μΑ	
loz	$V_O = V_{CC}$ or GND	5.5 V	Q		±5			±5	μΑ	
Icc	$V_I = V_{CC}$ or GND, $I_O = 0$	5.5 V			20			20	μΑ	
l <sub>off</sub>	$V_I$ or $V_O = 0$ to 5.5 $V$	0			5			5	μΑ	
Ci	$V_I = V_{CC}$ or GND	3.3 V		1.6			1.6	·	pF	



#### SN54LV126A, SN74LV126A QUADRUPLE BUS BUFFER GATES WITH 3-STATE OUTPUTS

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

DADAMETED	FROM	то	LOAD	T,	ղ = 25°C	;	SN54L\	/126A	SN74L\	/126A	LINIT
PARAMETER	(INPUT)	(OUTPUT)	CAPACITANCE	MIN	TYP	MAX	MIN	MAX	MIN	MAX	UNIT
t <sub>pd</sub>	Α	Υ			7.1*	13*	1*	15.5*	1	15.5	
t <sub>en</sub>	OE	Υ	C <sub>L</sub> = 15 pF		7.4*	13*	1*	15.5*	1	15.5	ns
<sup>t</sup> dis	OE	Υ			5.7*	14.7*	1*	17*	1	17	
<sup>t</sup> pd	Α	Υ			9.2	16.5	15	18.5	1	18.5	
t <sub>en</sub>	OE	Υ	C <sub>1</sub> = 50 pF		9.5	16.5	70	18.5	1	18.5	ns
<sup>t</sup> dis	OE	Υ	OL = 30 βi		8.1	18.2	15	20.5	1	20.5	113
<sup>t</sup> sk(o)						2	7			2	

<sup>\*</sup> 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 V $\pm$ 0.3 V (unless otherwise noted) (see Figure 1)

242445	FROM	то	LOAD	LOAD T <sub>A</sub> = 25°C		SN54L	V126A	SN74L\	/126A	UNIT	
PARAMETER	(INPUT)	(OUTPUT)	CAPACITANCE	MIN	TYP	MAX	MIN	MAX	MIN	MAX	UNII
<sup>t</sup> pd	А	Υ			5*	8*	1*	9.5*	1	9.5	
t <sub>en</sub>	OE	Y	C <sub>L</sub> = 15 pF		5.1*	8*	1*	9.5*	1	9.5	ns
<sup>t</sup> dis	OE	Υ			4.4*	9.7*	1*	11.5*	1	11.5	
<sup>t</sup> pd	Α	Υ			6.4	11.5	.5	13	1	13	
t <sub>en</sub>	OE	Υ	C <sub>1</sub> = 50 pF		6.6	11.5	Z)	13	1	13	ns
<sup>t</sup> dis	OE	Y	] OL = 30 pi		6.1	13.2	& 1	15	1	15	113
tsk(o)						1.5	7			1.5	

<sup>\*</sup> 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 V $\pm$ 0.5 V (unless otherwise noted) (see Figure 1)

	FROM	то	LOAD	T,	4 = 25°C	;	SN54L\	/126A	SN74L	/126A	
PARAMETER	(INPUT)	(OUTPUT)	CAPACITANCE	MIN	TYP	MAX	MIN	MAX	MIN	MAX	UNIT
t <sub>pd</sub>	А	Υ			3.5*	5.5*	1*	6.5*	1	6.5	
t <sub>en</sub>	OE	Υ	C <sub>L</sub> = 15 pF		3.6*	5.1*	1*	6*	1	6	ns
<sup>t</sup> dis	OE	Υ			3.3*	6.8*	1*	8*	1	8	
t <sub>pd</sub>	Α	Υ			4.6	7.5	15	8.5	1	8.5	
t <sub>en</sub>	OE	Υ	C <sub>L</sub> = 50 pF		4.6	7.1	S)	8	1	8	ns
t <sub>dis</sub>	OE	Υ	CL = 30 βF		4.3	8.8	Q- 1	10	1	10	115
t <sub>sk(o)</sub>			]			1	~			1	

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



# SN54LV126A, SN74LV126A QUADRUPLE BUS BUFFER GATES WITH 3-STATE OUTPUTS SCES131H - MARCH 1998 - REVISED APRIL 2005

## noise characteristics, $V_{CC}$ = 3.3 V, $C_L$ = 50 pF, $T_A$ = 25°C (see Note 5)

	DADAMETED	SN	SN74LV126A			
	PARAMETER	MIN	TYP	MAX	UNIT	
V <sub>OL(P)</sub>	Quiet output, maximum dynamic V <sub>OL</sub>		0.3	0.8	V	
V <sub>OL(V)</sub>	Quiet output, minimum dynamic V <sub>OL</sub>		-0.2	-0.8	V	
VOH(V)	Quiet output, minimum dynamic V <sub>OH</sub>		3.1		V	
V <sub>IH(D)</sub>	High-level dynamic input voltage	2.31			V	
V <sub>IL(D)</sub>	Low-level dynamic input voltage			0.97	V	

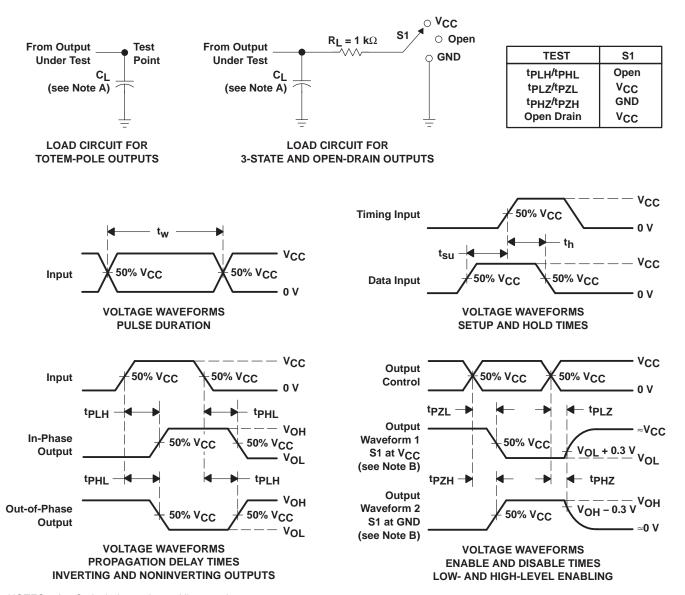
NOTE 5: Characteristics are for surface-mount packages only.

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

	PARAMETER	TEST CO	VCC	TYP	UNIT		
Cara	Power dissipation capacitance	Outputs enabled	C 50 pE	f = 10 MHz	3.3 V	14.4	PΓ
Cpd	rower dissipation capacitance	Outputs enabled	$C_L = 50 pF$ ,	I = IU IVINZ	5 V	15.9	рг

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#### 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. tpLZ and tpHZ are the same as tdis.
- F. tpzL and tpzH are the same as ten.
- 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







27-May-2005

#### **PACKAGING INFORMATION**

Orderable Device	Status <sup>(1)</sup>	Package Type	Package Drawing	Pins	Package Qty	e Eco Plan <sup>(2)</sup>	Lead/Ball Finish	n MSL Peak Temp <sup>(3)</sup>
SN74LV126AD	ACTIVE	SOIC	D	14	50	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SN74LV126ADBR	ACTIVE	SSOP	DB	14	2000	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SN74LV126ADBRE4	ACTIVE	SSOP	DB	14	2000	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SN74LV126ADE4	ACTIVE	SOIC	D	14	50	TBD	Call TI	Call TI
SN74LV126ADGVR	ACTIVE	TVSOP	DGV	14	2000	Pb-Free (RoHS)	CU NIPDAU	Level-1-250C-UNLIM
SN74LV126ADGVRE4	ACTIVE	TVSOP	DGV	14	2000	Pb-Free (RoHS)	CU NIPDAU	Level-1-250C-UNLIM
SN74LV126ADR	ACTIVE	SOIC	D	14	2500	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SN74LV126ADRE4	ACTIVE	SOIC	D	14	2500	TBD	Call TI	Call TI
SN74LV126ANSR	ACTIVE	SO	NS	14	2000	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SN74LV126ANSRE4	ACTIVE	SO	NS	14	2000	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SN74LV126APW	ACTIVE	TSSOP	PW	14	90	Pb-Free (RoHS)	CU NIPDAU	Level-1-250C-UNLIM
SN74LV126APWE4	ACTIVE	TSSOP	PW	14	90	Pb-Free (RoHS)	CU NIPDAU	Level-1-250C-UNLIM
SN74LV126APWG4	ACTIVE	TSSOP	PW	14	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV126APWR	ACTIVE	TSSOP	PW	14	2000	Pb-Free (RoHS)	CU NIPDAU	Level-1-250C-UNLIM
SN74LV126APWRE4	ACTIVE	TSSOP	PW	14	2000	Pb-Free (RoHS)	CU NIPDAU	Level-1-250C-UNLIM
SN74LV126APWRG4	ACTIVE	TSSOP	PW	14	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV126APWT	ACTIVE	TSSOP	PW	14	250	Pb-Free (RoHS)	CU NIPDAU	Level-1-250C-UNLIM
SN74LV126APWTE4	ACTIVE	TSSOP	PW	14	250	Pb-Free (RoHS)	CU NIPDAU	Level-1-250C-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.

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.

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<sup>(2)</sup> 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.



#### PACKAGE OPTION ADDENDUM

27-May-2005

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

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

#### **24 PINS SHOWN**

#### **PLASTIC SMALL-OUTLINE**



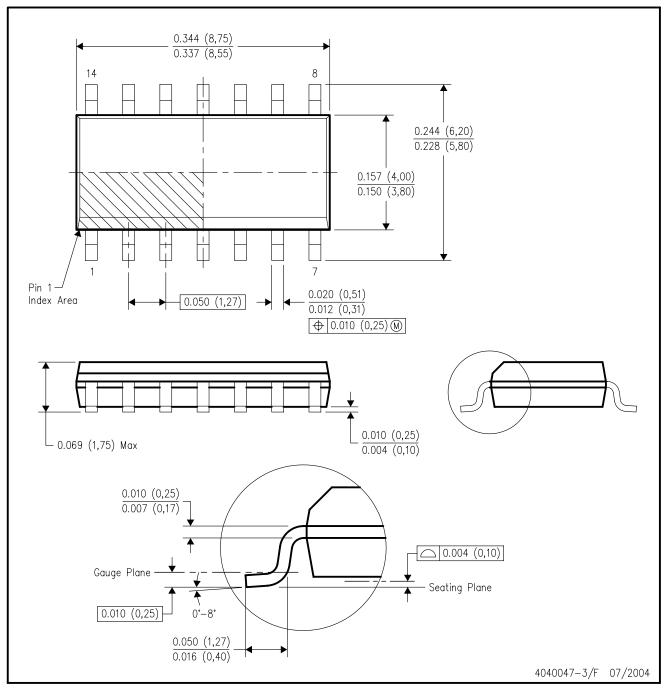
NOTES: A. All linear dimensions are in millimeters.

- 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



## D (R-PDSO-G14)

### 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-012 variation AB.



#### **MECHANICAL DATA**

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

#### 14-PINS SHOWN

#### PLASTIC SMALL-OUTLINE PACKAGE



NOTES:

- . 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



#### 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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