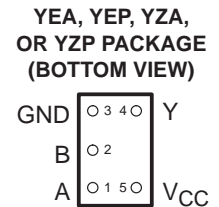
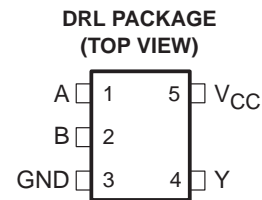
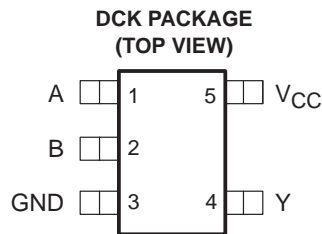
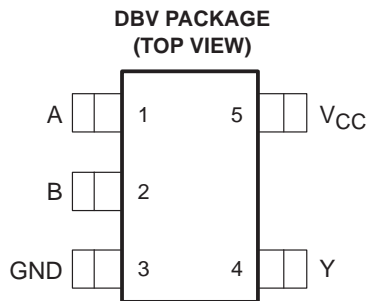


# SN74LVC1G32 SINGLE 2-INPUT POSITIVE-OR GATE

SCES219N – APRIL 1999 – REVISED JUNE 2005

- Available in the Texas Instruments NanoStar™ and NanoFree™ Packages
- Supports 5-V  $V_{CC}$  Operation
- Inputs Accept Voltages to 5.5 V
- Max  $t_{pd}$  of 3.6 ns at 3.3 V
- Low Power Consumption, 10- $\mu$ A Max  $I_{CC}$
- $\pm 24$ -mA Output Drive at 3.3 V
- $I_{off}$  Supports Partial-Power-Down Mode Operation
- Latch-Up Performance Exceeds 100 mA Per JESD 78, Class II
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 200-V Machine Model (A115-A)
  - 1000-V Charged-Device Model (C101)



See mechanical drawings for dimensions.

## description/ordering information

This single 2-input positive-OR gate is designed for 1.65-V to 5.5-V  $V_{CC}$  operation.

The SN74LVC1G32 performs the Boolean function  $Y = A + B$  or  $Y = \overline{A} \cdot \overline{B}$  in positive logic.

NanoStar™ and NanoFree™ package technology is a major breakthrough in IC packaging concepts, using the die as the package.

This device is fully specified for partial-power-down applications using  $I_{off}$ . The  $I_{off}$  circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.



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.

NanoStar and NanoFree are trademarks of Texas Instruments.

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.



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# SN74LVC1G32 SINGLE 2-INPUT POSITIVE-OR GATE

SCES219N – APRIL 1999 – REVISED JUNE 2005

## ORDERING INFORMATION

TA	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING‡
-40°C to 85°C	NanoStar™ – WCSP (DSBGA) 0.17-mm Small Bump – YEA	Reel of 3000	SN74LVC1G32YEAR	---CG_
	NanoFree™ – WCSP (DSBGA) 0.17-mm Small Bump – YZA (Pb-free)		SN74LVC1G32YZAR	
	NanoStar™ – WCSP (DSBGA) 0.23-mm Large Bump – YEP		SN74LVC1G32YEPR	
	NanoFree™ – WCSP (DSBGA) 0.23-mm Large Bump – YZP (Pb-free)		SN74LVC1G32YZPR	
	SOT (SOT-23) – DBV	Reel of 3000	SN74LVC1G32DBVR	C32_
		Reel of 250	SN74LVC1G32DBVT	
	SOT (SC-70) – DCK	Reel of 3000	SN74LVC1G32DCKR	CG_
		Reel of 250	SN74LVC1G32DCKT	
	SOT (SOT-553) – DRL	Reel of 4000	SN74LVC1G32DRLR	

† 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).

‡ DBV/DCK: The actual top-side marking has one additional character that designates the assembly/test site.

YEA/YZA, YEP/YZP: The actual top-side marking has three preceding characters to denote year, month, and sequence code, and one following character to designate the assembly/test site. Pin 1 identifier indicates solder-bump composition (1 = SnPb, • = Pb-free).

### FUNCTION TABLE

INPUTS		OUTPUT
A	B	Y
H	X	H
X	H	H
L	L	L

### logic diagram (positive logic)



# SN74LVC1G32 SINGLE 2-INPUT POSITIVE-OR GATE

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

Supply voltage range, $V_{CC}$	–0.5 V to 6.5 V
Input voltage range, $V_I$ (see Note 1)	–0.5 V to 6.5 V
Voltage range applied to any output in the high-impedance or power-off state, $V_O$ (see Note 1)	–0.5 V to 6.5 V
Voltage range applied to any output in the high or low state, $V_O$ (see Notes 1 and 2)	–0.5 V to $V_{CC} + 0.5$ V
Input clamp current, $I_{IK}$ ( $V_I < 0$ )	–50 mA
Output clamp current, $I_{OK}$ ( $V_O < 0$ )	–50 mA
Continuous output current, $I_O$	±50 mA
Continuous current through $V_{CC}$ or GND	±100 mA
Package thermal impedance, $\theta_{JA}$ (see Note 3):	
DBV package	206°C/W
DCK package	252°C/W
DRL package	142°C/W
YEA/YZA package	154°C/W
YEP/YZP package	132°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 negative-voltage ratings may be exceeded if the input and output current ratings are observed.
  2. The value of  $V_{CC}$  is provided in the recommended operating conditions table.
  3. The package thermal impedance is calculated in accordance with JESD 51-7.

# SN74LVC1G32

## SINGLE 2-INPUT POSITIVE-OR GATE

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### recommended operating conditions (see Note 4)

		MIN	MAX	UNIT	
V <sub>CC</sub>	Supply voltage	Operating	1.65	5.5	V
		Data retention only	1.5		
V <sub>IH</sub>	High-level input voltage	V <sub>CC</sub> = 1.65 V to 1.95 V	0.65 × V <sub>CC</sub>		V
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.7		
		V <sub>CC</sub> = 3 V to 3.6 V	2		
		V <sub>CC</sub> = 4.5 V to 5.5 V	0.7 × V <sub>CC</sub>		
V <sub>IL</sub>	Low-level input voltage	V <sub>CC</sub> = 1.65 V to 1.95 V	0.35 × V <sub>CC</sub>		V
		V <sub>CC</sub> = 2.3 V to 2.7 V	0.7		
		V <sub>CC</sub> = 3 V to 3.6 V	0.8		
		V <sub>CC</sub> = 4.5 V to 5.5 V	0.3 × V <sub>CC</sub>		
V <sub>I</sub>	Input voltage	0	5.5	V	
V <sub>O</sub>	Output voltage	0	V <sub>CC</sub>	V	
I <sub>OH</sub>	High-level output current	V <sub>CC</sub> = 1.65 V	-4		mA
		V <sub>CC</sub> = 2.3 V	-8		
		V <sub>CC</sub> = 3 V	-16		
		V <sub>CC</sub> = 4.5 V	-24		
I <sub>OL</sub>	Low-level output current	V <sub>CC</sub> = 1.65 V	4		mA
		V <sub>CC</sub> = 2.3 V	8		
		V <sub>CC</sub> = 3 V	16		
		V <sub>CC</sub> = 4.5 V	32		
Δt/Δv	Input transition rise or fall rate	V <sub>CC</sub> = 1.8 V ± 0.15 V, 2.5 V ± 0.2 V	20		ns/V
		V <sub>CC</sub> = 3.3 V ± 0.3 V	10		
		V <sub>CC</sub> = 5 V ± 0.5 V	5		
T <sub>A</sub>	Operating free-air temperature	-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.



# SN74LVC1G32

## SINGLE 2-INPUT POSITIVE-OR GATE

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

PARAMETER		TEST CONDITIONS	V <sub>CC</sub>	MIN	TYP†	MAX	UNIT
V <sub>OH</sub>		I <sub>OH</sub> = -100 μA	1.65 V to 5.5 V	V <sub>CC</sub> - 0.1			V
		I <sub>OH</sub> = -4 mA	1.65 V	1.2			
		I <sub>OH</sub> = -8 mA	2.3 V	1.9			
		I <sub>OH</sub> = -16 mA	3 V	2.4			
		I <sub>OH</sub> = -24 mA		2.3			
		I <sub>OH</sub> = -32 mA	4.5 V	3.8			
V <sub>OL</sub>		I <sub>OL</sub> = 100 μA	1.65 V to 5.5 V			0.1	V
		I <sub>OL</sub> = 4 mA	1.65 V			0.45	
		I <sub>OL</sub> = 8 mA	2.3 V			0.3	
		I <sub>OL</sub> = 16 mA	3 V			0.4	
		I <sub>OL</sub> = 24 mA				0.55	
		I <sub>OL</sub> = 32 mA	4.5 V			0.55	
I <sub>I</sub>	A or B inputs	V <sub>I</sub> = 5.5 V or GND	0 to 5.5 V			±5	μA
I <sub>off</sub>		V <sub>I</sub> or V <sub>O</sub> = 5.5 V	0			±10	μA
I <sub>CC</sub>		V <sub>I</sub> = 5.5 V or GND, I <sub>O</sub> = 0	1.65 V to 5.5 V			10	μA
ΔI <sub>CC</sub>		One input at V <sub>CC</sub> - 0.6 V, Other inputs at V <sub>CC</sub> or GND	3 V to 5.5 V			500	μA
C <sub>i</sub>		V <sub>I</sub> = V <sub>CC</sub> or GND	3.3 V			4	pF

† All typical values are at V<sub>CC</sub> = 3.3 V, T<sub>A</sub> = 25°C.

switching characteristics over recommended operating free-air temperature range, C<sub>L</sub> = 15 pF (unless otherwise noted) (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V <sub>CC</sub> = 1.8 V ± 0.15 V		V <sub>CC</sub> = 2.5 V ± 0.2 V		V <sub>CC</sub> = 3.3 V ± 0.3 V		V <sub>CC</sub> = 5 V ± 0.5 V		UNIT
			MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
t <sub>pd</sub>	A or B	Y	1.9	7.2	0.8	4.4	0.9	3.6	0.8	3.4	ns

switching characteristics over recommended operating free-air temperature range, C<sub>L</sub> = 30 pF or 50 pF (unless otherwise noted) (see Figure 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V <sub>CC</sub> = 1.8 V ± 0.15 V		V <sub>CC</sub> = 2.5 V ± 0.2 V		V <sub>CC</sub> = 3.3 V ± 0.3 V		V <sub>CC</sub> = 5 V ± 0.5 V		UNIT
			MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
t <sub>pd</sub>	A or B	Y	2.8	8	1.2	5.5	1.1	4.5	1	4	ns

operating characteristics, T<sub>A</sub> = 25°C

PARAMETER		TEST CONDITIONS	V <sub>CC</sub> = 1.8 V	V <sub>CC</sub> = 2.5 V	V <sub>CC</sub> = 3.3 V	V <sub>CC</sub> = 5 V	UNIT
			TYP	TYP	TYP	TYP	
C <sub>pd</sub>	Power dissipation capacitance	f = 10 MHz	20	20	21	22	pF

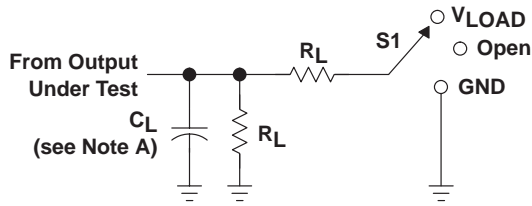


# SN74LVC1G32

## SINGLE 2-INPUT POSITIVE-OR GATE

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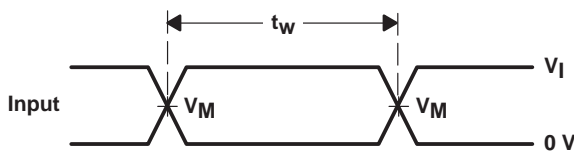
### PARAMETER MEASUREMENT INFORMATION



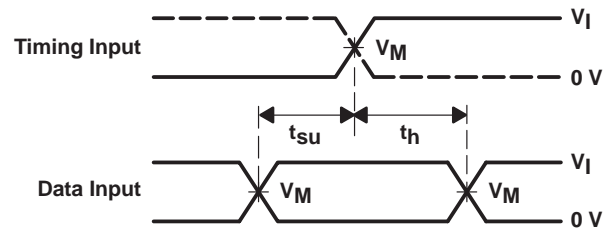
LOAD CIRCUIT

TEST	S1
$t_{PLH}/t_{PHL}$	Open
$t_{PLZ}/t_{PZL}$	VLOAD
$t_{PHZ}/t_{PZH}$	GND

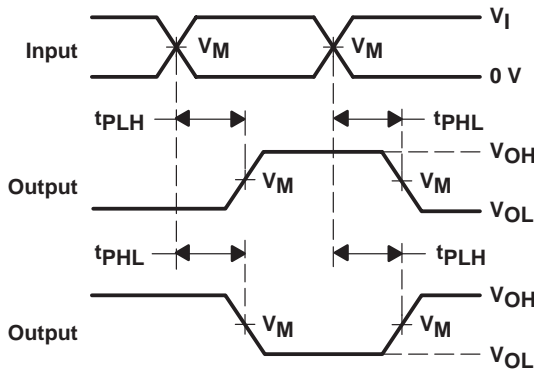
$V_{CC}$	INPUTS		$V_M$	$V_{LOAD}$	$C_L$	$R_L$	$V_{\Delta}$
	$V_I$	$t_r/t_f$					
$1.8\text{ V} \pm 0.15\text{ V}$	$V_{CC}$	$\leq 2\text{ ns}$	$V_{CC}/2$	$2 \times V_{CC}$	15 pF	1 M $\Omega$	0.15 V
$2.5\text{ V} \pm 0.2\text{ V}$	$V_{CC}$	$\leq 2\text{ ns}$	$V_{CC}/2$	$2 \times V_{CC}$	15 pF	1 M $\Omega$	0.15 V
$3.3\text{ V} \pm 0.3\text{ V}$	3 V	$\leq 2.5\text{ ns}$	1.5 V	6 V	15 pF	1 M $\Omega$	0.3 V
$5\text{ V} \pm 0.5\text{ V}$	$V_{CC}$	$\leq 2.5\text{ ns}$	$V_{CC}/2$	$2 \times V_{CC}$	15 pF	1 M $\Omega$	0.3 V



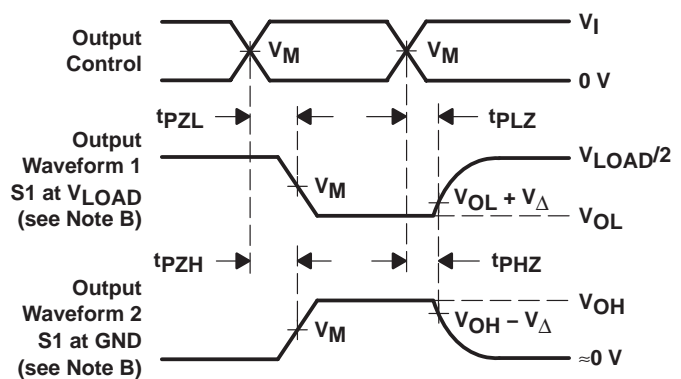
VOLTAGE WAVEFORMS  
PULSE DURATION



VOLTAGE WAVEFORMS  
SETUP AND HOLD TIMES



VOLTAGE WAVEFORMS  
PROPAGATION DELAY TIMES  
INVERTING AND NONINVERTING OUTPUTS

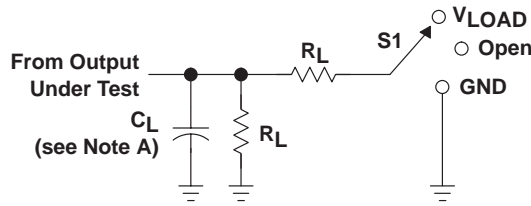


VOLTAGE WAVEFORMS  
ENABLE AND DISABLE TIMES  
LOW- AND HIGH-LEVEL ENABLING

- NOTES:
- $C_L$  includes probe and jig capacitance.
  - 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.
  - All input pulses are supplied by generators having the following characteristics:  $PRR \leq 10\text{ MHz}$ ,  $Z_O = 50\ \Omega$ .
  - The outputs are measured one at a time, with one transition per measurement.
  - $t_{PLZ}$  and  $t_{PHZ}$  are the same as  $t_{dis}$ .
  - $t_{PZL}$  and  $t_{PZH}$  are the same as  $t_{en}$ .
  - $t_{PLH}$  and  $t_{PHL}$  are the same as  $t_{pd}$ .
  - All parameters and waveforms are not applicable to all devices.

Figure 1. Load Circuit and Voltage Waveforms

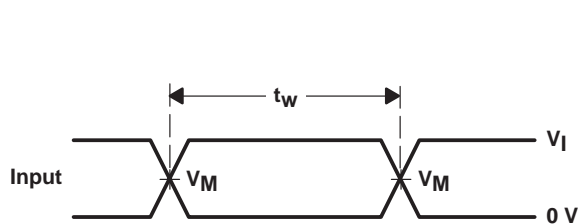
PARAMETER MEASUREMENT INFORMATION



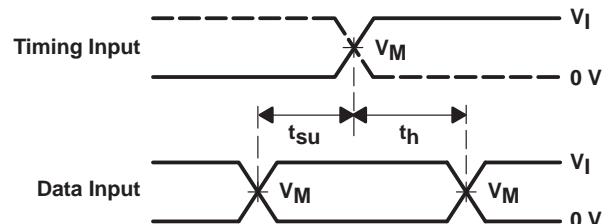
LOAD CIRCUIT

TEST	S1
t <sub>PLH</sub> /t <sub>PHL</sub>	Open
t <sub>PZL</sub> /t <sub>PZH</sub>	V <sub>LOAD</sub>
t <sub>PHZ</sub> /t <sub>PZH</sub>	GND

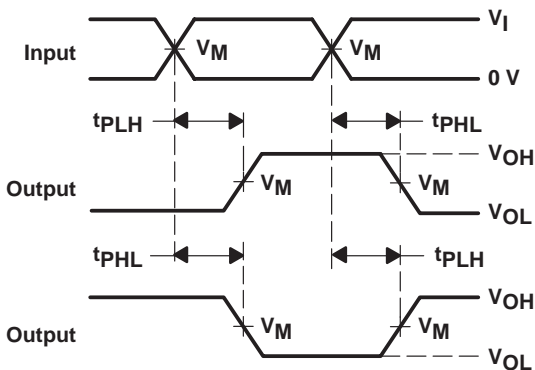
V <sub>CC</sub>	INPUTS		V <sub>M</sub>	V <sub>LOAD</sub>	C <sub>L</sub>	R <sub>L</sub>	V <sub>Δ</sub>
	V <sub>I</sub>	t <sub>r</sub> /t <sub>f</sub>					
1.8 V ± 0.15 V	V <sub>CC</sub>	≤ 2 ns	V <sub>CC</sub> /2	2 × V <sub>CC</sub>	30 pF	1 kΩ	0.15 V
2.5 V ± 0.2 V	V <sub>CC</sub>	≤ 2 ns	V <sub>CC</sub> /2	2 × V <sub>CC</sub>	30 pF	500 Ω	0.15 V
3.3 V ± 0.3 V	3 V	≤ 2.5 ns	1.5 V	6 V	50 pF	500 Ω	0.3 V
5 V ± 0.5 V	V <sub>CC</sub>	≤ 2.5 ns	V <sub>CC</sub> /2	2 × V <sub>CC</sub>	50 pF	500 Ω	0.3 V



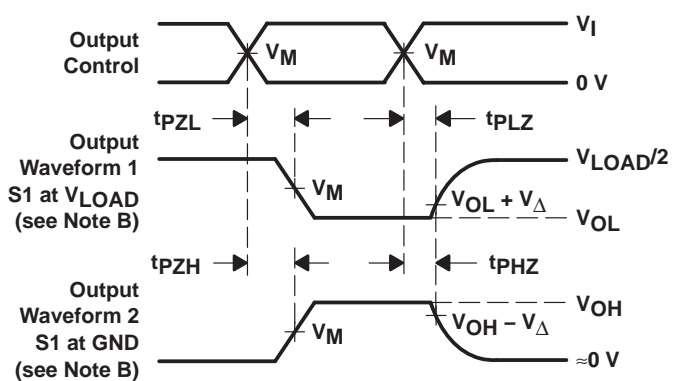
VOLTAGE WAVEFORMS  
PULSE DURATION



VOLTAGE WAVEFORMS  
SETUP AND HOLD TIMES



VOLTAGE WAVEFORMS  
PROPAGATION DELAY TIMES  
INVERTING AND NONINVERTING OUTPUTS



VOLTAGE WAVEFORMS  
ENABLE AND DISABLE TIMES  
LOW- AND HIGH-LEVEL ENABLING

- NOTES:
- A. C<sub>L</sub> 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 ≤ 10 MHz, Z<sub>O</sub> = 50 Ω.
  - D. The outputs are measured one at a time, with one transition per measurement.
  - E. t<sub>PZL</sub> and t<sub>PHZ</sub> are the same as t<sub>dis</sub>.
  - F. t<sub>PZL</sub> and t<sub>PZH</sub> are the same as t<sub>en</sub>.
  - G. t<sub>PLH</sub> and t<sub>PHL</sub> are the same as t<sub>pd</sub>.
  - H. All parameters and waveforms are not applicable to all devices.

Figure 2. 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>
SN74LVC1G32DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LVC1G32DBVRE4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LVC1G32DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LVC1G32DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LVC1G32DBVTE4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LVC1G32DCKR	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LVC1G32DCKRE4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LVC1G32DCKRG4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LVC1G32DCKT	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LVC1G32DCKTE4	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LVC1G32DRLR	ACTIVE	SOP	DRL	5	4000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LVC1G32DRLRG4	ACTIVE	SOP	DRL	5	4000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LVC1G32YEAR	ACTIVE	WCSP	YEA	5	3000	TBD	SNPB	Level-1-260C-UNLIM
SN74LVC1G32YEPR	ACTIVE	WCSP	YEP	5	3000	TBD	SNPB	Level-1-260C-UNLIM
SN74LVC1G32YZAR	ACTIVE	WCSP	YZA	5	3000	Pb-Free (RoHS)	SNAGCU	Level-1-260C-UNLIM
SN74LVC1G32YZPR	ACTIVE	WCSP	YZP	5	3000	Pb-Free (RoHS)	SNAGCU	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.

<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.

**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)

<sup>(3)</sup> 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

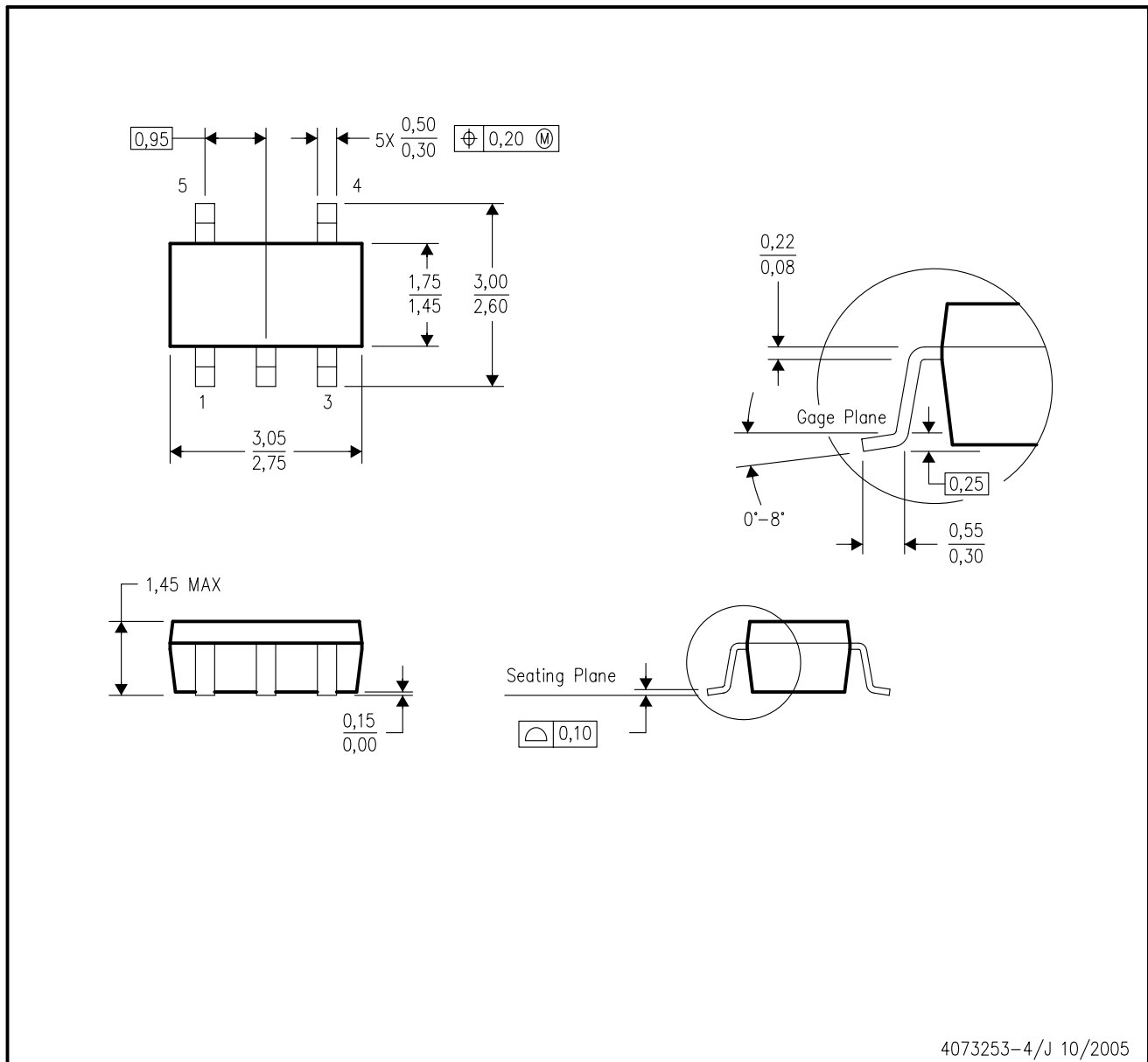


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DBV (R-PDSO-G5)

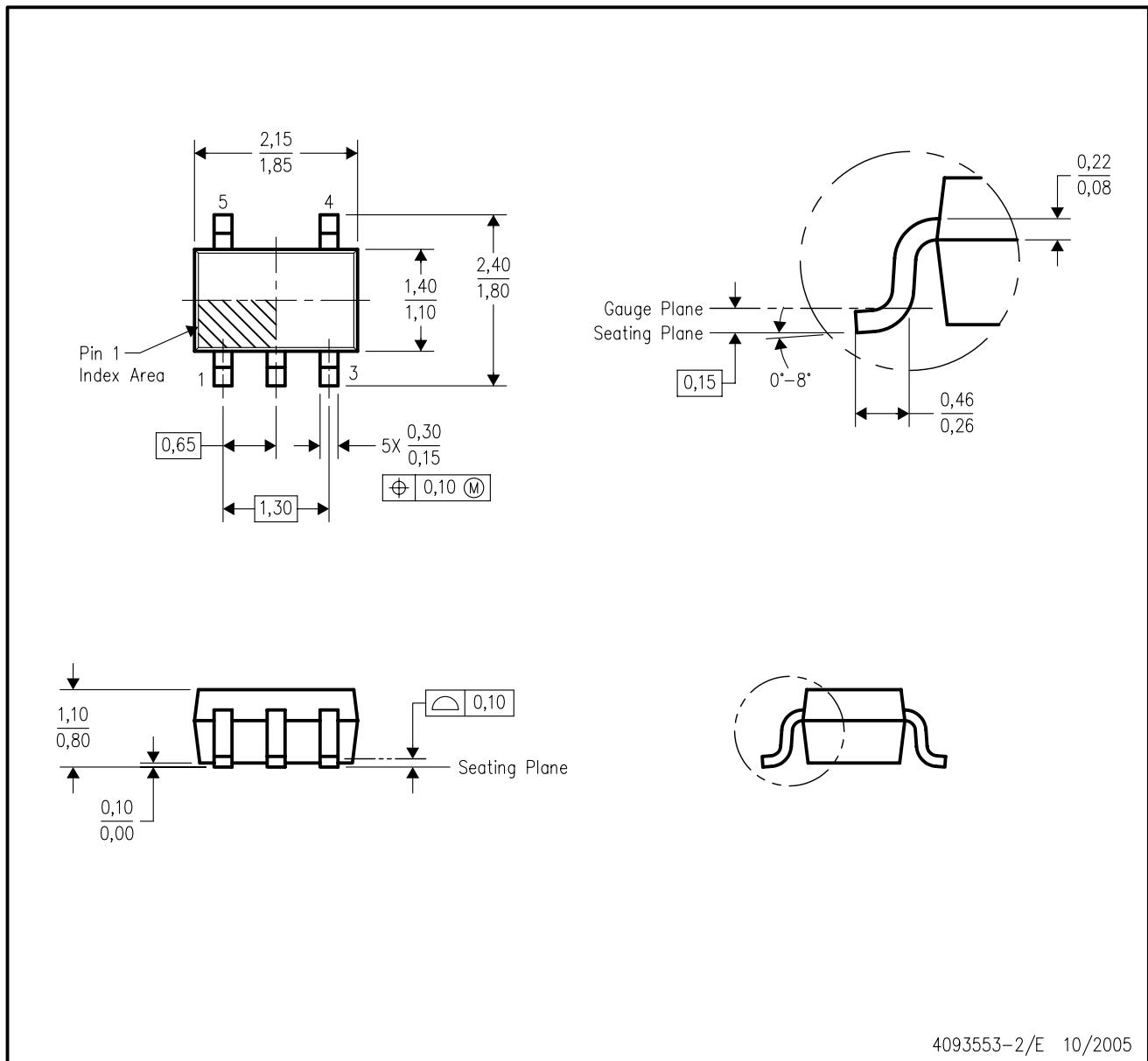
PLASTIC SMALL-OUTLINE PACKAGE



- 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. Mold flash and protrusion shall not exceed 0.15 per side.
  - D. Falls within JEDEC MO-178 Variation AA.

DCK (R-PDSO-G5)

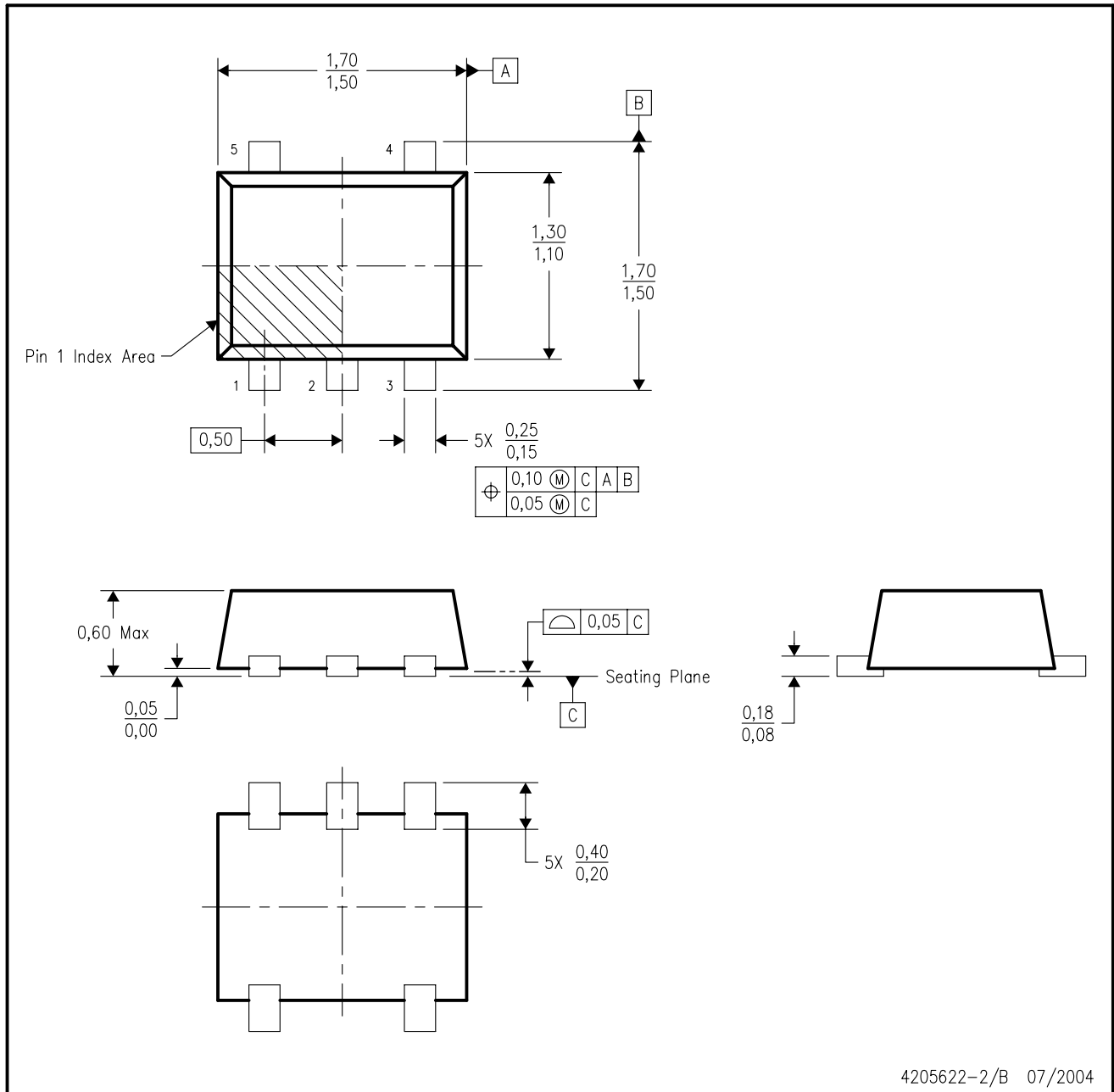
PLASTIC SMALL-OUTLINE PACKAGE



- 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. Mold flash and protrusion shall not exceed 0.15 per side.
  - D. Falls within JEDEC MO-203 variation AA.

DRL (R-PDSO-N5)

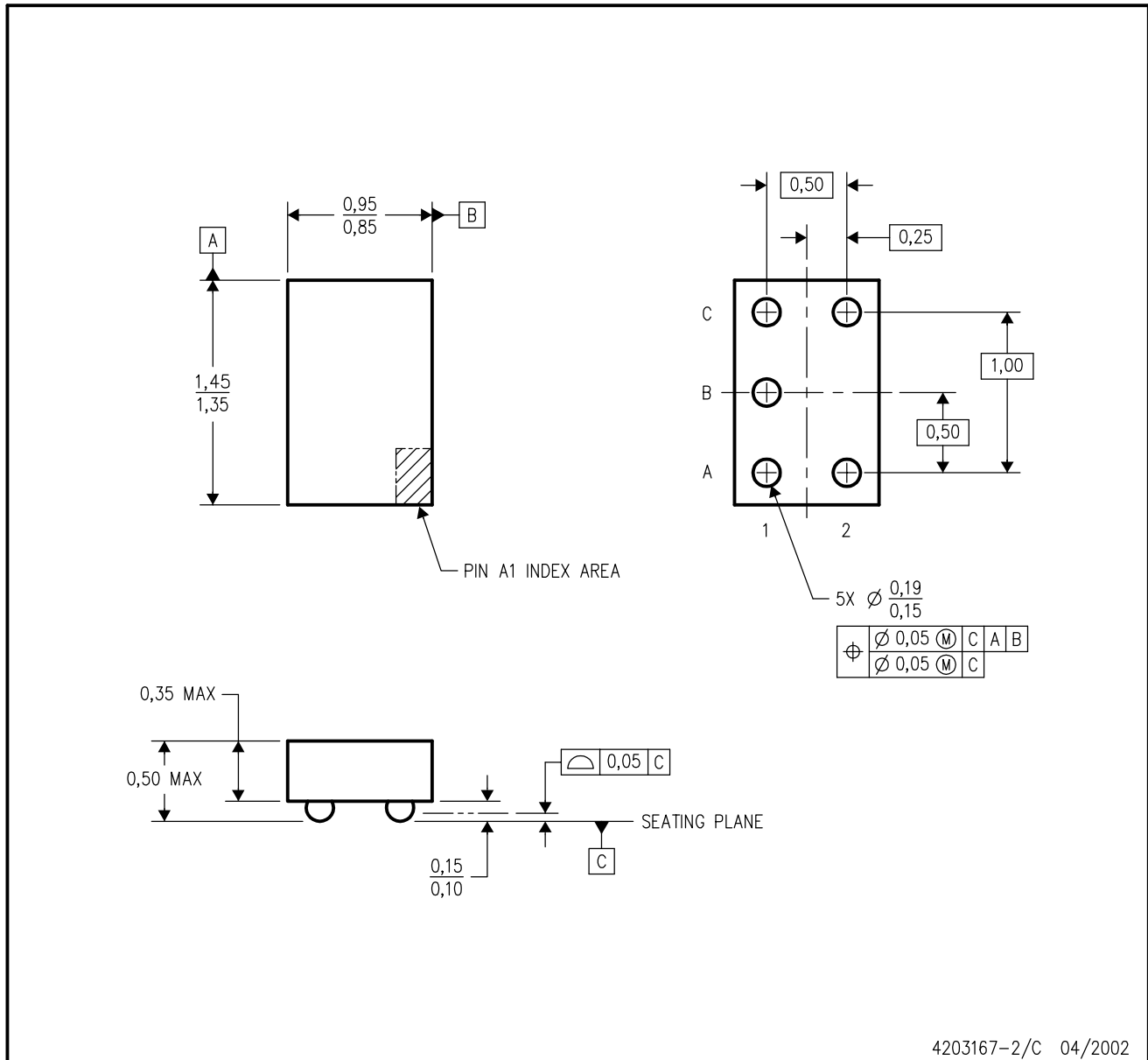
PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. JEDEC package registration is pending.

YEA (R-XBGA-N5)

DIE-SIZE BALL GRID ARRAY

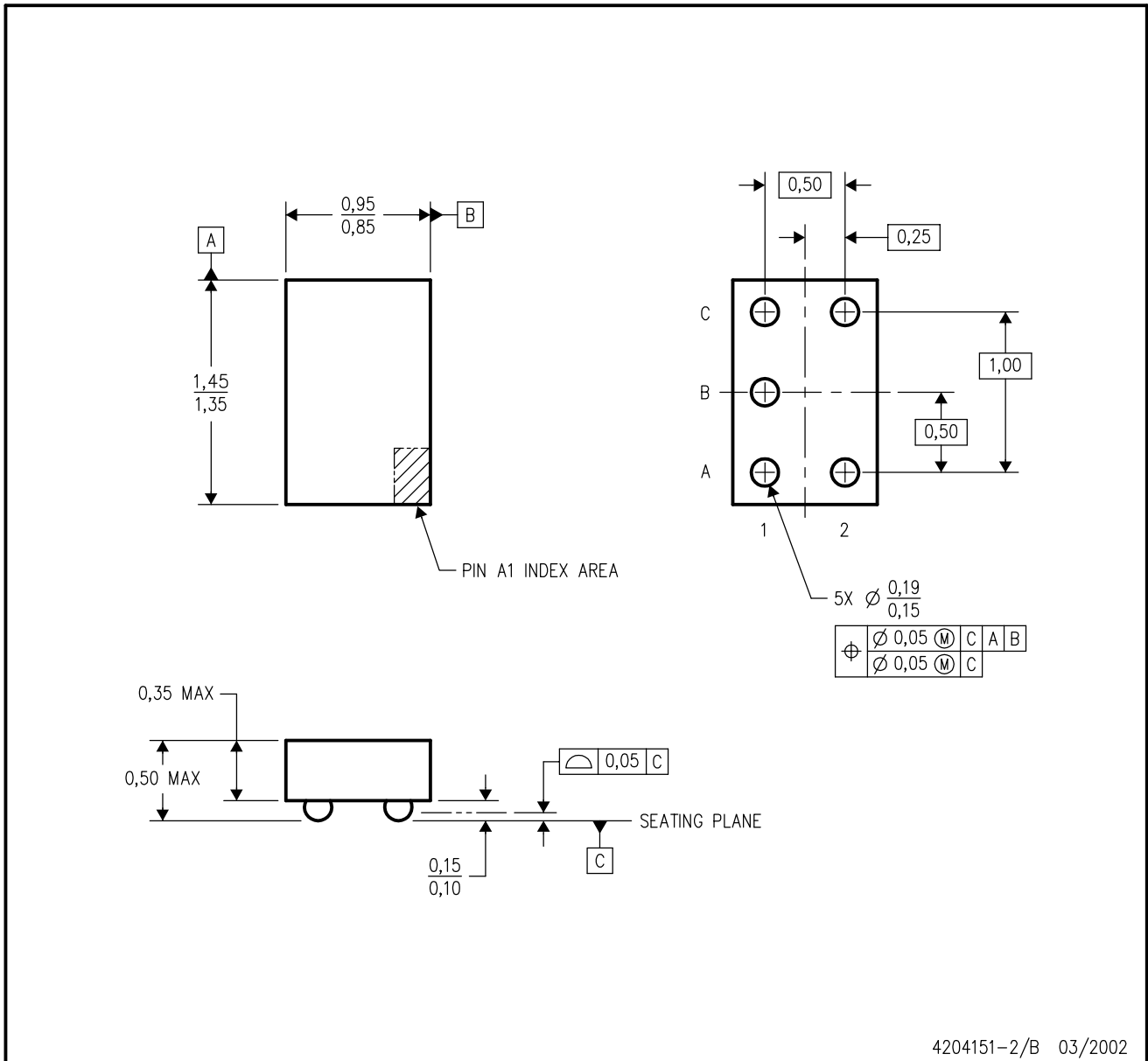


- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. NanoStar™ package configuration.
  - D. Package complies to JEDEC MO-211 variation EA.
  - E. This package is tin-lead (SnPb). Refer to the 5 YZA package (drawing 4204151) for lead-free.

NanoStar is a trademark of Texas Instruments.

YZA (R-XBGA-N5)

DIE-SIZE BALL GRID ARRAY

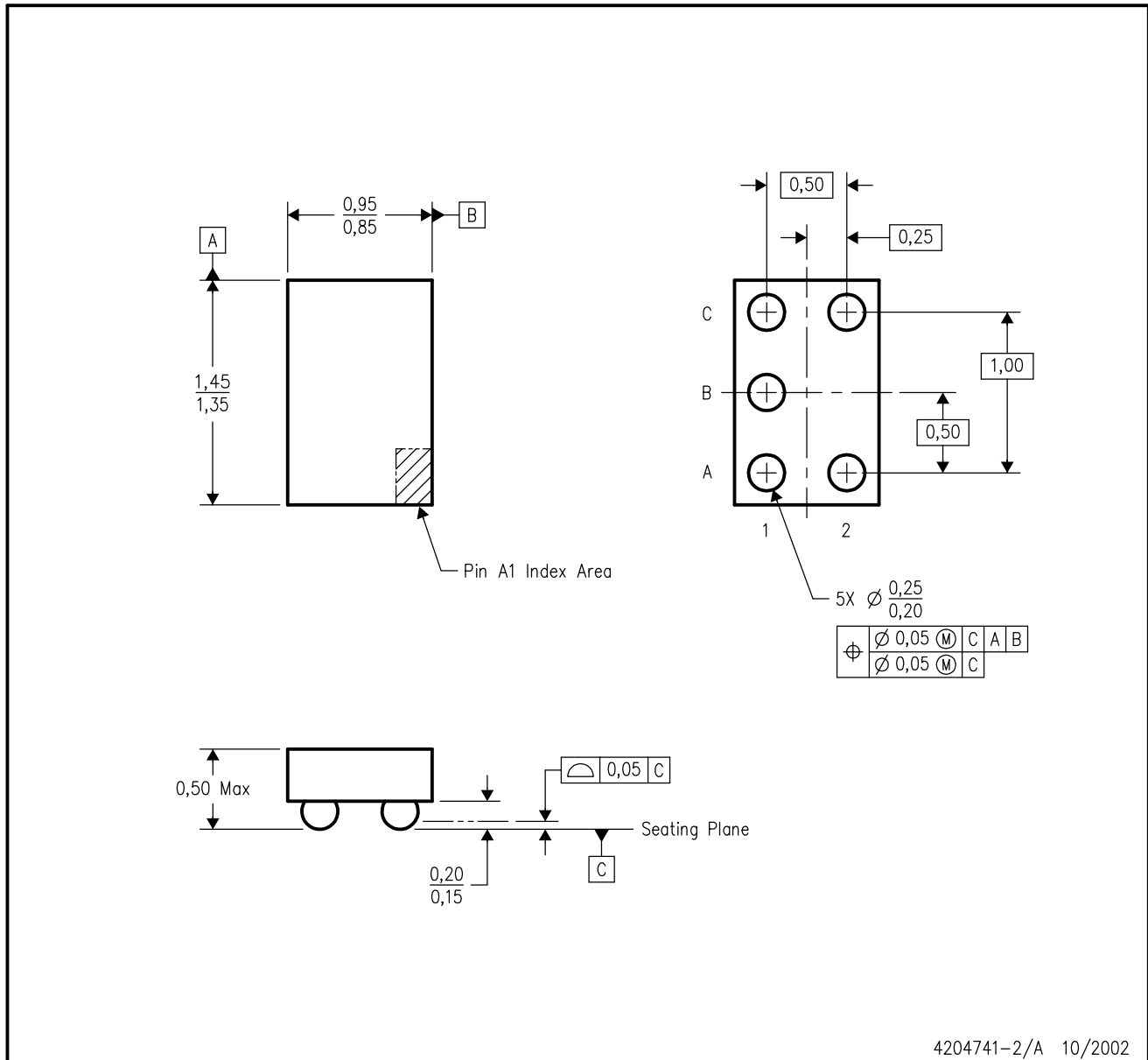


- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. NanoFree™ package configuration.
  - D. Package complies to JEDEC MO-211 variation EA.
  - E. This package is lead-free. Refer to the 5 YEA package (drawing 4203167) for tin-lead (SnPb).

NanoFree is a trademark of Texas Instruments.

YZP (R-XBGA-N5)

DIE-SIZE BALL GRID ARRAY

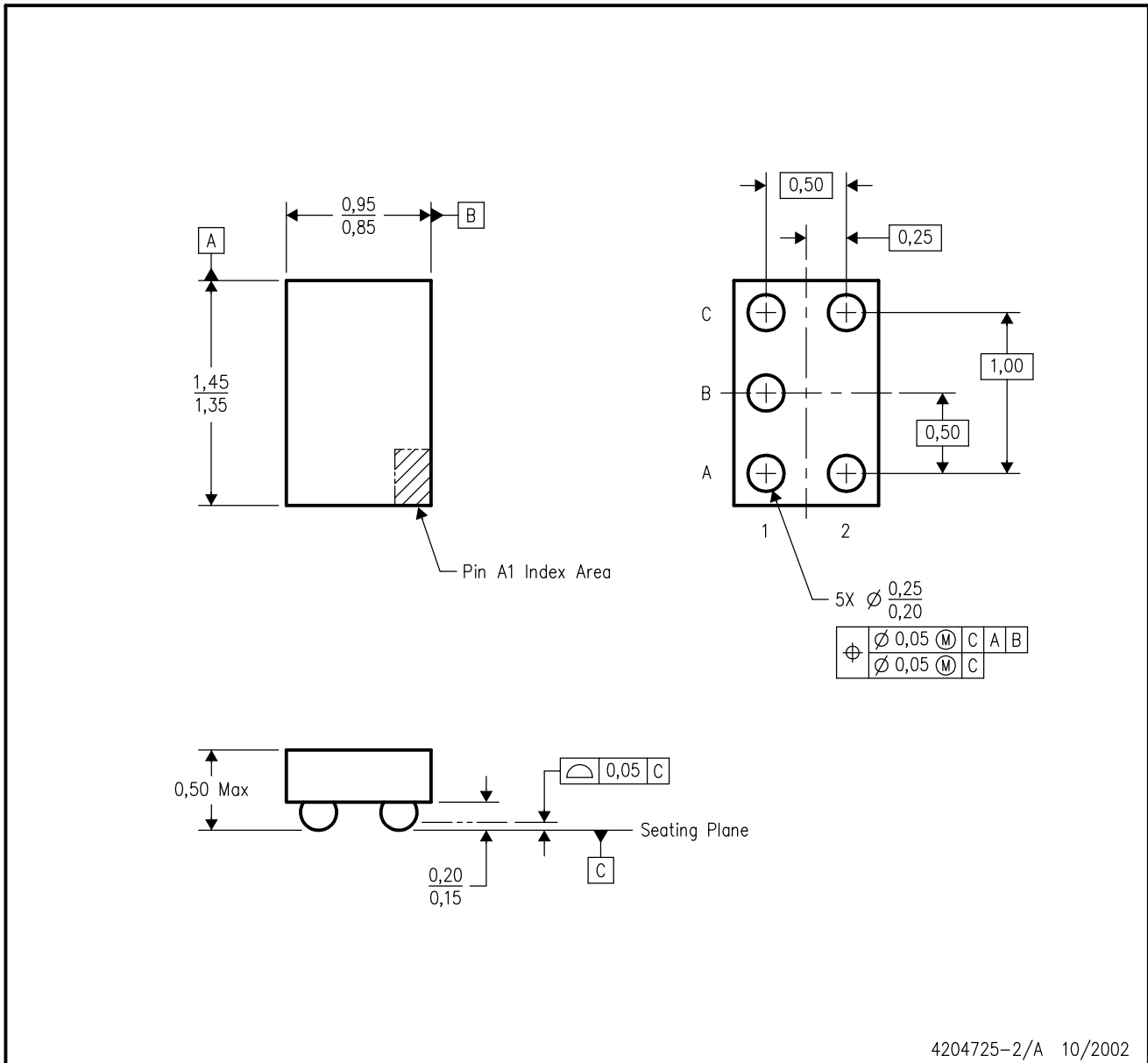


- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. NanoFree™ package configuration.
  - D. This package is lead-free. Refer to the 5 YEP package (drawing 4204725) for tin-lead (SnPb).

NanoFree is a trademark of Texas Instruments.

YEP (R-XBGA-N5)

DIE-SIZE BALL GRID ARRAY



- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. NanoStar™ package configuration.
  - D. This package is tin-lead (SnPb). Refer to the 5 YZP package (drawing 4204741) for lead-free.

NanoStar is a trademark of Texas Instruments.



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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>
Interface	<a href="http://interface.ti.com">interface.ti.com</a>	Digital Control	<a href="http://www.ti.com/digitalcontrol">www.ti.com/digitalcontrol</a>
Logic	<a href="http://logic.ti.com">logic.ti.com</a>	Military	<a href="http://www.ti.com/military">www.ti.com/military</a>
Power Mgmt	<a href="http://power.ti.com">power.ti.com</a>	Optical Networking	<a href="http://www.ti.com/opticalnetwork">www.ti.com/opticalnetwork</a>
Microcontrollers	<a href="http://microcontroller.ti.com">microcontroller.ti.com</a>	Security	<a href="http://www.ti.com/security">www.ti.com/security</a>
		Telephony	<a href="http://www.ti.com/telephony">www.ti.com/telephony</a>
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clear gif

**SN74LVC1G32**, Status: ACTIVE

Single 2-Input Positive-OR Gate



clear gif

<input type="checkbox"/> Features	<input type="checkbox"/> Samples	<input type="checkbox"/> Technical Documents
<input type="checkbox"/> Quality & Pb-Free Data	<input type="checkbox"/> Pricing/Packaging	<input type="checkbox"/> Applications Notes
<input type="checkbox"/> Related Products	<input type="checkbox"/> Inventory	<input type="checkbox"/> Simulation Models
<input type="checkbox"/> Tools & Software	<input type="checkbox"/> Symbols/Footprints	<input type="checkbox"/> Reference Designs



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- Logic: Single-Gates

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- Training
- Part Marking Lookup
- Part Number Nomenclature

**Datasheet**



Download Datasheet **SN74LVC1G32 (Rev. N)** (sn74lvc1g32.pdf, 490 KB)  
16 Jun 2005 [Download](#)

	LVC1G32-1.8	LVC1G32-2.5	LVC1G32-3.3	LVC1G32-5.0
<b>Voltage Node(V)</b>	1.8	2.5	3.3	5
<b>Performance</b>			Optimized	
<b>Vcc min(V)</b>	1.65	1.65	1.65	1.65
<b>Vcc max(V)</b>	5.5	5.5	5.5	5.5
<b>IOH(mA)</b>	-4	-8	-24	-32
<b>IOL(mA)</b>	4	8	24	32
<b>tpd max(ns)</b>	8	5.5	4.4	4
<b>ICC(uA)</b>	10	10	10	10
<b>Input Level</b>	1.8V CMOS	2.5V CMOS	LV TTL	CMOS
<b>Output Level</b>	1.8V CMOS	2.5V CMOS	LV TTL	CMOS
<b>No. of Gates</b>	1	1	1	1
	<a href="#">Samples</a>	<a href="#">Samples</a>	<a href="#">Samples</a>	<a href="#">Samples</a>
	Inventory Not Available	Inventory Not Available	Inventory Not Available	Inventory Not Available

**Product Information**

Features [Save this to your personal library](#)

- Available in the Texas Instruments NanoStar™ and NanoFree™ Packages
- Supports 5-V V<sub>CC</sub> Operation
- Inputs Accept Voltages to 5.5 V
- Max t<sub>pd</sub> of 3.6 ns at 3.3 V
- Low Power Consumption, 10-µA Max I<sub>CC</sub>
- ±24-mA Output Drive at 3.3 V
- I<sub>off</sub> Supports Partial-Power-Down Mode Operation
- Latch-Up Performance Exceeds 100 mA Per JESD 78, Class II
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 200-V Machine Model (A115-A)
  - 1000-V Charged-Device Model (C101)

NanoStar and NanoFree are trademarks of Texas Instruments.

**Description**

This single 2-input positive-OR gate is designed for 1.65-V to 5.5-V V<sub>CC</sub> operation.

The SN74LVC1G32 performs the Boolean function  $Y = A + B$  or  $Y = (A \cdot B)$  in positive logic.

NanoStar™ and NanoFree™ package technology is a major breakthrough in IC packaging concepts, using the die as the package.

This device is fully specified for partial-power-down applications using I<sub>off</sub>. The I<sub>off</sub> circuitry disables the


outputs, preventing damaging current backflow through the device when it is powered down.

Pricing/Packaging/CAD Design Tools/Samples								
Device	Status	Temp (°C)	Price	Packaging	CAD Design Tools	Samples		
			Budget Price (\$US)   QTY	Industry Standard (TI Pkg)   Pins	Top Side Marking	Standard Pack Quantity	Footprints	Samples
SN74LVC1G32DBVR	ACTIVE	-40 to 85	0.13   1KU	SOT-23 (DBV)   5	View	3000	<input type="checkbox"/>	Request Free Samples
SN74LVC1G32DBVRE4	ACTIVE	-40 to 85	0.12   1KU	SOT-23 (DBV)   5	View	3000	<input type="checkbox"/>	Purchase Samples
SN74LVC1G32DBVRG4	ACTIVE	-40 to 85	0.13   1KU	SOT-23 (DBV)   5	View	3000	<input type="checkbox"/>	Purchase Samples
SN74LVC1G32DBVT	ACTIVE	-40 to 85	0.46   1KU	SOT-23 (DBV)   5	View	250	<input type="checkbox"/>	Purchase Samples
SN74LVC1G32DBVTE4	ACTIVE	-40 to 85	0.46   1KU	SOT-23 (DBV)   5	View	250	<input type="checkbox"/>	Purchase Samples
SN74LVC1G32DCKR	ACTIVE	-40 to 85	0.13   1KU	SC70 (DCK)   5	View	3000	<input type="checkbox"/>	Request Free Samples
SN74LVC1G32DCKRE4	ACTIVE	-40 to 85	0.13   1KU	SC70 (DCK)   5	View	3000	<input type="checkbox"/>	Request Free Samples
SN74LVC1G32DCKRG4	ACTIVE	-40 to 85	0.15   1KU	SC70 (DCK)   5	View	3000	<input type="checkbox"/>	Purchase Samples
SN74LVC1G32DCKT	ACTIVE	-40 to 85	0.46   1KU	SC70 (DCK)   5	View	250	<input type="checkbox"/>	Purchase Samples
SN74LVC1G32DCKTE4	ACTIVE	-40 to 85	0.46   1KU	SC70 (DCK)   5	View	250	<input type="checkbox"/>	Purchase Samples
SN74LVC1G32DRLR	ACTIVE	-40 to 85	0.26   1KU	SOP (DRL)   5		4000	<input type="checkbox"/>	Request Free Samples
SN74LVC1G32DRLRG4	ACTIVE	-40 to 85	0.26   1KU	SOP (DRL)   5		4000	<input type="checkbox"/>	Request Free Samples
SN74LVC1G32YEAR	ACTIVE	-40 to 85	0.23   1KU	WCSP (YEA)   5		3000	<input type="checkbox"/>	Purchase Samples
SN74LVC1G32YEPR	ACTIVE	-40 to 85	0.23   1KU	WCSP (YEP)   5		3000	<input type="checkbox"/>	Purchase Samples
SN74LVC1G32YZAR	ACTIVE	-40 to 85	0.23   1KU	WCSP (YZA)   5		3000	<input type="checkbox"/>	Request Free Samples
SN74LVC1G32YZPR	ACTIVE	-40 to 85	0.23   1KU	WCSP (YZP)   5		3000	<input type="checkbox"/>	Request Free Samples

Inventory							
TI Inventory Status	Reported Distributor Inventory						
SN74LVC1G32DBVR	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	0*	>10k   4 Jan	6 Weeks	Americas	DigiKey	>1k	<input type="text"/>
				Europe	Avnet-SILICA	175	<input type="text"/>
SN74LVC1G32DBVRE4	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	0*	>10k   12 Dec	6 Weeks	None Reported			<input type="text"/>
				<a href="#">View Distributors</a>			
SN74LVC1G32DBVRG4	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	>10k*	>10k   9 Jan	6 Weeks	None Reported			<input type="text"/>
				<a href="#">View Distributors</a>			
SN74LVC1G32DBVT	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			

View all Distributors

Choose a Region



	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	3250*	>10k   12 Dec	6 Weeks	Americas	Newark InOne	637	<input type="text"/>
<b>SN74LVC1G32DBVTE4</b>	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	3250*	>10k   12 Dec	6 Weeks	None Reported <a href="#">View Distributors</a>			
<b>SN74LVC1G32DCKR</b>	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	0*	6000   16 Jan	8 Weeks	Americas	Avnet	>1k	<input type="text"/>
		>10k   24 Jan			Newark InOne	>1k	<input type="text"/>
				Asia	P&S	589	<input type="text"/>
				Europe	Arrow Northern Europe	>1k	<input type="text"/>
<b>SN74LVC1G32DCKRE4</b>	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	0*	6000   16 Jan	8 Weeks	None Reported <a href="#">View Distributors</a>			
		>10k   24 Jan					
<b>SN74LVC1G32DCKRG4</b>	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	0*	>10k   12 Dec	6 Weeks	None Reported <a href="#">View Distributors</a>			
<b>SN74LVC1G32DCKT</b>	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	1500*	>10k   7 Feb	6 Weeks	Americas	Arrow	683	<input type="text"/>
				Asia	P&S	240	<input type="text"/>
				Europe	Avnet-SILICA	250	<input type="text"/>
<b>SN74LVC1G32DCKTE4</b>	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	1500*	>10k   7 Feb	6 Weeks	None Reported <a href="#">View Distributors</a>			
<b>SN74LVC1G32DRLR</b>	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	0*	>10k   12 Dec	4 Weeks	Americas	DigiKey	>1k	<input type="text"/>
<b>SN74LVC1G32DRLRG4</b>	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	0*	>10k   12 Dec	4 Weeks	None Reported <a href="#">View Distributors</a>			
<b>SN74LVC1G32YEAR</b>	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	0*	>10k   12 Dec	6 Weeks	None Reported <a href="#">View Distributors</a>			
<b>SN74LVC1G32YEPR</b>	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	0*	>10k   31 Jan	9 Weeks	None Reported <a href="#">View Distributors</a>			

SN74LVC1G32YZAR	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	0*	>10k   20 Feb	10 Weeks	Americas	DigiKey	>1k	<input type="text"/>

SN74LVC1G32YZPR	As of 9:07 AM GMT, 29 Nov 2005			As of 9:07 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY   Date	Lead Time	Region	Company	In Stock	Purchase
	0*	2997   14 Feb	10 Weeks	Americas	DigiKey	973	<input type="text"/>
		>10k   20 Feb					

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### Quality & Lead (Pb)-Free Data

<input type="checkbox"/>	Product Content				MTBF/FIT Rate	
Device	Eco Plan*	Lead/Ball Finish	MSL Rating/Peak Reflow	Details	Details	
SN74LVC1G32DBVR <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	
SN74LVC1G32DBVRE4 <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	
SN74LVC1G32DBVRG4 <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	
SN74LVC1G32DBVT <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	
SN74LVC1G32DBVTE4 <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	
SN74LVC1G32DCKR <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	
SN74LVC1G32DCKRE4 <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	
SN74LVC1G32DCKRG4 <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	
SN74LVC1G32DCKT <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	
SN74LVC1G32DCKTE4 <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	
SN74LVC1G32DRLR <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	
SN74LVC1G32DRLRG4 <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	
SN74LVC1G32YEAR	TBD	SNPB	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	
SN74LVC1G32YEPR	TBD	SNPB	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	
SN74LVC1G32YZAR <input type="checkbox"/>	Pb-Free (RoHS)	SNAGCU	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	
SN74LVC1G32YZPR <input type="checkbox"/>	Pb-Free (RoHS)	SNAGCU	Level-1-260C-UNLIM	<a href="#">View</a>	<a href="#">View</a>	

\* The planned eco-friendly classification: Pb-Free (RoHS) or Green (RoHS & no Sb/Br) - please click on the Product Content Details "View" link in the table above for the latest availability information and additional product content details.

If the information you are requesting is not available online at this time, contact one of our [Product Information Centers](#) regarding the availability of this information.

### Technical Documents

<b>Datasheets</b>	<b>Keep track of what's new</b>
<b>SN74LVC1G32 (Rev. N)</b> (sn74lvc1g32.pdf, 490 KB) 16 Jun 2005 <a href="#">Download</a>	
<b>Application Notes</b>	

**Semiconductor Packing Material Electrostatic Discharge (ESD) Protection** (szza047.htm, 9 KB)

08 Jul 2004 [Abstract](#)

**Selecting the Right Level Translation Solution (Rev. A)** (scea035a.htm, 9 KB)

22 Jun 2004 [Abstract](#)

**Shelf-Life Evaluation of Lead-Free Component Finishes** (szza046.htm, 9 KB)

24 May 2004 [Abstract](#)

**Use of the CMOS Unbuffered Inverter in Oscillator Circuits** (szza043.htm, 9 KB)

06 Nov 2003 [Abstract](#)

**Understanding and Interpreting Standard-Logic Data Sheets (Rev. B)** (szza036b.htm, 8 KB)

28 May 2003 [Abstract](#)

**Texas Instruments Little Logic Application Report** (scea029.htm, 9 KB)

01 Nov 2002 [Abstract](#)

**TI IBIS File Creation, Validation, and Distribution Processes** (szza034.htm, 9 KB)

29 Aug 2002 [Abstract](#)

**16-Bit Widebus Logic Families in 56-Ball, 0.65-mm Pitch Very Thin Fine-Pitch BGA (Rev. B)** (szza029b.htm, 9 KB)

22 May 2002 [Abstract](#)

**Power-Up 3-State (PU3S) Circuits in TI Standard Logic Devices** (szza033.htm, 9 KB)

10 May 2002 [Abstract](#)

**Selecting the Right Texas Instruments Signal Switch** (szza030.htm, 9 KB)

07 Sep 2001 [Abstract](#)

**Implications of Slow or Floating CMOS Inputs (Rev. C)** (scba004c.htm, 9 KB)

01 Feb 1998 [Abstract](#)

**Bus-Interface Devices With Output-Damping Resistors Or Reduced-Drive Outputs (Rev. A)** (scba012a.htm, 9 KB)

01 Aug 1997 [Abstract](#)

**CMOS Power Consumption and CPD Calculation (Rev. B)** (scaa035b.htm, 9 KB)

01 Jun 1997 [Abstract](#)

**LVC Characterization Information** (scba011.htm, 9 KB)

01 Dec 1996 [Abstract](#)

**Live Insertion** (sdya012.htm, 9 KB)

01 Oct 1996 [Abstract](#)

**Input and Output Characteristics of Digital Integrated Circuits** (sdya010.htm, 9 KB)

01 Oct 1996 [Abstract](#)

**Understanding Advanced Bus-Interface Products Design Guide** (scaa029.pdf, 253 KB)

01 May 1996 [Download](#)

[View Application Notes for SINGLE-GATES](#)

#### **User Guides**

**Signal Switch Data Book (Rev. A)** (scdd003a.pdf, 19732 KB)

14 Nov 2003 [Download](#)

**LVC and LV Low-Voltage CMOS Logic Data Book (Rev. B)** (scbd152b.pdf, 13291 KB)

18 Dec 2002 [Download](#)

**LOGIC Pocket Data Book** (scyd013.pdf, 4835 KB)

05 Dec 2002 [Download](#)

#### **Simulation Models**

##### **IBIS Model**

**IBIS Model of SN74LVC1G32 (Rev. A)** (scem168a.ibs, 247 KB)

18 May 2004 [ibis](#) / [zip](#)

#### **More Literature**

**Logic Selection Guide 2005 (Rev. X)** (sdyu001x.pdf, 6909 KB)

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**Wireless Infrastructure Solutions Guide (2Q2005) (Rev. E)** (sstc001e.pdf, 734 KB)

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**Design Summary for WCSP Little Logic (Rev. B)** (scet007b.pdf, 295 KB)

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