The XD74LS32 and XL74LS32 are characterized for operation over the full military range of −55°C to 125°C. The XD74LS32 and XL74LS32 are characterized for operation from −30° to 80°C.

FUNCTION TABLE (each gate)

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

logic symbol†
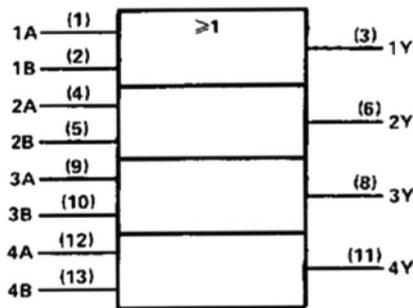
logic diagram
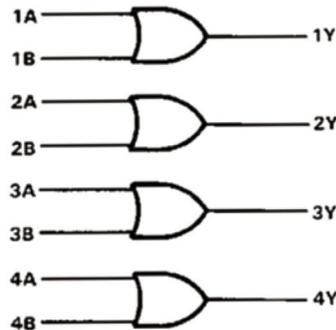
positive logic

$$Y = A + B \text{ or } Y = \overline{\overline{A} \cdot \overline{B}}$$

XD74LS32 . . . J OR W PACKAGE
XL74LS32 . . . J OR W PACKAGE

### (TOP VIEW)
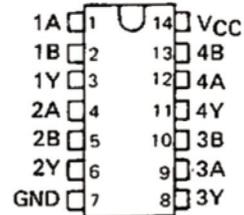
XD74LS32,XL74LS32 . . . FK PACKAGE

(TOP VIEW)
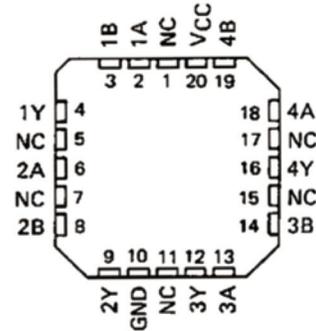
NC - No internal connection

schematics (each gate)

'32

'LS32

'S32
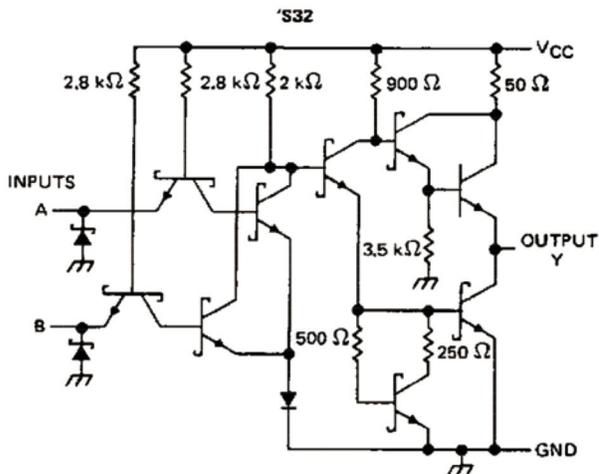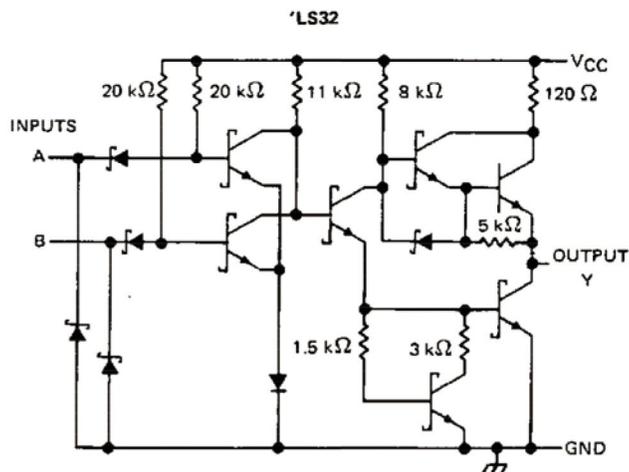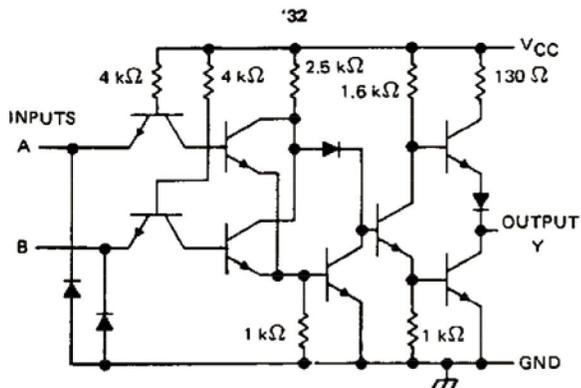
Resistor values shown are nominal.

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

Supply voltage, V_{CC} (see Note 1) .... 7 V
Input voltage: '32, 'S32 .... 5.5 V
          'LS32 .... 7 V
Operating free-air temperature: XD74' .... −55°C to 125°C
             XL74' .... −30°C to 80°C
Storage temperature range .... −65°C to 150°C

NOTE 1: Voltage values are with respect to network ground terminal.

recommended operating conditions

		XD74LS32			XL74LS32			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.75	5	5.25	V
V_{IH}	High-level input voltage	2			2			V
V_{IL}	Low-level input voltage			0.8			0.8	V
I_{OH}	High-level output current			− 0.8			− 0.8	mA
I_{OL}	Low-level output current			16			16	mA
T_A	Operating free-air temperature	− 55		125	−30		80	°C

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

PARAMETER	TEST CONDITIONS†			XD74LS32			XL74LS32			UNIT
				MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V_{IK}	V_{CC} = MIN,	I_I = − 12 mA				− 1.5			− 1.5	V
V_{OH}	V_{CC} = MIN,	V_{IH} = 2 V,	I_{OH} = − 0.8 mA	2.4	3.4		2.4	3.4		V
V_{OL}	V_{CC} = MIN,	V_{IL} = 0.8 V,	I_{OL} = 16 mA		0.2	0.4		0.2	0.4	V
I_I	V_{CC} = MAX,	V_I = 5.5 V				1			1	mA
I_{IH}	V_{CC} = MAX,	V_I = 2.4 V				40			40	μA
I_{IL}	V_{CC} = MAX,	V_I = 0.4 V				− 1.6			− 1.6	mA
I_{OS}§	V_{CC} = MAX			− 20		− 55	− 18		− 55	mA
I_{CCH}	V_{CC} = MAX,	See Note 2			15	22		15	22	mA
I_{CCL}	V_{CC} = MAX,	V_I = 0 V			23	38		23	38	mA

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.
‡ All typical values are at V_{CC} = 5 V, T_A = 25°C.
§ Not more than one output should be shorted at a time.
NOTE 2: One input at 4.5 V, all others at GND.

switching characteristics, V_{CC} = 5 V, T_A = 25°C (see note 3)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS		MIN	TYP	MAX	UNIT
t_{PLH}	A or B	Y	R_L = 400 Ω,	C_L = 15 pF		10	15	ns
t_{PHL}						14	22	ns

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

recommended operating conditions

		XD74LS32			XL74LS32			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.75	5	5.25	V
V_{IH}	Hgh-level input voltage	2			2			V
V_{IL}	Low-level input voltage			0.7			0.8	V
I_{OH}	High-level output current			− 0.4			− 0.4	mA
I_{OL}	Low-level output current			4			8	mA
T_A	Opertating free-air temperature	− 55		125	− 30		80	°C

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

PARAMETER	TEST CONDITIONS †			XD74LS32			XL74LS32			UNIT
				MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V_{IK}	V_{CC} = MIN,	I_I = − 18 mA				− 1.5			− 1.5	V
V_{OH}	V_{CC} = MIN,	V_{IH} = 2 V,	I_{OH} = − 0.4 mA	2.5	3.4		2.7	3.4		V
V_{OL}	V_{CC} = MIN,	V_{IL} = MAX,	I_{OL} = 4 mA		0.25	0.4		0.25	0.4	V
	V_{CC} = MIN,	V_{IL} = MAX,	I_{OL} = 8 mA					0.35	0.5	
I_I	V_{CC} = MAX,	V_I = 7 V				0.1			0.1	mA
I_{IH}	V_{CC} = MAX,	V_I = 2.7 V				20			20	µA
I_{IL}	V_{CC} = MAX,	V_I = 0.4 V				− 0.4			− 0.4	mA
I_{OS} §	V_{CC} = MAX			− 20		− 100	− 20		− 100	mA
I_{CCH}	V_{CC} = MAX,	See Note 2			3.1	6.2		3.1	6.2	mA
I_{CCL}	V_{CC} = MAX,	V_I = 0 V			4.9	9.8		4.9	9.8	mA

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.
‡ All typical values are at V_{CC} = 5 V, T_A = 25°C.
§ Not more than one output should be shorted at a time and the duration of the short-circuit should not exceed one second.
NOTE 2: One input at 4.5 V, all others at GND.

switching characteristics, V_{CC} = 5 V, T_A = 25°C (see note 3)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS		MIN	TYP	MAX	UNIT
t_{PLH}	A or B	Y	R_L = 2 kΩ,	C_L = 15 pF		14	22	ns
t_{PHL}						14	22	ns

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

4

recommended operating conditions

		XD74LS32			XL74LS32			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.75	5	5.25	V
V_{IH}	High-level input voltage	2			2			V
V_{IL}	Low-level input voltage			0.8			0.8	V
I_{OH}	High-level output current			−1			−1	mA
I_{OL}	Low-level output current			20			20	mA
T_A	Operating free-air temperature	−55		125	−30		80	°C

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

PARAMETER	TEST CONDITIONS †			XD74LS32			XL74LS32			UNIT
				MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V_{IK}	V_{CC} = MIN,	I_I = −18 mA				−1.2			−1.2	V
V_{OH}	V_{CC} = MIN,	V_{IH} = 2 V,	I_{OH} = −1 mA	2.5	3.4		2.7	3.4		V
V_{OL}	V_{CC} = MIN,	V_{IL} = 0.8 V,	I_{OL} = 20 mA			0.5			0.5	V
I_I	V_{CC} = MAX,	V_I = 5.5 V				1			1	mA
I_{IH}	V_{CC} = MAX,	V_I = 2.7 V				50			50	μA
I_{IL}	V_{CC} = MAX,	V_I = 0.5 V				−2			−2	mA
I_{OS} §	V_{CC} = MAX			−40		−100	−40		−100	mA
I_{CCH}	V_{CC} = MAX,	See Note 2			18	32		18	32	mA
I_{CCL}	V_{CC} = MAX,	V_I = 0 V			38	68		38	68	mA

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.
‡ All typical values are at V_{CC} = 5 V, T_A = 25°C.
§ Not more than one output should be shorted at a time and the duration of the short-circuit should not exceed one second.
NOTE 2: One input at 4.5 V, all others at GND.

switching characteristics, V_{CC} = 5 V, T_A = 25°C (see note 3)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS		MIN	TYP	MAX	UNIT
t_{PLH}	A or B	Y	R_L = 280 Ω,	C_L = 15 pF		4	7	ns
t_{PHL}						4	7	ns
t_{PLH}	A or B	Y	R_L = 280 Ω,	C_L = 50 pF		5		ns
t_{PHL}						6		ns

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

DIP14

.750±.005
NOT INCLUDING MOLD FLASH
.01 MAX PER END

14   8

.250±.010
NOT INCLUDING
MOLD FLASH

PIN 1 ID
SUPPLIER'S
OPTION

1   7

.04 MIN TYP

14X .060±.005

.145-.210

(.13)

SEATING PLANE

.125-.135

.015 MIN
TYP

12X .100

14X .018⁺·⁰⁰⁴₋·⁰⁰³

⊕ .01Ⓜ C AⓈ BⓈ

.300-.325

95°±5° TYP

.008-.012
TYP

.325⁺·⁰⁴⁰₋·⁰¹⁵
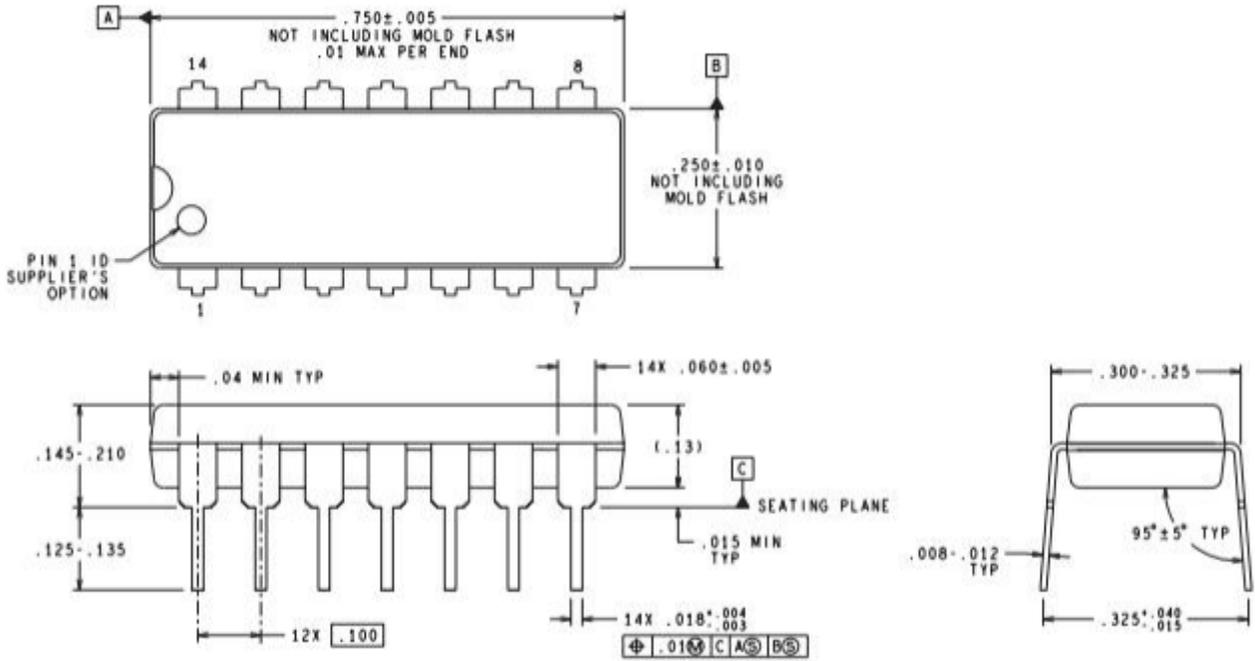
DIMENSIONS ARE IN INCHES
DIMENSIONS IN ( ) FOR REFERENCE ONLY

0.344 (8,75)
0.337 (8,55)

⚠C

14

8

0.244 (6,20)
0.228 (5,80)

0.157 (4,00)
0.150 (3,80) ⚠D

1

7

Pin 1
Index Area

0.050 (1,27)

0.020 (0,51)
0.012 (0,31)

⊕ 0.010 (0,25) Ⓜ

0.069 (1,75) Max

0.010 (0,25)
0.004 (0,10)

0.010 (0,25)
0.005 (0,13)

Gauge Plane

⌒ 0.004 (0,10)

Seating Plane

0.010 (0,25)

0°−8°

0.050 (1,27)
0.016 (0,40)
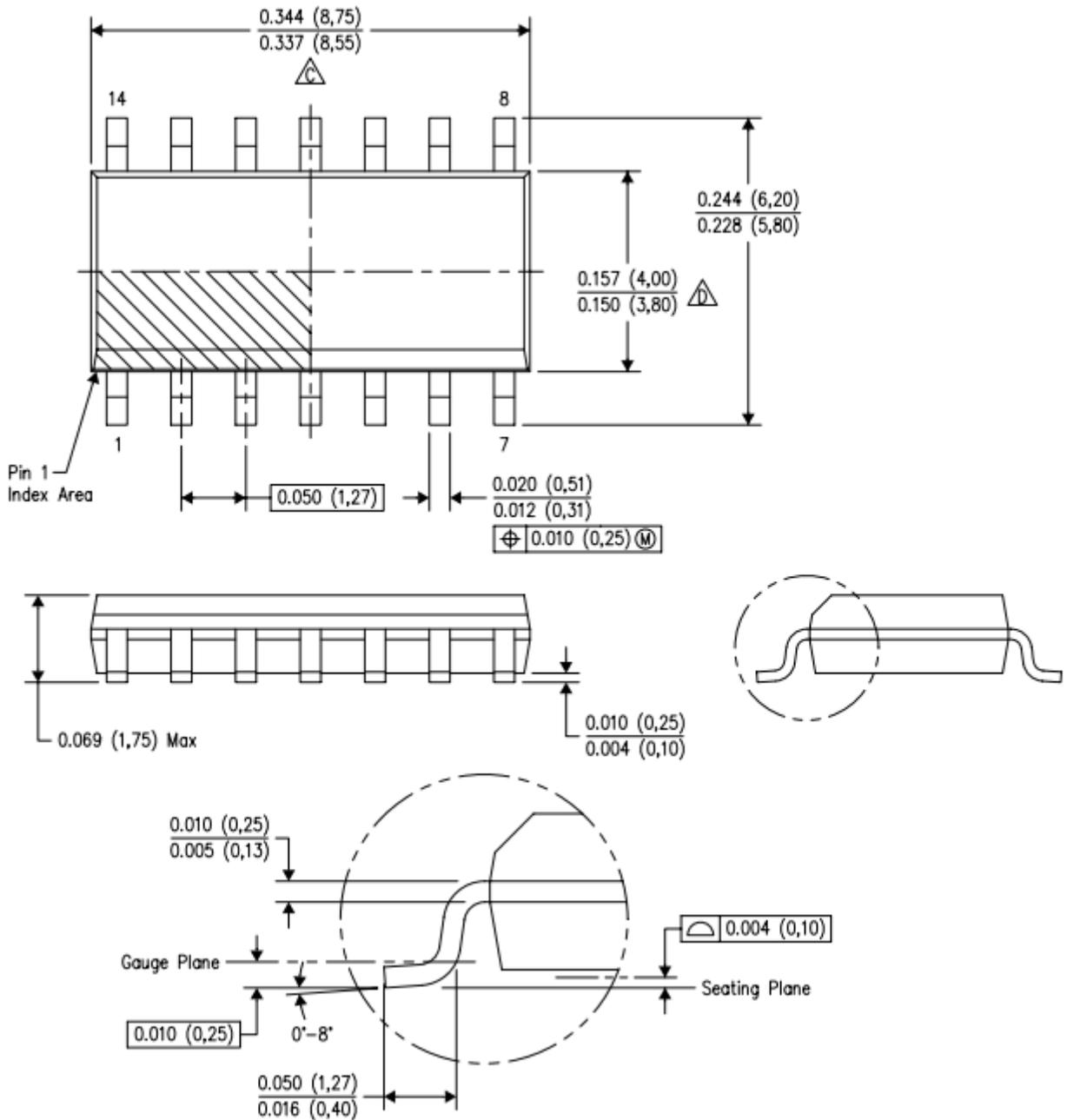
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