- High-Current 3-State Outputs Drive Bus Lines, Buffer Memory Address Registers, or Up to 15 LSTTL Loads

- Choice of True or Inverting Outputs

- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
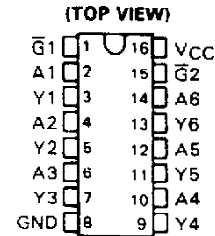
- Dependable Texas Instruments Quality and Reliability

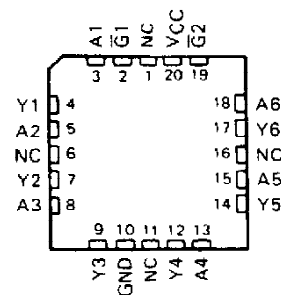|	
'HC365, HC367	True Outputs
'HC366, HC368	Inverting Outputs

description

These Hex buffers and line drivers are designed specifically to improve both the performance and density of three-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters. The designer has a choice of selected combinations of inverting and noninverting outputs, symmetrical G (active-low control) inputs.

The SN54HC' family is characterized for operation over the full military temperature range of −55°C to 125°C. The SN74HC' family is characterized for operation from −40°C to 85°C.
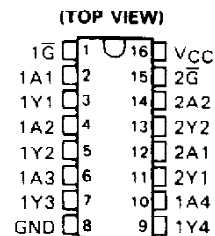
SN54HC365, SN54HC366 . . . J PACKAGE
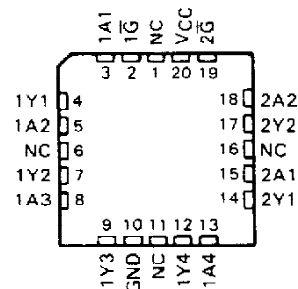**SN74HC365, SN74HC366 . . . D† OR N PACKAGE**
(TOP VIEW)

```
        ___
Ḡ1  [ 1  U  16 ]  VCC
A1  [ 2     15 ]  Ḡ2
Y1  [ 3     14 ]  A6
A2  [ 4     13 ]  Y6
Y2  [ 5     12 ]  A5
A3  [ 6     11 ]  Y5
Y3  [ 7     10 ]  A4
GND [ 8      9 ]  Y4
```

SN54HC365, SN54HC366 . . . FK PACKAGE
(TOP VIEW)

```
        A1  Ḡ1  NC  VCC  Ḡ2
         3   2   1  20  19
Y1  [ 4              18 ]  A6
A2  [ 5              17 ]  Y6
NC  [ 6              16 ]  NC
Y2  [ 7              15 ]  A5
A3  [ 8              14 ]  Y5
         9  10  11  12  13
        Y3  GND  NC  Y4  A4
```

SN54HC367, SN54HC368 . . . J PACKAGE
SN74HC367, SN74HC368 . . . D† OR N PACKAGE
(TOP VIEW)

```
        ___
1Ḡ  [ 1  U  16 ]  VCC
1A1 [ 2     15 ]  2Ḡ
1Y1 [ 3     14 ]  2A2
1A2 [ 4     13 ]  2Y2
1Y2 [ 5     12 ]  2A1
1A3 [ 6     11 ]  2Y1
1Y3 [ 7     10 ]  1A4
GND [ 8      9 ]  1Y4
```

SN54HC367, SN54HC368 . . . FK PACKAGE
(TOP VIEW)

```
        1A1  1Ḡ  NC  VCC  2Ḡ
          3    2   1  20  19
1Y1 [ 4              18 ]  2A2
1A2 [ 5              17 ]  2Y2
NC  [ 6              16 ]  NC
1Y2 [ 7              15 ]  2A1
1A3 [ 8              14 ]  2Y1
          9  10  11  12  13
         1Y3  GND  NC  1Y4  1A4
```

NC – No internal connection

† Contact the factory for D availability.

TEXAS INSTRUMENTS

logic symbols†

logic diagrams (positive logic)
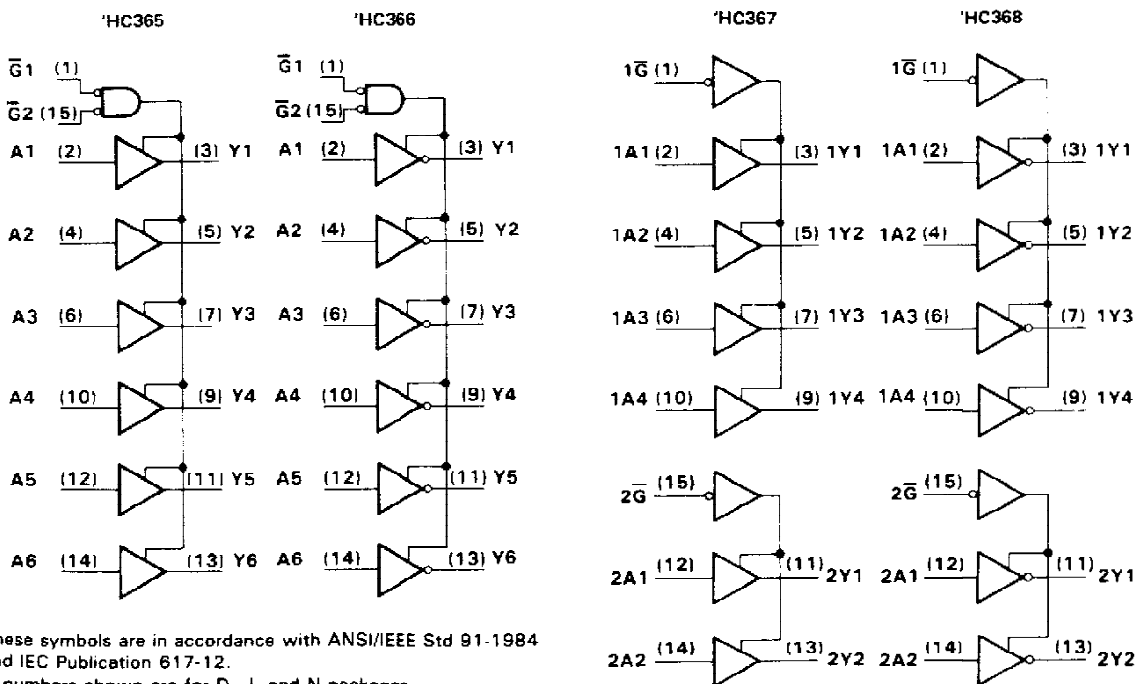
†These symbols are in accordance with ANSI/IEEE Std 91-1984
and IEC Publication 617-12.

Pin numbers shown are for D, J, and N packages.

TEXAS
INSTRUMENTS

absolute maximum ratings over operating free-air temperature range†

Supply voltage, V_{CC} . . . . –0.5 V to 7 V
Input clamp current, I_{IK} (V_I < 0 or V_I > V_{CC}) . . . . ±20 mA
Output clamp current, I_{OK} (V_O < 0 or V_O > V_{CC}) . . . . ±20 mA
Continuous output current, I_O (V_O = 0 to V_{CC}) . . . . ±35 mA
Continuous current through V_{CC} or GND pins . . . . ±70 mA
Lead temperature 1,6 mm (1/16 in) from case for 60 s: FK or J package . . . . 300°C
Lead temperature 1,6 mm (1/16 in) from case for 10 s: D or N package . . . . 260°C
Storage temperature range . . . . –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.

recommended operating conditions

		SN54HC365 thru SN54HC368			SN74HC365 thru SN74HC368			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	2	5	6	2	5	6	V
V_{IH}	High-level input voltage	V_{CC} = 2 V: 1.5			1.5			V
		V_{CC} = 4.5 V: 3.15			3.15			
		V_{CC} = 6 V: 4.2			4.2			
V_{IL}	Low-level input voltage	V_{CC} = 2 V: 0		0.3	0		0.3	V
		V_{CC} = 4.5 V: 0		0.9	0		0.9	
		V_{CC} = 6 V: 0		1.2	0		1.2	
V_I	Input voltage	0		V_{CC}	0		V_{CC}	V
V_O	Output voltage	0		V_{CC}	0		V_{CC}	V
t_t	Input transition (rise and fall) times	V_{CC} = 2 V: 0		1000	0		1000	ns
		V_{CC} = 4.5 V: 0		500	0		500	
		V_{CC} = 6 V: 0		400	0		400	
T_A	Operating free-air temperature	–55		125	–40		85	°C

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

PARAMETER	TEST CONDITIONS	V_{CC}	$T_A = 25°C$ MIN	TYP	MAX	SN54HC365 thru SN54HC368 MIN	MAX	SN74HC365 thru SN74HC368 MIN	MAX	UNIT
V_{OH}	$V_I = V_{IH}$ or V_{IL}, $I_{OH} = -20 \mu A$	2 V	1.9	1.998		1.9		1.9		V
		4.5 V	4.4	4.499		4.4		4.4		
		6 V	5.9	5.999		5.9		5.9		
	$V_I = V_{IH}$ or V_{IL}, $I_{OH} = -6 mA$	4.5 V	3.98	4.30		3.7		3.84		
	$V_I = V_{IH}$ or V_{IL}, $I_{OH} = -7.8 mA$	6 V	5.48	5.80		5.2		5.34		
V_{OL}	$V_I = V_{IH}$ or V_{IL}, $I_{OL} = 20 \mu A$	2 V		0.002	0.1		0.1		0.1	V
		4.5 V		0.001	0.1		0.1		0.1	
		6 V		0.001	0.1		0.1		0.1	
	$V_I = V_{IH}$ or V_{IL}, $I_{OL} = 6 mA$	4.5 V		0.17	0.26		0.4		0.33	
	$V_I = V_{IH}$ or V_{IL}, $I_{OL} = 7.8 mA$	6 V		0.15	0.26		0.4		0.33	
I_I	$V_I = V_{CC}$ or 0	6 V		±0.1	±100		±1000		±1000	nA
I_{OZ}	$V_O = V_{CC}$ or 0	6		±0.01	±0.5		±10		±5	μA
I_{CC}	$V_I = V_{CC}$ or 0, $I_O = 0$	6 V			8		160		80	μA
C_i		2 to 6 V		3	10		10		10	pF

4

switching characteristics over recommended operating free-air temperature range (unless otherwise noted), C_L = 50 pF (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC}	T_A = 25°C			SN54HC'		SN74HC'		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{pd}	A	Y	2 V		50	95		145		120	ns
			4.5 V		12	19		29		24	
			6 V		10	16		25		20	
t_{en}	$\overline{G}$	Y	2 V		100	190		285		238	ns
			4.5 V		26	38		57		48	
			6 V		21	32		48		41	
t_{dis}	$\overline{G}$	Y	2 V		50	175		265		240	ns
			4.5 V		21	35		53		48	
			6 V		19	30		45		41	
t_t		Any	2 V		28	60		90		75	ns
			4.5 V		8	12		18		15	
			6 V		6	10		16		13	

C_{pd}	Power dissipation capacitance per driver	No load, T_A = 25°C	35 pF typ

switching characteristics over recommended operating free-air temperature range (unless otherwise noted), C_L = 150 pF (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC}	T_A = 25°C			SN54HC'		SN74HC'		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{pd}	A	Y	2 V		70	120		180		150	ns
			4.5 V		17	24		36		30	
			6 V		14	20		31		25	
t_{en}	$\overline{G}$	Y	2 V		140	230		345		285	ns
			4.5 V		30	46		69		57	
			6 V		28	39		59		48	
t_t			2 V		45	210		315		265	ns
			4.5 V		17	42		63		53	
			6 V		13	36		53		45	

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

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