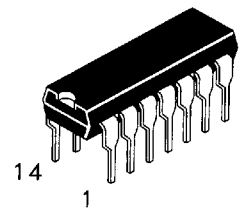
Quad 2-Input OR Gate

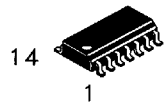
DV74HC32A
DV74HCT32A

The DV74HC32A is quad 2-input OR gate. The DV74HCT32A is also quad 2-input gate, but with LSTTL compatible inputs

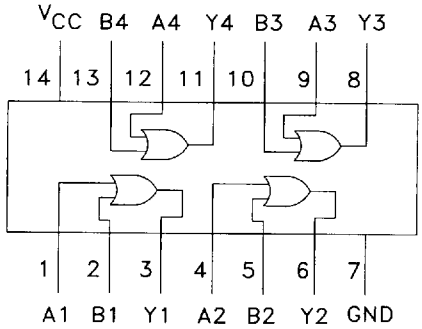
- **Output Drive Capability: 10 LSTTL Loads**
- **Outputs Directly Interface to CMOS, NMOS, and TTL**
- **Operating Voltage Range: 2 to 6 V for HC devices**
- **Low Input Current: 1 μA**
- **DC, AC parameters guaranteed from -55°C to 125°C**



N Suffix
Plastic DIP
AVG-001 Case



D Suffix
Plastic SOP
AVG-002 Case



TRUTH TABLE
Y = A+B

Inputs		Outputs
A	B	Y
L	L	L
L	H	H
H	L	H
H	H	H

H = High Logic Level
L = Low Logic Level

ABSOLUTE MAXIMUM RATINGS

Maximum ratings are those values beyond which damage to the device may occur.

Symbol	Parameter	Value	Unit
V_{CC}	DC Supply Voltage (Referenced to GND)	−0.5 to +7.0	V
V_{IN}	DC Input Voltage (Referenced to GND)	−1.5 to V_{CC} +1.5	V
V_{OUT}	DC Output Voltage (Referenced to GND)	−0.5 to V_{CC} +0.5	V
I_{IN}	DC Input Current, per Pin	±20	mA
I_{OUT}	DC Output Current, per Pin	±25	mA
I_{CC}	DC Supply Current, V_{CC} and GND Pins	±50	mA
P_D	Power Dissipation in Still Air, Plastic DIP SOP Package	750 500	mW
T_{STG}	Storage Temperature Range	−65 to +150	°C
TL	Lead Temperature, 1mm from Case for 10 Seconds (Plastic DIP or Sop Package)	260	°C

GUARANTEED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
V_{CC}	DC Supply Voltage, HC (HCT), Referenced to GND	2.0 (4.5)	6.0 (5.5)	V
V_{IN}, V_{OUT}	DC Input Voltage, Output Voltage, Referenced to GND	0	V_{CC}	V
T_A	Ambient Temperature	−55	+125	°C
t_r, t_f	Input Rise and Fall Time: HC: V_{CC}=2.0V HCT: V_{CC}=5.5V / HC: V_{CC}=4.5V HC: V_{CC}=6.0V	0 0 0	1000 500 400	ns

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V_{CC} V	Guaranteed Limits			Unit
				25°C to −55°C	≤85°C	≤125°C	
V_{IH}	Minimum High-Level Input Voltage	V_{OUT} =0.1 V, $\|I_{OUT}\| \leq$ 20 µA or $V_{OUT} \geq V_{CC}$−0.1V	2.0 4.5 6.0	1.5 3.15 4.2	1.5 3.15 4.2	1.5 3.15 4.2	V
V_{IL}	Maximum Low- Level Input Voltage	V_{OUT} =0.1 V, $\|I_{OUT}\| \leq$ 20 µA or $V_{OUT} = V_{CC}$−0.1V	2.0 4.5 6.0	0.5 1.35 1.8	0.5 1.35 1.8	0.5 1.35 1.8	V
V_{OH}	Minimum High-Level Output Voltage	$V_{IN} = V_{IH}$ or V_{IL} $\|I_{OUT}\| \leq$ 20 µA	2.0 4.5 6.0	1.9 4.4 5.9	1.9 4.4 5.9	1.9 4.4 5.9	V
		$V_{IN} = V_{IH}$ or V_{IL}, $\|I_{OUT}\| \leq$ 4.0mA $\|I_{OUT}\| \leq$ 5.2 mA	4.5 6.0	3.98 5.48	3.84 5.34	3.7 5.2	
V_{OL}	Maximum Low Level Output Voltage	$V_{IN} = V_{IH}$ or V_{IL} $\|I_{OUT}\| \leq$ 20 µA	2.0 4.5 6.0	0.1 0.1 0.1	0.1 0.1 0.1	0.1 0.1 0.1	V
		$V_{IN} = V_{IH}$ or V_{IL}, $\|I_{OUT}\| \leq$ 4.0mA $\|I_{OUT}\| \leq$ 5.2 mA	4.5 6.0	0.26 0.26	0.33 0.33	0.40 0.40	V
I_{IN}	Maximum Input Leakage Current	$V_{IN} = V_{CC}$ or GND	6.0	±0.1	±1.0	±1.0	µA
I_{CC}	Maximum Quiescent Supply Current	$V_{IN} = V_{CC}$ or GND, $\|I_{OUT}\| \leq$ 0µA (Per Package)	6.0	1.0	10	40	µA

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AC ELECTRICAL CHARACTERISTICS over full operating conditions (C_L=50pF, Input t_f=t_r= 6ns)

Symbol	Parameter	V_{CC} V	Guaranteed Limit			Unit
			25°C to −55°C	≤85°C	≤125°C	
t_{PLH}, t_{PHL}	Maximum Propagation Delay Time, Input A or B To Output Y	2.0 4.5 6.0	75 15 13	95 19 16	110 22 19	ns
t_{TLH}, t_{THL}	Maximum Output Transition Time Any Output	2.0 4.5 6.0	75 15 13	95 19 16	110 22 19	ns
C_{IN}	Maximum Input Capacitance	—	10	10	10	pF

C_{PD}	Power Dissipation Capacitance (Per Gate) Used to determine the no-load dynamic power consumption, $P_D = C_{PD} V_{CC}^2 f + I_{CC} V_{CC}$	Typical @ 25°C, V_{CC} = 5 V 20	pF

HCT-32A

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V_{CC} V	Guaranteed Limits						Unit
				25°C to -55°C		≤85°C		≤125°C		
				Min	Max	Min	Max	Min	Max	
V_{IH}	Minimum High-Level Input Voltage	V_{OUT} =0.1 V, $\|I_{OUT}\|$=0µA or $V_{OUT} = V_{CC}$−0.1V	4.5 5.5	2.0 2.0		2.0 2.0		2.0 2.0		V
V_{IL}	Maximum Low- Level Input Voltage	V_{OUT} =0.1 V,$\|I_{OUT}\|$=0µA or $V_{OUT} = V_{CC}$−0.1V	4.5 5.5		0.8 0.8		0.8 0.8		0.8 0.8	V

Symbol	Parameter	Conditions	V_{CC} V	Guaranteed Limits						Unit
				25°C to -55°C		≤85°C		≤125°C		
				Min	Max	Min	Max	Min	Max	
V_{OH}	Minimum High-Level Output Voltage	V_{IN} = V_{IH} or V_{IL} $\|I_{OUT}\| \leq$ 20 µA	4.5 5.5	4.4 5.4		4.4 5.4		4.4 5.4		V
		V_{IN} = V_{IH} or V_{IL} $\|I_{OUT}\| \leq$ 4.0mA	5.5	3.98		3.84		3.7		
V_{OL}	Maximum Low Level Output Voltage	V_{IN} = V_{IH} or V_{IL} $\|I_{OUT}\| \leq$ 20 µA	4.5 5.5		0.1 0.1		0.1 0.1		0.1 0.1	V
		V_{IN} = V_{IH} or V_{IL} $\|I_{OUT}\| \leq$ 4.0mA	4.5		0.26		0.33		0.40	
I_{IN}	Maximum Input Leakage Current	V_{IN} = V_{CC} or GND	5.5		± 0.1		± 1.0		± 1.0	µA
I_{CC}	Maximum Quiescent Supply Current	V_{IN}=V_{CC} or GND, $\|I_{OUT}\| \leq$ 0µA (Per Package)	5.5		1.0		10		40	µA
ΔI_{CC}	Additional Quiescent Supply Current	V_{IN}=2.4V, Any One Input V_{IN}=V_{CC} or GND,Other Inputs I_{OUT}=0µA			≥-55°C		25°C to 125°C			
			5.5		2.9		2.4			mA

AC ELECTRICAL CHARACTERISTICS over full operating conditions (CL=50pF, Input t_f=t_r=6ns)

Symbol	Parameter	V_{CC}	Guaranteed Limit						Unit
			25°C to –55°C		≤85°C		≤125°C		
			Min	Max	Min	Max	Min	Max	
t_{PLH}, t_{PHL}	Maximum Propagation Delay Time, Input A or B To Output Y	5.0 ± 10%		20		25		30	ns
t_{TLH}, t_{THL}	Maximum Output Transition Time Any Output			15		19		22	ns
C_{IN}	Maximum Input Capacitance	—		10		10		10	pF

C_{PD}	Power Dissipation Capacitance (Per Gate) Used to determine the no-load dynamic power consumption, $P_D = C_{PD} V_{CC}^2 f + I_{CC} V_{CC}$	Typical @ 25°C, V_{CC} = 5 V 15	pF

SWITCHING WAVEFORMS

Input and Output threshold voltage, V_T=50% V_{CC} for HC; 1.3V for HCT
V_H=V_{CC} for HC, 3V for HCT