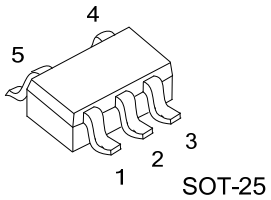
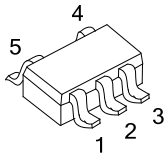
U74VHC1GT32

CMOS IC

SINGLE 2-INPUT OR GATE



SOT-25



SOT-353

■ DESCRIPTION

The UTC **U74VHC1GT32** is a single 2−input OR Gate in tiny footprint packages.

The UTC **U74VHC1GT32** has TTL−level thresholds.

■ FEATURES

* Operate from 2V to 5.5V
* Source/Sink 8mA at 5V
* Inputs are TTL voltage compatible

■ ORDERING INFORMATION

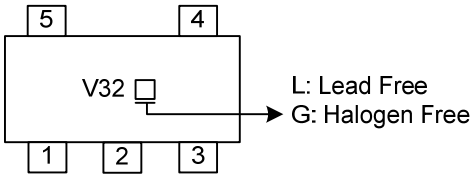
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74VHC1GT32L-AF5-R	U74VHC1GT32G-AF5-R	SOT-25	Tape Reel
U74VHC1GT32L-AL5-R	U74VHC1GT32G-AL5-R	SOT-353	Tape Reel

U74VHC1GT32G-AF5-R

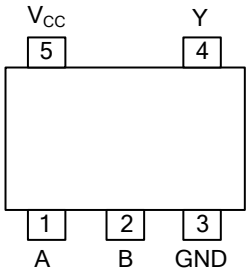
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) AF5: SOT-25, AL5: SOT-353
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ PIN CONFIGURATION

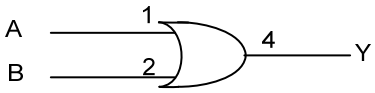


■ FUNCTION TABLE (each gate)

INPUT		OUTPUT
A	B	Y
L	L	L
L	H	H
H	L	H
H	H	H

Note: H: high voltage level; L: low voltage level.

■ LOGIC DIAGRAM



Logic Symbol

■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5 ~ 6.5	V
Input Voltage	V_{IN}	-0.5 ~ 6.5	V
Output Voltage	V_{OUT}	-0.5 ~ V_{CC} +0.5	V
V_{CC} or GND Current	I_{CC}	±50	mA
Output Current	I_{OUT}	±25	mA
Input Clamp Current	I_{IK}	-20	mA
Output Clamp Current	I_{OK}	±20	mA
Storage Temperature	T_{STG}	-65 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2.0		5.5	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}		0		V_{CC}	V
High-level Input Voltage	V_{IH}	V_{CC}=2V	1			V
		V_{CC}=3V	1.4			V
		V_{CC}=4.5V~5.5V	2			V
Low-level Input Voltage	V_{IL}	V_{CC}=2V			0.28	V
		V_{CC}=3V			0.45	V
		V_{CC}=4.5V~5.5V			0.8	V
High-level Output Current	I_{OH}				-8	mA
Low-level Output Current	I_{OL}				8	mA
Input Transition Rise and Fall Time	t_R / t_F	V_{CC}=2V			20	ns/V
		V_{CC}=2.3V~2.7V			20	ns/V
		V_{CC}=3V~3.6V			10	ns/V
		V_{CC}=4.5V~5.5V			5	ns/V
Ambient Operating Temperature	T_A		-40		+125	°C

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Output Voltage	V_{OH}	V_{CC}=2V, I_{OH}=-50μA	1.9			V
		V_{CC}=3V, I_{OH}=-50μA	2.9			V
		V_{CC}=4.5V, I_{OH}=-50μA	4.4			V
		V_{CC}=3V, I_{OH}=-4mA	2.58			V
		V_{CC}=4.5V, I_{OH}=-8mA	3.94			V
Low-Level Output Voltage	V_{OL}	V_{CC}=2V, I_{OL}=50μA		0	0.1	V
		V_{CC}=3V, I_{OL}=50μA		0	0.1	V
		V_{CC}=4.5V, I_{OL}=50μA			0.1	V
		V_{CC}=3V, I_{OL}=4mA			0.36	V
		V_{CC}=4.5V, I_{OL}=8mA			0.36	V
Input Leakage Current	$I_{I(LEAK)}$	V_{CC}=0~5.5V, V_{IN}=5.5V or GND			±0.1	μA
Quiescent Supply Current	I_Q	V_{CC}=5.5V, V_{IN}=V_{CC} or GND, I_{OUT}=0			1	μA
Additional Quiescent Supply Current	ΔI_Q	V_{CC}=5.5V, One input at 3.4V, Other inputs at V_{CC} or GND			1.35	mA
Input Capacitance	C_{IN}	V_{CC}=4.5V, V_{IN}=V_{CC} or GND		4	10	pF
Output Capacitance	C_{OUT}	Output in High Impedance State		6		pF

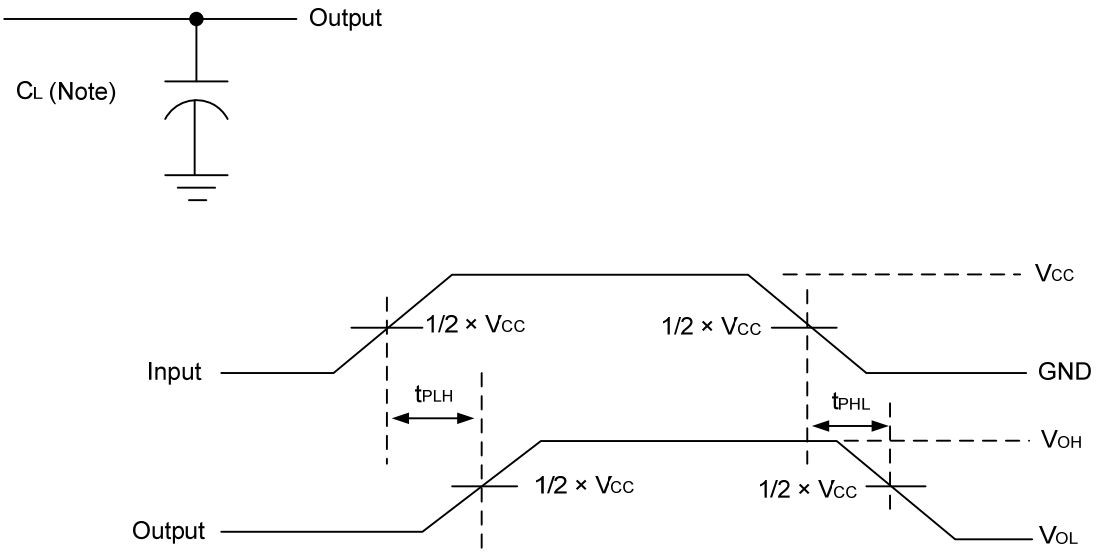
■ DYNAMIC CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation Delay Time Input (A) to Output (Y)	t_{PLH}, t_{PHL}	V_{CC}=3V~3.6V	C_L=15pF		6.3	8.9	ns
			C_L=50pF		7.4	12.4	ns
		V_{CC}=4.5V±0.5V	C_L=15pF		5.2	7.5	ns
			C_L=50pF		5.9	9.5	ns

■ OPERATING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	V_{CC}=5V, f=1MHz, No load		8		pF

■ TEST CIRCUIT AND WAVEFORMS



Notes: 1. C_L includes probe and jig capacitance.
2. All input pulses are supplied by generators having the following characteristics: $P_{RR} \leqq 1MHz$, $Z_O=50\Omega$, $t_R \leqq 3ns$, $t_F \leqq 3ns$.