

# MITSUBISHI LSTTLs M74LS266P

## QUADRUPLE 2-INPUT EXCLUSIVE NOR GATE WITH OPEN COLLECTOR OUTPUT

### DESCRIPTION

The M74LS266P is a semiconductor integrated circuit containing four integral open-collector output circuits configured into dual input exclusive NOR gates.

### FEATURES

- "wire-AND" capability
- Capable of gating high output voltages ( $V_O \geq 7V$ )
- Low power dissipation ( $P_d = 40mW$  typical)
- Wide operating temperature range ( $T_a = -20 \sim +75^\circ C$ )

### APPLICATION

General purpose, for use in industrial and consumer equipment

### FUNCTIONAL DESCRIPTION

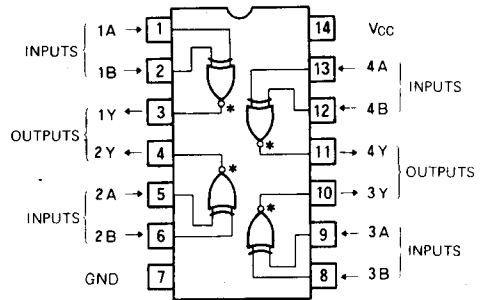
The use of open-collector output circuits in this device gives the user the option of varying high-level output impedance via an external resistance. It is thus possible to implement an AND tie which is not possible in conventional gates.

When both inputs A and B are either high or low-level, output Y goes high-level. Conversely, when A and B are high – low, or low – high with respect to each other, Y will be low-level.

### FUNCTION TABLE

A	B	Y
L	L	H
H	L	L
L	H	L
H	H	H

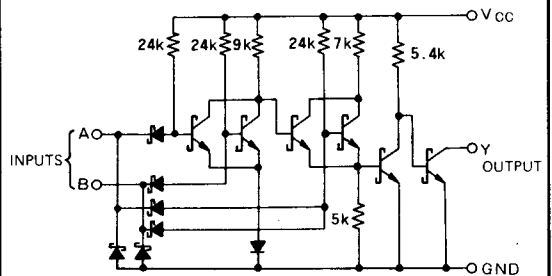
### PIN CONFIGURATION (TOP VIEW)



\* : OPEN COLLECTOR OUTPUT

Outline 14P4

### CIRCUIT DIAGRAM (Applicable to each gate)



UNIT :  $\Omega$

### ABSOLUTE MAXIMUM RATINGS ( $T_a = -20 \sim +75^\circ C$ , unless otherwise noted)

Symbol	Parameter	Conditions	Limits	Unit
$V_{CC}$	Supply voltage		-0.5 ~ +7	V
$V_i$	Input voltage		-0.5 ~ +15	V
$V_O$	Output voltage	High-level state	-0.5 ~ +7	V
$T_{opr}$	Operating free-air ambient temperature range		-20 ~ +75	$^\circ C$
$T_{stg}$	Storage temperature range		-65 ~ +150	$^\circ C$

**QUADRUPLE 2-INPUT EXCLUSIVE NOR GATE  
WITH OPEN COLLECTOR OUTPUT**

**RECOMMENDED OPERATING CONDITIONS** ( $T_a = -20 \sim +75^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter		Limits			Unit
			Min	Typ	Max	
$V_{CC}$	Supply voltage		4.75	5	5.25	V
$I_{OH}$	High-level output current	$V_O = 5.5\text{V}$	0		100	$\mu\text{A}$
$I_{OL}$	Low-level output current	$V_{OL} \leq 0.4\text{V}$	0		4	mA
		$V_{OL} \leq 0.5\text{V}$	0		8	mA

**ELECTRICAL CHARACTERISTICS** ( $T_a = -20 \sim +75^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ *	Max	
$V_{IH}$	High-level input voltage		2			V
$V_{IL}$	Low-level input voltage				0.8	V
$V_{IC}$	Input clamp voltage	$V_{CC} = 4.75\text{V}$ , $I_{IC} = -18\text{mA}$			-1.5	V
$I_{OH}$	High-level output current	$V_{CC} = 4.75\text{V}$ , $V_I = 0.8\text{V}$ $V_I = 2\text{V}$ , $V_O = 5.5\text{V}$			100	$\mu\text{A}$
$V_{OL}$	Low-level output voltage	$V_{CC} = 4.75\text{V}$ $V_I = 0.8\text{V}$ , $V_I = 2\text{V}$	$I_{OL} = 4\text{mA}$	0.25	0.4	V
			$I_{OL} = 8\text{mA}$	0.35	0.5	V
$I_{IH}$	High-level input current	$V_{CC} = 5.25\text{V}$ , $V_I = 2.7\text{V}$ $V_{CC} = 5.25\text{V}$ , $V_I = 10\text{V}$			40	$\mu\text{A}$
					0.2	mA
$I_{IL}$	Low-level input current	$V_{CC} = 5.25\text{V}$ , $V_I = 0.4\text{V}$			-0.8	mA
$I_{CC}$	Supply current	$V_{CC} = 5.25\text{V}$ (Note 1)		8	13	mA

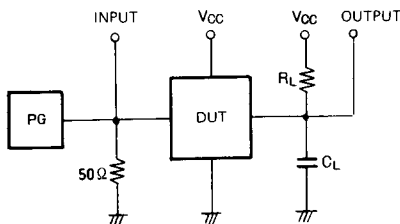
\* : All typical values are at  $V_{CC} = 5\text{V}$ ,  $T_a = 25^\circ\text{C}$ .

Note 1.  $I_{CC}$  is measured with one input of each gate at 4.5V, the other inputs grounded, and the outputs open.

**SWITCHING CHARACTERISTICS** ( $V_{CC} = 5\text{V}$ ,  $T_a = 25^\circ\text{C}$ , unless otherwise noted)

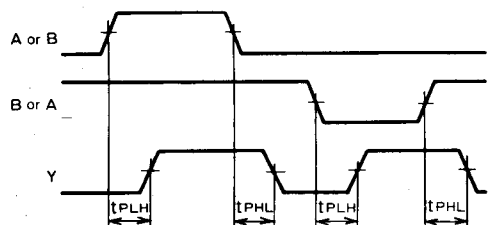
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$t_{PLH}$	Low-to-high-level, high-to-low-level output propagation time	$R_L = 2\text{k}\Omega$ $C_L = 15\text{pF}$ Other input low-level (Note 2)		16	30	ns
$t_{PHL}$				16	30	ns
$t_{PLH}$		$R_L = 2\text{k}\Omega$ $C_L = 15\text{pF}$ Other input high-level (Note 2)		14	30	ns
$t_{PHL}$				14	30	ns

Note 2. Measurement Circuit



- (1) The pulse generator has the following characteristics: PRR = 1MHz,  $t_r = 6\text{ns}$ ,  $t_f = 6\text{ns}$ ,  $t_w = 500\text{ns}$ ,  $V_p = 3\text{V}_{p-p}$ ,  $Z_0 = 50\Omega$ .  
(2)  $C_L$  includes probe and jig capacitance.

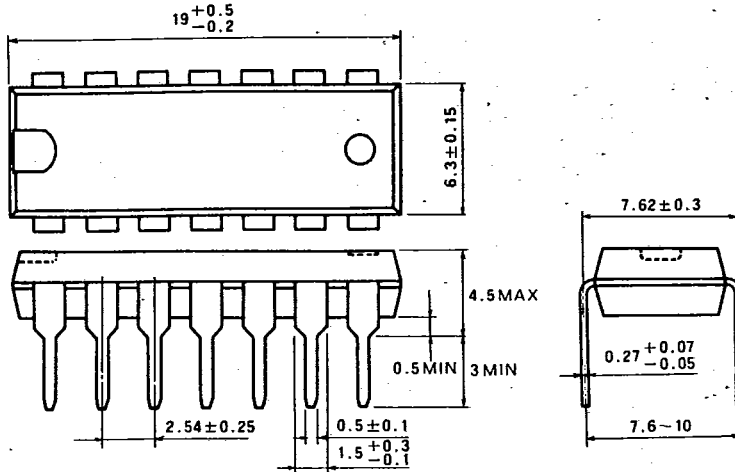
**TIMING DIAGRAM (Reference level = 1.3V)**



T-90-20

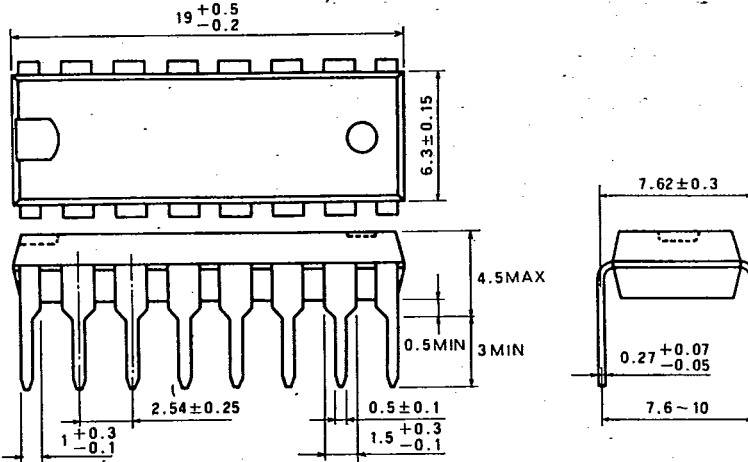
**TYPE 14P4 14-PIN MOLDED PLASTIC DIL**

Dimension in mm



**TYPE 16P4 16-PIN MOLDED PLASTIC DIL**

Dimension in mm



**TYPE 20P4 20-PIN MOLDED PLASTIC DIL**

Dimension in mm

