



MOTOROLA

**MC75451
MC75452
MC75453
MC75454**

DUAL PERIPHERAL DRIVERS

These versatile devices are useful for interfacing digital logic to industrial electronic systems. They are useful as lamp drivers, relay drivers, logic buffers, line drivers, or MOS drivers.

Each of these devices consists of a pair of MTTL gates with the output of each gate internally connected to the base of a transistor.

MC75451 provides the AND function

MC75452 provides the NAND function

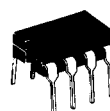
MC75453 provides the OR function

MC75454 provides the NOR function

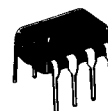
- 300 mA Output Current Capability
- Output Breakdown Voltage — 30 V Min
- MTTL compatible Inputs

DUAL PERIPHERAL DRIVERS

SILICON MONOLITHIC INTEGRATED CIRCUITS

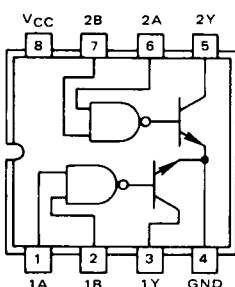


U SUFFIX
CERAMIC PACKAGE
CASE 693



P SUFFIX
PLASTIC PACKAGE
CASE 626

MC75451 — Positive AND



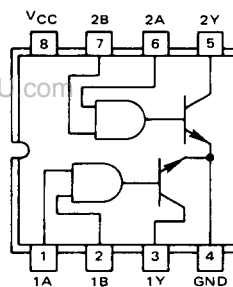
Positive Logic: $Y = AB$

TRUTH TABLE

A	B	Y
L	L	L ("on" state)
L	H	L ("on" state)
H	L	L ("on" state)
H	H	L ("off" state)

H = high level, L = low level.

MC75452 — Positive NAND



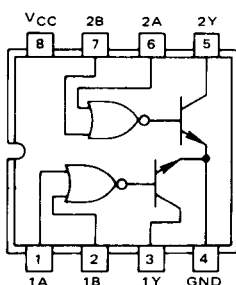
Positive Logic: $Y = \overline{AB}$

TRUTH TABLE

A	B	Y
L	L	H ("off" state)
L	H	H ("off" state)
H	L	H ("off" state)
H	H	L ("on" state)

H = high level, L = low level.

MC75453 — Positive OR



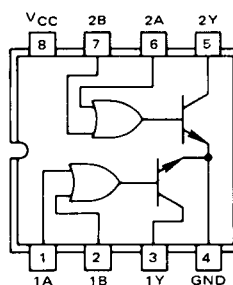
Positive Logic: $Y = A + B$

TRUTH TABLE

A	B	Y
L	L	L ("on" state)
L	H	H ("off" state)
H	L	H ("off" state)
H	H	H ("off" state)

H = high level, L = low level.

MC75454 — Positive NOR



Positive Logic: $Y = \overline{A + B}$

TRUTH TABLE

A	B	Y
L	L	H ("off" state)
L	H	L ("on" state)
H	L	L ("on" state)
H	H	L ("on" state)

H = high level, L = low level.

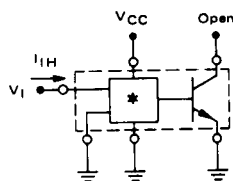
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SWITCHING CHARACTERISTICS ($V_{CC} = 5.0\text{ V}$, $T_A = +25^\circ\text{C}$ unless otherwise noted.)

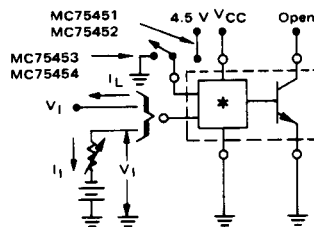
Characteristic	Symbol	Test Fig.	Min	Typ	Max	Unit
Propagation Delay Time ($I_O \approx 200\text{ mA}$, $C_L = 15\text{ pF}$, $R_L = 50\text{ ohms}$)						
MC75451						
Low-to-High-Level Output	t_{PLH}	6	—	17	—	ns
High-to-Low-Level Output	t_{PHL}		—	18	—	
MC75452						
Low-to-High-Level Output	t_{PLH}	6	—	18	—	ns
High-to-Low-Level Output	t_{PHL}		—	16	—	
MC75453						
Low-to-High-Level Output	t_{PLH}	6	—	15	—	ns
High-to-Low-Level Output	t_{PHL}		—	17	—	
MC75454						
Low-to-High-Level Output	t_{PLH}	6	—	25	—	ns
High-to-Low-Level Output	t_{PHL}		—	19	—	
Transition Time ($I_O \approx 200\text{ mA}$, $C_L = 15\text{ pF}$, $R_L = 50\text{ ohms}$)						
MC75451						
Low-to-High-Level Output	t_{TLH}	6	—	6.0	—	ns
High-to-Low-Level Output	t_{THL}		—	11	—	
MC75452						
Low-to-High-Level Output	t_{TLH}	6	—	8.0	—	ns
High-to-Low-Level Output	t_{THL}		—	9.0	—	
MC75453						
Low-to-High-Level Output	t_{TLH}	6	—	5.0	—	ns
High-to-Low-Level Output	t_{THL}		—	8.0	—	
MC75454						
Low-to-High-Level Output	t_{TLH}	6	—	5.0	—	ns
High-to-Low-Level Output	t_{THL}		—	8.0	—	

TEST CIRCUITS (Continued)

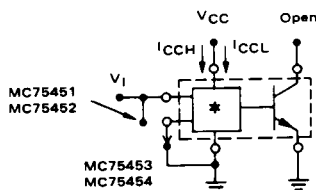
(Current into terminal is shown as a positive value.
Arrows indicate actual direction of current flow.)

FIGURE 3 — I_{IH}
(ALL DEVICE TYPES)

Each input is tested separately.

FIGURE 4 — I_{IL}, V_I
(ALL DEVICE TYPES)

Each input is tested separately.

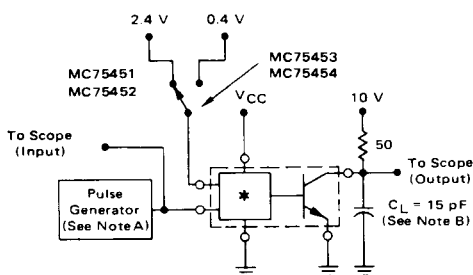
FIGURE 5 — I_{CCH}, I_{CCL}
(ALL DEVICE TYPES)

Both gates are tested simultaneously.

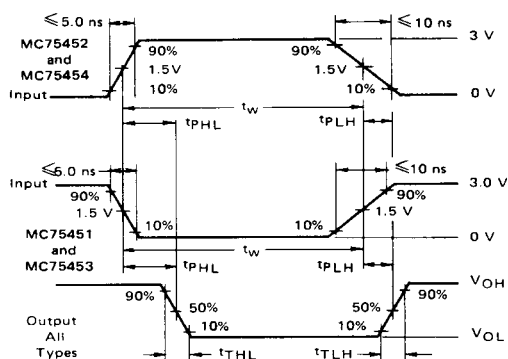
*See page 1 for specific gate type.

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FIGURE 6 – SWITCHING TIMES TEST CIRCUIT AND WAVEFORMS



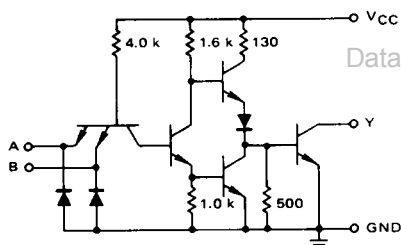
NOTES: A. Pulse generator characteristics: $t_w = 0.5 \mu s$,
 PRR = 1.0 MHz, $z_o \approx 50 \Omega$
 B. C_L includes probe and test fixture capacitance.



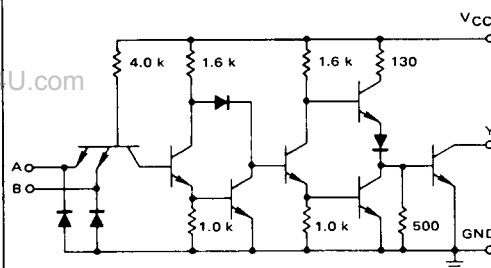
REPRESENTATIVE SCHEMATIC DIAGRAMS

(1/2 Circuits Shown)

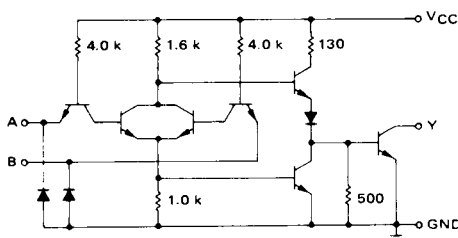
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