

2-BIT FULL ADDER

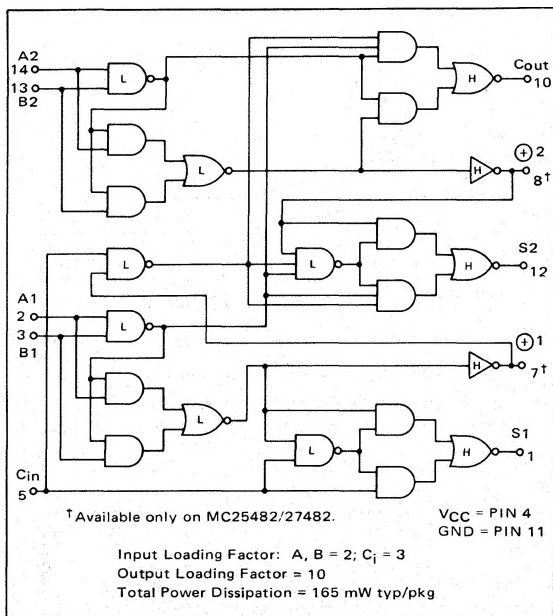
MC5400/7400 series

MC15482L • MC17482L*
MC25482L • MC27482L*

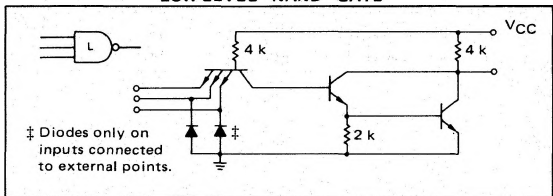
ADVANCE INFORMATION/NEW PRODUCT

Each bit of this device performs the logical addition of two binary numbers. The sum outputs, the carry output for the second bit, and Exclusive OR outputs for each bit are available. A look-ahead carry is provided internally. The Exclusive OR outputs of the MC25482/MC27482 can be used for look-ahead carry when adding more than two bits.

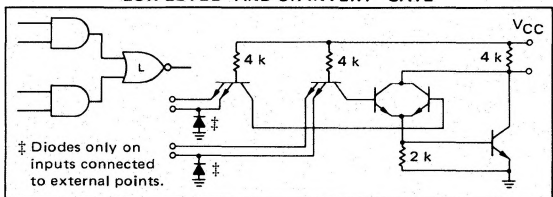
This device is constructed from low and high-level NAND and AND-OR-INVERT gates as shown in the logic diagram to maximize output drive capability and minimize power dissipation.



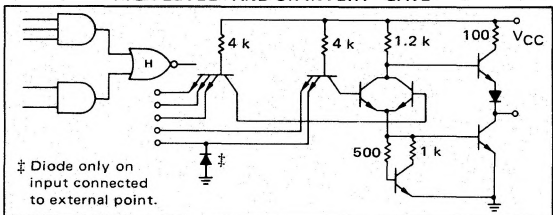
LOW-LEVEL "NAND" GATE



LOW-LEVEL "AND-OR-INVERT" GATE



HIGH-LEVEL "AND-OR-INVERT" GATE



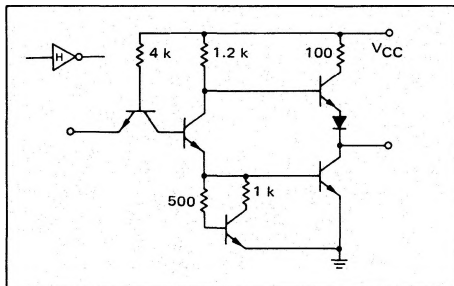
TRUTH TABLE									
INPUT				OUTPUT					
A1	B1	A2	B2	C _{in} = 0			C _{in} = 1		
S1	S2	C _o	S1	S2	C _o	⊕1†	⊕2†		
0	0	0	0	0	0	0	1	0	0
0	0	0	1	0	0	0	1	0	1
0	0	0	1	0	0	0	1	0	1
0	0	1	0	0	1	0	1	1	0
0	0	1	0	0	1	0	1	1	0
0	0	1	1	0	1	0	1	1	0
0	1	0	0	1	0	0	0	1	1
0	1	0	1	1	0	0	0	1	1
0	1	1	0	1	1	0	0	1	1
0	1	1	1	1	1	0	0	1	1
1	0	0	0	1	0	1	1	0	0
1	0	0	1	1	0	1	1	0	0
1	0	1	0	1	1	0	1	1	0
1	0	1	1	1	1	0	1	1	0
1	1	0	0	1	1	1	0	1	0
1	1	0	1	1	1	1	0	1	0
1	1	1	0	1	1	1	1	0	0
1	1	1	1	1	1	1	1	1	0
1	1	1	1	1	1	1	1	1	0

† Available only on MC25482/27482.

TYPICAL PROPAGATION DELAY TIMES T_A = 25°C

INPUT	t _{pd-} (ns)				t _{pd+} (ns)			
	S1	S2	C _o	⊕	S1	S2	C _o	⊕
B2	—	18.5	—	9.5	—	27	—	14
C _i	5.5	13	9.5	—	9.0	18.5	14	—

HIGH-LEVEL INVERTER



* L suffix = TO-116 ceramic dual in-line package (Case 632).

MC15482, MC17482, MC25482, MC27482 (continued)

DC ELECTRICAL CHARACTERISTICS

$T_A = 0$ to $+70^{\circ}\text{C}$ for MC17482 and MC27482
 $T_A = -55$ to $+125^{\circ}\text{C}$ for MC15482 and MC25482

Characteristic	Symbol	Value	Conditions
Input			
Forward Current — A, B C_i	I_F	-3.2 mA dc max -4.8 mA dc max	$V_{in} = 0.4$ Vdc, $V_{CC} = 5.5$ Vdc ① or 5.25 Vdc ②
Leakage Current — A, B C_i A, B, C_i	I_R	80 μ A dc max 120 μ A dc max 1.0 mA dc max	$V_{in} = 2.4$ Vdc, $V_{CC} = 5.5$ Vdc ① or 5.25 Vdc ② $V_{in} = 5.5$ Vdc, $V_{CC} = 5.5$ Vdc ① or 5.25 Vdc ②
Threshold Voltage	V_{th} "1"	2.0 Vdc	
	V_{th} "0"	0.8 Vdc	
Output			
Output Voltage	V_{OL}	0.4 Vdc max	$I_{OL} = 16$ mA dc, $V_{CC} = 4.5$ Vdc ① or 4.75 Vdc ②
	V_{OH}	2.4 Vdc min	
Short-Circuit Current	I_{SC}	① -20 to -57 mA dc ② -18 to -57 mA dc	$V_{CC} = 5.5$ Vdc, output grounded. Tested according to truth table. Logical "1" = 4.5 Vdc; Logical "0" = Gnd.

① MC15482, MC25482

② MC17482, MC27482