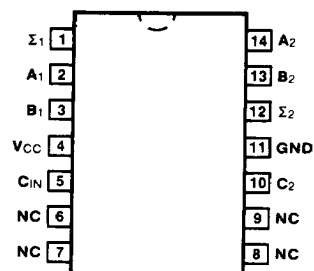


✓ **54/7482** 010002
2-BIT FULL ADDER

CONNECTION DIAGRAM
PINOUT A

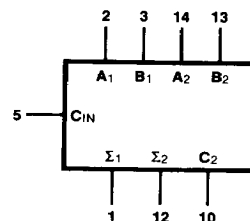


DESCRIPTION — The '82 is a full adder which performs the addition of two 2-bit binary numbers. The sum (Σ) outputs are provided for each bit and the resultant carry (C_2) is obtained from the second bit. Designed for medium to high speed, multiple-bit, parallel-add/serial-carry applications, the circuit utilizes high speed, high fan-out TTL. The implementation of a single-inversion, high speed, Darlington-connected serial-carry circuit within each bit minimizes the necessity for extensive "lookahead" and carry-cascading circuits.

ORDERING CODE: See Section 9

PKGS	PIN OUT	COMMERCIAL GRADE	MILITARY GRADE	PKG TYPE
		$V_{CC} = +5.0 \text{ V} \pm 5\%$, $T_A = 0^\circ \text{C to } +70^\circ \text{C}$	$V_{CC} = +5.0 \text{ V} \pm 10\%$, $T_A = -55^\circ \text{C to } +125^\circ \text{C}$	
Plastic DIP (P)	A	7482PC		9A
Ceramic DIP (D)	A	7482DC	5482DM	6A
Flatpak (F)	A	7482FC	5482FM	3I

LOGIC SYMBOL



V_{CC} = Pin 14
GND = Pin 11
NC = Pins 6,7,8,9

INPUT LOADING/FAN-OUT: See Section 3 for U.L. definitions

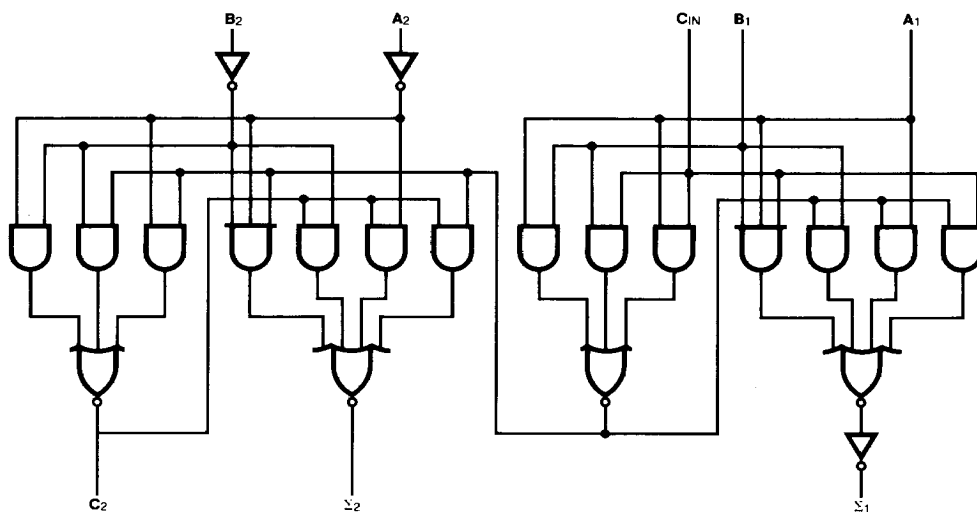
PIN NAMES	DESCRIPTION	54/74 (U.L.) HIGH/LOW
A1, B1	Bit 1 Operand Inputs	4.0/4.0
A2, B2	Bit 2 Operand Inputs	1.0/1.0
CIN	Bit 1 Carry Input	4.0/4.0
Σ_1	Bit 1 Sum Output	10/10
Σ_2	Bit 2 Sum Output	10/10
C2	Bit 2 Carry Output	5.0/5.0

TRUTH TABLE

INPUTS				OUTPUTS					
A ₁	B ₁	A ₂	B ₂	C _{IN} = 0			C _{IN} = 1		
				Σ ₁	Σ ₂	C ₂	Σ ₁	Σ ₂	C ₂
L	L	L	L	L	L	L	H	L	L
H	L	L	L	H	L	L	L	H	L
L	H	L	L	H	L	L	L	H	L
H	H	L	L	L	H	L	H	H	L
L	L	H	L	L	H	L	H	H	L
H	L	H	L	H	H	L	L	L	H
L	H	H	L	H	H	L	L	L	H
H	H	H	L	L	L	H	H	L	H
L	L	L	H	L	H	L	H	H	L
H	L	L	H	H	H	L	L	L	H
L	H	L	H	H	H	L	L	L	H
H	H	L	H	L	L	H	H	L	H
L	L	H	H	L	L	H	H	L	H
H	L	H	H	H	L	H	L	H	H
L	H	H	H	H	L	H	L	H	H
H	H	H	H	L	H	H	H	H	H

H = HIGH Voltage Level
L = LOW Voltage Level

LOGIC DIAGRAM



DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

SYMBOL	PARAMETER		54/74		UNITS	CONDITIONS
			Min	Max		
I _{OS}	Output Short Circuit Current at Σ_n	XM	-20	-55	mA	V _{CC} = Max
		XC	-18	-55		
I _{OS}	Output Short Circuit Current at C ₂	XM	-20	-70	mA	V _{CC} = Max
		XC	-18	-70		
I _{CC}	Power Supply Current	XM		50	mA	V _{CC} = Max; A ₁ , A ₂ , C _{IN} = 4.5 V; B ₁ , B ₂ = Gnd
		XC		58		

AC CHARACTERISTICS: V_{CC} = +5.0 V, T_A = +25° C (See Section 3 for waveforms and load configurations)

SYMBOL	PARAMETER	54/74		UNITS	CONDITIONS
		C _L = 15 pF R _L = 400 Ω			
		Min	Max		
t _{PLH} t _{PHL}	Propagation Delay C _{IN} to Σ ₁		34 40	ns	Figs. 3-1, 3-20
t _{PLH} t _{PHL}	Propagation Delay B ₂ to Σ ₂		40 35	ns	Figs. 3-1, 3-20
t _{PLH} t _{PHL}	Propagation Delay C _{IN} to Σ ₂		38 42	ns	Figs. 3-1, 3-20
t _{PLH} t _{PHL}	Propagation Delay C _{IN} to C ₂		19 27	ns	Figs. 3-1, 3-5 R _L = 780 Ω