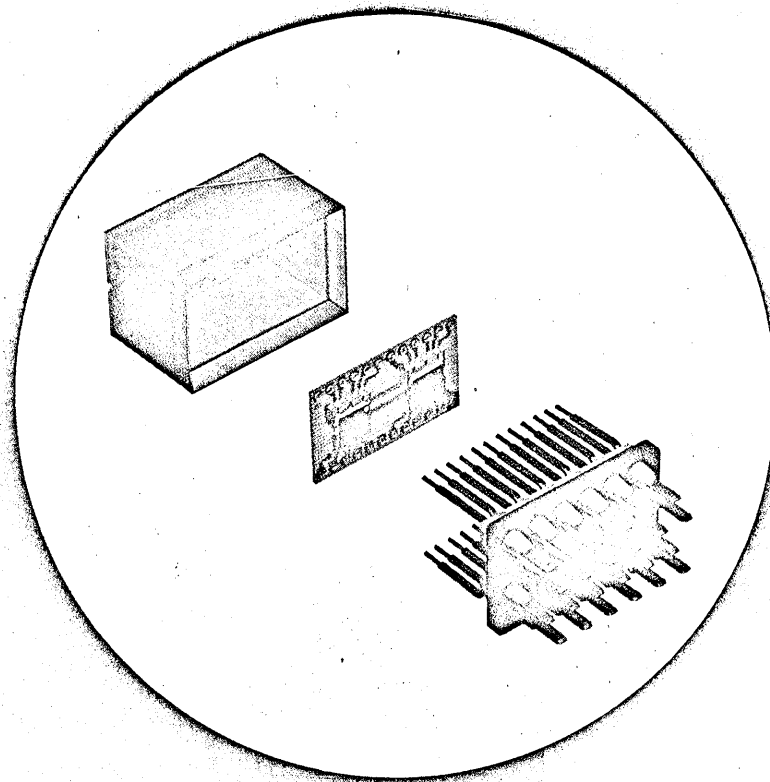


DIGITAL SYSTEM BUILDING BLOCKS



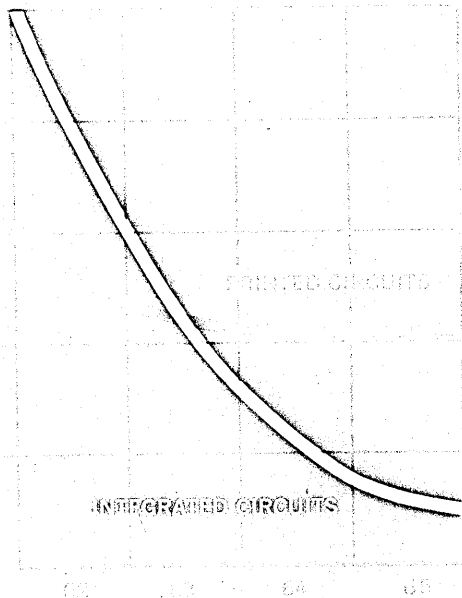
The New SYSTEM Concept from

PHILCO | WOL DIVISION
an American Ford Motor Company | PALO ALTO, CALIFORNIA

Philco announces a new approach to complex digital systems based on these minimum total cost factors: design simplicity, maintenance ease, automated fabrication compatibility, and documentation and training simplification.

Philco's WDL Division, a major supplier of space vehicle and ground support systems, has designed a family of equipment (from simple logic modules to complex standard instruments) compatible not only with state-of-the-art circuitry, but with an eye to the vast potential yet to be realized with silicon planar epitaxial integrated circuits. Philco engineers now reveal an economical and reliable incorporation of micro-electronics into ground systems . . . **Digital System Building Blocks.**

PHILCO'S DIGITAL SYSTEM BUILDING BLOCKS



RELIABILITY is achieved through the use of ground circuitry, built-in self-testing, and a high level of production quality control. (See chart.)

LOW COST is achieved through the simplicity of design, ease of maintenance (one full-line code module from module to instrument throughout an entire system), simplification of documentation with functional blocks of circuits, reduction of support hardware requirements, compatibility with current and future fabrication techniques, and simplification of personnel training.

OFFER ADVANTAGES FROM EVERY STANDPOINT

SIZE & WEIGHT REDUCTION result from the use of integrated circuits, compact module mounting configuration, and less copper wiring.

MAINTENANCE SIMPLICITY is enhanced by the use of plug-in modules and easily accessible test points, connectors and system components.

NOISE IMMUNITY results from the inherent characteristics, modularity of circuit design, and grounding techniques, reduction of wiring and cabling, and use of PNP silicon diode-transistor logic.

MODULE FLEXIBILITY is provided by modules and designed for a wide variety of thin-film, multi-layered, and hybrid individual function discrete component level of circuits.



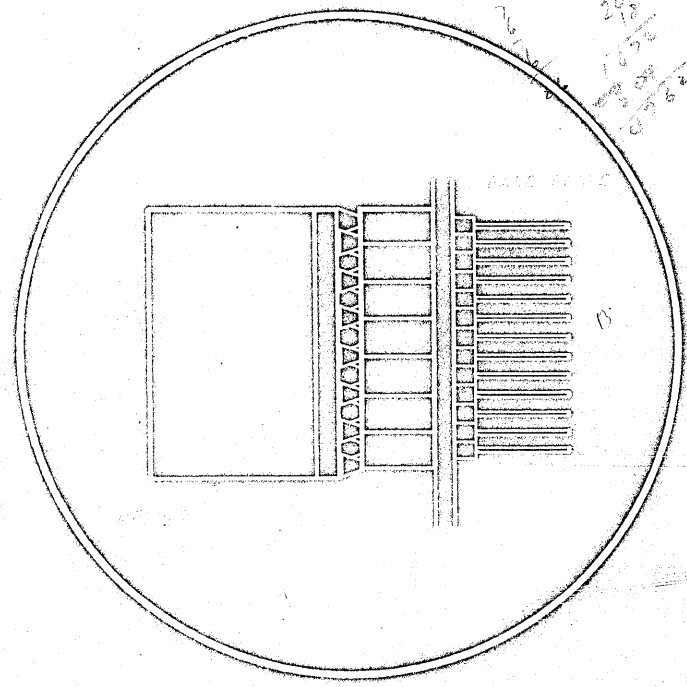
$15 \times 15 = 225 \text{ m}^2$
 $17 \text{ 1/2} \times 209 \text{ modules}$
 224 pins/module
 5872 pins
 $\frac{5872}{234} = 25.1 \text{ pins/m}^2$
 $209(26) = 5420$
 $\frac{5420}{234} = 23.1 \text{ pins/m}^2$
 $4221 = 501$
 $\frac{4220}{501} = 8.4 \text{ pins/m}^2$
 $\frac{4 \times 5420}{501} = 10.7 \text{ pins/m}^2$

$19 \times 18 =$
 $15 =$

15'-0" = 15.4'

24

ONE RACK OF PHILCO MODULES REPLACES UP



The Philco rack is designed to hold up to 100 modules. The rack is 19 inches high and 14 1/2 inches wide. The modules are 1 1/2 inches high and 1 1/2 inches wide. The rack is made of aluminum and is easy to assemble. The rack is designed to be used in a variety of applications. The rack is a great way to save space and reduce the cost of your computer system.

The Philco design is modular at the circuit level rather than the function level. The resulting adaptability to various kinds of circuitry results in a dual enhancement of economy. Standard function circuits, produced inexpensively in large quantities, are readily integrated into the building block concept, as are special function hybrid or cordwood circuits for unique requirements.

The design is also compatible with automated wiring, design, and documentation. Time normally spent in layout, test, and checkout, plus drafting, documentation and control of printed circuit cards is greatly reduced. Modifications can be made more easily, even during final checkout or in the field.

UP TO 6 RACKS OF PRINTED CIRCUIT CARD LOGIC

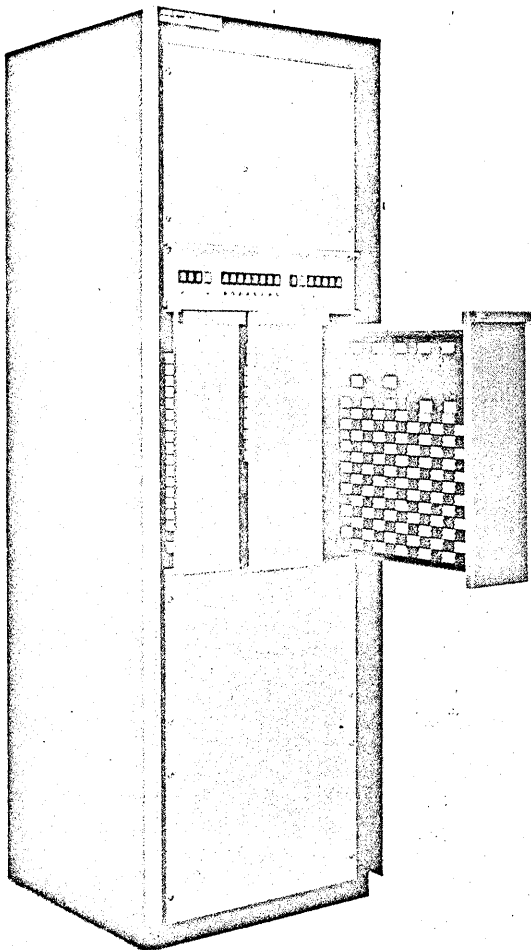
Up to six racks, 13 inches wide and 4 1/2 inches high, are mounted on a rack for a total of 6 racks of logic. The rack is designed to hold up to 6 racks of logic. The rack provides an interface between the logic modules and the system. The rack is readily accessible for testing, maintenance, and replacement of modules.

APPLICABLE TO HIGH-SPEED DIGITAL SYSTEMS

Applications of Philco Digital System Building Blocks are many . . . Module applications include sequential counters, decode counters, shift registers, storage registers, adders, subtractors, comparators and code converters. System applications include computers, command, timing, input/output, data acquisition, data processing, automated checkout, safety monitoring, mobile equipment, and expansion of existing systems for both military and industrial use.

LONG RANGE ADVANTAGES FOR ADVANCED PLANNING

Numerous long-range advantages are inherent in the design of Philco Digital System Building Blocks. Advances in the field of integrated circuits can be readily incorporated into the basic system design, with the result that increased performance as well as compatibility with the next generation of computers and other standard products can be quickly realized. Integrated circuits also offer the prospect of decreasing unit cost, a significant factor in future system planning, and further increases in reliability. The basic system approach will provide significant overall cost savings throughout equipment life.



Model	Price
Model 100	\$1,000
Model 200	\$2,000
Model 300	\$3,000
Model 400	\$4,000
Model 500	\$5,000
Model 600	\$6,000
Model 700	\$7,000
Model 800	\$8,000
Model 900	\$9,000
Model 1000	\$10,000

OPTIONS

The flexibility of the digital system allows the user to select the amount of memory, the type of printer, the type of keyboard, and the type of mouse. The system is designed to be expandable, allowing the user to add more memory and documentation. The system is also designed to be cost-effective, with a low cost for digital system upgrades.

For Further Information:
 Write:
 Buckman, Inc.
 1700 E. 1st Avenue
 94775 Redwood City
 California

PHILCO LOGIC BUILDING BLOCKS
 FLIP-FLOP MODULE FF-01
 39-155470-01

DESCRIPTION

THE FLIP-FLOP MODULE FF-01 IS ONE OF A FAMILY OF PHILCO LOGIC BUILDING BLOCKS DESIGNED FOR HIGH RELIABILITY, LOW POWER AND HIGH NOISE IMMUNITY. THE FLIP-FLOP MODULE CONTAINS TWO FLAT-PAK ELEMENTS. THE BASIC ELEMENT CONTAINS A DUAL FLIP-FLOP (MASTER-SLAVE) CIRCUIT. GENEROUS LOGIC GATING IS PROVIDED WHICH ADDS TO THE VERSATILITY OF THE MODULE.

MECHANICAL SPECIFICATIONS

MODULE COLOR: RED

DIMENSIONS: 1.4 X 0.8 X 1.4 INCHES

WEIGHT: 1.0 OUNCE (MAXIMUM)

PACKAGING:

THERE ARE TWO FLAT-PAK ELEMENTS PER MODULE. BASIC CIRCUIT ELEMENTS ARE FABRICATED USING THE SILICON MONOLITHIC EPITAXIAL PROCESS. THE CIRCUIT ELEMENTS ARE ATTACHED TO A SINGLE-SIDED EPOXY PRINTED CIRCUIT BOARD AND MOUNTED IN A PROVEN HIGH RELIABILITY 26-PIN HEADER. THE CIRCUIT BOARD AND HEADER IS THEN ENCLOSED IN A COLOR-CODED MOLDED NYLON COVER. TEST POINTS ARE PROVIDED AT THE TOP OF EACH MODULE FOR CHECKING CIRCUIT FUNCTION AT ANY ONE OF THE 26 PINS.

ELECTRICAL SPECIFICATIONS

FREQUENCY: DC TO 5 MC

INPUT LOADING:

CLOCK PULSE 2 STANDARD LOADS
 SET RESET 2/3 STANDARD LOAD
 ASYN. SET/RESET 1-1/3 STANDARD LOADS

FAN-IN:

CLOCK PULSE 1 STANDARD LOAD
 SET RESET 2 STANDARD LOADS
 ASYN. SET/RESET 1 STANDARD LOAD

FAN-OUT:

7 STANDARD LOADS

VOLTAGE LEVELS:

LOGICAL "1" -- +2.5 TO 5 VDC
 LOGICAL "0" -- 0 TO 0.4 VDC

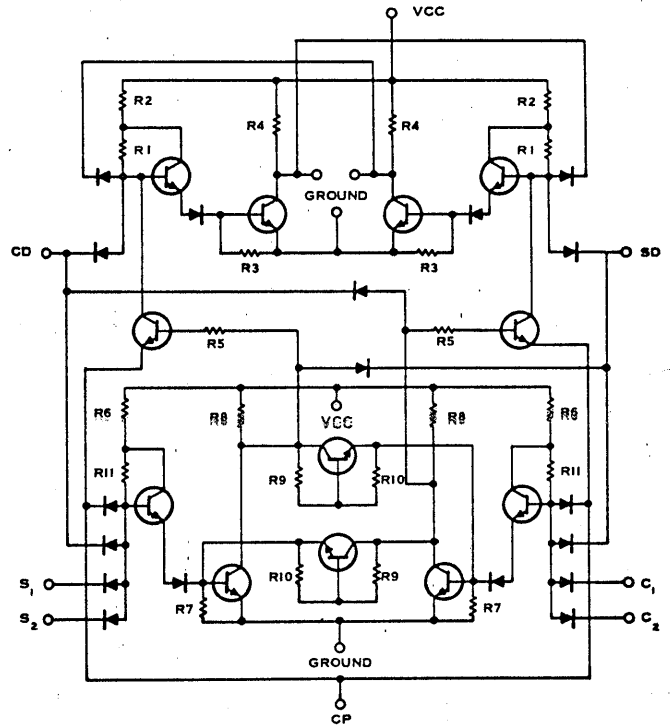
PROPAGATION DELAY: -- 55 N SEC (AVERAGE)

POWER REQUIREMENTS

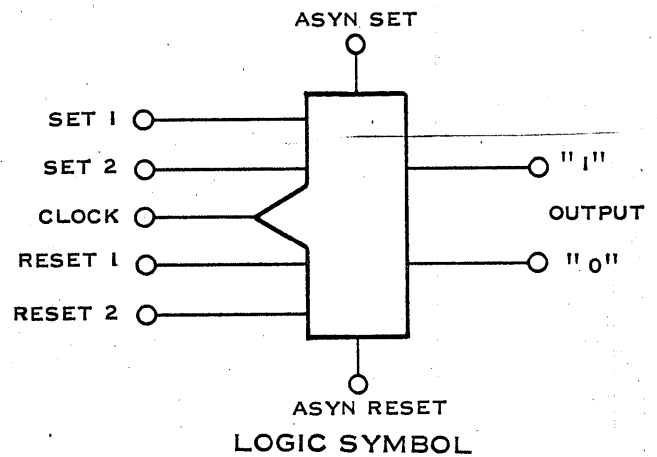
+5 VDC AT 7 MA

ENVIRONMENTAL SPECIFICATIONS

0° C TO +75° C



SCHEMATIC DIAGRAM



LOGIC SYMBOL

MODULE PIN CONNECTORS

SIGNAL GROUND ----- A7
 +5 VOLTS DC ----- C7

FUNCTION	CIRCUIT	
	1	2
CLOCK PULSE	A3	A6
SET 1	A2	A5
SET 2	B2	B5
RESET 1	D2	D5
RESET 2	C3	C6
ASYNCHRONOUS SET	C2	C5
ASYNCHRONOUS RESET	B1	B4
OUTPUT "1"	A1	A4
OUTPUT "0"	D1	D4

PHILCO LOGIC BUILDING BLOCKS
 RS FLIP-FLOP MODULE FF-02
 39-155470-06
 (4 CIRCUITS PER MODULE)

DESCRIPTION

RS FLIP-FLOP MODULE FF-02 IS ONE OF A FAMILY OF PHILCO LOGIC BUILDING BLOCKS DESIGNED FOR HIGH RELIABILITY, LOW POWER, AND HIGH NOISE IMMUNITY. THIS MODULE CONTAINS FOUR RS FLIP-FLOPS. ITS PRIMARY APPLICATION IS FOR SIMPLE STORAGE OF SINGLE BITS OF INFORMATION.

MECHANICAL SPECIFICATIONS

MODULE COLOR-CODE : RED
 DIMENSIONS : 1.4 X 0.8 X 1.4 INCHES
 WEIGHT : 1.0 OUNCE (MAXIMUM)
 PACKAGING :

THERE ARE TWO FLAT-PAK CIRCUIT ELEMENTS PER MODULE. BASIC CIRCUIT ELEMENTS ARE FABRICATED USING THE SILICON MONOLITHIC EPITAXIAL PROCESS. THE CIRCUIT ELEMENTS ARE ATTACHED TO A SINGLE SIDED PRINTED CIRCUIT BOARD AND MOUNTED IN A PROVEN HIGH RELIABILITY 26-PIN HEADER. THE CIRCUIT BOARD AND HEADER ARE THEN ENCLOSED IN A COLOR CODED MOLDED NYLON COVER. TEST POINTS ARE PROVIDED AT THE TOP OF EACH MODULE FOR CHECKING CIRCUIT FUNCTIONS AT ANY OF THE 26 PINS.

ELECTRICAL SPECIFICATIONS

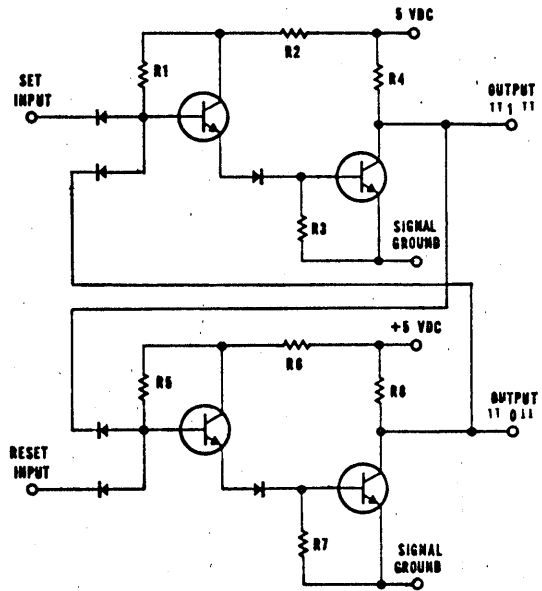
FREQUENCY: DC TO 5 MC
 INPUT LOADING: 1 STANDARD LOAD
 FAN-IN: 1
 FAN-OUT: 7 STANDARD LOADS
 VOLTAGE LEVELS:
 LOGICAL "1" -- +2.5 TO +5 VDC
 LOGICAL "0" -- 0 TO 0.4 VDC
 PROPAGATION DELAY: -- 40 N SEC (AVERAGE)

MODULE POWER REQUIREMENTS

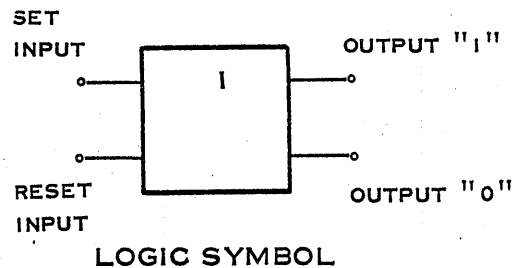
+5 VDC AT 15 MA

ENVIRONMENTAL SPECIFICATIONS

0°C TO +75°C



SCHEMATIC DIAGRAM
(1 CIRCUIT)



MODULE PIN CONNECTORS

SIGNAL GROUND - - - - - A7
 +5 VOLTS DC - - - - - C7

FUNCTION	CIRCUIT			
	1	2	3	4
SET INPUT	B 1	B 4	D 1	D 4
RESET INPUT	A 3	A 6	C 3	C 6
OUTPUT "1" '1"	A 1	A 4	C 1	C 4
OUTPUT "0" '0"	B 2	B 5	D 2	D 5

PHILCO LOGIC BUILDING BLOCKS
LAMP/RELAY DRIVER MODULE LD-01
39-155470-05
(2 CIRCUITS PER MODULE)

DESCRIPTION

LAMP/RELAY DRIVER MODULE LD-01 IS ONE OF A FAMILY OF PHILCO LOGIC BUILDING BLOCKS DESIGNED FOR HIGH RELIABILITY, LOW POWER AND HIGH NOISE IMMUNITY. THE LAMP DRIVER MODULE CONTAINS TWO SEPARATE DRIVER CIRCUITS. EACH CIRCUIT IS PROVIDED WITH A 4-INPUT GATE AND A NOR INPUT. THE 4-INPUT GATE ALLOWS FOR DECODING BCD. STORAGE IS EASILY OBTAINED BY CONNECTING THE GATE OUTPUT TO THE INPUT TO FORM AN RS FLIP-FLOP.

MECHANICAL SPECIFICATIONS

MODULE COLOR-CODE: BROWN
DIMENSIONS: 1.4 X 0.8 X 1.4 INCHES
WEIGHT: 1.0 OUNCE (MAXIMUM)
PACKAGING:

THERE ARE TWO HYBRID FLAT-PAK ELEMENTS PER MODULE. THE CIRCUIT ELEMENTS ARE ATTACHED TO A SINGLE-SIDED EPOXY PRINTED CIRCUIT BOARD AND MOUNTED IN A PROVEN HIGH RELIABILITY 26-PIN HEADER. THE CIRCUIT BOARD AND HEADER IS THEN ENCLOSED IN A MOLDED NYLON COVER. TEST POINTS ARE AVAILABLE ON THE TOP OF EACH MODULE FOR CHECKING CIRCUIT FUNCTIONS AT ANY OF THE 26 PINS.

ELECTRICAL SPECIFICATIONS

FREQUENCY: D-C TO 5 MC
INPUT: 1 STANDARD LOAD
FAN-IN: 4, PLUS A NOR INPUT
FAN-OUT: 120 MA LAMP LOAD OR 200 MA RESISTIVE LOAD
 GATE OUTPUT 1 STANDARD LOAD

INPUT VOLTAGE LEVELS:

LOGICAL "1" -- + 2.5 TO 5 VDC
 LOGICAL "0" -- 0 TO 0.4 VDC

OUTPUT VOLTAGE LEVELS:

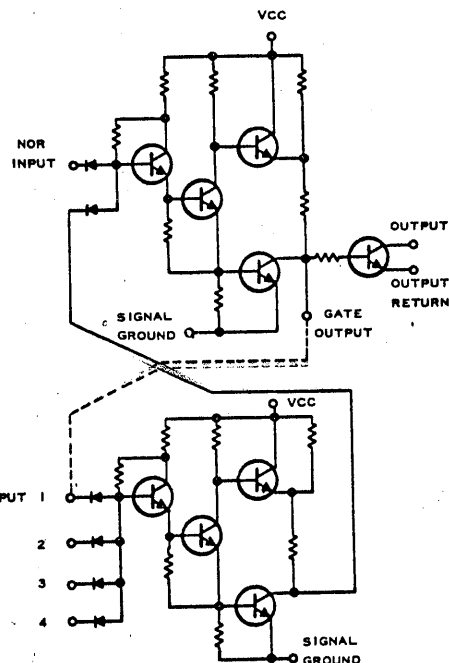
40 VDC MAXIMUM

MODULE POWER REQUIREMENTS

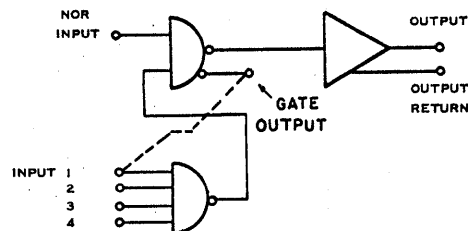
5 VDC AT 20 MA (AVG)

ENVIRONMENTAL SPECIFICATIONS

0°C TO +75°C



SCHEMATIC DIAGRAM



LOGIC DIAGRAM

MODULE PIN CONNECTORS

SIGNAL GROUND -- A7
 5 VOLTS DC --- C7

FUNCTION

INPUT 1	D4	C2
INPUT 2	C5	D2
INPUT 3	D5	C3
INPUT 4	C6	D3
NOR INPUT	A6	B3
OUTPUT	B5	A3
OUTPUT RETURN	A5	B2
GATE OUTPUT	B4	A2

DESCRIPTION

THE NAND-GATE LOGIC MODULE NG-01 IS ONE OF A FAMILY OF PHILCO LOGIC BUILDING BLOCKS DESIGNED FOR HIGH RELIABILITY, LOW POWER AND HIGH NOISE IMMUNITY. THE NAND-GATE MODULE CONTAINS FOUR CIRCUITS EACH FORMED BY A 4-INPUT AND-GATE WITH EXPANDER STRAP, FOLLOWED BY AN INVERTER.

MECHANICAL SPECIFICATIONS

- MODULE COLOR: BLUE
- DIMENSIONS: 1.4 X 0.8 X 1.4 INCHES
- WEIGHT: 1.0 OUNCE (MAXIMUM)
- PACKAGING:

THERE ARE TWO 2-CIRCUIT SILICON FLAT-PAK ELEMENTS PER MODULE. THE BASIC CIRCUIT ELEMENTS ARE FABRICATED USING THE SILICON MONOLITHIC EPITAXIAL PROCESS. THE ELEMENTS ARE ATTACHED TO A SINGLE-SIDED EPOXY PRINTED CIRCUIT BOARD AND MOUNTED IN A PROVEN HIGH RELIABILITY 26-PIN HEADER. THE CIRCUIT BOARD AND HEADER IS THEN ENCLOSED IN A COLOR-CODED MOLDED NYLON COVER. TEST POINTS ARE PROVIDED AT THE TOP OF EACH MODULE FOR CHECKING THE CIRCUIT FUNCTION AT ANY OF THE 26 PINS.

ELECTRICAL SPECIFICATIONS

- FREQUENCY: D-C TO 5 MC
- INPUT LOADING: 1 STANDARD LOAD
- FAN-IN: 4 PLUS EXPANDER
- FAN-OUT: 8 STANDARD LOADS

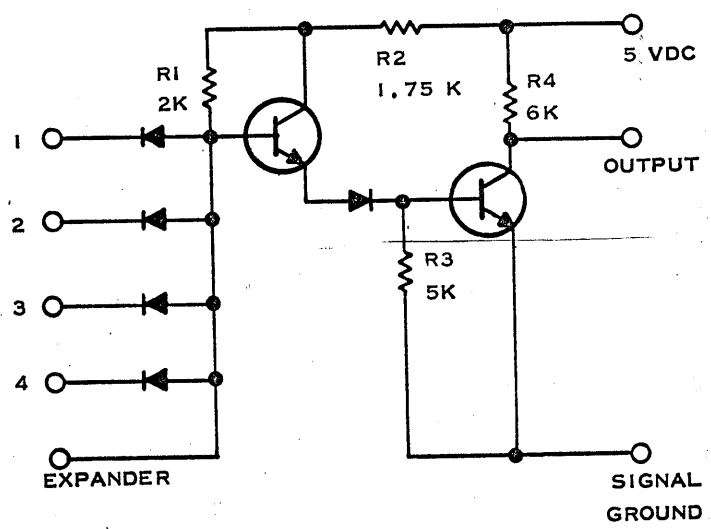
- VOLTAGE LEVELS:
 - LOGICAL "1" -- +2.5 TO 5.0 VDC
 - LOGICAL "0" -- 0 TO 0.4 VDC
- PROPAGATION DELAY: -- 20 N SEC (AVERAGE)

POWER REQUIREMENTS

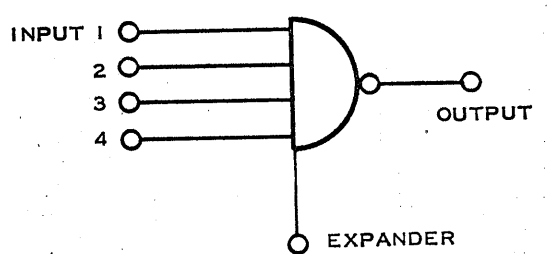
+5 VDC AT 7.5 MA

ENVIRONMENTAL SPECIFICATIONS

0° C TO +75° C



SCHEMATIC DIAGRAM



LOGIC DIAGRAM

MODULE PIN CONNECTORS

- SIGNAL GROUND ----- A7
- +5 VOLTS DC ----- C7

FUNCTION	CIRCUIT			
	1	2	3	4
INPUT 1	B1	B4	D1	D4
INPUT 2	A2	A5	C2	C5
INPUT 3	A3	A6	C3	C6
INPUT 4	B3	B6	D3	D6
EXPANDER	B2	B5	D2	D5
OUTPUT	A1	A4	C1	C4

DESCRIPTION

THE POWER NAND-GATE MODULE NG-03 IS ONE OF A FAMILY OF PHILCO LOGIC BUILDING BLOCKS DESIGNED FOR HIGH RELIABILITY, LOW POWER AND HIGH NOISE IMMUNITY. THE POWER NAND-GATE IS VERY SIMILAR TO NAND-GATE LG-01. IT CONTAINS 4 SEPARATE CIRCUITS EACH FORMED BY A 4-INPUT AND-GATE AND EXPANDER FOLLOWED BY A DUAL TRANSISTOR DRIVER STAGE. THE POWER NAND CIRCUIT PROVIDES HIGH FAN-OUT AND A CAPACITANCE DRIVE CAPABILITY.

MECHANICAL SPECIFICATIONS

- MODULE COLOR: ORANGE
- DIMENSIONS: 1.4 X 0.8 X 1.4 INCHES
- WEIGHT: 1.0 OUNCE (MAXIMUM)
- PACKAGING:

THERE ARE TWO 2-CIRCUIT SILICON FLAT-PAK ELEMENTS PER MODULE. BASIC CIRCUIT ELEMENTS ARE FABRICATED USING THE SILICON MONOLITHIC EPITAXIAL PROCESS. THE CIRCUIT ELEMENTS ARE ATTACHED TO AN EPOXY PRINTED CIRCUIT BOARD AND MOUNTED IN A HIGH RELIABILITY 26-PIN HEADER. THE CIRCUIT BOARD AND HEADER IS THEN ENCLOSED IN A COLOR-CODED MOLDED NYLON COVER. TEST POINTS ARE PROVIDED AT THE TOP OF EACH MODULE FOR CHECKING THE CIRCUIT FUNCTION AT ANY OF THE 26 PINS.

ELECTRICAL SPECIFICATIONS

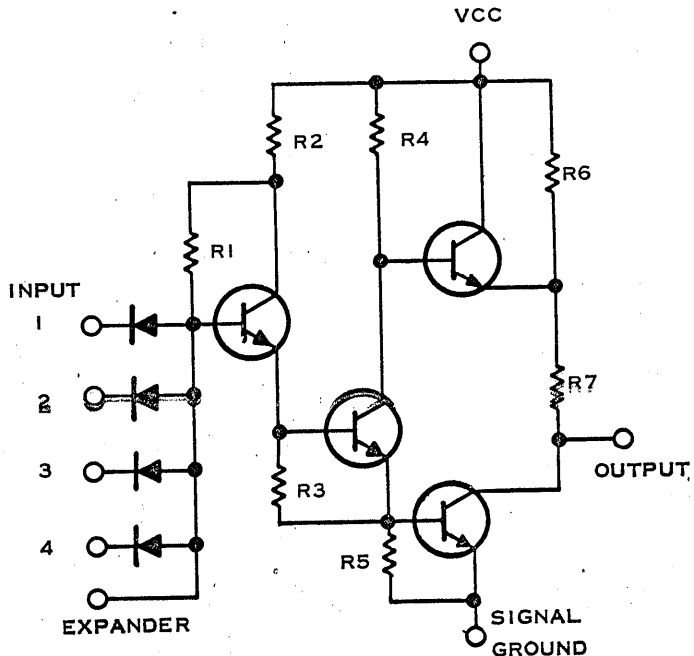
- FREQUENCY: D-C TO 5 MC
- INPUT: 1 STANDARD LOAD
- FAN-IN: 4, PLUS EXPANDER
- FAN-OUT: 20 STANDARD LOADS
- VOLTAGE LEVELS:
 - LOGICAL "1" -- +2 TO +5 VDC
 - LOGICAL "0" -- 0 TO 0.4 VDC
- PROPAGATION DELAY: -- 30 N SEC (AVERAGE)

POWER REQUIREMENTS

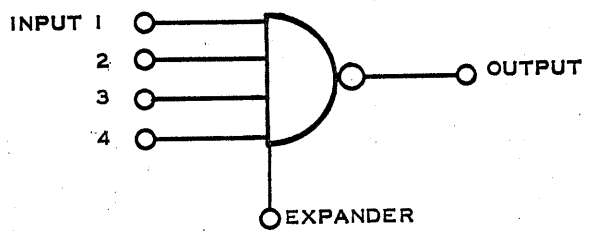
+5 VDC AT 19 MA

ENVIRONMENTAL SPECIFICATIONS

0° C TO +75° C



SCHEMATIC DIAGRAM



LOGIC SYMBOL

MODULE PIN CONNECTORS

- SIGNAL GROUND ----- A7
- +5 VOLTS DC ----- C7

FUNCTION	CIRCUIT			
	1	2	3	4
INPUT 1	B1	B4	D1	D4
INPUT 2	A2	A5	C2	C5
INPUT 3	A3	A6	C3	C6
INPUT 4	B3	B6	D3	D6
EXPANDER	B2	B5	D2	D5
OUTPUT	A1	A4	C1	C4

DESCRIPTION

THE NAND/INVERTER MODULE NV-02 IS ONE OF A FAMILY OF PHILCO LOGIC BUILDING BLOCKS DESIGNED FOR HIGH RELIABILITY, LOW POWER, AND HIGH NOISE IMMUNITY. THIS NAND/INVERTER CONTAINS EIGHT 2-INPUT GATES. ITS PRIMARY APPLICATION IS FOR LOW FAN-IN GATING AND INVERSION. THE MODULE CIRCUITS MAY ALSO BE CONNECTED TO FORM FOUR D-C COUPLED FLIP-FLOPS.

MECHANICAL SPECIFICATIONS

- MODULE COLOR: BLUE
- DIMENSIONS: 1.4 X 0.8 X 1.4 INCHES
- WEIGHT: 1.0 OUNCE (MAXIMUM)
- PACKAGING:

THERE ARE TWO FLAT-PAK CIRCUIT ELEMENTS PER MODULE. BASIC CIRCUIT ELEMENTS ARE FABRICATED USING THE SILICON MONOLITHIC EPITAXIAL PROCESS. THE CIRCUIT ELEMENTS ARE ATTACHED TO A SINGLE SIDED PRINTED CIRCUIT BOARD AND MOUNTED IN A PROVEN HIGH RELIABILITY 26-PIN HEADER. THE CIRCUIT BOARD AND HEADER ARE THEN ENCLOSED IN A COLOR CODED MOLDED NYLON COVER. TEST POINTS ARE PROVIDED AT THE TOP OF EACH MODULE FOR CHECKING CIRCUIT FUNCTION AT ANY OF THE 26 PINS.

ELECTRICAL SPECIFICATIONS

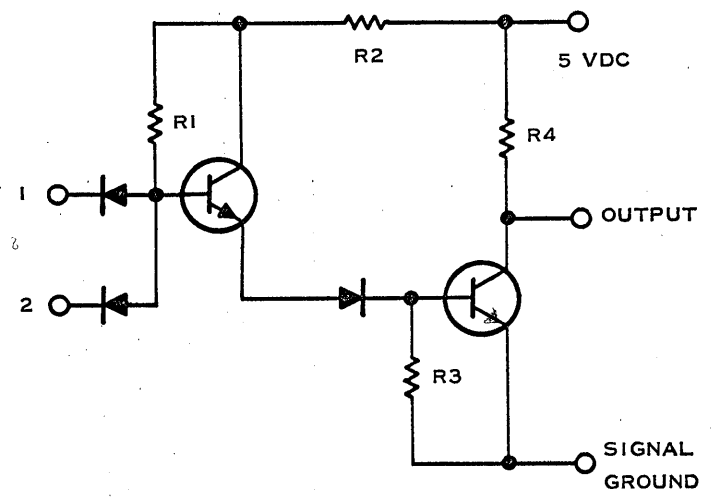
- FREQUENCY: DC TO 5 MC
- INPUT LOADING: 1 STANDARD LOAD
- FAN-IN: 2
- FAN-OUT: 8 STANDARD LOADS
- VOLTAGE LEVELS:
 - LOGICAL "1" -- +2.5 TO +5 VDC
 - LOGICAL "0" -- 0 TO 0.4 VDC
- PROPAGATION DELAY: -- 20 N SEC (AVERAGE)

POWER REQUIREMENTS

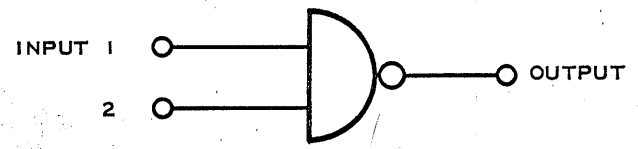
+5 VDC AT 15 MA

ENVIRONMENTAL SPECIFICATIONS

0° C TO +75° C



SCHEMATIC DIAGRAM



LOGIC SYMBOL

MODULE PIN CONNECTORS

- SIGNAL GROUND ----- A7
- +5 VOLTS DC ----- C7

FUNCTION	CIRCUIT							
	1	2	3	4	5	6	7	8
INPUT 1	B1	A3	B4	A6	D1	C3	B4	C6
INPUT 2	A2	B3	A5	B6	C2	D3	C5	D6
OUTPUT	A1	B2	A4	B5	C1	D2	C4	D5

PHILCO LOGIC BUILDING BLOCKS
 DIODE GATE EXPANDER MODULE DG-01
 39-155471-01

DESCRIPTION

THE DIODE GATE EXPANDER MODULE DG-01 IS ONE OF A FAMILY OF PHILCO LOGIC BUILDING BLOCKS DESIGNED FOR HIGH RELIABILITY, LOW POWER AND HIGH NOISE IMMUNITY. THE DIODE-EXPANDER MODULE CONTAINS SIX 3-INPUT DIODE AND-GATES WHICH ARE USED TO WIDEN THE GATING OF ACTIVE MODULE ELEMENTS.

MECHANICAL SPECIFICATIONS

MODULE COLOR: GREEN

DIMENSIONS: 1.4 X 0.8 X 1.4 INCHES

WEIGHT: 1.0 OUNCE (MAXIMUM)

PACKAGING:

THE DIODE GATE EXPANDER MODULE CONTAINS 18 SILICON DIODES. THE DIODES ARE ATTACHED BETWEEN TWO SINGLE-SIDED EPOXY PRINTED CIRCUIT BOARDS AND MOUNTED IN A PROVEN HIGH RELIABILITY 26-PIN HEADER. THE CIRCUIT BOARD AND HEADER IS THEN ENCLOSED IN A COLOR-CODED MOLDED NYLON COVER. TEST POINTS ARE PROVIDED AT THE TOP OF EACH MODULE FOR CHECKING CIRCUIT FUNCTIONS AT ANY OF THE 26 PINS.

ELECTRICAL SPECIFICATIONS

FREQUENCY: DC TO 5 MC

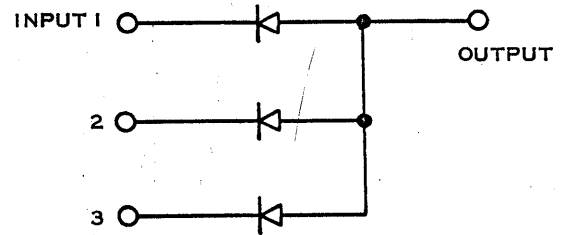
INPUT LOADING: 1/3 STANDARD LOAD

VOLTAGE LEVELS:

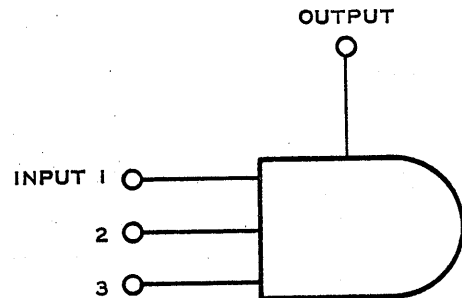
LOGICAL "1" -- +2.5 TO 5 VDC
 LOGICAL "0" -- 0 TO 0.4 VDC

ENVIRONMENTAL SPECIFICATIONS

0° C TO +75° C



SCHEMATIC DIAGRAM



LOGIC SYMBOL

MODULE PIN CONNECTORS

SIGNAL GROUND ----- A7
 +5 VOLTS DC ----- C7

FUNCTION	CIRCUIT					
	1	2	3	4	5	6
INPUT 1	A1	A2	A4	A5	C2	C5
INPUT 2	B1	A3	B4	A6	C3	C6
INPUT 3	D1	B3	D4	B6	D3	D6
OUTPUT	C1	B2	C4	B5	D2	D5

PHILCO LOGIC BUILDING BLOCKS
 2-MC OSCILLATOR MODULE MV-01
 39-155568-01

DESCRIPTION

THE 2-MEGACYCLE OSCILLATOR MODULE MV-01 IS ONE OF A FAMILY OF PHILCO LOGIC BUILDING BLOCKS DESIGNED FOR HIGH RELIABILITY, LOW POWER AND HIGH NOISE IMMUNITY. THE MODULE CIRCUIT CONSISTS OF A PHASE SHIFT OSCILLATOR FOLLOWED BY A POWER NAND-GATE.

MECHANICAL SPECIFICATIONS

MODULE COLOR: AQUA
 DIMENSIONS: 1.4 X 0.8 X 1.4 INCHES
 WEIGHT: 1.0 OUNCE (MAXIMUM)
 PACKAGING:

THE 2-MEGACYCLE OSCILLATOR MODULE CONTAINS ONE NG-01 ELEMENT AND ONE NG-03 ELEMENT PLUS TWO DISCRETE RESISTORS AND TWO CAPACITORS. THE CIRCUIT ELEMENTS AND COMPONENTS ARE ATTACHED TO A SINGLE SIDED EPOXY PRINTED CIRCUIT BOARD AND MOUNTED IN A PROVEN HIGH RELIABILITY 26-PIN HEADER. THE CIRCUIT BOARD AND HEADER IS THEN ENCLOSED IN A COLOR-CODED MOLDED NYLON COVER. TEST POINTS ARE PROVIDED AT THE TOP OF EACH MODULE FOR CHECKING CIRCUIT FUNCTIONS AT ANY OF THE 26 PINS.

ELECTRICAL SPECIFICATIONS

FREQUENCY (AVAILABLE): 1 TO 5 MC
 PULSE WIDTH: 50 TO 500 N SEC
 FAN-OUT: 20 STANDARD LOADS

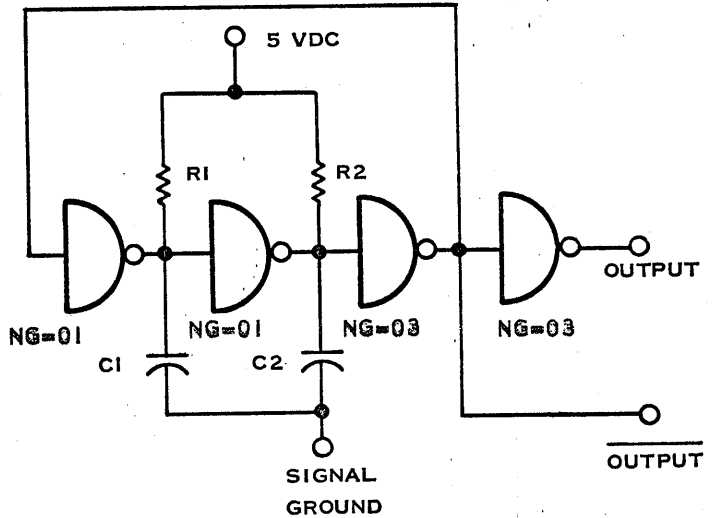
VOLTAGE LEVELS:
 LOGICAL "1" -- +2.5 TO +5 VDC
 LOGICAL "0" -- 0 TO 0.4 VDC

POWER REQUIREMENTS

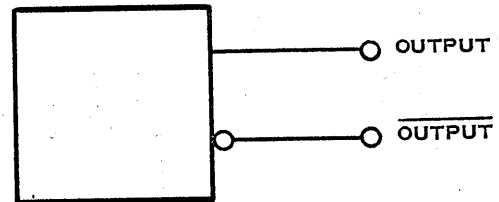
+5 VDC AT 10 MA

ENVIRONMENTAL SPECIFICATIONS

0° C TO +75° C



SCHEMATIC DIAGRAM



LOGIC SYMBOL

MODULE PIN CONNECTORS

FUNCTION	PIN CONNECTOR
SIGNAL GROUND	A7
+5 VDC	C7
OUTPUT	C4
OUTPUT	A4

PHILCO LOGIC BUILDING BLOCKS
5-VOLT POWER SUPPLY
82-155567-01

DESCRIPTION

THE 5-VOLT POWER SUPPLY IS ONE OF A FAMILY OF PHILCO BUILDING BLOCKS DESIGNED FOR HIGH RELIABILITY, LOW POWER AND NOISE IMMUNITY. IT'S COMPACT MODULAR CONSTRUCTION AND POWER REGULATION CAPABILITIES MAKE IT IDEALLY SUITED AS A POWER SOURCE FOR DIGITAL SYSTEM CONFIGURATION USING PHILCO LOGIC BUILDING BLOCKS. SILICON SEMICONDUCTORS ARE USED EXCLUSIVELY IN THE DESIGN.

SPECIFICATIONS

INPUT POWER

120 VAC $\pm 10\%$, 60 CPS $\pm 5\%$, SINGLE PHASE. NO PERMANENT DAMAGE OR ALTERATION OF CHARACTERISTICS FOR LINE VOLTAGE VARIATIONS OF $\pm 30\%$, OR LINE FREQUENCY VARIATIONS OF $\pm 15\%$, OF UP TO 10 SECONDS DURATION, ONCE EVERY 5 MINUTES.

OUTPUT POWER

ADJUSTABLE INTERNALLY 5 ± 0.5 VDC, REMOTELY PROGRAMMABLE 5 ± 0.5 VDC, FROM 0 TO 5.5 AMPERES MAXIMUM LOAD. MAXIMUM OUTPUT VOLTAGE UNDER ANY AND ALL CONDITIONS, INCLUDING FAILURE, IS 10 VDC.

REGULATION

WITHIN 5 MV AT ANY RATED OUTPUT FOR LINE VOLTAGE VARIATIONS FROM 108 TO 132 VAC. WITHIN 5 MV AT ANY RATED OUTPUT FROM NO-LOAD TO FULL LOAD. TURN-ON AND TURN-OFF TRANSIENTS NOT TO EXCEED 10% OVERSHOOT.

RIPPLE

0.5 MV RMS MAXIMUM; 5 MV P/P MAXIMUM.

STABILITY

WITHIN 10 MV AFTER 8 HOURS WARMUP

RECOVERY TIME

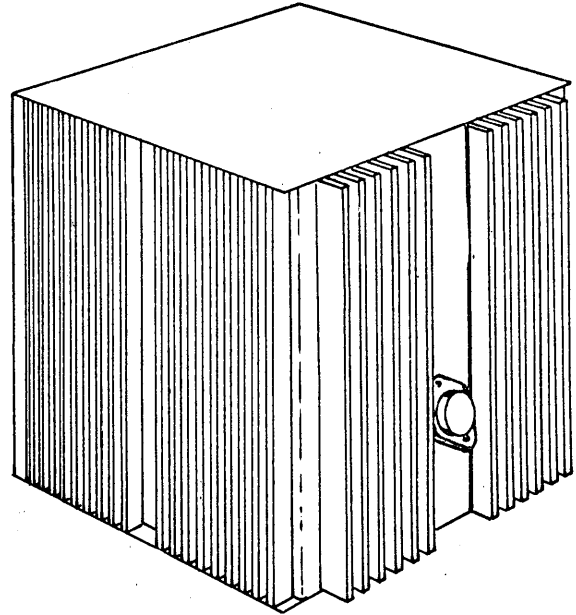
WITHIN 50 μ SEC TO WITHIN 15 MV OF OUTPUT VOLTAGE FOR 100% STEP CHANGE IN RATED LOAD.

SHORT CIRCUIT PROTECTION

CURRENT LIMITED. AUTOMATIC RESET UPON REMOVAL OF SHORT OR OVERLOAD CONDITION.

EFFICIENCY

GREATER THAN 50%



REMOTE SENSING

THROUGH 15 FEET OF CABLE

PHYSICAL PARAMETERS

DIMENSIONS	6-1/2" X 5" X 6-1/2" MAX. (EXCLUDING TERMINALS)
WEIGHT	18 POUNDS (MAXIMUM)
MOUNTING	EITHER HORIZONTAL OR VERT.
TERMINALS	EITHER OCTAL SOCKET OR TERMINAL STRIPS.

ENVIRONMENTAL

TEMPERATURE COEFFICIENT $\leq 0.002\%$ $^{\circ}\text{C}+2$ MV
AMBIENT OPERATING TEMPERATURE 0° TO 75° C

DESIGN GUIDES

MIL-E-4158B
MIL-I-26600
MIL-T-27A

PHILCO.

A SUBSIDIARY OF *Ford Motor Company*

PHILCO INTEGRATED CIRCUIT PRODUCTS PRICE LIST & SCHEDULE

MODULE PRICE SCHEDULE

<u>TYPE</u>	<u>DESCRIPTION</u>	<u>CIRCUITS PER MODULE</u>	<u>I-10 MODULES</u>	<u>II-100 MODULES</u>
NG-01	NAND-GATE	4 26	\$ 30.74	\$ 27.67
FF-02	FLIP-FLOP (RS)	4 18	40.82	36.74
FF-01	FLIP-FLOP (UNIVERSAL)	2 20	41.94	37.75
NG-03	POWER NAND-GATE	4 26	33.88	30.49
DG-01	DIODE GATE EXPANDER	6 26	15.20	13.80
NV-02	NAND/INVERTER	8 26	40.82	36.74
LD-01	LAMP/RELAY DRIVER	2 18	48.66	43.79
MV-01	CLOCK OSCILLATOR	1 4	55.00	
00-00	MODULE (WITHOUT CIRCUITS)	0	2.50	

UNIT COST FOR LOTS OVER 100 UNITS ON SPECIAL QUOTE

OVER 100 SPECIAL CARD TYPES AND ASSOCIATED HARDWARE, COMPATIBLE WITH THE INTEGRATED CIRCUIT MODULES ARE AVAILABLE AND WILL BE QUOTED ON REQUEST.

CABINET HARDWARE

PL-01	MODULE CONNECTOR PLATE (190 MODULES)	\$ 337.30
CI-01	CABLE INTERCONNECTION PLATE (1,120 TERMINALS)	59.00
US-01	UNI-STRUT FOR ONE STANDARD 21" INCREMENT	40.40
US-02	UNI-STRUT FOR ONE HORIZONTAL 7" INCREMENT	12.80
SC-01	SPECTRA STRIP CABLE (PER 15" LAYER)	10.40
BP-01	BUMP COVER, HANDLE AND LATCH ASSEMBLY	48.50
PS-01	LOGIC POWER SUPPLY -- 5 VOLTS AT 5.5 AMPS	216.10
BS-01	"BOOK" SLIDES PER PAIR	43.60
BR-01	ELDRE GROUND/POWER BUS, PER "PAGE"	31.30
CP-01	CABLE CONNECTOR PLATES, 2 PER 21" INCREMENT	25.10

TOTAL CABLE AND HARDWARE COST (EXCLUDING MODULE MOUNTING PLATES)
FOR ONE 21" HIGH VERTICAL BOOK OR ONE 7" HIGH HORIZONTAL BOOK IS - 280.00

TERMS OF SALE: NET 30 DAYS. TRANSPORTATION COLLECT, FOB PALO ALTO,
CALIFORNIA. PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.