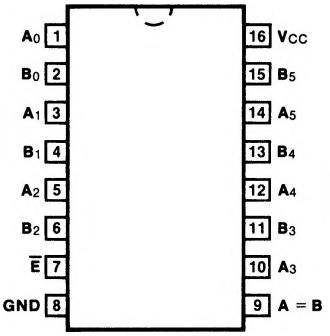
93S47

HIGH SPEED 6-BIT IDENTITY COMPARATOR

DESCRIPTION — The '47 is a very high speed 6-bit identity comparator. The device features an open-collector output for wired-OR expansion and active LOW Enable. The '47 is fabricated with the Schottky barrier diode process for high speed, and is completely compatible with all TTL families. This device is recommended for applications where wired-OR expansion is desired and the speed of an active pull-up is not required. The '47 is a pin-for-pin replacement for the DM7160/8160.

- **SCHOTTKY PROCESS FOR HIGH SPEED**
- **COMPARE TWO 6-BIT WORDS IN 15 ns**
- **OPEN-COLLECTOR OUTPUT FOR WIRED-OR EXPANSION**

CONNECTION DIAGRAM
PINOUT A



ORDERING CODE: See Section 9

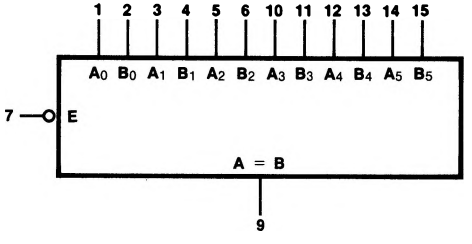
PKGS	PIN OUT	COMMERCIAL GRADE V_{CC} = +5.0 V ±5%, T_A = 0°C to +70°C	MILITARY GRADE V_{CC} = +5.0 V ±10%, T_A = -55°C to +125°C	PKG TYPE
Plastic DIP (P)	A	93S47PC		9B
Ceramic DIP (D)	A	93S47DC	93S47DM	6B
Flatpak (F)	A	93S47FC	93S47FM	4L

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

PIN NAMES	DESCRIPTION	93S (U.L.) HIGH/LOW
A_0 — A_5	Word A Inputs	1.25/1.25
B_0 — B_5	Word B Inputs	1.25/1.25
$\overline{E}$	Enable Input (Active LOW)	1.25/1.25
A = B	A Equal to B Output	OC*/12.5

*OC — Open Collector

LOGIC SYMBOL

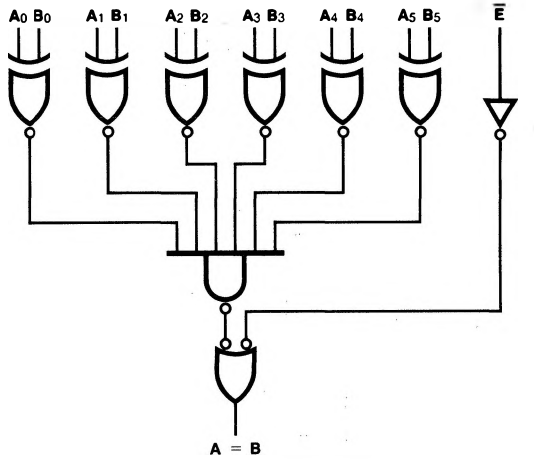


V_{CC} = Pin 16
GND = Pin 8

FUNCTIONAL DESCRIPTION — The '47 is a very high speed 6-bit identity comparator. When enabled ($\overline{E}$ input LOW), the A = B output is HIGH if the two 6-bit words are equal. When disabled ($\overline{E}$ input HIGH), the A = B output is forced HIGH. Equality is determined by Exclusive-NOR circuits which individually compare the equivalent bits from each word. Since the A = B output state is determined by the equality of each pair of inputs, the equivalent A_n and B_n pins can be interchanged to facilitate board layout or wiring. The active LOW Enable ($\overline{E}$) can be used as a high speed strobe. When the Enable is HIGH, the A = B output is forced HIGH. This allows devices tied to a common wired-OR (actually wired-AND) node to be strobed individually or in groups. Only the enabled devices will determine the state of the output node.

$$(A = B) = \overline{E} + \overline{(A_0 \oplus B_0)} \bullet \overline{(A_1 \oplus B_1)} \bullet \overline{(A_2 \oplus B_2)} \bullet \overline{(A_3 \oplus B_3)} \bullet \overline{(A_4 \oplus B_4)} \bullet \overline{(A_5 \oplus B_5)}$$

LOGIC DIAGRAM



TRUTH TABLE

INPUTS		OUTPUT
$\overline{E}$	A_n, B_n	A = B
L	$A_n = B_n$	H
L	$A_n \neq B_n$	L
H	$A_n \neq B_n$	H
H	$A_n = B_n$	H

H = HIGH Voltage Level
L = LOW Voltage Level

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

SYMBOL	PARAMETER	93S		UNITS	CONDITIONS
		Min	Max		
I_{CC}	Power Supply Current		65	mA	V_{CC} = Max

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

SYMBOL	PARAMETER	93S C_L = 15 pF R_L = 280 Ω		UNITS	CONDITIONS
		Min	Max		
t_{PLH} t_{PHL}	Propagation Delay A_n or B_n to A = B	5.0 5.0	17 17	ns	$\overline{E}$ = Gnd, Other Inputs = 4.5 V, Test each input individually, Figs. 3-2, 3-5
t_{PLH} t_{PHL}	Propagation Delay A_n or B_n to A = B	4.0 4.0	14 15	ns	$\overline{E}$ = Gnd, Other Inputs = Gnd, Test each input individually, Figs. 3-2, 3-4
t_{PLH} t_{PHL}	Propagation Delay $\overline{E}$ to A = B	3.0 3.0	10 10	ns	$A_n \neq B_n$ Figs. 3-2, 3-5