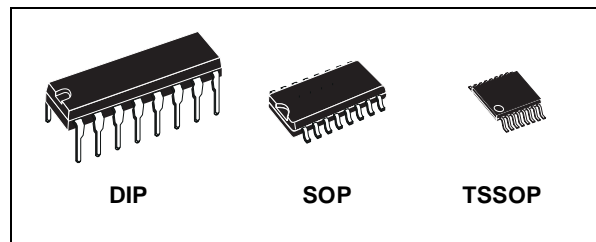




# M74HC85

## 4-BIT MAGNITUDE COMPARATOR

- HIGH SPEED :  
 $t_{PD} = 20 \text{ ns (TYP.)}$  at  $V_{CC} = 6V$
- LOW POWER DISSIPATION:  
 $I_{CC} = 4\mu\text{A (MAX.)}$  at  $T_A = 25^\circ\text{C}$
- HIGH NOISE IMMUNITY:  
 $V_{NIH} = V_{NIL} = 28 \% V_{CC}$  (MIN.)
- SYMMETRICAL OUTPUT IMPEDANCE:  
 $|I_{OH}| = I_{OL} = 4\text{mA (MIN)}$
- BALANCED PROPAGATION DELAYS:  
 $t_{PLH} \cong t_{PHL}$
- WIDE OPERATING VOLTAGE RANGE:  
 $V_{CC}$  (OPR) = 2V to 6V
- PIN AND FUNCTION COMPATIBLE WITH  
 74 SERIES 85



### ORDER CODES

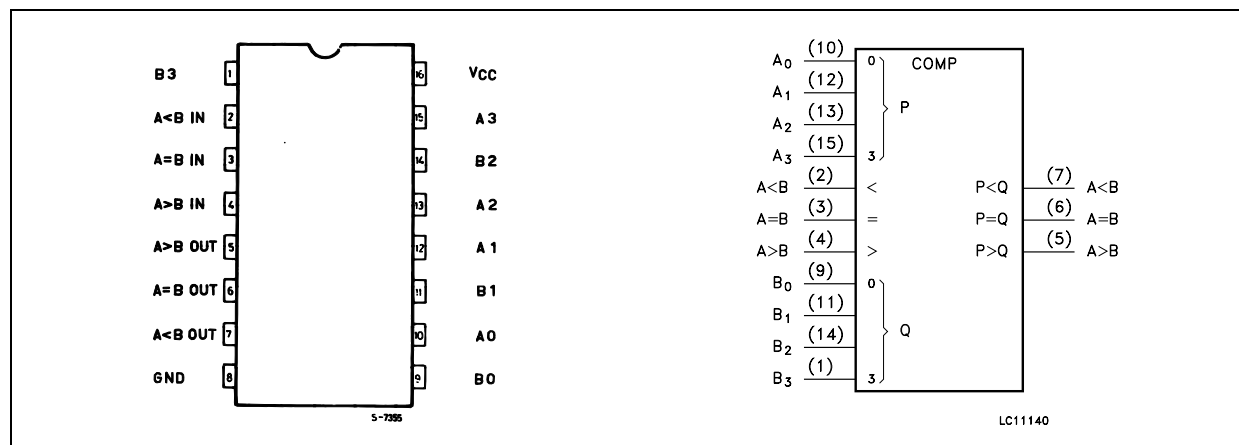
PACKAGE	TUBE	T & R
DIP	M74HC85B1R	
SOP	M74HC85M1R	M74HC85RM13TR
TSSOP		M74HC85TTR

### DESCRIPTION

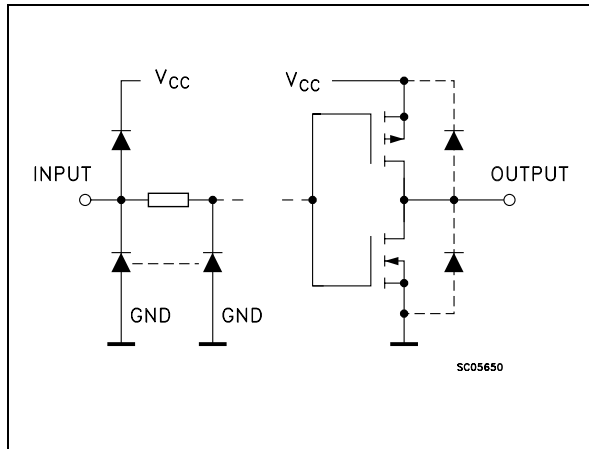
The M74HC85 is an high speed CMOS 4-BIT MAGNITUDE COMPARATOR fabricated with silicon gate C<sup>2</sup>MOS technology. This comparator compares two 4-bit words and provides an high voltage level on one of the A>B out, A=B out and A<B out outputs. The comparing

bit number is easily expanded by cascading several devices as shown in the typical application. All inputs are equipped with protection circuits against static discharge and transient excess voltage.

### PIN CONNECTION AND IEC LOGIC SYMBOLS



INPUT AND OUTPUT EQUIVALENT CIRCUIT



PIN DESCRIPTION

PIN No	SYMBOL	NAME AND FUNCTION
2	$IN_{A<B}$	A<B Expansion Input
3	$IN_{A=B}$	A=B Expansion Input
4	$IN_{A>B}$	A>B Expansion Input
5	$OUT_{A>B}$	A>B Expansion Output
6	$OUT_{A=B}$	A=B Expansion Output
7	$OUT_{A<B}$	A<B Expansion Output
9, 11, 14, 1	$B_0$ to $B_3$	Word B Inputs
10, 12, 13, 15	$A_0$ to $A_3$	Word A Inputs
8	GND	Ground (0V)
16	Vcc	Positive Supply Voltage

TRUTH TABLE

COMPARING INPUTS				CASCADING INPUTS			OUTPUTS		
				A>B	A<B	A=B	A>B	A<B	A=B
A3 > B3	X	X	X	X	X	X	H	L	L
A3 = B3	A2 > B2	X	X	X	X	X	H	L	L
A3 = B3	A2 = B2	A1 > B1	X	X	X	X	H	L	L
A3 = B3	A2 = B2	A1 = B1	A0 > B0	X	X	X	H	L	L
A3 = B3	A2 = B2	A1 = B1	A0 = B0	L	L	L	H	H	L
				X	X	H	L	L	H
				L	H	L	L	H	L
				H	L	L	H	L	L
A3 = B3	A2 = B2	A1 = B1	A0 < B0	X	X	X	L	H	L
A3 = B3	A2 = B2	A1 > B1	X	X	X	X	L	H	L
A3 = B3	A2 < B2	X	X	X	X	X	L	H	L
A3 < B3	X	X	X	X	X	X	L	H	L

X : Don't Care