

## DM54LS460/DM74LS460 10-Bit Comparator

### General Description

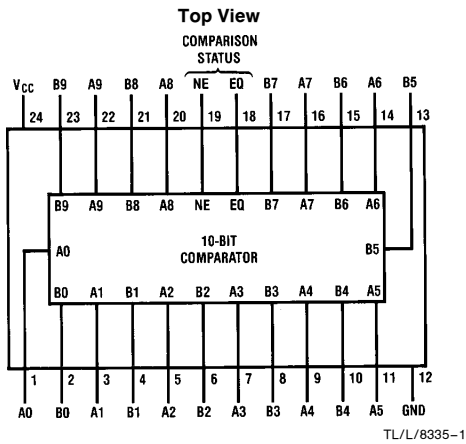
The 'LS460 is a 10-bit comparator with true and complement comparison status outputs. The device compares two 10-bit data strings ( $A_9-A_0$  and  $B_9-B_0$ ) to establish if this data is Equivalent (EQ = HIGH and NE = LOW) or Not Equivalent (EQ = LOW and NE = HIGH).

Outputs conform to the usual 8 mA LS totem-pole drive standard.

### Features/Benefits

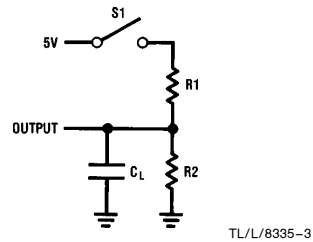
- True and complement comparison status outputs
- 24-pin SKINNYDIP saves space
- Low current PNP inputs reduce loading
- Expandable in 10-bit increments

### Connection Diagram



Order Number DM54LS460J,  
DM74LS460J, or DM74LS460N  
See NS Package Number J24F or N24C

### Standard Test Load



### Function Table

A9-A0	B9-B0	EQ	NE	Operation
A	A	H	L	} Equivalent (A = B)
B	B	H	L	
A	B	L	H	Not Equivalent (A ≠ B)

## Absolute Maximum Ratings

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage  $V_{CC}$

7V

Input Voltage

5.5V

Off-State Output Voltage

5.5V

Storage Temperature

-65° to +150°C

## Operating Conditions

Symbol	Parameter	Military			Commercial			Units
		Min	Typ	Max	Min	Typ	Max	
$V_{CC}$	Supply Voltage	4.5	5	5.5	4.75	5	5.25	V
$T_A$	Operating Free-Air Temperature	-55		125*	0		75	°C

\*Case Temperature

## Electrical Characteristics Over Operating Conditions

Symbol	Parameter	Test Conditions	Min	Typ†	Max	Units	
$V_{IL}$	Low-Level Input Voltage				0.8	V	
$V_{IH}$	High-Level Input Voltage			2		V	
$V_{IC}$	Input Clamp Voltage	$V_{CC} = \text{MIN}$ $I_I = -18 \text{ mA}$			-1.5	V	
$I_{IL}$	Low-Level Input Current	$V_{CC} = \text{MAX}$ $V_I = 0.4 \text{ V}$			-0.25	mA	
$I_{IH}$	High-Level Input Current	$V_{CC} = \text{MAX}$ $V_I = 2.4 \text{ V}$			25	μA	
$I_I$	Maximum Input Current	$V_{CC} = \text{MAX}$ $V_I = 5.5 \text{ V}$			1	mA	
$V_{OL}$	Low-Level Output Voltage	$V_{CC} = \text{MIN}$ $V_{IL} = 0.8 \text{ V}$ $V_{IH} = 2 \text{ V}$			0.5	V	
$V_{OH}$	High-Level Output Voltage	$V_{CC} = \text{MIN}$ $V_{IL} = 0.8 \text{ V}$ $V_{IH} = 2 \text{ V}$	MIL		2.4		V
			COM				
$I_{OS}$	Output Short-Circuit Current*	$V_{CC} = 5.0 \text{ V}$ $V_O = 0 \text{ V}$	-30		-130	mA	
$I_{CC}$	Supply Current	$V_{CC} = \text{MAX}$		60	100	mA	

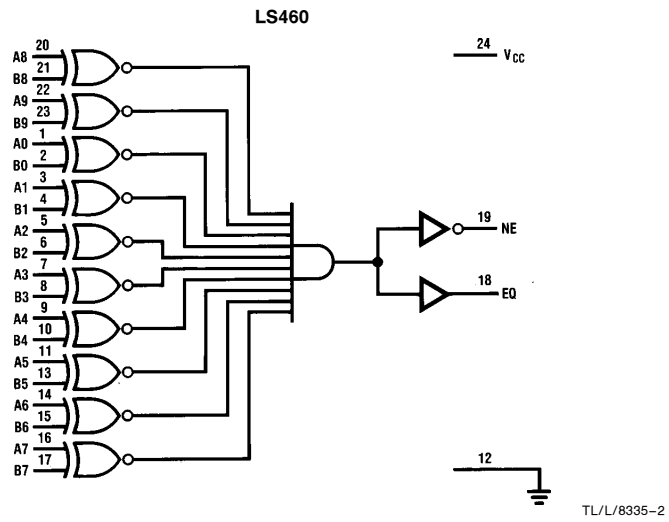
\*No more than one output should be shorted at a time and duration of the short-circuit should not exceed one second

†All typical values are at  $V_{CC} = 5 \text{ V}$ ,  $T_A = 25^\circ \text{C}$

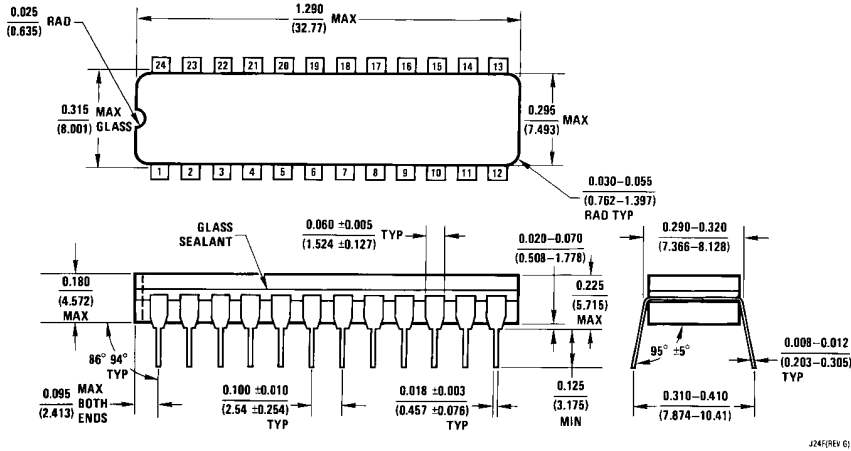
## Switching Characteristics Over Operating Conditions

Symbol	Parameter	Test Conditions (See Test Load)	Military			Commercial			Units
			Min	Typ	Max	Min	Typ	Max	
$t_{PD}$	Any Input to EQ or NE	$C_L = 50 \text{ pF}$ $R_1 = 560 \Omega$ $R_2 = 1.1 \text{ k}\Omega$		25	45		25	40	ns

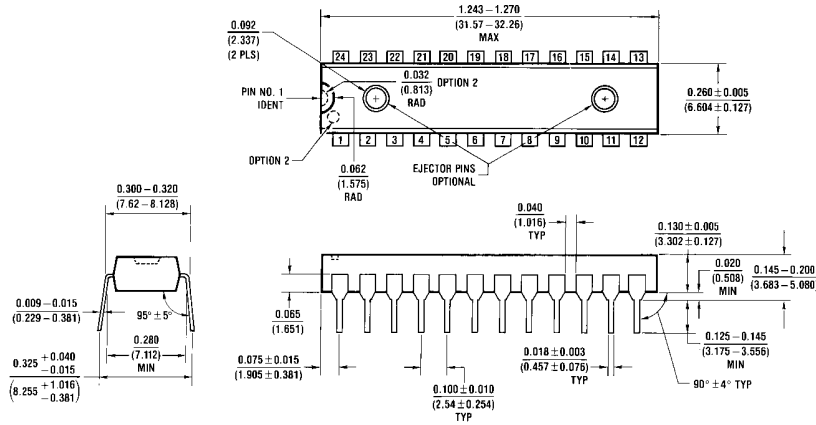
# Logic Diagram



**Physical Dimensions** inches (millimeters)



**24-Pin Narrow Ceramic Dual-In-Line Package (J)**  
 Order Number DM54LS460J or DM74LS460J  
 NS Package J24F



**24-Pin Narrow Plastic Dual-In-Line Package (N)**  
 Order Number DM74LS460N  
 NS Package N24C

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