



DM54LS460/DM74LS460 10-Bit Comparator

General Description

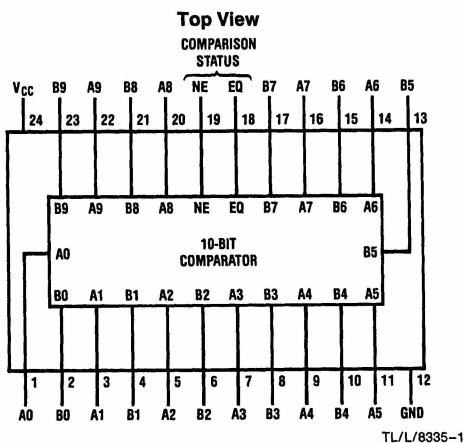
The 'LS460 is a 10-bit comparator with true and complement comparison status outputs. The device compares two 10-bit data strings (A_9-A_0 and B_9-B_0) to establish if this data is Equivalent ($EQ=HIGH$ and $NE=LOW$) or Not Equivalent ($EQ=LOW$ and $NE=HIGH$).

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

Features/Benefits

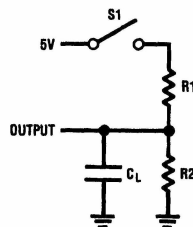
- True and complement comparison status outputs
- 24-pin SKINNYDIP saves space
- Low current PNP inputs reduce loading
- Expandable in 10-bit increments

Connection Diagram



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

Standard Test Load



TL/L/8335-3

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 ($A \neq B$)

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	$V_{CC} = \text{MIN}$ $V_{IL} = 0.8 \text{ V}$ $V_{IH} = 2 \text{ V}$	$I_{OL} = 8 \text{ mA}$			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 $I_{OH} = -2 \text{ mA}$	2.4			V
			COM $I_{OH} = -3.2 \text{ mA}$				
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

