



MOTOROLA

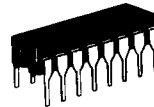
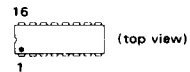
**MC8T13
MC8T23**

DUAL LINE DRIVERS

The MC8T13 and MC8T23 are designed to drive transmission lines with impedances of 50 Ω to 500 Ω. The MC8T23 specifically meets all of the input/output requirements of the IBM System 360/System 370 specifications (IBM Specification GA 22-6974-0).

- High Output Drive Capability –
 $I_O = -75 \text{ mA (Min) @ } V_O = 2.4 \text{ V} - \text{MC8T13}$
 $I_O = -59.3 \text{ mA (Min) @ } V_O = 3.11 \text{ V} - \text{MC8T23}$
- High Speed Operation –
 $t_{PLH} = t_{PHL} = 20 \text{ ns (Max) with } 50 \Omega \text{ Load}$
- M TTL and MDTL Compatible Inputs
- Uncommitted Emitter Output Structures Permit Party-Line Operation
- Designed to Operate with MC8T14 or MC8T24 Line Receivers
- Outputs are Short-Circuit Protected
- Equivalent to SN75121 and SN75123 Respectively.

**DUAL LINE DRIVERS
SILICON MONOLITHIC
INTEGRATED CIRCUIT**



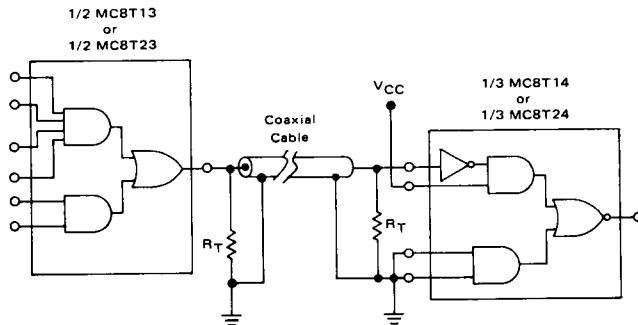
**L SUFFIX
CERAMIC PACKAGE
CASE 620**



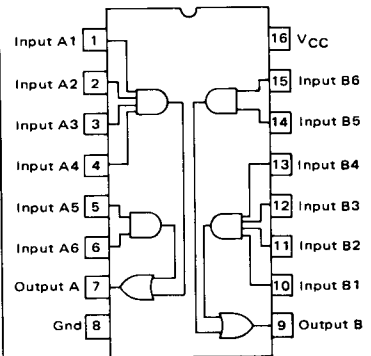
**P SUFFIX
PLASTIC PACKAGE
CASE 648**

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TYPICAL APPLICATION



PIN CONNECTIONS



TRUTH TABLE

Inputs						Output
1	2	3	4	5	6	
H	H	H	H	X	X	H
X	X	X	X	H	H	H
All Other Combinations						L

H = High Logic State
 L = Low Logic State
 X = Irrelevant

MC8T13, MC8T23

MAXIMUM RATINGS (T_A = +25°C unless otherwise noted.)

Rating	Symbol	Value	Unit
Power Supply Voltage	V _{CC}	7.0	Vdc
Input Voltage	V _I	5.5	Vdc
Output Voltage	V _O	7.0	Vdc
Power Dissipation @ T _A = +25°C Derate above 25°C	P _D	1000 6.7	mW mW/°C
Operating Ambient Temperature Range	T _A	0 to +75	°C
Storage Temperature Range	T _{stg}	-65 to +150	°C

ELECTRICAL CHARACTERISTICS (Unless otherwise noted, 4.75 V ≤ V_{CC} ≤ 5.25 V and 0°C ≤ T_A ≤ 75°C)

Characteristics	Symbol	MC8T13			MC8T23			Unit
		Min	Typ	Max	Min	Typ	Max	
Input Voltage – Low Logic State	V _{IL}	–	–	0.8	–	–	0.8	V
Input Voltage – High Logic State	V _{IH}	2.0	–	–	2.0	–	–	V
Input Current – Low Logic State (V _{IL} = 0.4 V)	I _{IL}	-0.1	–	-1.6	-0.1	–	-1.6	mA
Input Current – High Logic State (V _{IH} = 4.5 V) (V _{IH} = 5.5 V, V _{CC} = 5.0 V)	I _{IH1}	–	–	40	–	–	40	μA
	I _{IH2}	–	–	10	–	–	10	mA
Input Clamp Voltage (I _I = -12 mA, V _{CC} = 5.0 V)	V _{I(clamp)}	–	–	-1.5	–	–	-1.5	V
Output Voltage – High Logic State (V _{IH} = 2.0 V, I _{OH} = -75 mA) (V _{CC} = 5.0 V, V _{IH} = 2.0 V, I _{OH} = -59.3 mA) (T _A = 25°C)	V _{OH1}	2.4	–	–	–	–	–	V
	V _{OH2}	–	–	–	2.9 3.11	–	–	V
Output Current – High Logic State (V _{IH} = 4.5 V, V _{CC} = 5.0 V, V _O = 2.0 V, T _A = 25°C)	I _{OH}	-100	–	-250	-100	–	-250	mA
Output Current – Low Logic State (V _{IL} = 0.8 V, V _O = 0.4 V) (V _{IL} = 0.8 V, V _O = 0.15 V)	I _{OL1}	–	–	-800	–	–	–	μA
	I _{OL2}	–	–	–	–	–	-240	μA
Output Reverse Leakage Current – Low Logic State (V _{IL} = 0 V, V _O = 3.0 V) (V _{IL} = 0 V, V _O = 3.0 V, V _{CC} = 0 V)	I _{OR1}	–	–	80	–	–	–	μA
	I _{OR2}	–	–	500	–	–	40	μA
Output Short-Circuit Current (V _{IH} = 4.5 V, V _{CC} = 5.0 V, V _O = 0 V, T _A = 25°C)	I _{OS}	–	–	-30	–	–	-30	mA
Power Supply Currents (I _O = 0 mA) Outputs – Low Logic State, V _{IL} = 0.8 V Outputs – High Logic State, V _{IH} = 2.0 V	I _{CCL}	–	–	60	–	–	60	mA
	I _{CCH}	–	–	28	–	–	28	mA

SWITCHING CHARACTERISTICS (V_{CC} = 5.0 V, T_A = 25°C unless otherwise noted.) Figure 1

Characteristic	Symbol	MC8T13			MC8T23			Unit
		Min	Typ	Max	Min	Typ	Max	
Propagation Delay Time – Low to High Level Output (R _L = 37 Ω, C _L = 15 pF) (R _L = 37 Ω, C _L = 1000 pF) (R _L = 50 Ω, C _L = 15 pF) (R _L = 50 Ω, C _L = 100 pF)	t _{PLH}	–	11	20	–	–	–	ns
		–	22	50	–	–	–	
		–	–	–	–	12	20	
		–	–	–	–	20	35	
Propagation Delay Time – High to Low Level Output (R _L = 37 Ω, C _L = 15 pF) (R _L = 37 Ω, C _L = 1000 pF) (R _L = 50 Ω, C _L = 15 pF) (R _L = 50 Ω, C _L = 100 pF)	t _{PHL}	–	8.0	20	–	–	–	ns
		–	20	50	–	–	–	
		–	–	–	–	12	20	
		–	–	–	–	15	25	

MC8T13, MC8T23

FIGURE 1 – SWITCHING TEST CIRCUIT AND WAVEFORMS

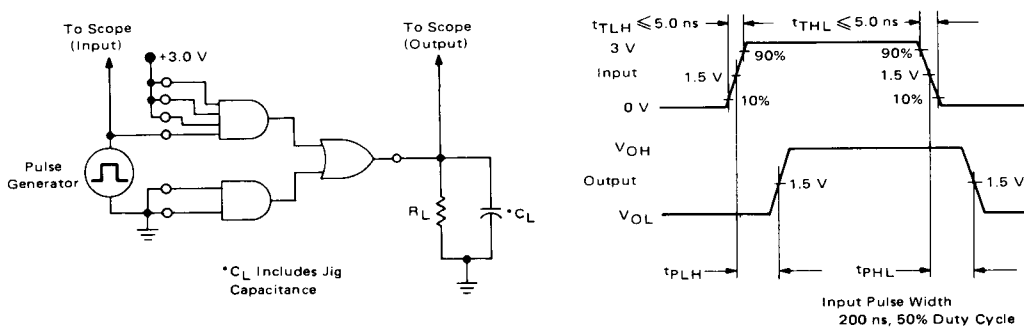


FIGURE 2 – REPRESENTATIVE SCHEMATIC DIAGRAM (1/2 Shown)

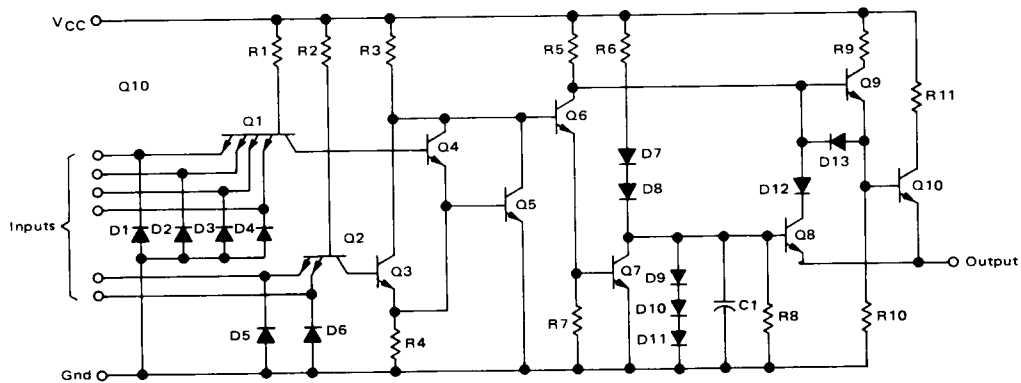


FIGURE 3 – TYPICAL OUTPUT CURRENT versus OUTPUT VOLTAGE

