MOTOROLA

Quad 2-Input Multiplexer (Non-Inverting)

Military 10H558

ELECTRICALLY TESTED PER:
5962-8756601

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The 10H558 is a quad two channel multiplexer with common input select. A "high" level select enables input D00, D10, D20 and D30 and a "low" level select enables input D01, D11, D21 and D31.

This MECL 10H part is a functional/pinout duplication of the standard MECL 10K family part, with 100% improvement in propagation delay and no increase in power-supply current.

- Propagation Delay, 1.5 ns Typical
- 290 mW Max/Pkg (No Load)
- Improved Noise Margin 150 mV (Over Operating Voltage and Temperature Range)
- Voltage Compensated
- MECL 10K-Compatible

AVAILABLE AS

1) JAN: N/A
2) SMD: 5962-8756601
3) 883: 10H558/BXAJC
X = CASE OUTLINE AS FOLLOWS:

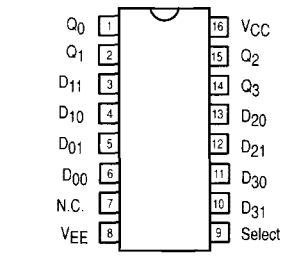
PACKAGE: CERDIP: E
CERFLAT: F
LCC: 2

The letter "M" appears before the slash on LCC.

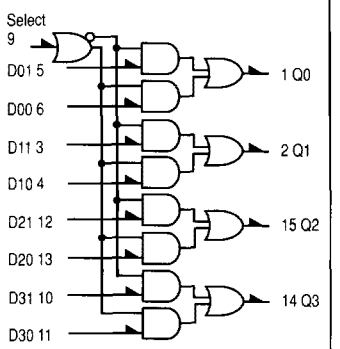
PIN ASSIGNMENTS

FUNCTION	DIL	FLATS	LCC	BURN-IN (CONDITION C)
Q0	1	5	2	51 Ω to V_{TT}
Q1	2	6	3	51 Ω to V_{TT}
D11	3	7	4	51 Ω to V_{TT}
D10	4	8	5	OPEN
D01	5	9	7	GND
D00	6	10	8	OPEN
NC	7	11	9	OPEN
V_{EE}	8	12	10	V_{EE}
Select	9	13	12	OPEN
D31	10	14	13	GND
D30	11	15	14	OPEN
D21	12	16	15	GND
D20	13	1	17	OPEN
Q3	14	2	18	51 Ω to V_{TT}
Q2	15	3	19	51 Ω to V_{TT}
V_{CC}	16	4	20	GND

BURN - IN CONDITIONS:
V_{TT} = – 2.0 V MAX/ – 2.2 V MIN
V_{EE} = – 5.7 V MAX/ – 5.2 V MIN

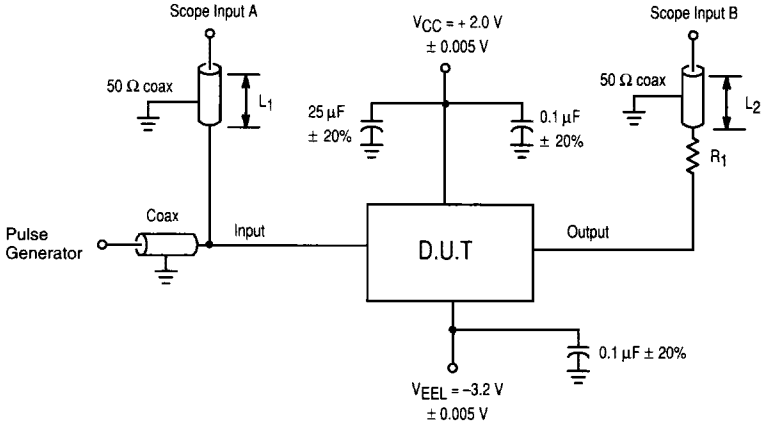


POSITIVE LOGIC DIAGRAM



Truth Table			
Select	**D0**	**D1**	**Q**
L	∅	L	L
L	∅	H	H
H	L	∅	L
H	H	∅	H

∅ = Don't Care



NOTES

1. Pulse generator must be capable of rise and fall times of 2.0 ns ± 0.2 ns.
2. Unused outputs connected to 100 Ω resistor to ground.
3. 2:1 divider may be used.
4. L1 = L2: Matched for equal time delay.
5. R_1 = 50 Ω resistor in series with 50 Ω coax constituting the 100 Ω load.
6. $t_r = t_f$ = 1.0 ns ± 0.1 ns (20% - 80%).
7. $P_W \geq 20$ ns.
7. P_{RF} = 1.0 MHz.

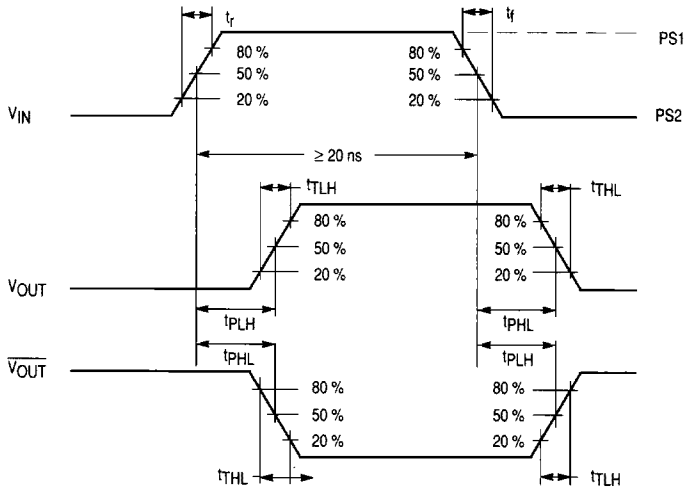


Figure 1. Switching Test Circuit and Waveforms

10H558
QUIESCENT LIMIT TABLE *

*** ELECTRICAL CHARACTERISTICS**

Each MECL 10H series circuit has been designed to meet the dc specifications shown in the test table, after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse air flow greater than 500 linear fpm is maintained. Outputs are terminated through a 100 Ω resistor to - 2.0 volts.

Test Temperature	Test Voltage Values (Volts)								
	V_{IH}	V_{IL}	V_{IH1}	V_{IL1}	P_{S1}	P_{S2}	V_{EE1}	V_{EE2}	V_{EEL}
T_A = 25 °C	-0.78	-1.95	-1.10	-1.480	+1.11	+0.31	-5.46	-4.94	-2.94
T_A = 125 °C	-0.65	-1.95	-0.96	-1.465	+1.24	+0.36	-5.46	-4.94	-2.94
T_A = -55 °C	-0.84	-1.95	-1.16	-1.510	+1.01	+0.28	-5.46	-4.94	-2.94

Symbol	Parameter	Limits						Units	TEST VOLTAGE APPLIED TO PINS BELOW							
	Functional Parameters:	+ 25° C		+ 125° C		- 55° C			Pinouts referenced are for DIL package, check Pin Assignments V_{CC} = 0 V, Output Load = 100 Ω to GND							
		Subgroup 1		Subgroup 2		Subgroup 3										
		Min	Max	Min	Max	Min	Max		V_{IH1}	V_{IL1}	V_{IH2}	V_{IL2}	V_{EE1}	V_{EE2}	V_{CC}	P.U.T.
V_{OH}	High Output Voltage	-1.01	-0.78	-0.86	-0.65	-1.06	-0.84	V	3, 5, 10, 12				8		16	1, 2, 14, 15
V_{OL}	Low Output Voltage	-1.95	-1.58	-1.95	-1.565	-1.95	-1.61	V					8		16	1, 2, 14, 15
V_{OH1}	High Output Voltage	-1.01	-1.78	-0.86	-0.65	-1.06	-0.84	V	3 - 6, 9 -13				8	8	16	1, 2, 13, 15
V_{OL1}	Low Output Voltage	-1.95	-0.58	-1.95	-1.565	-1.95	-1.61	V	3 - 6, 9 -13		3 - 6, 9 -13	9	8	8	16	1, 2, 14, 15
I_{EE}	Power Supply Current	-48		-53		-53		mA			9	3 - 6, 9 -13	8		16	8
I_{IH1}	Input Current High		295		475		475	µA	9				8		16	9
I_{IH2}	Input Current High		320		515		515	µA	3 - 6, 9 -13				8		16	3 - 6, 9 - 13
I_{IL}	Input Current	0.5		0.3		0.5		µA		3 - 6 9 - 13			8		16	3 - 6, 9 - 13

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QUIESCENT LIMIT TABLE *

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Test Temperature	Test Voltage Values (Volts)								
	V_{IH}	V_{IL}	V_{IH1}	V_{IL1}	P_{S1}	P_{S2}	V_{EE1}	V_{EE2}	V_{EEL}
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Symbol	Parameter	Limits						Units	TEST VOLTAGE APPLIED TO PINS BELOW				
	Functional Parameters:	+ 25 °C		+ 125 °C		- 55 °C			Pinouts referenced are for DIL package, check Pin Assignments V_{CC} = 2.0 V, Output Load = 100 Ω to GND				
		Subgroup 9		Subgroup 10		Subgroup 11							
		Min	Max	Min	Max	Min	Max		V_{IN}	V_{OUT}	V_{CC}	V_{EEL}	P.U.T.
t_{TLH}	Rise Time	0.7	2.0	0.7	2.2	0.7	2.2	ns	3 - 6, 10 - 13	1, 2	16	8	1, 2, 14, 15
t_{THL}	Fall Time	0.7	2.0	0.7	2.2	0.7	2.2	ns	3 - 6, 10 - 13	1, 2	16	8	1, 2, 14, 15
t_{PLH}	Propagation Delay Data to Output	0.5	1.8	0.5	2.2	0.5	1.9	ns	3 - 6	1, 2, 10 - 13	16	8	1, 2, 14, 15
t_{PLH}	Propagation Delay Data to Output	0.5	1.8	0.5	2.2	0.5	1.9	ns	3 - 6	1, 2, 10 - 13	16	8	1, 2, 14, 15
t_{PHL}	Propagation Delay Select to Output	1.0	2.7	1.0	3.0	1.0	2.7	ns	3 - 6, 10 - 13	1, 2	16	8	1, 2, 14, 15
t_{PLH}	Propagation Delay Select to Output	1.0	2.7	1.0	3.0	1.0	2.7	ns	3 - 6, 10 - 13	1, 2	16	8	1, 2, 14, 15