

MC10EL58, MC100EL58

5.0 V ECL 2:1 Multiplexer

Description

The MC10EL/100EL58 is a 2:1 multiplexer. The device is functionally equivalent to the E158 device with higher performance capabilities. With propagation delays and output transition times significantly faster than the E158, the EL58 is ideally suited for those applications which require the ultimate in AC performance.

The 100 Series contains temperature compensation.

Features

- 230 ps Propagation Delay
- PECL Mode Operating Range:
 - ◆ $V_{CC} = 4.2\text{ V to } 5.7\text{ V}$ with $V_{EE} = 0\text{ V}$
- NECL Mode Operating Range:
 - ◆ $V_{CC} = 0\text{ V}$ with $V_{EE} = -4.2\text{ V to } -5.7\text{ V}$
- Internal Input Pulldown Resistors on D_a , D_b , and SEL
- These Devices are Pb-Free, Halogen Free and are RoHS Compliant

8
DT SUFFIX
CASE 948R-02

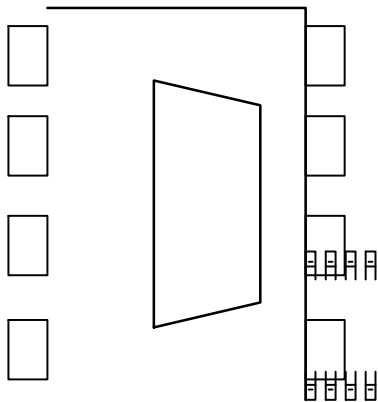


Figure 1. Logic Diagram and Pin Assignment



MC10EL58, MC100EL58
K = MC10EL58
4Z = MC100EL58
2O = MC10EL58/D
A = Assembled

(Note)

*For additional applications information, see the application notes.

See detailed information in this data sheet.

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Table 1. PIN DESCRIPTION

PIN	FUNCTION
D _a , D _b	ECL Data Inputs
Q, \bar{Q}	ECL Data Outputs
SEL	ECL Select Input
V _{CC}	Positive Supply
V _{EE}	Negative Supply
NC	No Connect

Table 2. FUNCTION TABLE

SEL*	Data
H	a
L	b

* Pin will default low when left open.

Table 4. MAXIMUM RATINGS

Symbol	Parameter	Condition 1	Condition 2	Rating	Unit
V _{CC}	PECL Mode Power Supply	V _{EE} = 0 V		8	V
V _{EE}	NECL Mode Power Supply	V _{CC} = 0 V		8	V
V _I	PECL Mode Input Voltage NECL Mode Input Voltage	V _{EE} = 0 V V _{CC} = 0 V	V _I ≤ V _{CC} V _I ≥ V _{EE}	6 6	V
I _{out}	Output Current	Continuous Surge		50 100	mA
T _A	Operating Temperature Range			40 to +85	°C
T _{stg}	Storage Temperature Range			65 to +150	°C
θ _{JA}	Thermal Resistance (Junction-to-Ambient)	0 lfpm 500 lfpm	SOIC 8 NB	190 130	°C/W
θ _{JC}	Thermal Resistance (Junction-to-Case)		SOIC 8 NB	41 to 44	°C/W
θ _{JA}	Thermal Resistance (Junction-to-Ambient)	0 lfpm 500 lfpm	TSSOP 8	185 140	°C/W
T _{sol}	Wave Solder (Pb-Free)	<2 to 3 sec @ 260°C		265	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device p2its are exceeded,

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Table 6. 10EL SERIES NECL DC CHARACTERISTICS ($V_{CC}= 0.0\text{ V}$; $V_{EE}= 5.0\text{ V}$ (Note 1))

Symbol	Characteristic	-40°C Min	25°C	85°C	
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Table 8. 100EL SERIES NECL DC CHARACTERISTICS ($V_{CC}= 0.0\text{ V}$; $V_{EE}= 5.0\text{ V}$ (Note 1))

Symbol	Characteristic	-40°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
I_{EE}	Power Supply Current		14	17		14	17		16	19	mA
V_{OH}	Output HIGH Voltage (Note 2)	1085	1005	880	1025	955	880	1025	955	880	mV
V_{OL}	Output LOW Voltage (Note 2)	1830	1695	1555	1810	1705	1620	1810	1705	1620	mV
V_{IH}	Input HIGH Voltage	1165		880	1165		880	1165		880	mV
V_{IL}	Input LOW Voltage	1810		1475	1810		1475	1810		1475	mV
I_{IH}	Input HIGH Current			150			150			150	μA
I_{IL}	Input LOW Current	0.5			0.5			0.5			μA

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

1. Input and output parameters vary 1:1 with V_{CC} . V_{EE} can vary +0.8 V / 0.5 V.
2. Outputs are terminated through a 50 ohm resistor to V_{CC} 2 volts.

Table 9. AC CHARACTERISTICS ($V_{CC}= 5.0\text{ V}$; $V_{EE}= 0.0\text{ V}$ or $V_{CC}= 0.0\text{ V}$; $V_{EE}= 5.0\text{ V}$ (Note 1))

Symbol	Characteristic	-40°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
f_{max}	Maximum Toggle Frequency					1.5					GHz
t_{PLH} t_{PHL}	Propagation Delay to Output D to Q SEL to Q	60 90	220 250	380 410	120 150	230 260	340 370	140 170	250 280	360 390	ps
t_{JITTER}	Random Clock Jitter (RMS)					0.9					ps
t_r t_f	Output Rise/Fall Times Q (20% 80%)	100	225	350	100	225	350	100	225	350	ps

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

1. 10 Series: V_{EE} can vary +0.06 V / 0.5 V.
100 Series: V_{EE} can vary +0.8 V / 0.5 V.

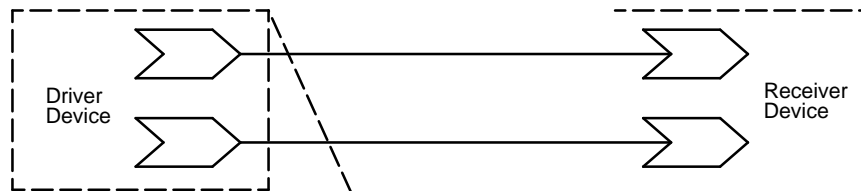


Figure 2. Typical Termination for Output Driver and Device Evaluation
(See Application Note [AND8020/D](#) – Termination of ECL Logic Devices.)

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ORDERING INFORMATION

Device	Package	Shipping†
MC10EL58DG	SOIC 8 (Pb-Free)	98 Units / Rail
MC10EL58DR2G	SOIC 8 (Pb-Free)	2500 / Tape & Reel
MC10EL58DTG		2500 / Tape & Reel

-X-

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⊕ 0. (0.010) ○ ○

-Y-

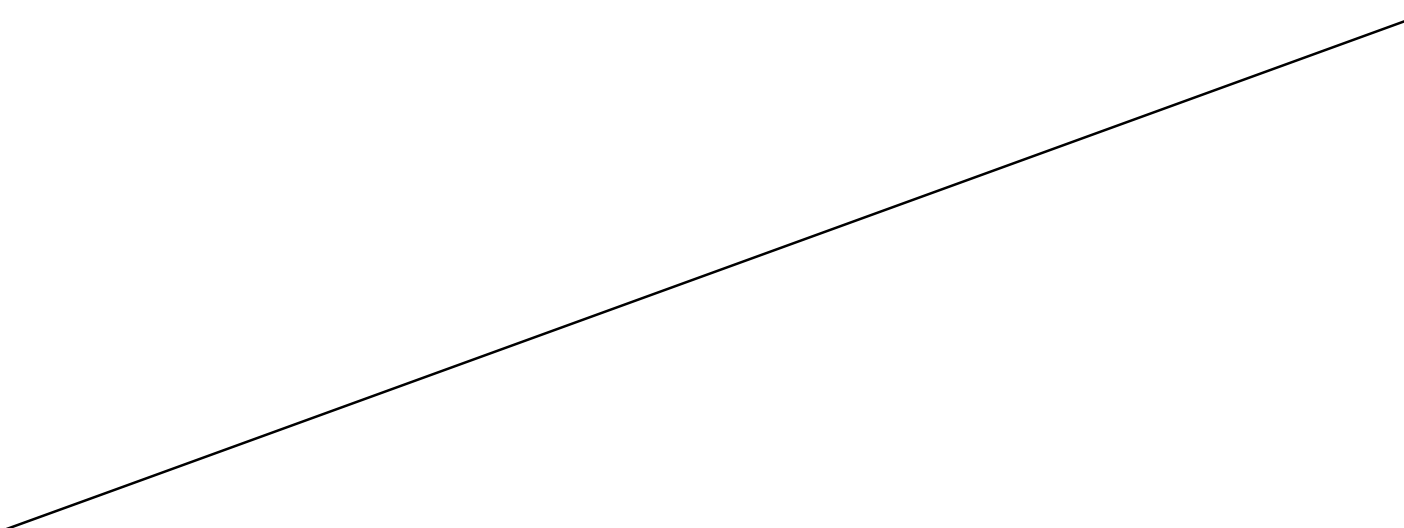
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G

-Z-

C	1.35	1.75	0.053	0.069
D	0.33	0.51	0.013	0.020
G	1.27 BSC		0.050 BSC	
H	0.10	0.25	0.004	0.010
J	0.19	0.25	0.007	0.010
K	0.40	1.27	0.016	0.050
M	0	8	0	8
N	0.25	0.50	0.010	0.020
S	5.80	6.20	0.228	0.244

0. (0.010) ○ 101100 1.000 0.1 1011. 100 0001.1 1001 1 0()01.1 100111.1.100000 5.80 6.20 0.228 0.244 1.0 0 1000 0.)



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