MOTOROLA

Quad 3-State Buffer Low Enable
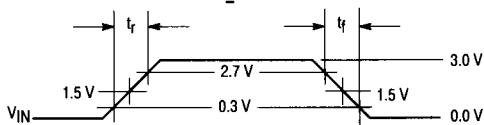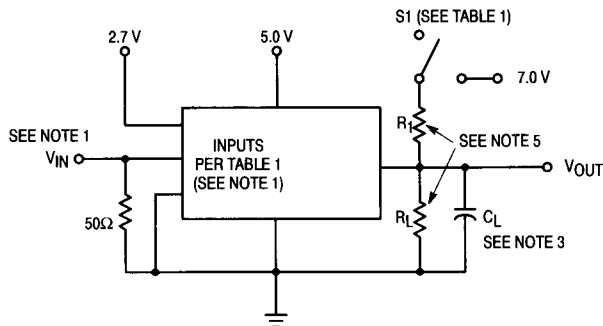
ELECTRICALLY TESTED PER:
MPG54F125

MPO

LOGIC DIAGRAM

	Vcc	C4	A4	Y4	C3	A3	Y3
	14	13	12	11	10	9	8

1	2	3	4	5	6	7
C1	A1	Y1	C2	A2	Y2	GND
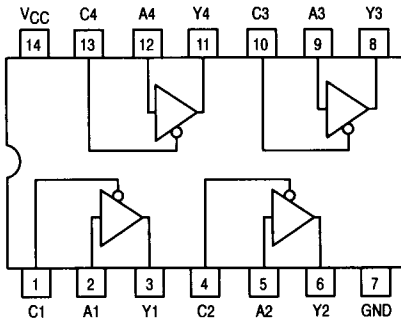
Positive Logic:
Y = A
Output is off (disabled) when C is high.

AC TEST CIRCUIT

S1 (SEE TABLE 1)

2.7 V   5.0 V   7.0 V

SEE NOTE 1
V$_{IN}$

INPUTS
PER TABLE 1
(SEE NOTE 1)

50Ω

R$_1$ SEE NOTE 5

V$_{OUT}$

R$_L$ C$_L$
        SEE NOTE 3

t$_r$ t$_f$

3.0 V
2.7 V
1.5 V   1.5 V
0.3 V
V$_{IN}$ 0.0 V

REFERENCE NOTES ON PAGE 4-39

PIN ASSIGNMENTS

FUNCT.	DIL 632-08	FLATS 717-04	LCC 756A-02	BURN-IN (COND. A)
C1	1	1	2	GND
A1	2	2	3	V$_{CC}$
Y1	3	3	4	OPEN
C2	4	4	6	GND
A2	5	5	8	V$_{CC}$
Y2	6	6	9	OPEN
GND	7	7	10	GND
Y3	8	8	12	OPEN
A3	9	9	13	V$_{CC}$
C3	10	10	14	GND
Y4	11	11	16	OPEN
A4	12	12	18	V$_{CC}$
C4	13	13	19	GND
V$_{CC}$	14	14	20	V$_{CC}$

BURN-IN CONDITIONS:
V$_{CC}$ = 5.0 V MIN/6.0 V MAX

FUNCTION TABLE

Inputs		Output
$\overline{C}$	A	Y
L	L	L
L	H	H
H	X	(Z)

H = HIGH Voltage Level
L = LOW Voltage Level
X = Don't Care
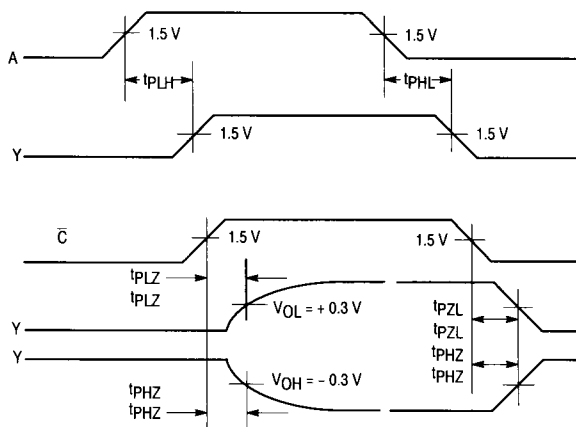
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WAVEFORMS

Table 1

Test Type	S1
t_{PLH}	open
t_{PHL}	open
t_{PHZ}	open
t_{PZH}	open
t_{PLZ}	closed
t_{PZL}	closed

Symbol	Parameter	Limits						Unit	Test Condition (Unless Otherwise Specified)
		+ 25°C		+ 125°C		− 55°C			
	Static Parameters:	Subgroup 1		Subgroup 2		Subgroup 3			
		Min	Max	Min	Max	Min	Max		
V_{OH}	Logical "1" Output Voltage	2.4		2.4		2.4		V	V_{CC} = 4.5 V, I_{OH} = −3.0 mA, V_{IN} = 2.0 V, other input is = 0.8 V.
V_{OL}	Logical "0" Output Voltage		0.5		0.5		0.5	V	V_{CC} = 4.5 V, I_{OL} = 48 mA, V_{IN} = 0.8 V (both inputs).
V_{IC}	Input Clamping Voltage		−1.2					V	V_{CC} = 4.5 V, I_{IN} = −18 mA, other inputs are open.
I_{IH}	Logical "1" Input Current		20		20		20	µA	V_{CC} = 5.5 V, V_{IH} = 2.7 V, V_{IN} = GND, other inputs are open.
I_{IHH}	Logical "1" Input Current		100		100		100	µA	V_{CC} = 5.5 V, V_{IHH} = 7.0 V, V_{IN} = GND, other inputs are open.
I_{IL}	Logical "0" Input Current	0	−20	0	−20	0	−20	µA	V_{CC} = 5.5 V, V_{IL} = 0.5 V, other inputs are open.
I_{IL}	Logical "0" Input Current	0	−20	0	−20	0	−20	µA	V_{CC} = 5.5 V, V_{IL} = 0.5 V, other input = 0 V.
I_{OS}	Output Short Circuit Current	−100	−225	−100	−225	−100	−225	mA	V_{CC} = 5.5 V, V_{IN} = 4.5 V, other input is GND, V_{OUT} = GND.
I_{OZH}	Output Off Current High		50		50		50	µA	V_{CC} = 5.5 V, V_{IN} = 2.0 V, other input = 0 V, V_{OUT} = 2.7 V.
I_{OZL}	Output Off Current Low		−50		−50		−50	µA	V_{CC} = 5.5 V, V_{IN} = 2.0 V, other input = 4.5 V, V_{OUT} = 0.5 V.
I_{CCH}	Power Supply Current		24		24		24	mA	V_{CC} = 5.5 V, V_{IN} = 4.5 V, other input = 0 V.
I_{CCL}	Power Supply Current		40		40		40	mA	V_{CC} = 5.5 V, V_{IN} = 0 V (all inputs).
I_{CCZ}	Power Supply Current Off		35		35		35	mA	V_{CC} = 5.5 V, V_{IN} = 4.5 V, other inputs are open.
V_{IH}	Logical "1" Input Voltage	2.0		2.0		2.0		V	V_{CC} = 4.5 V.
V_{IL}	Logical "0" Input Voltage		0.8		0.8		0.8	V	V_{CC} = 4.5 V.

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Symbol	Parameter	Limits						Unit	Test Condition (Unless Otherwise Specified)
		+25°C		+125°C		−55°C			
	Functional Tests	Subgroup 7		Subgroup 8A		Subgroup 8B			per Truth Table with V_{CC} = 4.5 V, (**Repeat at**) V_{CC} = 5.5 V, V_{IL} = 0.5 V, and V_{IH} = 2.4 V.

Symbol	Parameter	Limits						Unit	Test Condition (Unless Otherwise Specified)
	Switching Parameters:	+25°C		+125°C		−55°C			
		Subgroup 9		Subgroup 10		Subgroup 11			
		Min	Max	Min	Max	Min	Max		
t_{PHL}	Propagation Delay /Data-Output Output High-Low	3.0	7.5	3.0	9.0	3.0	9.0	ns	V_{CC} = 5.0 V, C_L = 50 pF, R_L = R_1 = 500 Ω.
t_{PLH}	Propagation Delay /Data-Output Output Low-High	2.0	6.0	2.0	7.5	2.0	7.5	ns	V_{CC} = 5.0 V, C_L = 50 pF, R_L = R_1 = 500 Ω.
t_{PLZ}	Propagation Delay /Data-Output Output Low-High	1.5	5.5	1.5	7.0	1.5	7.0	ns	V_{CC} = 5.0 V, C_L = 50 pF, R_L = R_1 = 500 Ω.
t_{PHZ}	Propagation Delay /Data-Output Output High-Low	1.5	5.0	1.5	7.0	1.5	7.0	ns	V_{CC} = 5.0 V, C_L = 50 pF, R_L = R_1 = 500 Ω.
t_{PZL}	Propagation Delay /Data-Output Output Low-High	3.0	8.0	3.0	10	3.0	10	ns	V_{CC} = 5.0 V, C_L = 50 pF, R_L = R_1 = 500 Ω.
t_{PZH}	Propagation Delay /Data-Output Output High-Low	3.0	7.5	3.0	9.0	3.0	9.0	ns	V_{CC} = 5.0 V, C_L = 50 pF, R_L = R_1 = 500 Ω.

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