

**MOTOROLA**

T-43-22

Quad 2-Input NOR Gate

ELECTRICALLY TESTED PER:
MPG 1662 (–30°C to +85°C)

- $P_D = 240$ mW typ/pkg
- $t_{pd} = 0.9$ ns typ (510 ohm load)
= 1.1 ns typ (50 ohm load)
- Full Load Current, $I_L = -25$ mA dc max

ABSOLUTE MAXIMUM RATINGS:	Symbol	Min	Max	Unit
Power Supply Voltage ($V_{CC} = 0$)	V_{CC}	–8.0	0	Vdc
Base Input Voltage ($V_{CC} = 0$)	V_{IN}	0	V_{EE}	Vdc
Output Source Current Continuous	I_O		< 40	mA dc
Storage Temperature Range	T_{stg}	–55	+125	°C
Operating Temperature Range	T_A	–30	+85	°C

PIN ASSIGNMENTS

FUNCTION	DIL	FLATS	BURN-IN (CONDITION C)
V_{CC1}	1	5	GND
AOUT	2	6	51 Ω to V_{TT}
BOUT	3	7	51 Ω to V_{TT}
A _{IN1}	4	8	OPEN
A _{IN2}	5	9	OPEN
B _{IN1}	6	10	OPEN
B _{IN2}	7	11	OPEN
V_{EE}	8	12	V_{EE}
N.C.	9	13	OPEN
C _{IN1}	10	14	OPEN
C _{IN2}	11	15	GND
D _{IN1}	12	16	OPEN
D _{IN2}	13	1	GND
COUT	14	2	51 Ω to V_{TT}
DOUT	15	3	51 Ω to V_{TT}
V_{CC2}	16	4	GND

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

Military 1662

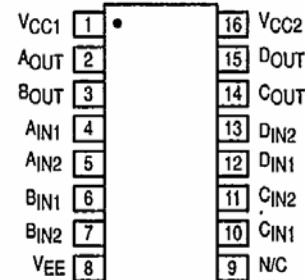


AVAILABLE AS

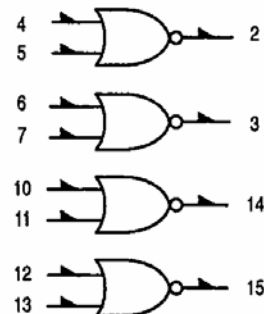
- 1) JAN: N/A
 - 2) SMD: N/A
 - 3) 883: N/A
 - 4) 1662/BXA *
- X = CASE OUTLINE AS FOLLOWS:

PACKAGE: CERDIP: E
CERFLAT: F

* 883 Processing (Non-Compliant)



LOGIC DIAGRAM



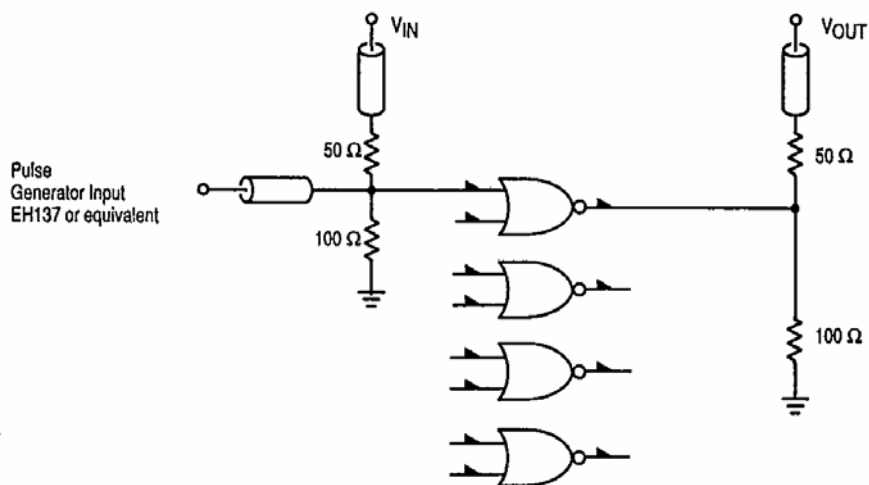


Figure 1. Test Circuit

NOTES

1. Coaxial cables (Equal lengths, typ 2 places) to scope.
2. $t_r = t_f = 1.5 \text{ ns} \pm 0.2 \text{ ns}$.
3. PRR = 20 MHz, 50% duty cycle.
4. Unused outputs connected to a 50Ω resistor to ground.

Temp.	25°C	85°C	-30°C
V_{ILL}	0.31 V	0.34 V	0.28 V
V_{IHH}	1.11 V	1.19 V	1.04 V

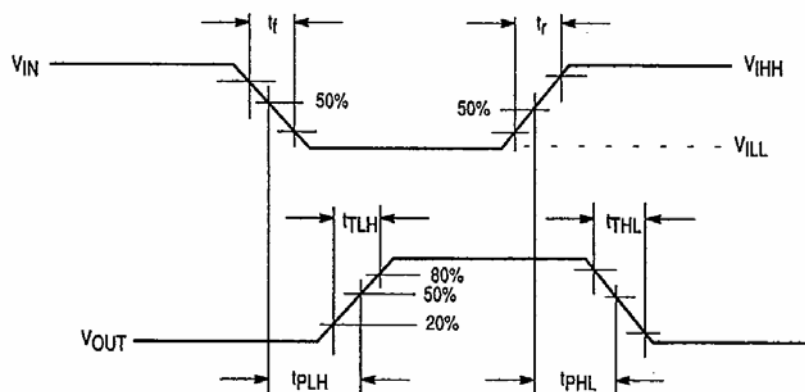


Figure 2. Test Circuit Waveforms

1662 QUIESCENT LIMIT TABLE

Test Temperature	Test Voltage Values (Volts)					
	V _{IH}	V _{IL}	V _{IHA}	V _{ILA}	V _{EE}	V _{EEL}
T _A = 25 °C	-0.81	-1.85	-1.095	-1.485	-5.2	-3.2
T _A = 85 °C	-0.70	-1.83	-1.025	-1.440	-5.2	-3.2
T _A = -30 °C	-0.875	-1.89	-1.180	-1.515	-5.2	-3.2

Symbol	Parameter	Limits						Units	TEST VOLTAGE APPLIED TO PINS BELOW																
		+ 25 °C		+ 85 °C		- 30 °C			Pinouts referenced are for DIL package, check Pin Assignments VCC = 0.0 V, Output Load = 50 Ω to - 2.0 V																
Functional Parameters:		Subgroup 1		Subgroup 2		Subgroup 3			V _{IH}	V _{IL}	V _{IHA}	V _{ILA}	V _{CC}	V _{EE}	P.U.T.										
		Min	Max	Min	Max	Min	Max																		
		V _{OH}	High Output Voltage	- 0.96	- 0.81	- 0.89	- 0.7									- 1.045	- 0.875	V		4 - 7, 10 - 13			1, 16	8	2, 3, 14, 15
		V _{OL}	Low Output Voltage	- 1.85	- 1.62	- 1.83	- 1.575									- 1.89	- 1.65	V	4 - 7, 10 - 13				1, 16	8	2, 3, 14, 15
V _{OHA}	High Output Voltage	- 0.98	- 0.81	- 0.91	- 0.7	- 1.065	- 0.875	V				4 - 7, 10 - 13	1, 16	8	2, 3, 14, 15										
V _{OLA}	Low Output Voltage	- 1.85	- 1.60	- 1.83	- 1.555	- 1.89	- 1.63	V			4 - 7, 10 - 13		1, 16	8	2, 3, 14, 15										
I _{EE}	Power Supply Drain Current	-56		-56		-56		mA					1, 16	8	8										
I _{INH}	Input Current High		350		350		350	μA	4 - 7, 10 - 13				1, 16	8	4 - 7, 10 - 13										
I _{INL}	Input Current Low	0.5		0.3		0.5		μA		4 - 7, 10 - 13			1, 16	8	4 - 7, 10 - 13										

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1662 QUIESCENT LIMIT TABLE

Test Temperature	Test Voltage Values (Volts)					
	V _{IH}	V _{IL}	V _{IHA}	V _{ILA}	V _{EE}	V _{CC}
T _A = 25 °C	-0.91	-1.85	-1.095	-1.485	-5.2	+2.0
T _A = 85 °C	-0.70	-1.83	-1.025	-1.440	-5.2	+2.0
T _A = -30 °C	-0.875	-1.89	-1.180	-1.515	-5.2	+2.0

Symbol	Parameter	Limits						Units	TEST VOLTAGE APPLIED TO PINS BELOW				
	Functional Parameters:	+ 25 °C		+ 85 °C		- 30 °C			Pinouts referenced are for DIL package, check Pin Assignments Output Load = 50 Ω to GND				
		Min	Max	Min	Max	Min	Max						
t _{TLH}	Rise Time		2.1		2.3		2.2	ns	5, 6 11, 12	2, 3, 14, 16	1, 16	8	2, 3, 14, 15
t _{THL}	Fall Time		2.1		2.3		2.2	ns	5, 6 11, 12	2, 3, 14, 16	1, 16	8	2, 3, 14, 15
t _{PHL}	Propagation Delay High to Low A, B and D		1.9		2.1		2.0	ns	5, 6 11, 12	2, 3, 14, 16	1, 16	8	2, 3, 14, 15
t _{PLH}	Propagation Delay Low to High A, B and D		2.1		2.1		2.1	ns	5, 6 11, 12	2, 3, 14, 16	1, 16	8	2, 3, 14, 15
t _{PHL}	Propagation Delay High to Low C		2.0		2.2		2.1	ns	5, 6 11, 12	2, 3, 14, 16	1, 16	8	2, 3, 14, 15
t _{PLH}	Propagation Delay Low to High C		2.1		2.1		2.1	ns	5, 6 11, 12	2, 3, 14, 16	1, 16	8	2, 3, 14, 15