



Quint 2-Input AND/NAND Gate

Product Preview

**ELECTRICALLY TESTED PER:
100E504**

The 100E504 is a quint 2-input **AND/NAND** gate. The function output F is the OR of all five AND gate outputs, while $\bar{F}$ is the NOR. The Q outputs need not be terminated if only the F outputs are to be used.

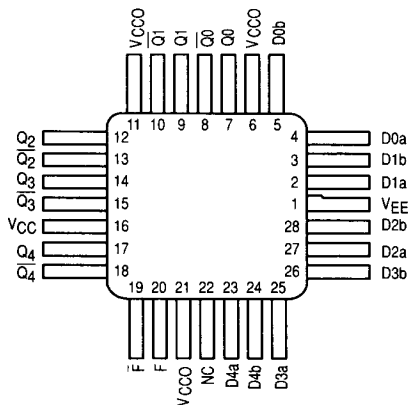
- 600 ps Max. Propagation Delay
- OR/NOR Function Outputs
- Extended 100E V_{EE} Range of - 4.2 V to - 5.46 V
- 75 k Ω Input Pulldown Resistors

PIN NAME

Pin	Function
D0a - D4b	Data Inputs
Q0 - Q4	AND Outputs
$\bar{Q}_0 - \bar{Q}_4$	NAND Outputs
F	OR Output
$\bar{F}$	NOR Output

FUNCTION OUTPUTS

$$F = (D0a \cdot D0b) + (D1a \cdot D1b) + (D2a \cdot D2b) + (D3a \cdot D3b) + (D4a \cdot D4b)$$



Military 100E504



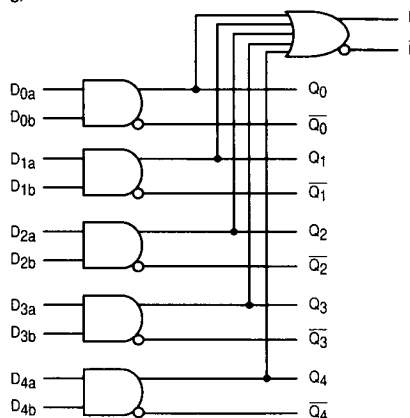
AVAILABLE AS

- 1) JAN: N/A
- 2) SMD: N/A
- 3) 883: Planned

X = CASE OUTLINE AS FOLLOWS:

**PACKAGE: NON-Compliant
QFP: X**

LOGIC DIAGRAM



5

This document contains information on a product under development. Motorola reserves the right to change or discontinue this product without notice.

100E504

100E Series DC CHARACTERISTICS: $V_{EE} = -4.2 \text{ V to } -5.46 \text{ V}$, $V_{CC} = V_{CCO} = \text{GND}$; $-55^{\circ}\text{C to } +125^{\circ}\text{C}$

Symbol	Parameter	Min	Max	Units	TEST CONDITION APPLIED:		
V _{OH}	Output HIGH Voltage	-1025	-880	mV	V _{IN} = V _{IH} (max) or V _{IN} = V _{IL} (min)	Loading with 50Ω to -2.0 V	
V _{OL}	Output LOW Voltage	-1810	-1620	mV			
V _{OHA}	Output HIGH Voltage	-1035		mV	V _{IN} = V _{IH} (min) or V _{IN} = V _{IL} (max)	Loading with 50Ω to -2.0 V	
V _{OLA}	Output LOW Voltage		-1610	mV			
V _{IH}	Input HIGH Voltage	-1165	-880	mV	Guaranteed HIGH Signal for All Inputs		
V _{IL}	Input LOW Voltage	-1810	-1475	mV	Guaranteed LOW Signal for All Inputs		
I _{IL}	Input LOW Current	0.5		μA	V _{IN} = V _{IL} (min)		

DC CHARACTERISTICS: $V_{EE} = V_{EE}(\text{min}) \text{ to } V_{EE}(\text{max})$, $V_{CC} = V_{CCO} = \text{GND}$

Symbol	Parameter	Limits						Units	TEST CONDITION APPLIED:
	Functional Parameters:	+ 25° C		+ 125° C		- 55° C			
		Min	Max	Min	Max	Min	Max		
I_{IH}	Input High Current		200		200		200	μA	
I_{EE}	Power Supply Current		46		53		46	mA	

AC CHARACTERISTICS: $V_{EE} = V_{EE}(\text{min}) \text{ to } V_{EE}(\text{max})$, $V_{CC} = V_{CCO} = \text{GND}$

Symbol	Parameter	Limits						Units	TEST CONDITION APPLIED:
	Functional Parameters:	+ 25° C		+ 125° C		- 55° C			
		Min	Max	Min	Max	Min	Max		
t_{PLH} t_{PHL}	Propagation Delay to Output								
	D to Q	225	600	225	600	225	600	ps	
	D to F	500	1000	500	1000	500	1000	ps	
t_{Skew}	Within-device Skew								
	D to Q	75		75		75		ps	(Note 1)
t_r t_f	Rise/Fall Times 20 - 80%								
	Q	275	700	275	700	275	700	ps	
	F	300	700	300	700	300	700	ps	

1. Within-device skew is defined as identical transitions on similar paths through a device.