MOTOROLA

Quint 2-Input AND/NAND Gate

Military 100E504

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 $\overline{F}$ 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 kΩ Input Pulldown Resistors

AVAILABLE AS

1) JAN: N/A
2) SMD: N/A
3) 883: Planned
X = CASE OUTLINE AS FOLLOWS:

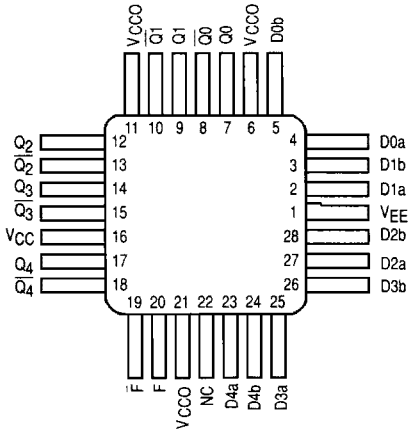
PACKAGE: NON-Compliant
QFP: X

PIN NAME

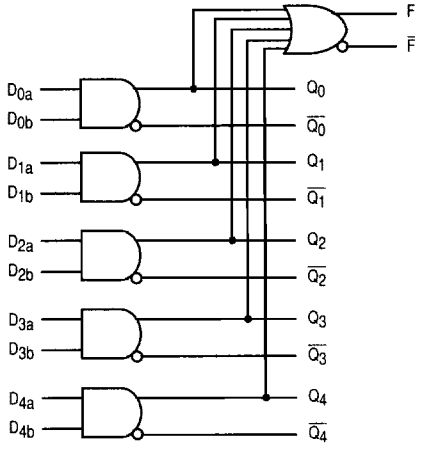
Pin	Function
D_{0a} - D_{4b}	Data Inputs
Q_0 - Q_4	AND Outputs
$\overline{Q_0}$ - $\overline{Q_4}$	NAND Outputs
F	OR Output
$\overline{F}$	NOR Output

FUNCTION OUTPUTS

$F = (D_{0a} \bullet D_{0b}) + (D_{1a} \bullet D_{1b}) + (D_{2a} \bullet D_{2b}) + (D_{3a} \bullet D_{3b}) + (D_{4a} \bullet D4_b)$



LOGIC DIAGRAM



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

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

Symbol	Parameter	Min	Max	Units	TEST CONDITION APPLIED:	
V_{OH}	Output HIGH Voltage	-1025	-880	mV	$V_{IN} = V_{IH(max)}$	Loading with
V_{OL}	Output LOW Voltage	-1810	-1620	mV	or $V_{IN} = V_{IL(min)}$	50Ω to -2.0 V
V_{OHA}	Output HIGH Voltage	-1035		mV	$V_{IN} = V_{IH(min)}$	Loading with
V_{OLA}	Output LOW Voltage		-1610	mV	or $V_{IN} = V_{IL(max)}$	50Ω to -2.0 V
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: $V_{EE} = V_{EE(min)}$ to $V_{EE(max)}$, $V_{CC} = V_{CCO}$ = 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: $V_{EE} = V_{EE(min)}$ to $V_{EE(max)}$, $V_{CC} = V_{CCO}$ = 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.