



# Quint 2-Input AND/NAND Gate

*Product Preview*  
ELECTRICALLY TESTED PER:  
**10E504**

The 10E504 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.

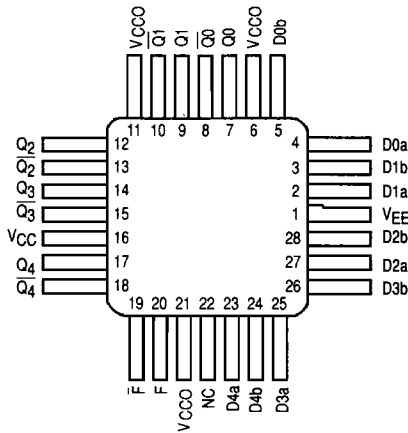
- 600 ps Max. Propagation Delay
- OR/NOR Function Outputs
- 75 k $\Omega$  Input Pulldown Resistors

### PIN NAME

Pin	Function
D <sub>0a</sub> - D <sub>4b</sub>	Data Inputs
Q <sub>0</sub> - Q <sub>4</sub>	AND Outputs
$\bar{Q}_0$ - $\bar{Q}_4$	NAND Outputs
F	OR Output
$\bar{F}$	NOR Output

### FUNCTION OUTPUTS

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



**Military 10E504**

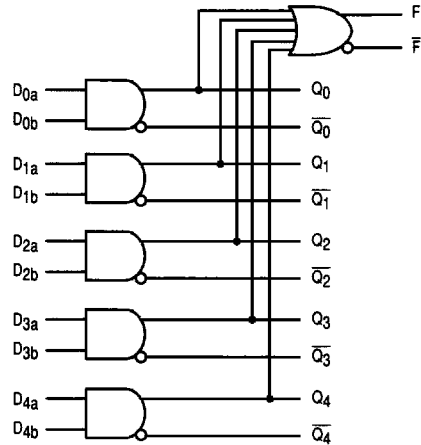


AVAILABLE AS

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

PACKAGE: NON-Compliant  
QFP: X

### LOGIC DIAGRAM



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

# 10E504

## 10E Series DC CHARACTERISTICS: $V_{EE} = -5.2\text{ V} \pm 5\%$ ; $V_{CC} = V_{CCO} = \text{GND}^1$

Symbol	Parameter	Limits						Units
		+ 25° C		+ 125° C		- 55° C		
		Min	Max	Min	Max	Min	Max	
$V_{OH}$	Output HIGH Voltage	-980	-810	TBA	TBA	TBA	TBA	mV
$V_{OL}$	Output LOW Voltage	-1950	-1630	TBA	TBA	TBA	TBA	mV
$V_{IH}$	Input HIGH Voltage	-1130	-810	TBA	TBA	TBA	TBA	mV
$V_{IL}$	Input LOW Voltage	-1950	-1480	TBA	TBA	TBA	TBA	mV
$I_{IL}$	Input LOW Current	0.5		TBA	TBA	TBA	TBA	$\mu\text{A}$

1. 10E series circuits are designed to meet the dc specifications shown in the table, after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse air flow greater than 500 lpm is maintained. Outputs are terminated through a 50 $\Omega$  resistor to -2.0 volts, except bus outputs where specified, are terminated into 25 $\Omega$ .

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

Symbol	Parameter	Limits						Units	TEST CONDITION APPLIED:
		+ 25° C		+ 125° C		- 55° C			
		Min	Max	Min	Max	Min	Max		
$I_{IH}$	Input High Current		200		200		200	$\mu\text{A}$	
$I_{EE}$	Power Supply Current		46		46		46	mA	

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

Symbol	Parameter	Limits						Units	TEST CONDITION APPLIED:
		+ 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.