

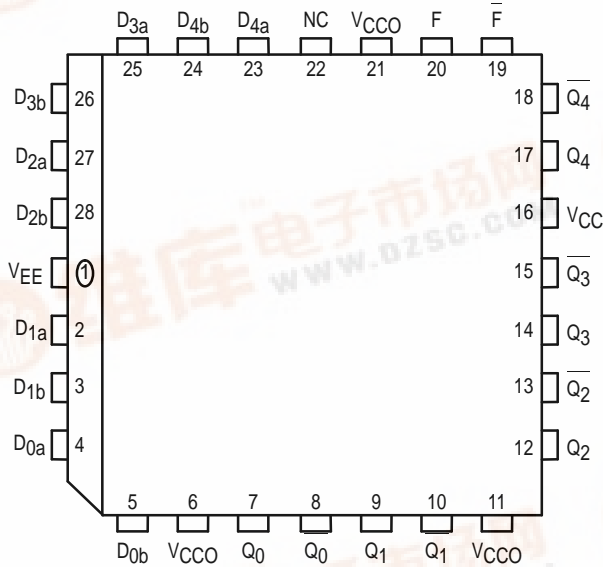
**MOTOROLA**  
SEMICONDUCTOR TECHNICAL DATA

# Quint 2-Input AND/NAND Gate

The MC10E/100E104 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.

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

Pinout: 28-Lead PLCC (Top View)



\* All VCC and VCCO pins are tied together on the die.

**PIN NAMES**

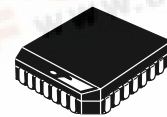
Pin	Function
D0a - D4b	Data Inputs
$Q_0 - \bar{Q}_4$	AND Outputs
$Q_0 - Q_4$	NAND Outputs
F	OR Output
$\bar{F}$	NOR Output

**FUNCTION OUTPUTS**

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

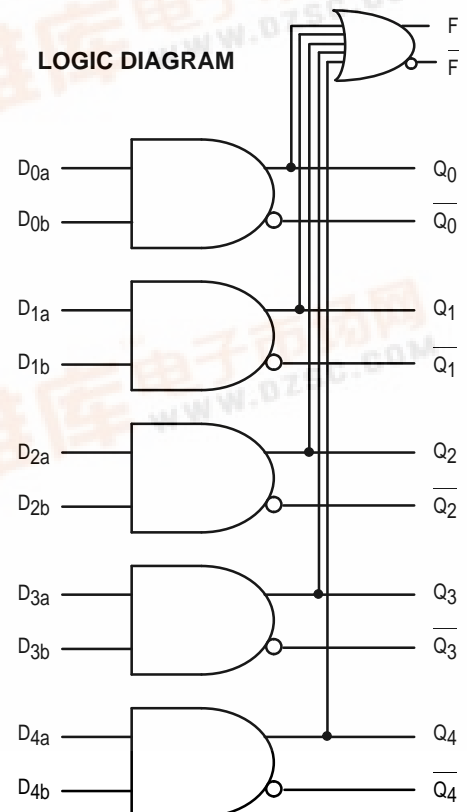
**MC10E104**  
**MC100E104**

**QUINT 2-INPUT**  
**AND/NAND GATE**



**FN SUFFIX**  
PLASTIC PACKAGE  
CASE 776-02

**LOGIC DIAGRAM**



# MC10E104 MC100E104

## DC CHARACTERISTICS ( $V_{EE} = V_{EE(min)}$ to $V_{EE(max)}$ ; $V_{CC} = V_{CCO} = GND$ )

Symbol	Characteristic	0°C			25°C			85°C			Unit	Condition
		min	typ	max	min	typ	max	min	typ	max		
$I_{IH}$	Input HIGH Current			200			200			200	$\mu A$	
$I_{EE}$	Power Supply Current										mA	
	10E		38	46		38	46		38	46		
	100E		38	46		38	46		44	53		

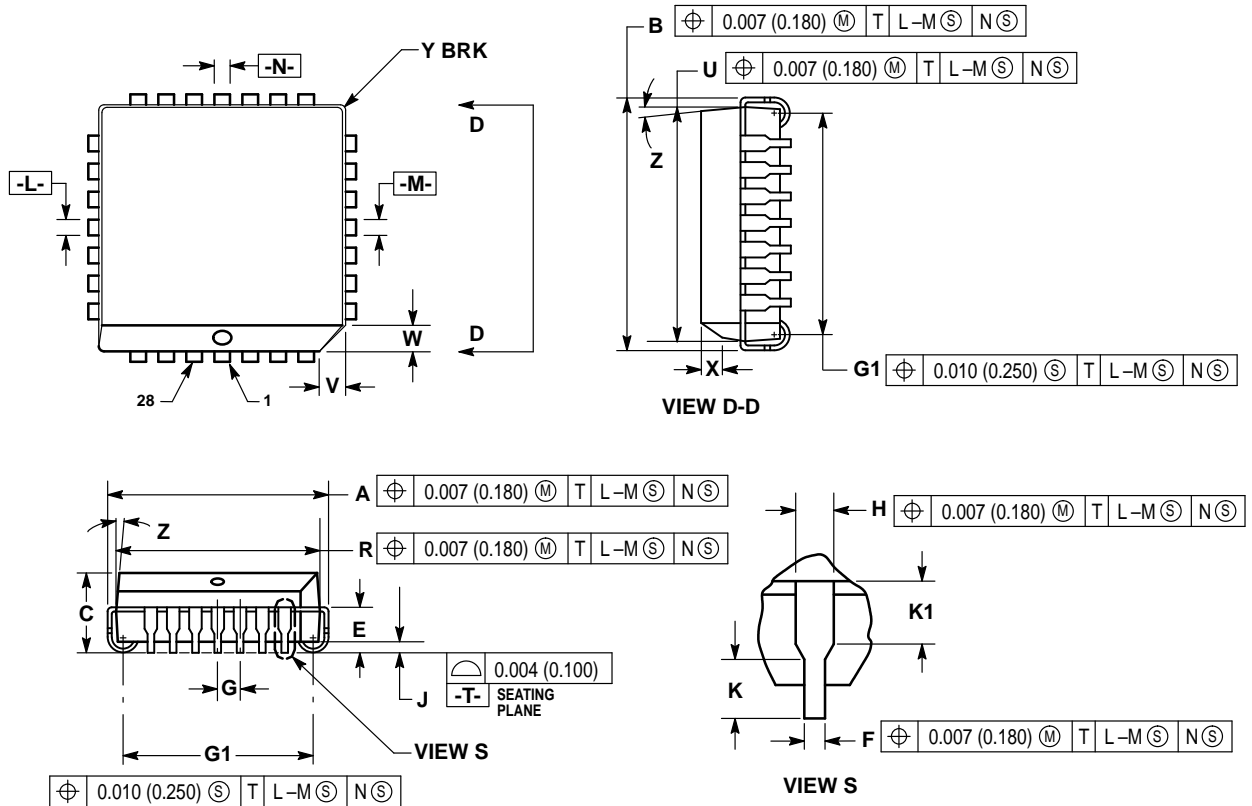
## AC CHARACTERISTICS ( $V_{EE} = V_{EE(min)}$ to $V_{EE(max)}$ ; $V_{CC} = V_{CCO} = GND$ )

Symbol	Characteristic	0°C			25°C			85°C			Unit	Condition
		min	typ	max	min	typ	max	min	typ	max		
$t_{PLH}$ $t_{PHL}$	Propagation Delay to Output D to Q D to F	225 500	385 725	600 1000	225 500	385 725	600 1000	225 500	385 725	600 1000	ps	
$t_{SKEW}$	Within-Device Skew D to Q		75			75			75			
$t_r$ $t_f$	Rise/Fall Times 20 - 80% Q F	275 300	425 475	700 700	275 300	425 475	700 700	275 300	425 475	700 700	ps	

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

OUTLINE DIMENSIONS

FN SUFFIX  
 PLASTIC PLCC PACKAGE  
 CASE 776-02  
 ISSUE D




NOTES:

- DATUMS -L-, -M-, AND -N- DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
- DIM G1, TRUE POSITION TO BE MEASURED AT DATUM -T-, SEATING PLANE.
- DIM R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- CONTROLLING DIMENSION: INCH.
- THE PACKAGE TOP MAY BE SMALLER THAN THE PACKAGE BOTTOM BY UP TO 0.012 (0.300). DIMENSIONS R AND U ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY EXCLUSIVE OF MOLD FLASH, TIE BAR BURRS, GATE BURRS AND INTERLEAD FLASH, BUT INCLUDING ANY MISMATCH BETWEEN THE TOP AND BOTTOM OF THE PLASTIC BODY.
- DIMENSION H DOES NOT INCLUDE DAMBAR PROTRUSION OR INTRUSION. THE DAMBAR PROTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO BE GREATER THAN 0.037 (0.940). THE DAMBAR INTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO BE SMALLER THAN 0.025 (0.635).

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.485	0.495	12.32	12.57
B	0.485	0.495	12.32	12.57
C	0.165	0.180	4.20	4.57
E	0.090	0.110	2.29	2.79
F	0.013	0.019	0.33	0.48
G	0.050 BSC		1.27 BSC	
H	0.026	0.032	0.66	0.81
J	0.020	—	0.51	—
K	0.025	—	0.64	—
R	0.450	0.456	11.43	11.58
U	0.450	0.456	11.43	11.58
V	0.042	0.048	1.07	1.21
W	0.042	0.048	1.07	1.21
X	0.042	0.056	1.07	1.42
Y	—	0.020	—	0.50
Z	2°	10°	2°	10°
G1	0.410	0.430	10.42	10.92
K1	0.040	—	1.02	—

# MC10E104 MC100E104

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