



# F100107

## Quint Exclusive OR/NOR Gate

### General Description

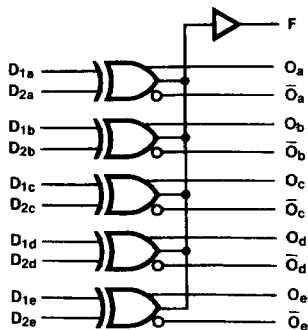
The F100107 is monolithic quint exclusive-OR/NOR gate. The Function output is the wire-OR of all five exclusive-OR outputs.

Refer to the F100307 datasheet for:

- PCC Packaging
- Lower Power
- Military Versions
- Extended Voltage Specs (-4.2V to -5.7V)

**Ordering Code:** See Section 8

### Logic Symbol



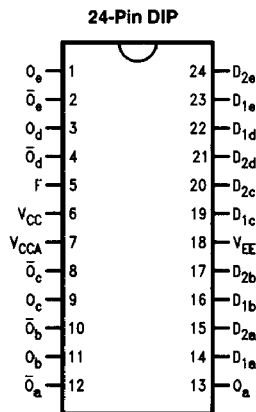
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### Logic Equation

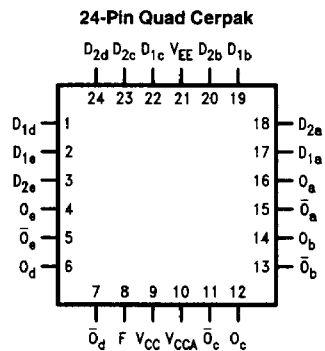
$$F = (D_{1a} \oplus D_{2a}) + (D_{1b} \oplus D_{2b}) + (D_{1c} \oplus D_{2c}) + (D_{1d} \oplus D_{2d}) + (D_{1e} \oplus D_{2e})$$

Pin Names	Description
$D_{na}-D_{ne}$	Data Inputs
F	Function Output
$O_a-O_e$	Data Outputs
$\bar{O}_a-\bar{O}_e$	Complementary Data Outputs

### Connection Diagrams



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TL/F/9838-2



### DC Electrical Characteristics

$V_{EE} = -4.2V$  to  $-4.8V$  unless otherwise specified,  $V_{CC} = V_{CCA} = GND$ ,  $T_C = 0^\circ C$  to  $+85^\circ C$

Symbol	Parameter	Min	Typ	Max	Units	Conditions
$I_{IH}$	Input HIGH Current $D_{2a}-D_{2e}$ $D_{1a}-D_{1e}$			250 350	$\mu A$	$V_{IN} = V_{IH} (Max)$
$I_{EE}$	Power Supply Current	-96	-66	-46	mA	Inputs Open

### Ceramic Dual-In-Line Package AC Electrical Characteristics

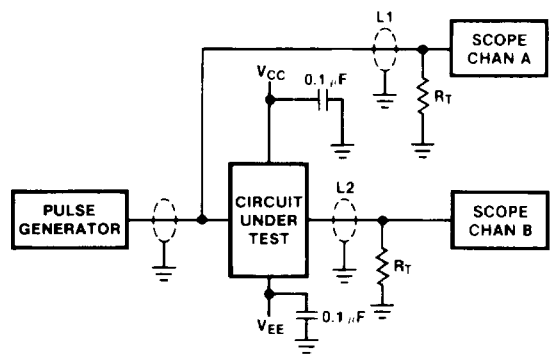
$V_{EE} = -4.2V$  to  $-4.8V$ ,  $V_{CC} = V_{CCA} = GND$

Symbol	Parameter	$T_C = 0^\circ C$		$T_C = +25^\circ C$		$T_C = +85^\circ C$		Units	Conditions
		Min	Max	Min	Max	Min	Max		
$t_{PLH}$ $t_{PHL}$	Propagation Delay $D_{2a}-D_{2e}$ to O, $\bar{O}$	0.55	1.90	0.55	1.80	0.55	1.90	ns	Figures 1 and 2
$t_{PLH}$ $t_{PHL}$	Propagation Delay $D_{1a}-D_{1e}$ to O, $\bar{O}$	0.55	1.70	0.55	1.60	0.55	1.70	ns	
$t_{PLH}$ $t_{PHL}$	Propagation Delay Data to F	1.15	2.75	1.15	2.75	1.15	3.00	ns	
$t_{TLH}$ $t_{THL}$	Transition Time 20% to 80%, 80% to 20%	0.45	1.80	0.45	1.65	0.45	1.80	ns	

### Cerpak AC Electrical Characteristics

$V_{EE} = -4.2V$  to  $-4.8V$ ,  $V_{CC} = V_{CCA} = GND$

Symbol	Parameter	$T_C = 0^\circ C$		$T_C = +25^\circ C$		$T_C = +85^\circ C$		Units	Conditions
		Min	Max	Min	Max	Min	Max		
$t_{PLH}$ $t_{PHL}$	Propagation Delay $D_{2a}-D_{2e}$ to O, $\bar{O}$	0.55	1.70	0.55	1.60	0.55	1.70	ns	Figures 1 and 2
$t_{PLH}$ $t_{PHL}$	Propagation Delay $D_{1a}-D_{1e}$ to O, $\bar{O}$	0.55	1.50	0.55	1.40	0.55	1.50	ns	
$t_{PLH}$ $t_{PHL}$	Propagation Delay Data to F	1.15	2.55	1.15	2.55	1.15	2.80	ns	
$t_{TLH}$ $t_{THL}$	Transition Time 20% to 80%, 80% to 20%	0.45	1.70	0.45	1.55	0.45	1.70	ns	



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**Notes:**  
 $V_{CC}, V_{CCA} = +2V$ ,  $V_{EE} = -2.5V$   
 L1 and L2 = equal length 50Ω impedance lines  
 $R_T = 50\Omega$  terminator internal to scope  
 Decoupling 0.1  $\mu F$  from GND to  $V_{CC}$  and  $V_{EE}$   
 All unused outputs are loaded with 50Ω to GND  
 $C_L$  = Fixture and stray capacitance  $\leq 3$  pF

FIGURE 1. AC Test Circuit

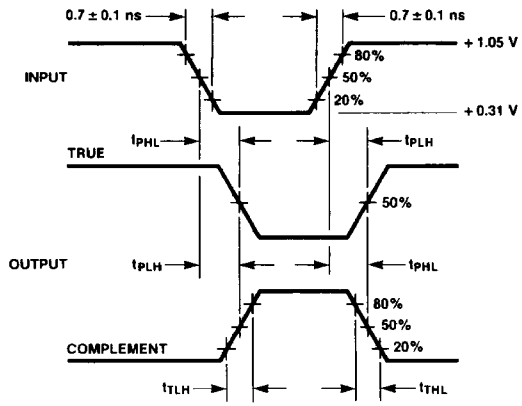


FIGURE 2. Propagation Delay and Transition Times

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