



**MICROCIRCUIT DATA SHEET**

**CN54F02-X REV 0A0**

Original Creation Date: 06/25/97  
Last Update Date: 07/08/97  
Last Major Revision Date: 06/25/97

**QUAD 2 INPUT NOR GATE**

**General Description**

This device contains four independent gates, each of which performs the logic NOR function.

**Industry Part Number**

54F02

**NS Part Numbers**

54F02DC

**Prime Die**

M002

**Processing**

(blank)

**Quality Conformance Inspection**

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Subgrp	Description	Temp ( °C)
1	Static tests at	+25
2	Static tests at	+70
3	Static tests at	0
4	Dynamic tests at	+25
5	Dynamic tests at	+70
6	Dynamic tests at	0
7	Functional tests at	+25
8A	Functional tests at	+70
8B	Functional tests at	0
9	Switching tests at	+25
10	Switching tests at	+70
11	Switching tests at	0

### (Absolute Maximum Ratings)

(Note 1)

Storage Temperature	-65 C to +150 C
Ambient Temperature under Bias	-55 C to +125 C
Junction Temperature under Bias	-55 C to +175 C
Vcc Pin Potential to Ground Pin	-0.5V to +7.0V
Input Voltage (Note 2)	-0.5V to +7.0V
Input Current (Note 2)	-30mA to +5.0mA
Voltage Applied to Output in HIGH State (with Vcc=0V)	
Standard Output	-0.5V to Vcc
TRI-STATE Output	-0.5V to +5.5V
Current Applied to Output in LOW State (Max)	twice the rated Iol(mA)

Note 1: Absolute Maximum ratings are those values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

Note 2: Either voltage limit or current limit is sufficient to protect inputs.

### Recommended Operating Conditions

Free Air Ambient Temperature Commercial	0 C to +70 C
Supply Voltage Commercial	+4.5V to +5.5V

## Electrical Characteristics

### DC PARAMETER

(The following conditions apply to all the following parameters, unless otherwise specified.)  
 DC: VCC 4.5V to 5.5V, Temp range: 0C to +70C

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
VIH	Input HIGH Voltage	Recognized as a HIGH signal	1	INPUTS	2.0		V	1, 2, 3
VIL	Input LOW Voltage	Recognized as a LOW signal	1	INPUTS		0.8	V	1, 2, 3
VCD	Input Clamp Diode Voltage	VCC=4.5V, IIN=-18mA	2, 3	INPUTS		-1.2	V	1, 2, 3
VOH	Output HIGH Voltage	VCC=4.5V, IOH=-1.0mA	2, 3	OUTPUTS	2.5		V	1, 2, 3
		VCC=4.75V, IOH=-1.0mA	2, 3	OUTPUTS	2.7		V	1, 2, 3
VOL	Output LOW Voltage	VCC=4.5V, IOL=20mA	2, 3	OUTPUTS		0.5	V	1, 2, 3
IIH	Input HIGH Current	VCC=5.5V, VIN=2.7V	2, 3	INPUTS		5.0	uA	1, 2, 3
IBVI	Input HIGH Current Breakdown Test	VCC=5.5V, VIN=7.0V	2, 3	INPUTS		7.0	uA	1, 2, 3
ICEX	Output HIGH Leakage Current	VCC=5.5V, VOUT = VCC	2, 3	OUTPUTS		100	uA	1, 2, 3
VID	Input Leakage Test	VCC = 0.0V, IID = 1.9uA, All other pins grounded	2, 3	INPUTS	4.75		V	1, 2, 3
IOD	Output Leakage Circuit Current	VCC = 0.0V, VIOD = 150mV, All other pins grounded	2, 3	OUTPUTS		4.75	uA	1, 2, 3
IIL	Input LOW Current	VCC=5.5V, VIN=0.5V	2, 3	INPUTS		-0.6	mA	1, 2, 3
IOS	Output Short-Circuit Current	VCC=5.5V, VOUT = 0V	2, 3	OUTPUTS	-60	-150	mA	1, 2, 3
ICCH	Power Supply Current	VCC=5.5V, VO = HIGH	2, 3	VCC		5.6	mA	1, 2, 3
ICCL	Power Supply Current	VCC=5.5V, VO = LOW	2, 3	VCC		13.0	mA	1, 2, 3

## Electrical Characteristics

### AC PARAMETER

(The following conditions apply to all the following parameters, unless otherwise specified.)  
AC: CL=50pf, RL=500 OHMS, TR=2.5ns, TF=2.5ns SEE AC FIGS, Temp Range: 0C to +70C

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
tpLH	Propagation Delay	VCC=+5.0V @ +25C, VCC=4.5V & 5.5V @ 0/+70C	2, 3	An/Bn to $\bar{O}n$	2.5	5.5	ns	9
			2, 3	An/Bn to $\bar{O}n$	2.5	6.5	ns	10, 11
tpHL	Propagation Delay	VCC=+5.0V @ +25C, VCC=4.5V & 5.5V @ 0/+70C	2, 3	An/Bn to $\bar{O}n$	1.5	4.3	ns	9
			2, 3	An/Bn to $\bar{O}n$	1.5	5.3	ns	10, 11

- Note 1: Guaranteed by applying specific input condition and testing VOL & VOH.  
Note 2: Screen tested 100% on each device at +75C temperature only, subgroups A2 & A10.  
Note 3: Sample tested (Method 5005, Table 1) on each MFG. lot at +75C temperature only, subgroups A2 & A10.

**Revision History**

Rev	ECN #	Rel Date	Originator	Changes
0A0	M0001677	07/08/97	Linda Collins	Legal issue with Fairchild due to the Fairchild/National split, is forcing the change from CN74F which is 'Fairchilds' product code to CN54F which is 'Nationals' product code.