



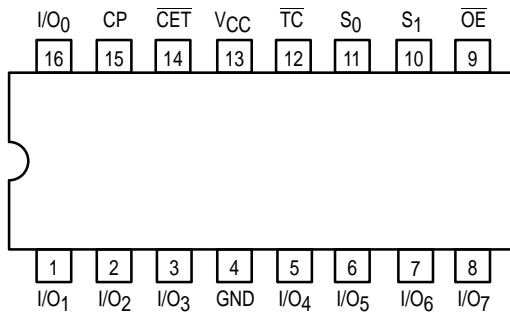
8-BIT BIDIRECTIONAL BINARY COUNTER (3-STATE)

The MC74F779 is a fully synchronous 8-stage up/down counter with multiplexed 3-state I/O ports for bus-oriented applications. All control functions (hold, count up, count down, synchronous load) are controlled by two mode pins (S_0, S_1). The device also features carry look-ahead for easy cascading. All state changes are initiated by the rising edge of the clock.

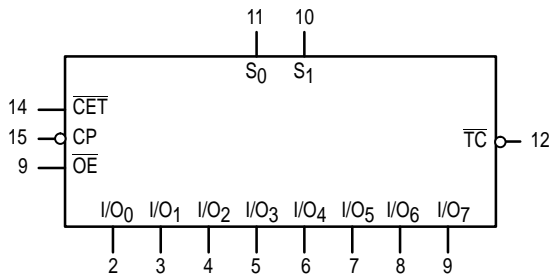
When \overline{CET} is High the data outputs are held in their current state and \overline{TC} is held high. The \overline{TC} output is not recommended for use as a clock or asynchronous reset due to the possibility of decoding spikes.

- Multiplexed 3-State I/O Ports For Bus-oriented Applications
- Built-In Look-Ahead Carry Capability
- Count Frequency 145 MHz Typ
- Supply Current 90 mA Typ
- Fully Synchronous Operation
- Separate Pins for Master Reset and Synchronous Reset
- Center Power Pins to Reduce Effects of Package Inductance
- See F269 for 24-Pin Separate I/O Port Version
- See F579 for 20-Pin Version
- ESD Protection > 4000 Volts

PIN ASSIGNMENT



LOGIC SYMBOL

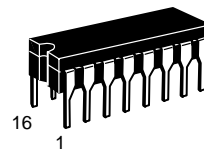


GUARANTEED OPERATING RANGES

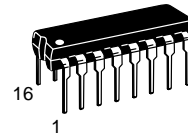
Symbol	Parameter	74	Min	Typ	Max	Unit
V_{CC}	Supply Voltage	74	4.5	5.0	5.5	V
T_A	Operating Ambient Temperature Range	74	0	25	70	°C
I_{OH}	Output Current — High	$I/O_0-I/O_7$			-3.0	mA
		\overline{TC}			-1.0	
I_{OL}	Output Current — Low	$I/O_0-I/O_7$			24	mA
		\overline{TC}			20	

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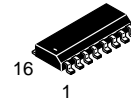
8-BIT BIDIRECTIONAL BINARY COUNTER (3-STATE)



J SUFFIX
CERAMIC
CASE 620-09



N SUFFIX
PLASTIC
CASE 648-08



D SUFFIX
SOIC
CASE 751B-03

ORDERING INFORMATION

MC74FXXXJ Ceramic
MC74FXXXN Plastic
MC74FXXXD SOIC

MC74F779

FUNCTION TABLE

S1	S0	\overline{CET}	\overline{OE}	CP	Operating Mode
X	X	X	H	X	I/Oa to I/Oh in Hi-Z
X	X	X	L	X	Flip-flop outputs appear on I/O lines
L	L	X	H	↑	Parallel load all flip-flops
(not LL)		H	X	↑	Hold (TC held High)
H	L	L	X	↑	Count up
L	H	L	X	↑	Count Down

H = High voltage level

L = Low voltage level

X = Don't care

↑ = Low-to-High clock transition

(not LL) = S₁ and S₂ should never be Low voltage level at the same time in the hold mode only.

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

Symbol	Parameter	74F			Unit	Test Conditions (Note 1)		
		Min	Typ (Note 2)	Max				
V _{OH}	Output HIGH Voltage	TC	2.5			V	I _{OH} = -1.0 mA V _{IL} = MAX V _{IH} = MIN	V _{CC} = 4.5 V
			2.7	3.4			V _{CC} = 4.75 V	
		I/O _n	2.4	3.3		V	I _{OH} = -3.0 mA V _{IL} = MAX V _{IH} = MIN	V _{CC} = 4.5 V
			2.7	3.3				V _{CC} = 4.75 V
V _{OL}	Output LOW Voltage	\overline{TC}		0.35	0.5	V	I _{OL} = 20 mA	V _{CC} = 4.5 V
		I/O _n					I _{OL} = 24 mA	V _{IL} = MAX V _{IH} = MIN
V _{IK}	Input Clamp Diode Voltage		-0.73	-1.2		V	V _{CC} = 4.5 V, I _{IN} = -18 mA	
I _{IH}	Input HIGH Current	I/O _n			1.0	mA	V _{CC} = 5.5 V	V _{IN} = 5.5 V
		others			100			μA
		I/O _n			70	μA	V _{CC} = 5.5 V, V _{IN} = 2.7 V	
		others			20			
I _{IL}	Input LOW Current	Except I/O _n			-0.6	mA	V _{CC} = 5.5 V, V _{IN} = 0.5 V	
I _{OZH}	OFF-State Current High-Level Voltage Applied	I/O _n			70	μA	V _{CC} = 5.5 V	V _{OUT} = 2.7 V
I _{OZL}	OFF-State Current Low-Level Voltage Applied				-600			V _{OUT} = 0.5 V
I _{OS}	Output Short Circuit Current (Note 3)		-60	-80	-150	mA	V _{CC} = MAX, V _{OUT} = 0 V	
I _{CC}	Total Supply Current (total)	I _{CC} H		82	116	mA	V _{CC} = MAX	
		I _{CC} L		91	128			
		I _{CC} Z		97	136			

NOTES:

- For conditions shown as MIN or MAX, use the appropriate value specified under guaranteed operating conditions for the applicable device type.
- All typical values are at V_{CC} = 5.0 V, T_A = 25°C.
- Not more than one output should be shorted at a time.

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AC ELECTRICAL CHARACTERISTICS

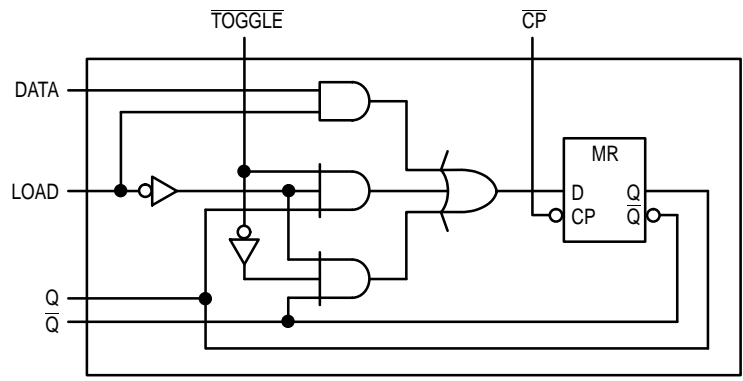
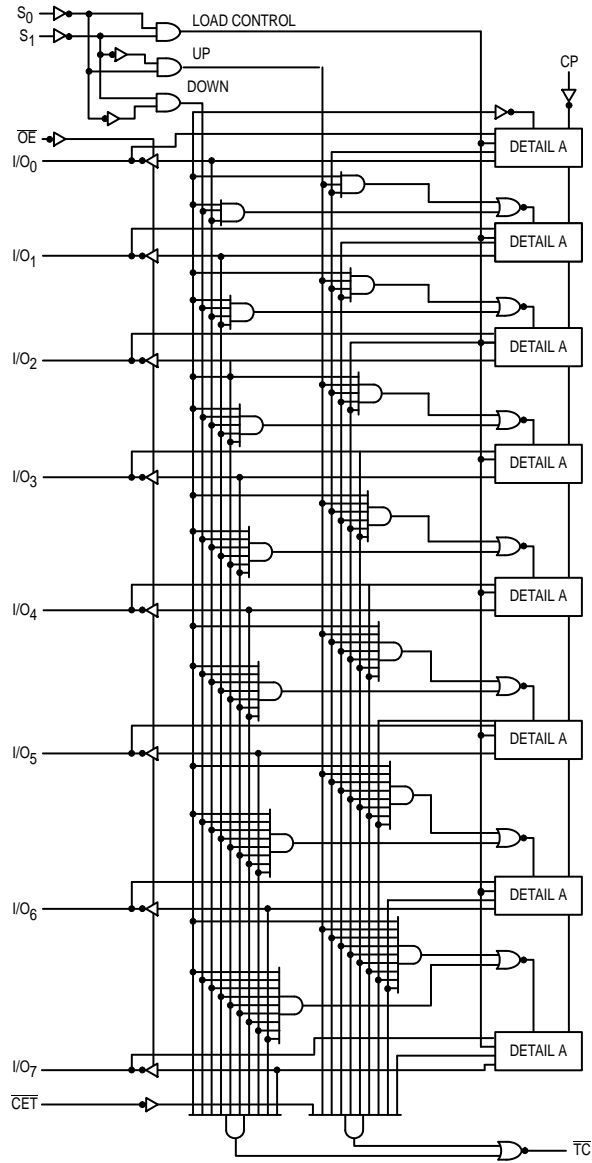
Symbol	Parameter	74F			74F		Unit
		T _A = +25°C V _{CC} = +5.0 V C _L = 50 pF			T _A = 0°C to +70°C V _{CC} = +5.0 V ±10% C _L = 50 pF		
		Min	Typ	Max	Min	Max	
f _{MAX}	Maximum Clock Frequency	125			80		MHz
t _{PLH} t _{PHL}	Propagation Delay CP to I/O _n	4.5 5.5		10.5 10.5	4.5 5.5	11 11	ns
t _{PLH} t _{PHL}	Propagation Delay CP to \overline{TC}	4.5 4.5		9.0 9.0	4.5 4.5	10 10	ns
t _{PLH} t _{PHL}	Propagation Delay CET to TC	3.0 3.0		6.5 7.5	2.5 2.5	7.5 8.0	ns
t _{PZH} t _{PZL}	Enable Time from High or Low Level	2.5 4.5		7.0 9.0	2.5 4.5	8.0 9.5	ns
t _{PHZ} t _{PLZ}	Disable Time from High or Low Level	1.0 1.0		6.5 7.0	1.0 1.0	8.0 8.0	ns

AC SETUP REQUIREMENTS

Symbol	Parameter	74F			74F			Unit
		T _A = +25°C V _{CC} = +5.0 V C _L = 50 pF			T _A = 0°C to +70°C V _{CC} = +5.0 V ±10% C _L = 50 pF			
		Min	Typ	Max	Min	Typ	Max	
t _{s(H)} t _{s(L)}	Set-up time, HIGH or LOW I/O _n to CP	5.0 5.0			5.0 5.0			ns
t _{h(H)} t _{h(L)}	Hold time, HIGH or LOW I/O _n to CP	1.0 1.0			2.0 2.0			ns
t _{s(H)} t _{s(L)}	Set-up time, HIGH or LOW \overline{CET} to CP	5.0 5.5			5.0 6.0			ns
t _{h(H)} t _{h(L)}	Hold time, HIGH or LOW \overline{CET} to CP	0 0			0 0			ns
t _{s(H)} t _{s(L)}	Set-up time, HIGH or LOW S _n to CP	8.0 8.0			8.5 8.5			ns
t _{h(H)} t _{h(L)}	Hold time, HIGH or LOW S _n to CP	0 0			0 0			ns
t _{w(H)} t _{w(L)}	Clock Pulse Width	4.0 4.0			4.0 4.0			ns

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LOGIC DIAGRAM



Detail A