

March 1990 Revised February 2004

## 74F794

## 8-Bit Register with Readback

## **General Description**

The 74F794 is an 8-bit register with readback capability designed to store data as well as read the register information back onto the data bus. The I/O bus (D bus) has 3-STATE outputs. Current sinking capability is 64 mA on both the D and Q busses.

Data is loaded into the registers on the LOW-to-HIGH transition of the clock (CP). The output enable  $(\overline{OE})$  is used to enable data on  $D_0-D_7$ . When  $\overline{OE}$  is LOW, the output of the registers is enabled on  $D_0-D_7$ , enabling D as an output bus. When OE is HIGH,  $D_0-D_7$  are inputs to the registers configuring D as an input bus.

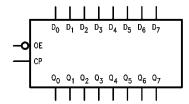
#### **Features**

- 3-STATE outputs on the I/O port
- D and Q output sink capability of 64 mA
- Functionally and pin equivalent to the 74LS794

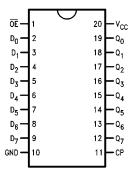
## **Ordering Code:**

Order Number	Package Number	Package Description			
74F794PC	N20A	20-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300" Wide			

## **Logic Symbol**



## **Connection Diagram**



# Input Loading/Fan-Out

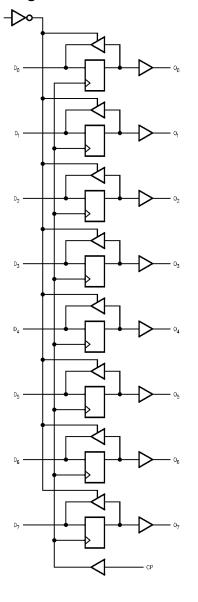
Pin Names	Description	HIGH/LOW			
1 iii Names	Description	(U.L.)	Current		
ŌĒ	Output Enable Input	1.0/1.0	20 μA/-0.6 mA		
CP	Clock Pulse Inputs	1.0/1.0	20 μA/-0.6 mA		
D <sub>0</sub> –D <sub>7</sub>	D Bus Inputs/	3.5/1.083	70 μΑ/–650 μΑ		
	3-STATE Outputs	750/106.6	–15 mA/64 mA		
Q <sub>0</sub> –Q <sub>7</sub>	Q Bus Outputs	750/106.6	–15 mA/64 mA		

## **Truth Table**

Inputs		Outputs			
CP	OE	ø	D		
L or H or ↓	L	$Q_n$	Output, Q		
L or H or ↓	Н	$Q_n$	Input		
1	L	$Q_n$	Output, Q (Note 1)		
1	Н	D	Input		

Note 1: In this case the output of the register is clocked to the inputs and the overall Q output is unchanged at  $\mathsf{Q}_n$ .

# Logic Diagram



## Absolute Maximum Ratings(Note 2)

Recommended Operating Conditions

 $\begin{array}{ll} \mbox{Storage Temperature} & -65\mbox{°C to} + 150\mbox{°C} \\ \mbox{Ambient Temperature under Bias} & -55\mbox{° to} + 125\mbox{°C} \\ \end{array}$ 

Junction Temperature under Bias  $-55^{\circ}$ C to  $+150^{\circ}$ C  $V_{CC}$  Pin Potential to Ground Pin -0.5V to +7.0V Input Voltage (Note 3) -0.5V to +7.0V Input Current (Note 3) -30 mA to +5.0 mA

ESD Last Passing Voltage (Min) 4000V

Voltage Applied to Output

In HIGH State (with  $V_{CC} = 0V$ )

Standard Output -0.5V to V<sub>CC</sub> 3-STATE Output -0.5V to +5.5V

Current Applied to Output

 Free Air Ambient Temperature  $0^{\circ}\text{C} \text{ to } 70^{\circ}\text{C}$  Supply Voltage +4.5V to +5.5V

Note 2: Absolute maximum ratings are values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

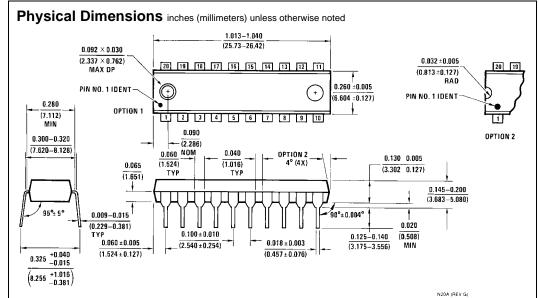
**Note 3:** In this case the output of the register is clocked to the inputs and the overall Q output is unchanged at  $Q_n$ .

Note 4: Either voltage limit or current limit is sufficient to protect inputs.

### DC Electrical Characteristics over Operating Temperature Range unless otherwise specified

Symbol	Parameter	Min	Тур	Max	Units	V <sub>CC</sub>	Conditions		
ViH	Input HIGH Voltage	2.0			V		Recognized as a HIGH Signal		
V <sub>IL</sub>	Input LOW Voltage			0.8	V		Recognized as a LOW Signal		
V <sub>CD</sub>	Input Clamp			-1.2	V	Min	I <sub>IN</sub> = -18 mA		
	Diode Voltage			-1.2	V	IVIIII	IIN = -10 IIIA		
V <sub>OH</sub>	Output HIGH	2.4	2.8		V Mir		$I_{OH} = -3 \text{ mA}$		
	Voltage	2.0	2.44		V	Min	$I_{OH} = -15 \text{ mA}$		
V <sub>OL</sub>	Output LOW		0.45	0.55	V	Min	I <sub>OL</sub> = 64 mA		
	Voltage		0.45	0.55	V	IVIIII	10L = 64 IIIA		
Ін	Input HIGH			5.0	μА	Max	V <sub>IN</sub> = 2.7V		
	Current			5.0	μΛ	IVIAX	V IN - 2.1 V		
I <sub>BVI</sub>	Input HIGH Current								
	Breakdown Test			7.0	μΑ	Max	$V_{IN} = 7.0V (\overline{OE}, CP)$		
I <sub>BVIT</sub>	Input HIGH Current				A Ma		V 55V/D)		
	Breakdown (I/O)			0.5	mA	Max	$V_{IN} = 5.5V (D_n)$		
CEX	Output HIGH								
	Leakage Current			50	μА	Max	$V_{OUT} = V_{CC}$		
V <sub>ID</sub>	Input Leakage	4.75			.,		$I_{ID} = 1.9  \mu A$		
	Test	4.75			V	0.0	All Other Pins Grounded		
I <sub>OD</sub>	Output Leakage			2.75		0.0	V <sub>IOD</sub> = 150 mV		
	Circuit Current			3.75	μА	0.0	All Other Pins Grounded		
l <sub>IL</sub>	Input LOW			O.S. mA May		May	$V_{IN} = 0.5V$		
	Current			-0.6	mA	Max	(OE, CP)		
Ios	Output Short-	-100		-225	mA	Max	V <sub>OUT</sub> = 0V		
	Circuit Current	-100		-225	IIIA	IVIAX	v <sub>OUT</sub> = ov		
lн +	Output Leakage			70	μΑ	Max	V <sub>OUT</sub> = 2.7V		
lozн	Current						(Dn)		
I <sub>IL</sub> +	Output Leakage			-650	μА	Max	V <sub>OUT</sub> = 0.5V		
OZL	Current			-030	μΛ	IVIAX	(Dn)		
V <sub>ID</sub>	Input Leakage	4.75			V	0.0	$I_{ID} = 1.9 \mu A$		
	Test	4.73					All Other Pins Grounded		
OD	Output Circuit			3.75	μА	0.0	V <sub>IOD</sub> = 150 mV		
OD	Leakage Current						All Other Pins Grounded		
zz	Bus Drainage Test			100	μΑ	0.0	V <sub>OUT</sub> = 5.25V		
Іссн	Power Supply Current			65	mA	Max	V <sub>O</sub> = HIGH		
CCL	Power Supply Current			80	mA	Max	$V_O = LOW$		
CCZ	Power Supply Current	Ì		80	mA	Max	V <sub>O</sub> = HIGH Z		

Symbol			T <sub>A</sub> = +25°C					
	Parameter		V <sub>CC</sub> = +5.0V			V <sub>CC</sub> = +5.0V		
			C <sub>L</sub> = 50 pF				Units	
		Min	Тур	Max	Min	Max	1	
f <sub>MAX</sub>	Maximum Clock Frequency	90			90		MHz	
t <sub>PLH</sub>	Propagation Delay	2.5		7.0	2.5	8.0	ns	
t <sub>PHL</sub>	CP to Q <sub>n</sub>	2.5		8.0	2.5	9.0		
t <sub>PZH</sub>	Output Enable Time	2.3		8.5	2.0	9.0	ns	
$t_{PZL}$		2.0		10.0	2.0	10.5		
t <sub>PHZ</sub>	Output Disable Time	1.0		7.0	1.0	8.0	ns	
t <sub>PLZ</sub>		1.0		7.0	1.0	8.0		
t <sub>S</sub> (H)	Setup Time, HIGH or LOW	4.0			4.0		ns	
t <sub>S</sub> (L)	Bus to Clock	4.0			4.0			
t <sub>H</sub> (H)	Hold Time, HIGH or LOW	1.5			1.5		ns	
t <sub>H</sub> (L)	Bus to Clock	1.5			1.5			
t <sub>W</sub> (H	Clock Pulse Width	5.8			5.8			
	HIGH or LOW	5.8			5.8		ns	



20-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300" Wide Package Number N20A

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