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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.

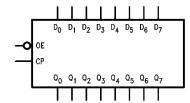
Features

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

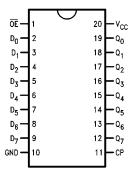
Ordering Code:

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



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DS010652

Input Loading/Fan-Out

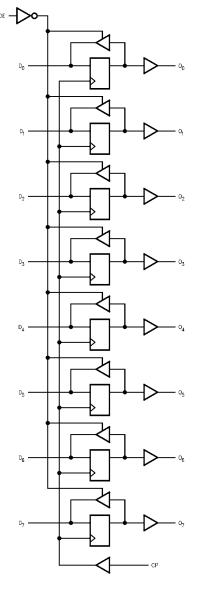
Pin Names	Description	HIGH/LOW			
i iii Names	Description	(U.L.)	Current		
OE	Output Enable Input	1.0/1.0	20 μA/-0.6 mA		
CP	Clock Pulse Inputs	1.0/1.0	20 μA/-0.6 mA		
D ₀ –D ₇	D Bus Inputs/	3.5/1.083	70 μΑ/–650 μΑ		
	3-STATE Outputs	750/106.6	–15 mA/64 mA		
Q ₀ –Q ₇	Q Bus Outputs	750/106.6	–15 mA/64 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 $\mathbf{Q}_{\mathbf{n}}$.

Logic Diagram



Absolute Maximum Ratings(Note 2)

Recommended Operating Conditions

-65°C to + 150°C Storage Temperature -55° to +125°C Ambient Temperature under Bias

Junction Temperature under Bias $-55^{\circ}C$ to $+150^{\circ}C$ V_{CC} Pin Potential to Ground Pin -0.5V to +7.0VInput 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 3-STATE Output -0.5V to +5.5V

Current Applied to Output

in LOW State (Max) Twice the Rated I_{OL} (mA)

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

Note 2: Absolute maximum ratings are values beyond which the device -0.5V to V_{CC} 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 Qn

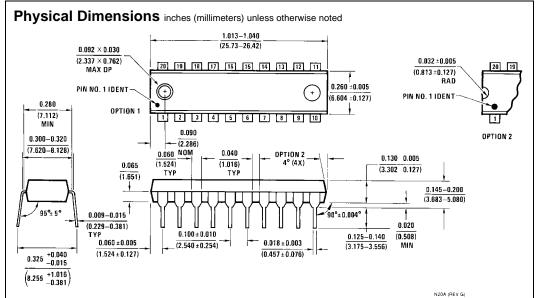
Note 4: Either voltage limit or current limit is sufficient to protect inputs.

DC Electrical Characteristics over Operating Temperature Range unless otherwise specified

Symbol	Parameter	Min	Тур	Max	Units	v _{cc}	Conditions	
V _{IH}	Input HIGH Voltage	2.0			V		Recognized as a HIGH Signal	
V _{IL}	Input LOW Voltage			8.0	V		Recognized as a LOW Signal	
V _{CD}	Input Clamp			-1.2	V	Min	I _{IN} = -18 mA	
	Diode Voltage			-1.2	v	IVIIII	IIN = TO IIIA	
V _{OH}	Output HIGH	2.4	2.8		V	Min	$I_{OH} = -3 \text{ mA}$	
	Voltage	2.0	2.44		V	IVIIII	$I_{OH} = -15 \text{ mA}$	
V _{OL}	Output LOW		0.45	0.55	V	Min	I _{OL} = 64 mA	
	Voltage		0.43	0.55	•	IVIIII	IOL - 04 IIIA	
I _{IH}	Input HIGH			5.0	μА	Max	V _{IN} = 2.7V	
	Current			0.0	μιτ	Wax	VIN - 2.7 V	
I _{BVI}	Input HIGH Current			7.0			V 7.0V (0.5 .0D)	
	Breakdown Test			7.0	μА	Max	$V_{IN} = 7.0V (\overline{OE}, CP)$	
I _{BVIT}	Input HIGH Current			0.5	4		V 55V/D)	
	Breakdown (I/O)			0.5	mA	Max	$V_{IN} = 5.5V (D_n)$	
I _{CEX}	Output HIGH			50			V V	
	Leakage Current			50	μА	Max	$V_{OUT} = V_{CC}$	
V _{ID}	Input Leakage	4.75			V	0.0	$I_{ID} = 1.9 \mu A$	
	Test	4.75			V	0.0	All Other Pins Grounded	
I _{OD}	Output Leakage			3.75		0.0	V _{IOD} = 150 mV	
	Circuit Current			3.73	μА	0.0	All Other Pins Grounded	
I _{IL}	Input LOW			-0.6	mA	Max	V _{IN} = 0.5V	
	Current			-0.6	IIIA	IVIAX	(OE, CP)	
I _{OS}	Output Short-	-100		-225	mA	Max	V _{OUT} = 0V	
	Circuit Current	-100		-223	IIIA	IVIAX	VOUT - VV	
I _{IH} +	Output Leakage			70	μΑ	Max	V _{OUT} = 2.7V	
l _{OZH}	Current						(Dn)	
I _{IL} +	Output Leakage			-650	μА	Max	V _{OUT} = 0.5V	
I _{OZL}	Current			-030	μΛ	IVIAX	(Dn)	
V _{ID}	Input Leakage	4.75			V	0.0	$I_{ID} = 1.9 \mu A$	
	Test	4.73			V	0.0	All Other Pins Grounded	
I _{OD}	Output Circuit			3.75	μА	0.0	V _{IOD} = 150 mV	
	Leakage Current			3.73	μΛ	0.0	All Other Pins Grounded	
I _{ZZ}	Bus Drainage Test			100	μΑ	0.0	V _{OUT} = 5.25V	
I _{CCH}	Power Supply Current			65	mA	Max	V _O = HIGH	
I _{CCL}	Power Supply Current			80	mA	Max	$V_O = LOW$	
I _{CCZ}	Power Supply Current			80	mA	Max	V _O = HIGH Z	

AC Electrical Characteristics

Symbol	Parameter		$T_A = +25^{\circ}C$ $V_{CC} = +5.0V$ $C_L = 50 \text{ pF}$		$T_A = 0$ °C to +70°C $V_{CC} = +5.0V$ $C_L = 50$ pF		Units	
		Min	Тур	Max	Min	Max	•	
f _{MAX}	Maximum Clock Frequency	90			90		MHz	
t _{PLH}	Propagation Delay	2.5		7.0	2.5	8.0	ns	
t _{PHL}	CP to Q _n	2.5		8.0	2.5	9.0		
t _{PZH}	Output Enable Time	2.3		8.5	2.0	9.0	ns	
t_{PZL}		2.0		10.0	2.0	10.5		
t _{PHZ}	Output Disable Time	1.0		7.0	1.0	8.0	ns	
t_{PLZ}		1.0		7.0	1.0	8.0		
t _S (H)	Setup Time, HIGH or LOW	4.0			4.0			
$t_S(L)$	Bus to Clock	4.0			4.0		ns	
t _H (H)	Hold Time, HIGH or LOW	1.5			1.5		ns	
$t_H(L)$	Bus to Clock	1.5			1.5			
t _W (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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