

9-Bit Bus Interface Register

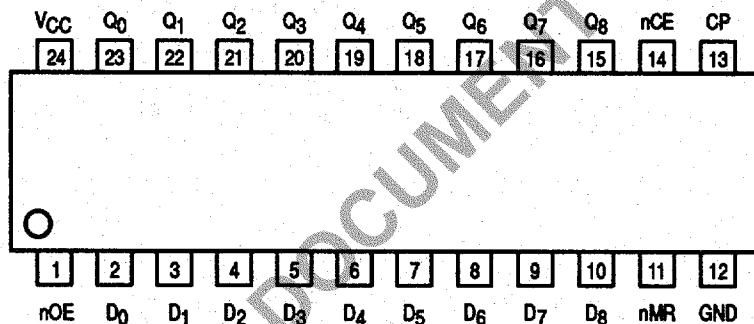
The MC74F823 is a 9-bit wide buffered register with Clock Enable (nCE) and Master Reset (nMR) which is ideal for parity bus interfacing in high performance microprogramming systems.

The F823 device consists of nine D-type edge-triggered flip-flops. It has 3-state true outputs and is organized in broadside pinning. The buffered Clock and buffered Output Enable (nOE) are common to all flip-flops. The flip-flops will store the state of their individual D inputs that meet the setup and hold times requirements on the Low-to-High Clock transition. With the nOE Low, the contents of the flip-flops are available at the outputs. When nOE is High, the outputs go to the high impedance state. Operation of the nOE inputs does not affect the state of the flip-flops. In addition to the Clock and Output Enable pins, the F823 has Master Reset (nMR) and Clock Enable (nCE) pins.

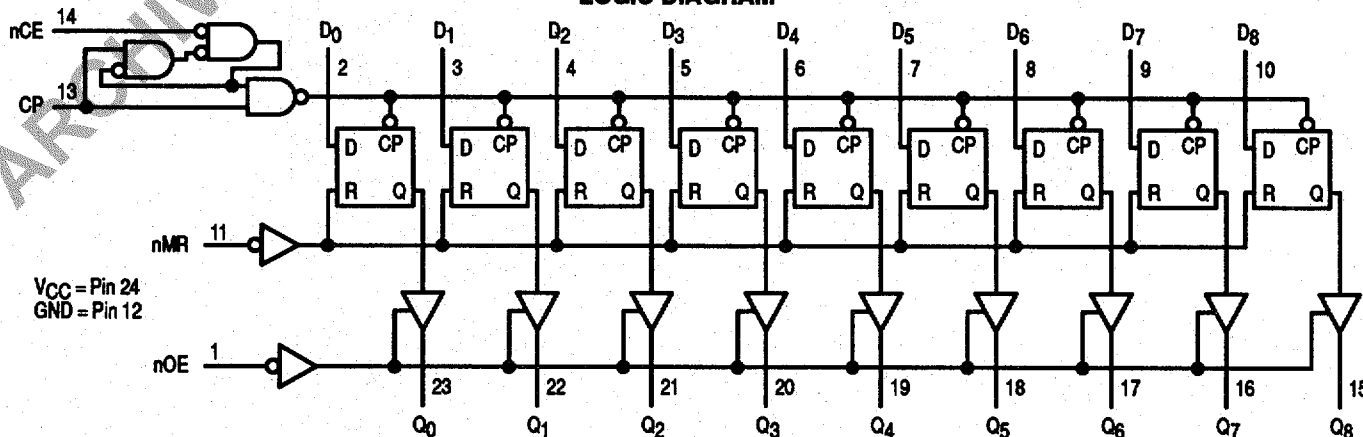
When the nMR is Low and the nOE is Low, the outputs are Low. When nMR is High, data can be entered into the flip-flops. When nCE is Low, data on the inputs is transferred to the outputs on the Low-to-High Clock transition. When the nCE is High, the outputs do not change state regardless of the data or clock inputs transitions.

- High Speed Parallel Registers With Positive Edge-Triggered D-Type Flip-Flops
- High Performance Bus Interface Buffering for Wide Data/Address Paths or Busses Carrying Parity
- Buffered Control Inputs to Reduce AC Effects
- 3-State Outputs Glitch Free During Power-Up and Power-Down
- Slim DIP 300mil Package
- Outputs Sink 64mA and Source 24mA

Pinout: 24-Lead Plastic Package (Top View)

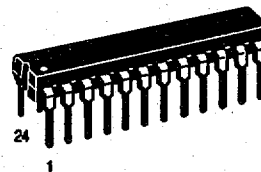


LOGIC DIAGRAM

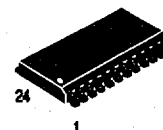


MC74F823

**9-BIT BUS
 INTERFACE
 REGISTER**



**N SUFFIX
 PLASTIC PACKAGE
 CASE 724-03**



**DW SUFFIX
 SOIC PACKAGE
 CASE 751E-03**



FUNCTION TABLE

Inputs					Outputs	Operating Mode
nOE	nMR	nCE*	CP	Dn	Qn	
H	H	L	H	X	Z	Hold
H	H	L	L	X	Z	Hold
H	H	H	X	X	Z	Hold
L	H	H	X	X	NC	Hold
H	L	X	X	X	Z	Reset
L	L	X	X	X	L	Reset
H	H	L	↑	l	Z	Load Data
H	H	L	↑	h	Z	Load Data
L	H	L	↑	l	L	Load and Read Data
L	H	L	↑	h	H	Load and Read Data
L	H	L	H	X	NC	No Change at Output
L	H	L	L	X	NC	No Change at Output

H = High Voltage Level; L = Low Voltage Level; h = High State Must Be Present One Setup Time Before Low-to-High Clock Transition; l = Low State Must Be Present One Setup Time Before Low-to-High Clock Transition; ↑ = Low-to-High Transition; Z = High Impedance "OFF" State; NC = No Change; X = Don't Care

* Since the nCE input is sensitive to very short (<3ns) High-to-Low-to-High going spikes, while CP is High, users should avoid the use of decoders or other potentially glitch prone devices on the nCE input.

MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
V _{CC}	DC Supply Voltage (Referenced to GND)	-0.5 to +7.0	V
V _{IN}	Input Voltage	-0.5 to +7.0	V
V _O	Voltage Applied to Output in High Output State	-0.5 to +V _{CC}	V
I _{IN}	Input Current	-30 to +5.0	mA
I _{OUT}	Current Applied to Output in Low Output State	128	mA
T _A	Operating Ambient Temperature Range	0 to +70	°C
T _{STG}	Storage Temperature Range	-65 to +150	°C

* Maximum Ratings are those values beyond which damage to the device may occur. Functional operation should be restricted to the Guaranteed Operating Conditions.

GUARANTEED OPERATING CONDITIONS

Symbol	Parameter	Min	Typ	Max	Unit
V _{CC}	Supply Voltage	4.5	5.0	5.5	V
V _{IH}	High Level Input Voltage	2.0			V
V _{IL}	Low Level Input Voltage			0.8	V
I _{IK}	Input Clamp Current			-18	mA
I _{OH}	High Level Input Current			-24	mA
I _{OL}	Low Level Input Current			64	mA
T _A	Operating Ambient Temperature Range	0		70	°C

DC CHARACTERISTICS

Symbol	Characteristic	VCC	74F		Unit	Condition
			Min	Max		
V _{IH}	Input High Voltage		2.0		V	Guaranteed as a High Signal
V _{IL}	Input Low Voltage			0.8	V	Guaranteed as a Low Signal
V _{IK}	Input Clamp Diode Voltage	Min		-1.2	V	I _{IN} = -18mA
V _{OH}	Output High Voltage	Min 4.75 Min 4.75	2.4 2.4 2.0 2.0		V	I _{OH} = -15mA I _{OH} = -15mA I _{OH} = -24mA I _{OH} = -24mA
V _{OL}	Output Low Voltage	Min 4.75		0.55 0.55	V	I _{OL} = 64mA I _{OL} = 64mA
I _{IH}	Input High Current	Max Max		20 100	μA	V _{IN} = 2.7V V _{IN} = 7.0V
I _{IL}	Input Low Current	Max		-0.6 -1.2	mA	V _{IN} = 0.5V (nOE, nMR, nCE, D _n) V _{IN} = 0.5V (CP)
I _{OZH}	Output Leakage Current	Max		50	μA	V _{OUT} = 2.7V
I _{OZL}	Output Leakage Current	Max		-50	μA	V _{OUT} = 0.5V
I _{OS}	Output Short-Circuit Current	Max	-60	-150	mA	V _{OUT} = 0V
I _{CCH} I _{CCL} I _{CCZ}	Power Supply Current	Max Max Max		100 105 90	mA mA mA	V _{OUT} = High V _{OUT} = Low V _{OUT} = High Z


- For conditions such as Min or Max, use the appropriate value specified under the Guaranteed Operating Conditions.
- For I_{OS}, not more than one output should be shorted at a time, nor for more than 1 second.

AC CHARACTERISTICS (C_L = 50pF; R_L = 500Ω)

Symbol	Parameter	T _A = +25°C V _{CC} = 5.0V		T _A = 0 to +70°C V _{CC} = 5.0V ±10%		Unit
		Min	Max	Min	Max	
F _{MAX}	Maximum Clock Frequency	100		70		MHz
t _{PLH} t _{PHL}	Propagation Delay CP to Q _n	4.0 4.0	8.5 8.5	4.0 3.5	9.5 9.0	ns
t _{PHL}	Propagation Delay nMR to Q _n	4.0	12.0	4.0	13.0	ns
t _{PZH} t _{PZL}	Output Enable Time nOE to Q _n	5.0 3.0	10.0 8.0	4.0 2.5	11.5 9.0	ns
t _{PHZ} t _{PLZ}	Output Disable Time nOE to Q _n	1.5 1.5	7.0 7.0	1.5 1.5	7.5 7.5	ns

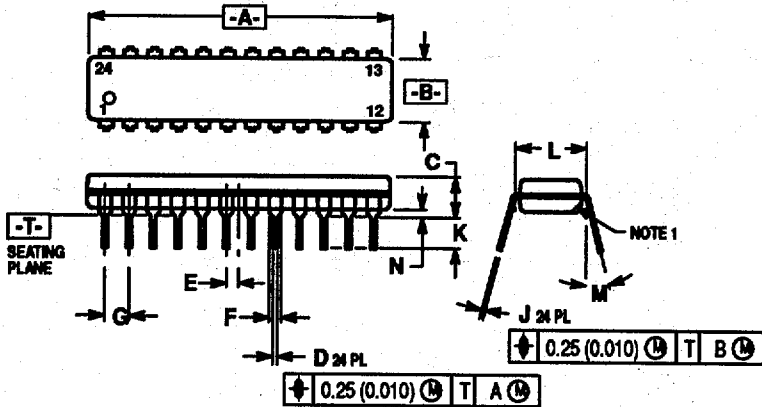
AC OPERATING REQUIREMENTS ($C_L = 50\text{pF}$; $R_I = 500\Omega$)

Symbol	Parameter	74F $T_A = +25^\circ\text{C}$ $V_{CC} = +5.0\text{V}$		74F $T_A = 0^\circ\text{C to } +70^\circ\text{C}$ $V_{CC} = 5.0\text{V} \pm 10\%$		Unit
		Min	Max	Min	Max	
$t_s(H)$ $t_s(L)$	Setup Time, High or Low D_n to CP	2.5 2.5		3.0 3.0		ns
$t_h(H)$ $t_h(L)$	Hold Time, High or Low D_n to CP	2.0 2.0		2.0 2.0		ns
$t_s(H)$ $t_s(L)$	Setup Time, High or Low nCE to CP	4.5 2.5		5.0 3.0		ns
$t_h(H)$ $t_h(L)$	Hold Time, High or Low nCE to CP	2.0 3.0		2.0 3.5		ns
$t_w(H)$ $t_w(L)$	CP Pulse Width High or Low	3.5 3.5		4.0 4.0		ns
$t_w(L)$	nMR Pulse Width, Low	4.5		4.5		ns
t_{REC}	Recovery Time nMR to CP	6.5		6.5		ns

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OUTLINE DIMENSIONS

N SUFFIX PLASTIC PACKAGE CASE 724-03

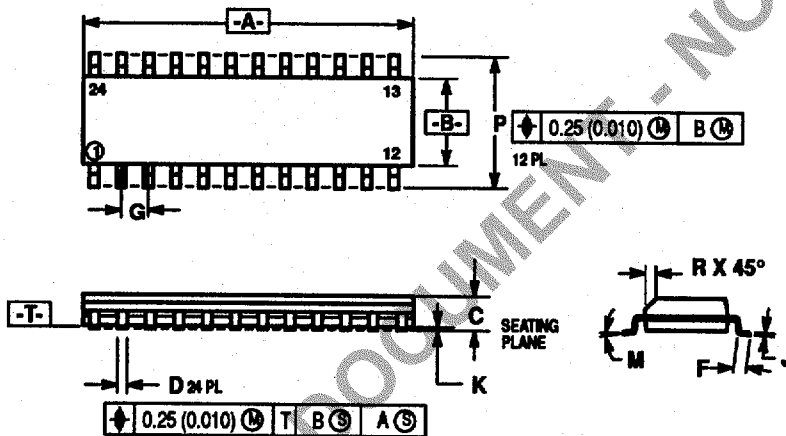


NOTES:

1. CHAMFERED CONTOUR OPTIONAL.
2. DIM "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
3. DIMENSIONS AND TOLERANCES PER ANSI Y14.5M, 1982.
4. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	31.25	32.13	1.230	1.265
B	6.35	6.85	0.250	0.270
C	3.69	4.44	0.145	0.175
D	0.38	0.51	0.015	0.020
E	1.27 BSC		0.050 BSC	
F	1.02	1.52	0.040	0.060
G	2.54 BSC		0.100 BSC	
J	0.18	0.30	0.007	0.012
K	2.80	3.55	0.110	0.140
L	7.62 BSC		0.300 BSC	
M	0°	15°	0°	15°
N	0.51	1.01	0.020	0.040

DW SUFFIX PLASTIC PACKAGE CASE 751E-03



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
5. 751E-01 AND -02 OBSOLETE, NEW STANDARD 751E-03.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	15.25	15.54	0.601	0.612
B	7.40	7.60	0.292	0.299
C	2.35	2.65	0.093	0.104
D	0.35	0.49	0.014	0.019
F	0.41	0.90	0.016	0.035
G	1.27 BSC		0.050 BSC	
J	0.229	0.317	0.0090	0.0125
K	0.127	0.292	0.0050	0.0115
M	0°	8°	0°	8°
P	10.05	10.55	0.395	0.415
R	0.25	0.75	0.010	0.029

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3PHX32090-0 PRINTED IN USA (10/92) MPS 62518 4M LOGIC YDAAAA

MC74F823/D

