



# OCTAL BUS TRANSCEIVER WITH 3-STATE OUTPUTS (INVERTING AND NONINVERTING)

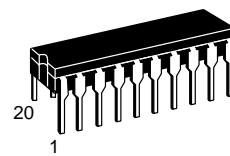
The MC74F620 is an octal bus transceiver featuring inverting 3-state bus-compatible outputs in both send and receive directions. The  $B_N$  outputs are capable of sinking 64 mA and sourcing up to 15 mA, providing very good capacitive drive characteristics. The MC74F623 is a non-inverting version of the MC74F620. These octal bus transceivers are designed for asynchronous two-way communication between data busses. The control function implementation allows for maximum flexibility in timing. These devices allow data transmission from the A bus to the B bus or from B bus to A bus, depending upon the logic levels at the Enable inputs (OEBA and OEAB). The Enable inputs can be used to disable the device so that the busses are effectively isolated. The dual-enable configuration gives the MC74F620 and MC74F623 the capability to store data by the simultaneous enabling of OEBA and OEAB. Each output reinforces its input in this transceiver configuration. Thus, when both control inputs are enabled and all other data sources to the two sets of the bus lines are at high impedance, both sets of bus lines (16 in all) will remain at their last states.

- High Impedance NPN base inputs for reduced loading (70  $\mu$ A in High and Low states)
- Ideal for Applications which Require High Output drive and minimal bus loading
- Octal Bidirectional Bus Interface
- 3-State Buffer Outputs Sink 64 mA and Source 15 mA
- – F620 Inverting  
– F623 Noninverting
- ESD Protection > 4000 Volts

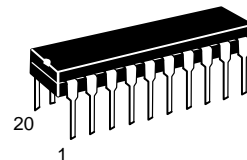
**MC74F620  
MC74F623**

**OCTAL BUS TRANSCEIVER  
WITH 3-STATE OUTPUTS  
(INVERTING AND NONINVERTING)**

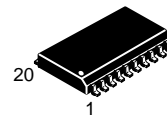
**FAST™ SCHOTTKY TTL**



**J SUFFIX  
CERAMIC  
CASE 732-03**



**N SUFFIX  
PLASTIC  
CASE 738-03**

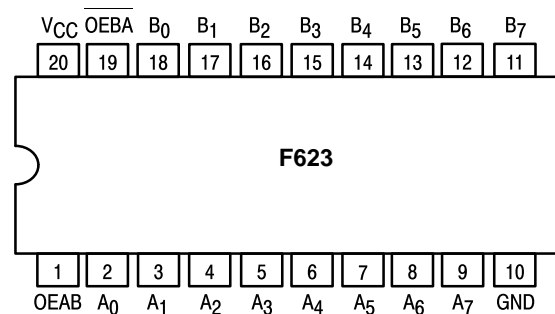
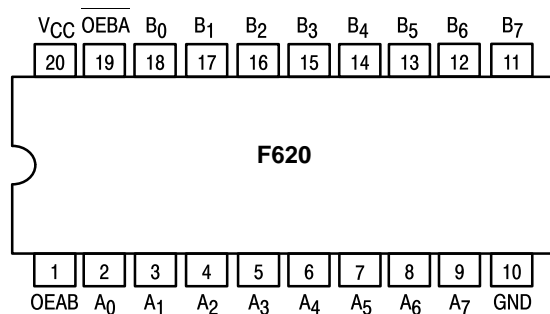


**DW SUFFIX  
SOIC  
CASE 751D-03**

### ORDERING INFORMATION

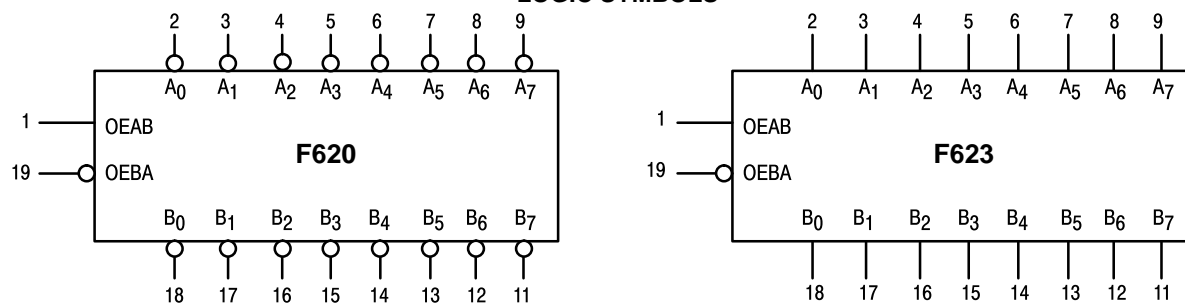
MC74FXXXJ	Ceramic
MC74FXXXN	Plastic
MC74FXXXDW	SOIC

### PIN ASSIGNMENTS



# MC74F620 • MC74F623

## LOGIC SYMBOLS



## FUNCTION TABLE

Inputs		Operating Modes	
OEBA	OEAB	F620	F623
L	L	B data to A bus	B data to A bus
H	H	A data to B bus	A data to B bus
H	L	Z	Z
L	H	B data to A bus A data to B bus	B data to A bus A data to B bus

H = HIGH voltage level; L = LOW voltage level; X = Don't care; Z = High impedance "off" state

## GUARANTEED OPERATING RANGES

Symbol	Parameter		Limits			Unit	
			Min	Typ	Max		
$V_{CC}$	DC 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	$A_n$ Outputs	74	—	—	-3.0	mA
$I_{OH}$	Output Current — High	$B_n$ Outputs	74	—	—	-15	mA
$I_{OL}$	Output Current — Low	$A_n$ Outputs	74	—	—	24	mA
$I_{OL}$	Output Current — Low	$B_n$ Outputs	74	—	—	64	mA

## MC74F620 • MC74F623

### DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

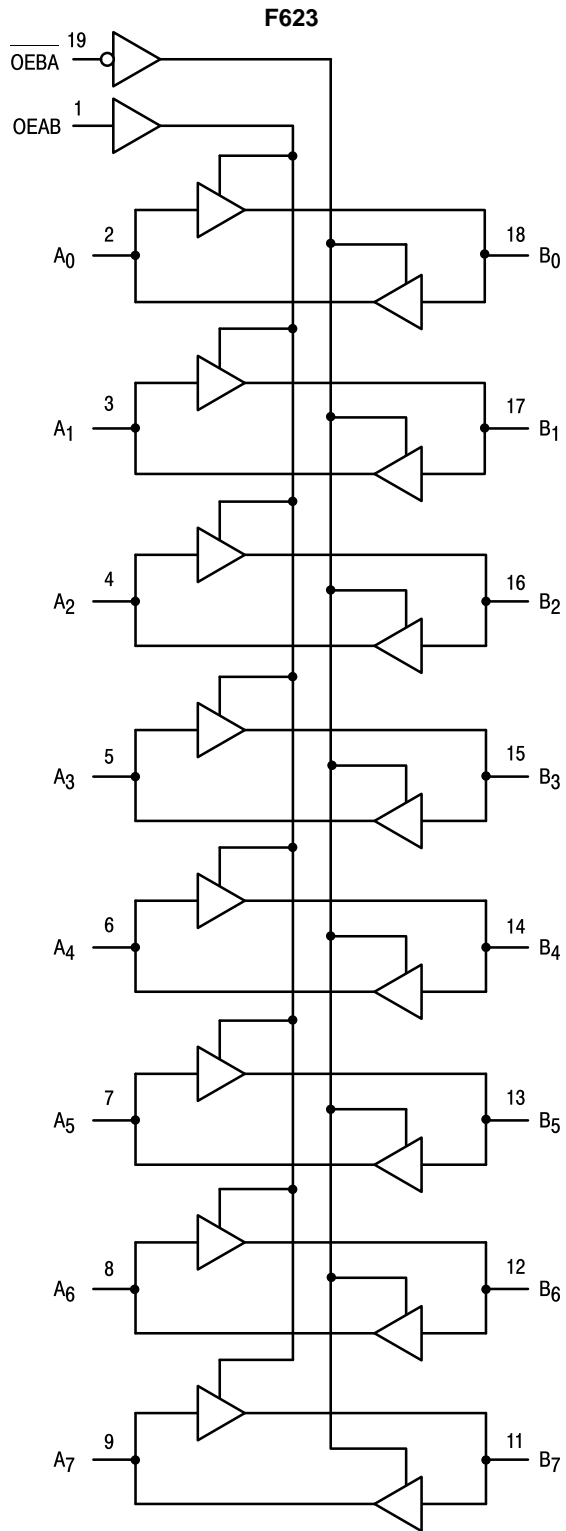
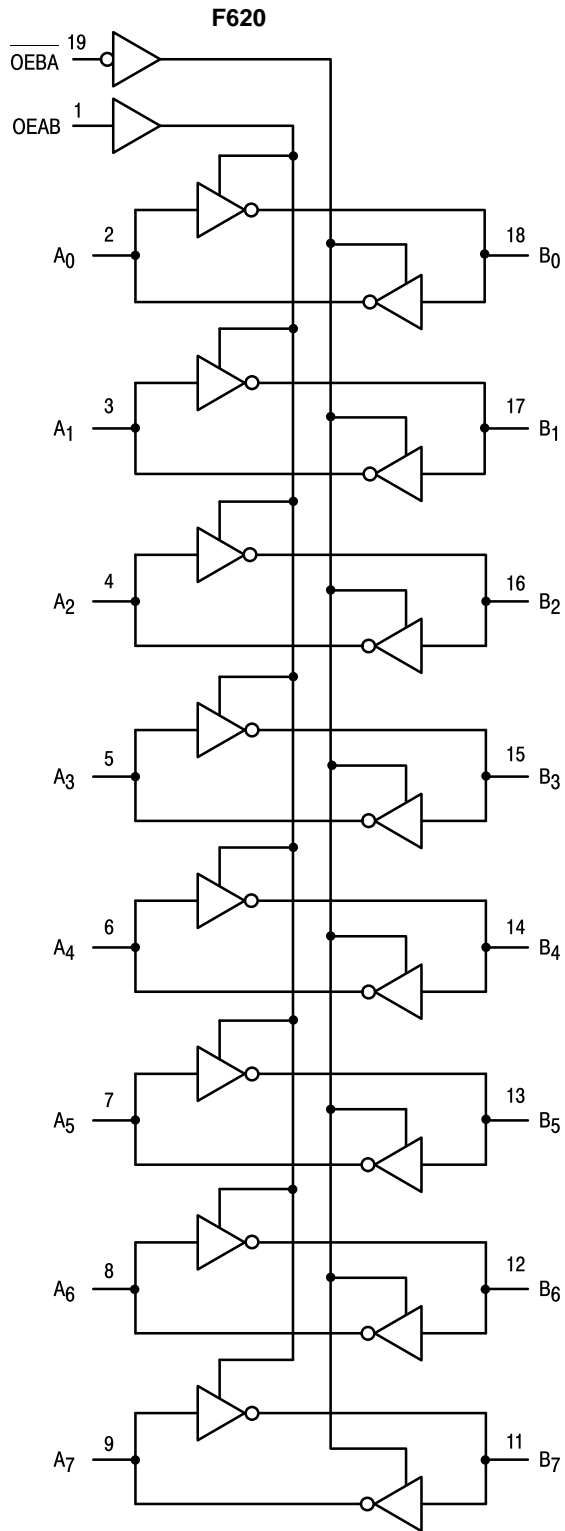
Symbol	Parameter		Limits			Unit	Test Conditions (Note 1)		
			Min	Typ	Max				
V <sub>IH</sub>	Input HIGH Voltage		2.0	—	—	V	Guaranteed as a HIGH Signal		
V <sub>IL</sub>	Input LOW Voltage		—	—	0.8	V	Guaranteed as a LOW Signal		
V <sub>IK</sub>	Input Clamp Diode Voltage		—	—	-1.2	V	V <sub>CC</sub> = MIN, I <sub>IN</sub> = -18 mA		
V <sub>OH</sub>	Output HIGH Voltage	A <sub>n</sub>	74	2.4	3.3	—	V	I <sub>OH</sub> = -3.0 mA	V <sub>CC</sub> = 4.5 V
			74	2.7	3.3	—	V	I <sub>OH</sub> = -3.0 mA	V <sub>CC</sub> = 4.75 V
		B <sub>n</sub>	74	2.4	3.4	—	V	I <sub>OH</sub> = -3.0 mA	V <sub>CC</sub> = 4.5 V
			74	2.7	3.4	—	V	I <sub>OH</sub> = -3.0 mA	V <sub>CC</sub> = 4.75 V
			74	2.0	—	—	V	I <sub>OH</sub> = -15.0 mA	V <sub>CC</sub> = 4.5 V
V <sub>OL</sub>	Output LOW Voltage	A <sub>n</sub>	74	—	0.35	0.50	V	I <sub>OL</sub> = 24 mA	V <sub>CC</sub> = MIN
V <sub>OL</sub>	Output LOW Voltage	B <sub>n</sub>	74	—	—	0.55	V	I <sub>OL</sub> = 64 mA	V <sub>CC</sub> = MIN
I <sub>OZH</sub> + I <sub>IH</sub>	Output Off Current HIGH		—	—	70	μA	V <sub>CC</sub> = MAX	V <sub>OUT</sub> = 2.7 V	
I <sub>OZL</sub> + I <sub>IL</sub>	Output Off Current LOW		—	—	-70	μA	V <sub>CC</sub> = MAX	V <sub>OUT</sub> = 0.5 V	
I <sub>IH</sub>	Input HIGH Current		OEBA, OEAB	—	—	20	μA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 2.7 V	
			OEBA, OEAB	—	—	100	μA	V <sub>CC</sub> = 0 V, V <sub>IN</sub> = 7.0 V	
			Others	—	—	1.0	mA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 5.5 V	
I <sub>IL</sub>	Input LOW Current		Non I/O Pins	—	—	-20	μA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 0.5 V	
I <sub>OS</sub>	Output Short Circuit Current (Note 2)		A <sub>0</sub> -A <sub>7</sub>	-60	—	-150	mA	V <sub>CC</sub> = MAX, V <sub>OUT</sub> = GND	
			B <sub>0</sub> -B <sub>7</sub>	-100	—	-225			
I <sub>CC</sub>	Power Supply Current		F620	I <sub>CCH</sub>	—	—	92	V <sub>out</sub> = HIGH	V <sub>CC</sub> = MAX
				I <sub>CCL</sub>	—	—	110	V <sub>out</sub> = LOW	
				I <sub>CCZ</sub>	—	—	92	V <sub>out</sub> = HIGH Z	
I <sub>CC</sub>	Power Supply Current		F623	—	—	120	mA	V <sub>CC</sub> = MAX	

NOTES:

1. For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable device type.
2. Not more than one output should be shorted at a time, nor for more than 1 second.

# MC74F620 • MC74F623

## LOGIC DIAGRAMS



## MC74F620 • MC74F623

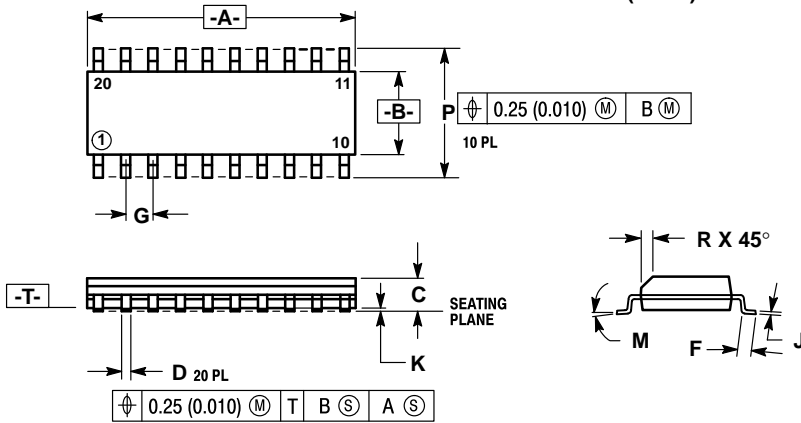
### AC ELECTRICAL CHARACTERISTICS For F620

Symbol	Parameter	74F			74F			Unit
		T <sub>A</sub> = +25°C V <sub>CC</sub> = +5.0 V C <sub>L</sub> = 50 pF			T <sub>A</sub> = 0°C to +70°C V <sub>CC</sub> = +5.0 V ±10% C <sub>L</sub> = 50 pF			
		Min	Typ	Max	Min	Typ	Max	
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay A <sub>n</sub> to B <sub>n</sub> and B <sub>n</sub> to A <sub>n</sub>	2.5 1.0	— —	6.5 4.5	2.0 1.0	— —	7.5 5.0	ns
t <sub>PZH</sub> t <sub>PZL</sub>	Output Enable Time _____ to High or Low level, OEBA to A <sub>n</sub>	3.0 4.0	— —	10.5 10.5	2.5 3.5	— —	11.5 11.5	ns
t <sub>PHZ</sub> t <sub>PLZ</sub>	Output Disable Time _____ to High or Low level, OEBA to A <sub>n</sub>	2.5 1.5	— —	7.5 7.0	2.0 1.0	— —	8.0 7.5	ns
t <sub>PZH</sub> t <sub>PZL</sub>	Output Enable Time _____ to High or Low level, OEAB to B <sub>n</sub>	3.5 4.5	— —	10.5 10.0	3.5 4.0	— —	11.5 11.0	ns
t <sub>PHZ</sub> t <sub>PLZ</sub>	Output Disable Time _____ to High or Low level, OEAB to B <sub>n</sub>	3.0 3.0	— —	9.5 9.5	2.5 1.5	— —	10.5 10.5	ns

### AC ELECTRICAL CHARACTERISTICS For F623

Symbol	Parameter	74F			74F			Unit
		T <sub>A</sub> = +25°C V <sub>CC</sub> = +5.0 V C <sub>L</sub> = 50 pF			T <sub>A</sub> = 0°C to +70°C V <sub>CC</sub> = +5.0 V ±10% C <sub>L</sub> = 50 pF			
		Min	Typ	Max	Min	Typ	Max	
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay A <sub>n</sub> to B <sub>n</sub>	2.0 3.0	— —	5.5 7.0	2.0 2.5	— —	6.5 7.5	ns
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay B <sub>n</sub> to A <sub>n</sub>	2.0 3.0	— —	6.0 7.0	2.0 2.5	— —	6.5 7.5	ns
t <sub>PZH</sub> t <sub>PZL</sub>	Output Enable Time _____ to High or Low level, OEBA to A <sub>n</sub>	3.5 5.0	— —	10.5 9.5	3.5 5.0	— —	12.0 10.0	ns
t <sub>PHZ</sub> t <sub>PLZ</sub>	Output Disable Time _____ to High or Low level, OEBA to A <sub>n</sub>	1.5 1.5	— —	6.5 6.5	1.5 1.5	— —	7.5 7.0	ns
t <sub>PZH</sub> t <sub>PZL</sub>	Output Enable Time _____ to High or Low level, OEAB to B <sub>n</sub>	3.5 4.5	— —	10.0 9.0	3.5 4.5	— —	11.5 9.5	ns
t <sub>PHZ</sub> t <sub>PLZ</sub>	Output Disable Time _____ to High or Low level, OEAB to B <sub>n</sub>	3.0 4.0	— —	8.5 9.0	3.0 2.0	— —	10.0 10.0	ns

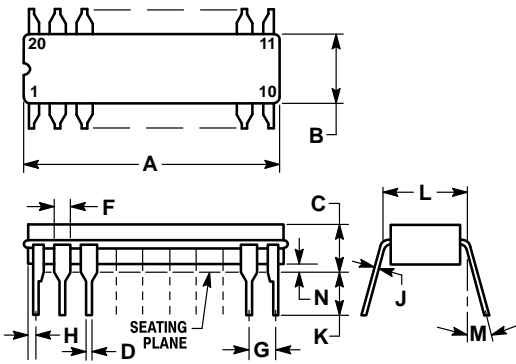
**Case 751D-03 DW Suffix  
20-Pin Plastic  
SO-20 (WIDE)**



- 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. 751D-01, AND -02 OBSOLETE, NEW STANDARD 751D-03.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	12.65	12.95	0.499	0.510
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	0.50	0.90	0.020	0.035
G	1.27 BSC		0.050 BSC	
J	0.25	0.32	0.010	0.012
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	10.05	10.55	0.395	0.415
R	0.25	0.75	0.010	0.029

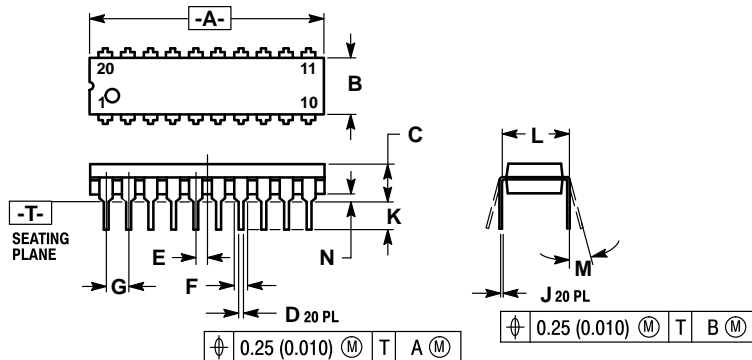
**Case 732-03 J Suffix  
20-Pin Ceramic Dual In-Line**



- NOTES:
1. LEADS WITHIN 0.25 mm (0.010) DIA., TRUE POSITION AT SEATING PLANE, AT MAXIMUM MATERIAL CONDITION.
  2. DIM L TO CENTER OF LEADS WHEN FORMED PARALLEL.
  3. DIM A AND B INCLUDES MENISCUS.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	23.88	25.15	0.940	0.990
B	6.60	7.49	0.260	0.295
C	3.81	5.08	0.150	0.200
D	0.38	0.56	0.015	0.022
F	1.40	1.65	0.055	0.065
G	2.54 BSC		0.100 BSC	
H	0.51	1.27	0.020	0.050
J	0.20	0.30	0.008	0.012
K	3.18	4.06	0.125	0.160
L	7.62 BSC		0.300 BSC	
M	0°	15°	0°	15°
N	0.25	1.02	0.010	0.040

**Case 738-03 N Suffix  
20-Pin Plastic**



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. DIMENSION "L" TO CENTER OF LEAD WHEN FORMED PARALLEL.
  4. DIMENSION "B" DOES NOT INCLUDE MOLD FLASH.
  5. 738-02 OBSOLETE, NEW STANDARD 738-03.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	25.66	27.17	1.010	1.070
B	6.10	6.60	0.240	0.260
C	3.81	4.57	0.150	0.180
D	0.39	0.55	0.015	0.022
E	1.27 BSC		0.050 BSC	
F	1.27	1.77	0.050	0.070
G	2.54 BSC		0.100 BSC	
J	0.21	0.38	0.008	0.015
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

## LOGIC DIAGRAM

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