MOTOROLA

MC74F620
MC74F623

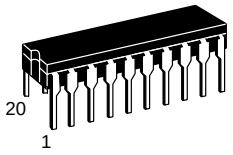
OCTAL BUS TRANSCEIVER WITH 3-STATE OUTPUTS (INVERTING AND NONINVERTING)

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

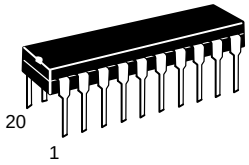
FAST™ SCHOTTKY TTL

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 ($\overline{OEBA}$ 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 $\overline{OEBA}$ 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.

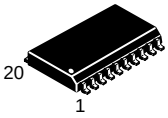
- High Impedance NPN base inputs for reduced loading (70 μA in High and Low states)
- Ideal for Applications which Require High Output drive and minimal bus loading
- Octal Bidirectional Bus Interface
- 3-State Buffer Outputs Sink 64 mA and Source 15 mA
- – F620 Inverting
  – F623 Noninverting
- ESD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



J SUFFIX
CERAMIC
CASE 732-03



N SUFFIX
PLASTIC
CASE 738-03

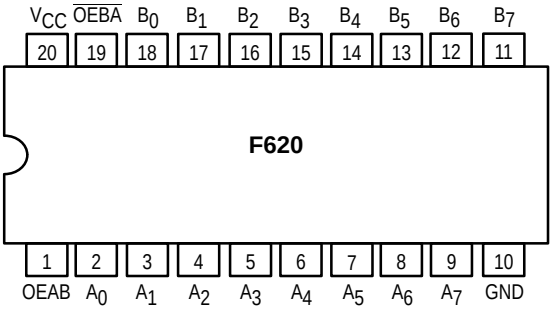


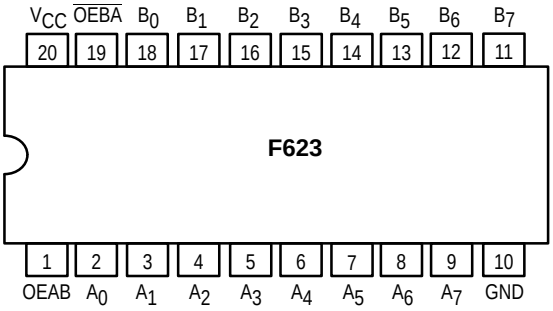
DW SUFFIX
SOIC
CASE 751D-03

ORDERING INFORMATION

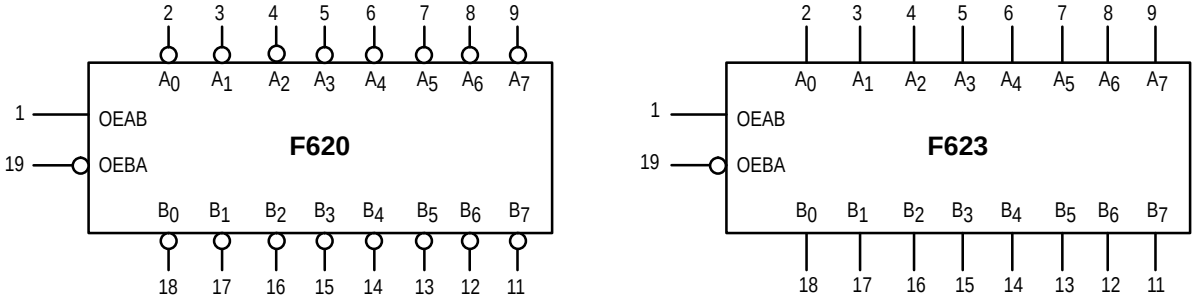
MC74FXXXJ	Ceramic
MC74FXXXN	Plastic
MC74FXXXDW	SOIC

PIN ASSIGNMENTS





LOGIC SYMBOLS



FUNCTION TABLE

Inputs		Operating Modes	
$\overline{OEBA}$	OEAB	F620	F623
L	L	$\overline{B}$ data to A bus	B data to A bus
H	H	$\overline{A}$ data to B bus	A data to B bus
H	L	Z	Z
L	H	$\overline{B}$ data to A bus $\overline{A}$ 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

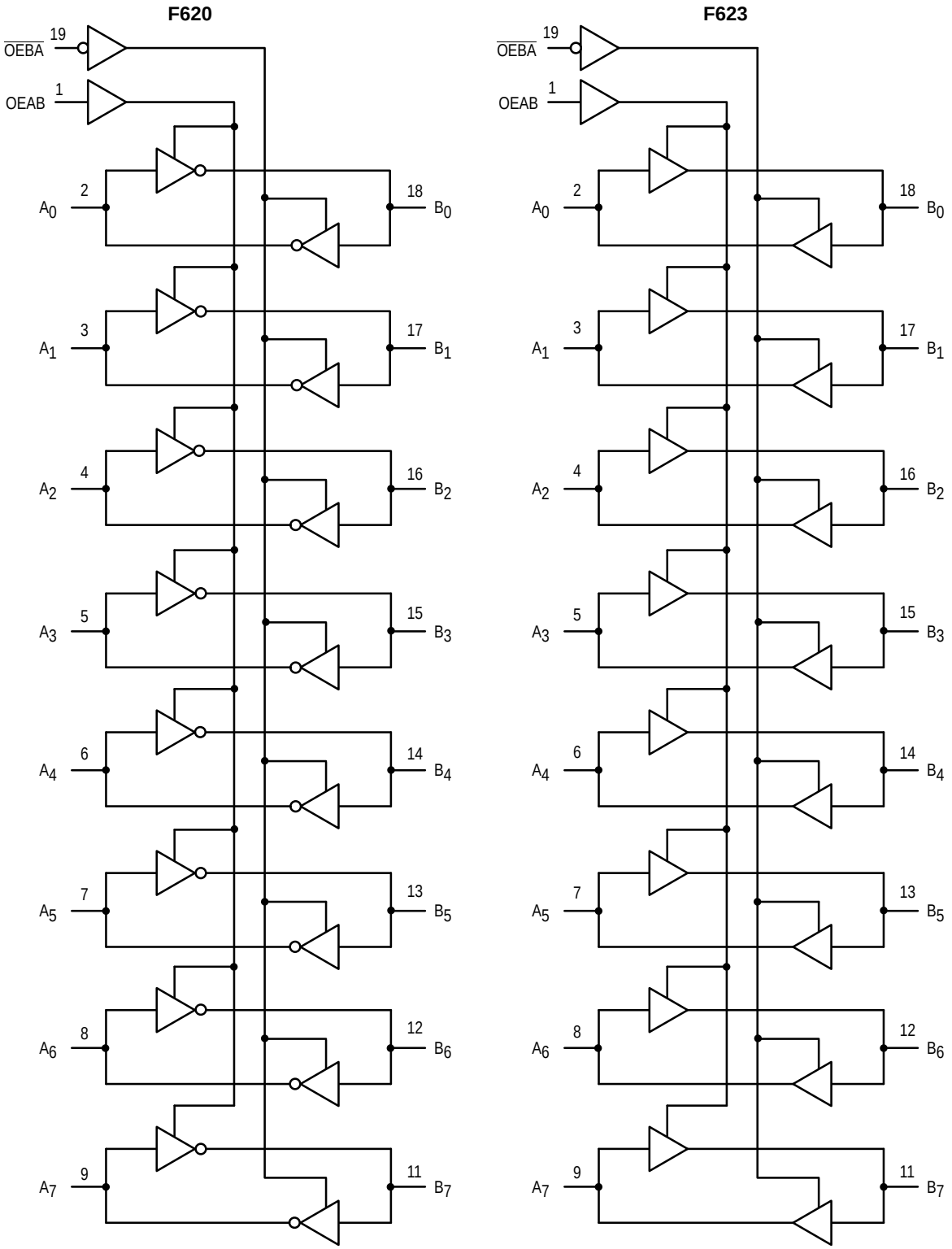
Symbol	Parameter			Limits			Unit
				Min	Typ	Max	
V_{CC}	DC Supply Voltage		74	4.5	5.0	5.5	V
T_A	Operating Ambient Temperature Range		74	0	25	70	°C
I_{OH}	Output Current — High	A_n Outputs	74	—	—	–3.0	mA
I_{OH}	Output Current — High	B_n Outputs	74	—	—	–15	mA
I_{OL}	Output Current — Low	A_n Outputs	74	—	—	24	mA
I_{OL}	Output Current — Low	B_n Outputs	74	—	—	64	mA

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

Symbol	Parameter			Limits			Unit	Test Conditions (Note 1)	
				Min	Typ	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			—	—	–1.2	V	V_{CC} = MIN, I_{IN} = –18 mA	
V_{OH}	Output HIGH Voltage	A_n	74	2.4	3.3	—	V	I_{OH} = –3.0 mA	V_{CC} = 4.5 V
			74	2.7	3.3	—	V	I_{OH} = –3.0 mA	V_{CC} = 4.75 V
		B_n	74	2.4	3.4	—	V	I_{OH} = –3.0 mA	V_{CC} = 4.5 V
			74	2.7	3.4	—	V	I_{OH} = –3.0 mA	V_{CC} = 4.75 V
			74	2.0	—	—	V	I_{OH} = –15.0 mA	V_{CC} = 4.5 V
V_{OL}	Output LOW Voltage	A_n	74	—	0.35	0.50	V	I_{OL} = 24 mA	V_{CC} = MIN
V_{OL}	Output LOW Voltage	B_n	74	—	—	0.55	V	I_{OL} = 64 mA	V_{CC} = MIN
$I_{OZH} + I_{IH}$	Output Off Current HIGH			—	—	70	µA	V_{CC} = MAX	V_{OUT} = 2.7 V
$I_{OZL} + I_{IL}$	Output Off Current LOW			—	—	–70	µA	V_{CC} = MAX	V_{OUT} = 0.5 V
I_{IH}	Input HIGH Current		$\overline{OEBA}$, OEAB	—	—	20	µA	V_{CC} = MAX, V_{IN} = 2.7 V	
			$\overline{OEBA}$, OEAB	—	—	100	µA	V_{CC} = 0 V, V_{IN} = 7.0 V	
			Others	—	—	1.0	mA	V_{CC} = MAX, V_{IN} = 5.5 V	
I_{IL}	Input LOW Current		Non I/O Pins	—	—	–20	µA	V_{CC} = MAX, V_{IN} = 0.5 V	
I_{OS}	Output Short Circuit Current (Note 2)		A_0–A_7	–60	—	–150	mA	V_{CC} = MAX, V_{OUT} = GND	
			B_0–B_7	–100	—	–225			
I_{CC}	Power Supply Current	F620	I_{CCH}	—	—	92	mA	V_{out} = HIGH	V_{CC} = MAX
			I_{CCL}	—	—	110		V_{out} = LOW	
			I_{CCZ}	—	—	92		V_{out} = HIGH Z	
I_{CC}	Power Supply Current	F623		—	—	120	mA	V_{CC} = 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.

LOGIC DIAGRAMS



AC ELECTRICAL CHARACTERISTICS For F620

Symbol	Parameter	74F $T_A = +25°C$ $V_{CC} = +5.0$ V $C_L = 50$ pF			74F $T_A = 0°C$ to $+70°C$ $V_{CC} = +5.0$ V $\pm 10\%$ $C_L = 50$ pF			Unit
		Min	Typ	Max	Min	Typ	Max	
t_{PLH} t_{PHL}	Propagation Delay A_n to B_n and B_n to A_n	2.5 1.0	— —	6.5 4.5	2.0 1.0	— —	7.5 5.0	ns
t_{PZH} t_{PZL}	Output Enable Time to High or Low level, $\overline{OEBA}$ to A_n	3.0 4.0	— —	10.5 10.5	2.5 3.5	— —	11.5 11.5	ns
t_{PHZ} t_{PLZ}	Output Disable Time to High or Low level, $\overline{OEBA}$ to A_n	2.5 1.5	— —	7.5 7.0	2.0 1.0	— —	8.0 7.5	ns
t_{PZH} t_{PZL}	Output Enable Time to High or Low level, OEAB to B_n	3.5 4.5	— —	10.5 10.0	3.5 4.0	— —	11.5 11.0	ns
t_{PHZ} t_{PLZ}	Output Disable Time to High or Low level, OEAB to B_n	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 $T_A = +25°C$ $V_{CC} = +5.0$ V $C_L = 50$ pF			74F $T_A = 0°C$ to $+70°C$ $V_{CC} = +5.0$ V $\pm 10\%$ $C_L = 50$ pF			Unit
		Min	Typ	Max	Min	Typ	Max	
t_{PLH} t_{PHL}	Propagation Delay A_n to B_n	2.0 3.0	— —	5.5 7.0	2.0 2.5	— —	6.5 7.5	ns
t_{PLH} t_{PHL}	Propagation Delay B_n to A_n	2.0 3.0	— —	6.0 7.0	2.0 2.5	— —	6.5 7.5	ns
t_{PZH} t_{PZL}	Output Enable Time to High or Low level, $\overline{OEBA}$ to A_n	3.5 5.0	— —	10.5 9.5	3.5 5.0	— —	12.0 10.0	ns
t_{PHZ} t_{PLZ}	Output Disable Time to High or Low level, $\overline{OEBA}$ to A_n	1.5 1.5	— —	6.5 6.5	1.5 1.5	— —	7.5 7.0	ns
t_{PZH} t_{PZL}	Output Enable Time to High or Low level, OEAB to B_n	3.5 4.5	— —	10.0 9.0	3.5 4.5	— —	11.5 9.5	ns
t_{PHZ} t_{PLZ}	Output Disable Time to High or Low level, OEAB to B_n	3.0 4.0	— —	8.5 9.0	3.0 2.0	— —	10.0 10.0	ns