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MOTOROLA

MC74F640

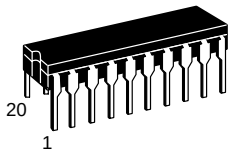
OCTAL BUS TRANSCEIVER, INVERTING WITH 3-STATE OUTPUTS

OCTAL BUS TRANSCEIVER, INVERTING WITH 3-STATE OUTPUTS

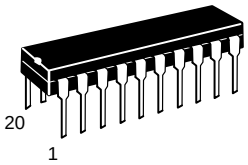
FAST™ SCHOTTKY TTL

The MC74F640 is an octal transceiver featuring inverting 3-state bus compatible outputs in both transmit and receive directions. The B port outputs are capable of sinking 64 mA and sourcing 15 mA, providing very good capacitive drive characteristics. The device features an Output Enable ($\overline{OE}$) input for easy cascading and Transmit/Receive (T/$\overline{R}$) input for direction control. The 3-state outputs, B_0–B_7, have been designed to prevent output bus loading if the power is removed from the device.

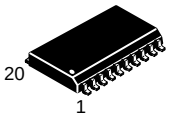
- High-Impedance NPN Base Inputs for Reduced Loading (70 μA in High and Low States)
- Ideal for Applications which Require High-Output Drive and Minimal Bus Loading
- Inverting Version of F245
- Octal Bidirectional Bus Interface
- 3-State Buffer Outputs Sink 64 mA and Source 15 mA
- ESD Sensitive — 4000 V HBM



J SUFFIX
CERAMIC
CASE 732-03



N SUFFIX
PLASTIC
CASE 738-03

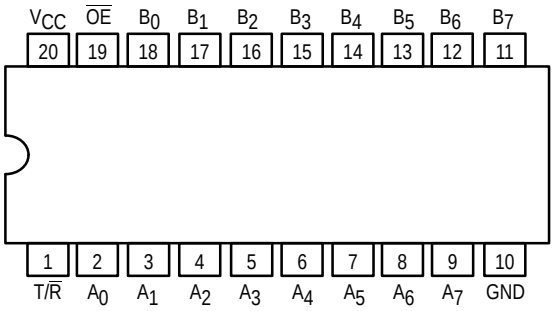


DW SUFFIX
SOIC
CASE 751D-03

ORDERING INFORMATION

MC74FXXXJ	Ceramic
MC74FXXXN	Plastic
MC74FXXXDW	SOIC

PIN ASSIGNMENT

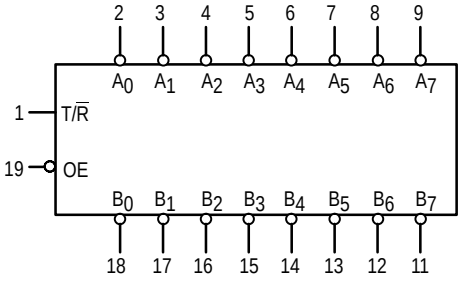


FUNCTION TABLE

Inputs		
$\overline{OE}$	T/$\overline{R}$	Outputs
L	L	Bus B data to Bus $\overline{A}$
L	H	Bus A data to Bus $\overline{B}$
H	X	Z

H = High Voltage Level
L = Low Voltage Level
X = Don't Care
Z = High Impedance "Off" State

LOGIC SYMBOL



GUARANTEED OPERATING RANGES

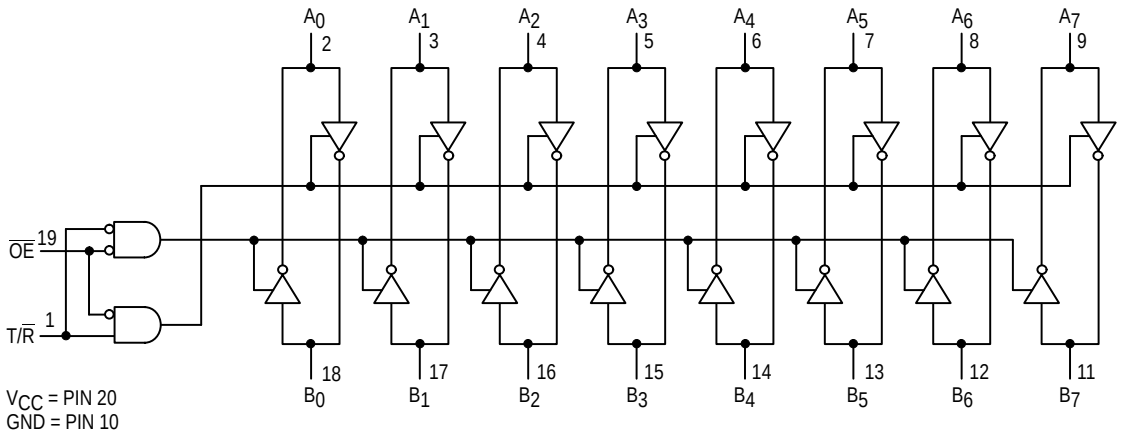
Symbol	Parameter			Min	Typ	Max	Unit
V_{CC}	DC Supply Voltage		74	4.5	5.0	5.5	V
T_A	Operating Ambient Temperature Range		74	0	25	70	°C
I_{OH}	Output Current — High	A_n Outputs	74			–3.0	mA
I_{OH}	Output Current — High	B_n Outputs	74			–15	mA
I_{OL}	Output Current — Low	A_n Outputs	74			24	mA
I_{OL}	Output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

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

Symbol	Parameter			Limits Min	Limits Typ	Limits Max	Unit	Test Conditions[1]	
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 mA	V_{CC} = 4.5 V
V_{OL}	Output LOW Voltage	A_n	74		0.35	0.5	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	$\overline{OE}$, T/$\overline{R}$				40	µA	V_{CC} = MAX, V_{IN} = 2.7 V	
		$\overline{OE}$, T/$\overline{R}$				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	$\overline{OE}$, T/$\overline{R}$				–40	µA	V_{CC} = MAX, V_{IN} = 0.5 V	
I_{OS}	Output Short Circuit Current[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	I_{CCH}				85	mA	V_{out} = HIGH, T/$\overline{R}$ = 4.5 V	V_{CC} = MAX
		I_{CCL}				120		V_{out} = LOW, T/$\overline{R}$ = 0 V	
		I_{CCZ}				100		$\overline{OE}$ = 4.5 V, V_{out} = HIGH Z	

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 DIAGRAM



AC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	74F $T_A = +25°C$, $V_{CC} = +5.0$ V, $C_L = 50$ pF, $R_L = 500\ \Omega$			74F $T_A = 0°C$ to $+70°C$, $V_{CC} = +5.0$ V $\pm 10\%$, $C_L = 50$ pF, $R_L = 500\ \Omega$			Unit
		Min	Typ	Max	Min	Typ	Max	
t_{PLH} t_{PHL}	Propagation Delay A_n to B_n, B_n to A_n	2.0 1.0		7.0 5.0	2.0 1.0		8.0 5.5	ns
t_{PZH} t_{PZL}	Output Enable Time to High or Low Level	3.5 6.0		11 11	3.5 6.0		13 12	ns
t_{PHZ} t_{PLZ}	Output Disable Time to High or Low Level	1.5 1.0		8.0 7.0	1.5 1.0		9.0 7.5	ns