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**Printed on:Mon, Feb 6, 1995 09:51:45**

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**Last saved on:Fri, Feb 3, 1995 16:10:59**

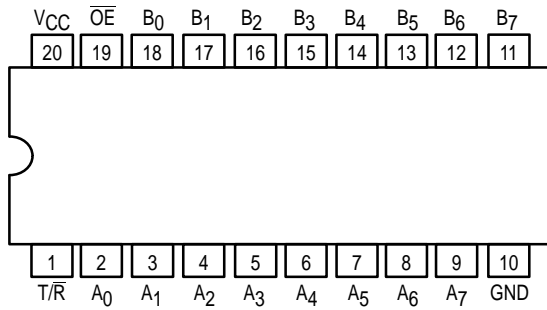


# OCTAL BUS TRANSCEIVER, INVERTING WITH 3-STATE OUTPUTS

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  $\mu$ A 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

### PIN ASSIGNMENT



### FUNCTION TABLE

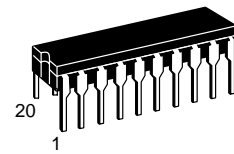
Inputs		Outputs
$\overline{OE}$	$T/\overline{R}$	
L	L	Bus B data to Bus $\overline{A}$
L	H	Bus A data to Bus $\overline{B}$
H	X	Z

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

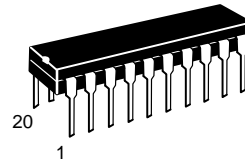
## MC74F640

### OCTAL BUS TRANSCEIVER, INVERTING WITH 3-STATE OUTPUTS

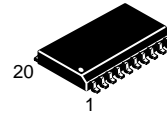
FAST™ SCHOTTKY TTL



**J SUFFIX**  
CERAMIC  
CASE 732-03



**N SUFFIX**  
PLASTIC  
CASE 738-03

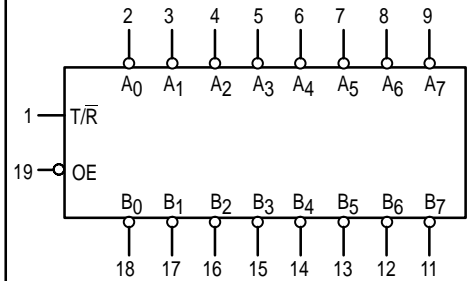


**DW SUFFIX**  
SOIC  
CASE 751D-03

### ORDERING INFORMATION

MC74FXXXJ Ceramic  
MC74FXXXN Plastic  
MC74FXXXDW SOIC

### LOGIC SYMBOL



# MC74F640

## GUARANTEED OPERATING RANGES

Symbol	Parameter		Min	Typ	Max	Unit	
V <sub>CC</sub>	DC Supply Voltage		74	4.5	5.0	5.5	V
T <sub>A</sub>	Operating Ambient Temperature Range		74	0	25	70	°C
I <sub>OH</sub>	Output Current — High	A <sub>n</sub> Outputs	74			-3.0	mA
I <sub>OH</sub>	Output Current — High	B <sub>n</sub> Outputs	74			-15	mA
I <sub>OL</sub>	Output Current — Low	A <sub>n</sub> Outputs	74			24	mA
I <sub>OL</sub>	Output Current — Low	B <sub>n</sub> Outputs	74			64	mA

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

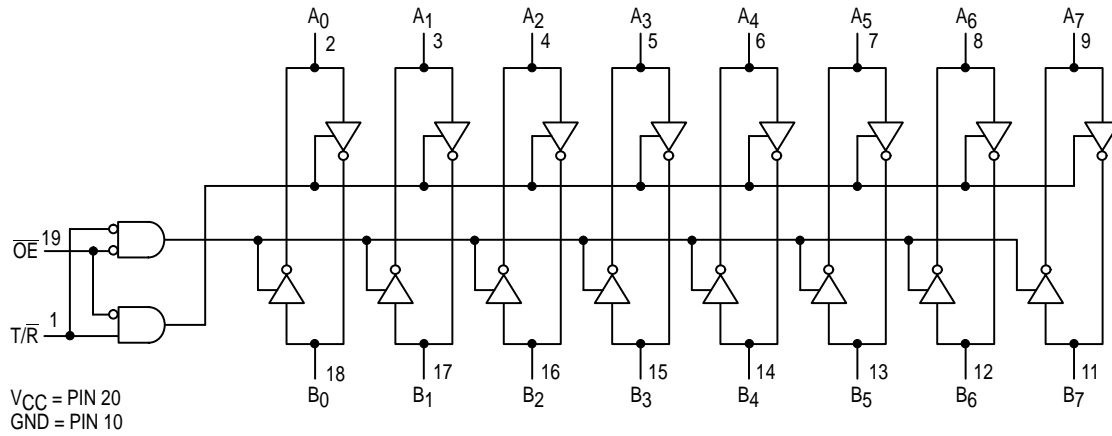
Symbol	Parameter		Limits			Unit	Test Conditions <sup>1</sup>	
			Min	Typ	Max			
V <sub>IH</sub>	Input HIGH Voltage		2.0			V	Guaranteed as a HIGH Signal	
V <sub>IL</sub>	Input LOW Voltage				0.8	V	Guaranteed as a LOW Signal	
V <sub>IK</sub>	Input Clamp Diode Voltage				-1.2	V	V <sub>CC</sub> = MIN, I <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 mA	V <sub>CC</sub> = 4.5 V
V <sub>OL</sub>	Output LOW Voltage	A <sub>n</sub>	74		0.35	0.5	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	OE, T/R				40	μA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 2.7 V
		OE, T/R				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	OE, T/R				-40	μA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 0.5 V
I <sub>OS</sub>	Output Short Circuit Current <sup>2</sup>	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	I <sub>CC</sub> H				85	mA	V <sub>out</sub> = HIGH T/R = 4.5 V
		I <sub>CC</sub> L				120		V <sub>out</sub> = LOW T/R = 0 V
		I <sub>CC</sub> Z				100		OE = 4.5 V V <sub>out</sub> = HIGH Z

### NOTES:

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

# MC74F640

## LOGIC DIAGRAM



## AC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	74F			74F			Unit
		$T_A = +25^\circ\text{C}$ $V_{CC} = +5.0\text{ V}$ $C_L = 50\text{ pF}$ $R_L = 500\ \Omega$			$T_A = 0^\circ\text{C to } +70^\circ\text{C}$ $V_{CC} = +5.0\text{ V } \pm 10\%$ $C_L = 50\text{ pF}$ $R_L = 500\ \Omega$			
		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

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