



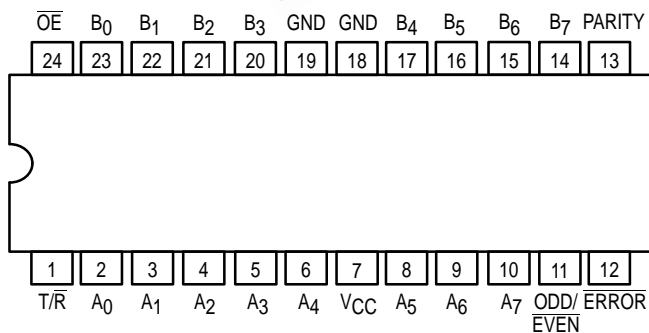
# OCTAL BIDIRECTIONAL TRANSCEIVER WITH 8-BIT PARITY GENERATOR CHECKER (3-STATE OUTPUTS)

The MC74F657A and MC74F657B are Octal Bidirectional Transceivers with an 8-bit parity Generator/Checker and 3-state outputs.

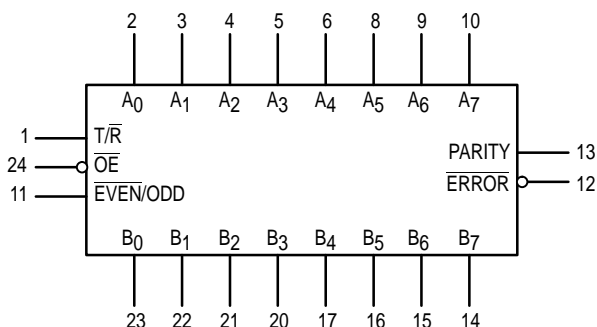
The A and B options are faster versions of the F657 and contain eight non-inverting buffers with 3-state outputs and an 8-bit parity generator/checker. These devices are intended for bus-oriented applications. The buffers have a guaranteed current sinking capability of 24 mA at the A ports and 64 mA at the B ports. The Transmit/Receiver ( $T/\bar{R}$ ) input determines the direction of the data flow through the bidirectional transceivers. Transmit (active HIGH) enables data from A ports to B ports; Receive (active LOW) enables data from B ports to A ports.

- High-Impedance NPN Base Input for Reduced Loading (20  $\mu$ A in HIGH and LOW States)
- Ideal in Applications Where High Output Drive and Light Bus Loading are Required ( $I_{IL}$  is 20  $\mu$ A versus Fast std of 600  $\mu$ A)
- Combines F245 and F280A Functions in One Package
- 3-State Outputs
- B Outputs,  $\overline{\text{PARITY}}$ ,  $\overline{\text{ERROR}}$ , Sink 64 mA and Source 15 mA
- 15 mA Source Current
- Input Diodes for Termination Effects
- Glitchless Outputs During Power Up and Power Down
- High Impedance Outputs During Power Off
- ESD Protection > 4000 Volts

## PIN ASSIGNMENT



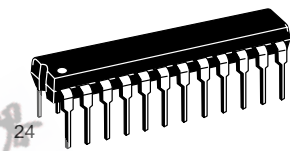
## LOGIC SYMBOL



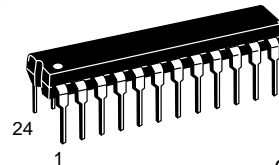
## MC74F657A,B

OCTAL BIDIRECTIONAL TRANSCEIVER WITH 8-BIT PARITY GENERATOR CHECKER (3-STATE OUTPUTS)

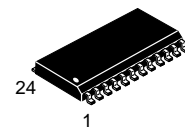
FAST™ SCHOTTKY TTL



J SUFFIX  
CERAMIC  
CASE 758-01



N SUFFIX  
PLASTIC  
CASE 724-03



DW SUFFIX  
SOIC  
CASE 751E-03

## ORDERING INFORMATION

MC74FXXXAJ/BJ	Ceramic
MC74FXXXAN/BN	Plastic
MC74FXXXADW/BDW	SOIC

# MC74F657A, B

## GUARANTEED OPERATING RANGES

Symbol	Parameter	Min	Typ	Max	Unit	
V <sub>CC</sub>	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	74			-3.0/-15	mA
I <sub>OL</sub>	Output Current — Low	74			24/64	mA

## FUNCTION TABLE

Number of Inputs That are High	Inputs			Input/Output	Outputs	
	OE	T/R	Even/Odd	Parity	Error	Outputs Mode
0, 2, 4, 6, 8	L	H	H	H	Z	Transmit
	L	H	L	L	Z	Transmit
	L	L	H	H	H	Receive
	L	L	H	L	L	Receive
	L	L	L	H	L	Receive
	L	L	L	L	L	Receive

Number of Inputs That are High	Inputs			Input/Output	Outputs	
	OE	T/R	Even/Odd	Parity	Error	Outputs Mode
1, 3, 5, 7	L	H	H	L	Z	Transmit
	L	H	L	H	Z	Transmit
	L	L	H	H	L	Receive
	L	L	H	L	H	Receive
	L	L	L	H	H	Receive
	L	L	L	L	L	Receive
Don't Care	H	X	X	Z	Z	Z

H = HIGH Voltage Level; L = LOW Voltage Level; X = Don't Care; Z = HIGH impedance state.

## MC74F657A, B

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

Symbol	Parameter		Limits			Unit	Test Conditions		
			Min	Typ	Max				
V <sub>IH</sub>	Input HIGH Voltage		2.0			V	Guaranteed Input HIGH Voltage		
V <sub>IL</sub>	Input LOW Voltage				0.8	V	Guaranteed Input LOW Voltage		
V <sub>IK</sub>	Input Clamp Diode Voltage			-0.73	-1.2	V	V <sub>CC</sub> = MIN, I <sub>IN</sub> = -18 mA		
V <sub>OH</sub>	Output HIGH Voltage	All Outputs	74	2.4			V	I <sub>OH</sub> = -3.0 mA	V <sub>CC</sub> = 4.5 V
				2.7	3.4				V <sub>CC</sub> = 4.75 V
		B0-B7 PARITY, ERROR	74	2.0			V	I <sub>OH</sub> = -15 mA	V <sub>CC</sub> = 4.5 V
V <sub>OL</sub>	Output LOW Voltage	A0-A7	74		0.35	0.5	V	I <sub>OL</sub> = 24 mA	V <sub>CC</sub> = MIN
		B0-B7 PARITY, ERROR	74		0.4	0.55	V	I <sub>OL</sub> = 64 mA	
I <sub>IH</sub>	Input HIGH Current	T/R, OE, EVEN/ODD				100	μA	V <sub>CC</sub> = 0 V, V <sub>IN</sub> = 7.0 V	
		A0-A7				2.0	mA	V <sub>CC</sub> = 5.5 V, V <sub>IN</sub> = 5.5 V	
		B0-B7, PARITY				1.0	mA	V <sub>CC</sub> = 5.5 V, V <sub>IN</sub> = 5.5 V	
		EVEN/ODD				20	μA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 2.7 V	
		T/R, OE				40	μA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 2.7 V	
I <sub>IL</sub>	Input LOW Current	EVEN/ODD				-20	μA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 0.5 V	
		T/R, OE				-40	μA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 0.5 V	
I <sub>IH</sub> +I <sub>OZH</sub>	Off-State Current HIGH Level Voltage Applied	A0-A7 B0-B7 PARITY			70	μA	V <sub>CC</sub> = MAX, V <sub>OUT</sub> = 2.7 V		
I <sub>IL</sub> +I <sub>OZL</sub>	Off-State Current LOW Level Voltage Applied				-70	μA	V <sub>CC</sub> = MAX, V <sub>OUT</sub> = 0.5 V		
I <sub>OZH</sub>	Off-State Output Current, High-Level Voltage Applied	ERROR			50	μA	V <sub>CC</sub> = MAX, V <sub>OUT</sub> = 2.7 V		
I <sub>OZL</sub>	Off-State Output Current, Low-Level Voltage Applied				-50	μA	V <sub>CC</sub> = MAX, V <sub>OUT</sub> = 0.5 V		
I <sub>OS</sub>	Output Short Circuit Current (Note 2)	A <sub>n</sub> Outputs		-60		-150	mA	V <sub>CC</sub> = MAX, V <sub>OUT</sub> = 0 V	
		PARITY, B <sub>n</sub> Outputs, ERROR		-100		-225			
I <sub>CC</sub>	Total Supply Current	I <sub>CC</sub> H			90	135	mA	V <sub>CC</sub> = MAX	
		I <sub>CC</sub> L			106	150			
		I <sub>CC</sub> Z			98	145			

**NOTES:**

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

## MC74F657A, B

### F657A

#### AC ELECTRICAL CHARACTERISTICS

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	Max	
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay A <sub>n</sub> to B <sub>n</sub> or B <sub>n</sub> to A <sub>n</sub>	2.0 2.0		7.0 7.0	2.0 2.0	7.5 7.5	ns
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay A <sub>n</sub> to PARITY	6.0 6.5		13 13	5.5 6.5	14 14	ns
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay EVEN/ODD to PARITY, $\overline{\text{ERROR}}$	4.5 4.5		10.5 10.5	4.5 4.5	11 11.5	ns
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay B <sub>n</sub> to $\overline{\text{ERROR}}$	7.0 7.0		18 18	6.5 6.5	19 19	ns
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay PARITY to $\overline{\text{ERROR}}$	8.0 7.0		14 14	7.0 7.0	15 15	ns
t <sub>PZH</sub> t <sub>PZL</sub>	Output Enable Time to HIGH or LOW Level	3.0 4.0		8.0 9.0	3.0 4.0	9.0 10	ns
t <sub>PHZ</sub> t <sub>PLZ</sub>	Output Disable Time from HIGH or LOW Level	2.0 2.0		7.5 6.0	2.0 2.0	8.0 6.5	ns

### F657B

#### AC ELECTRICAL CHARACTERISTICS

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	Max	
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay A <sub>n</sub> to B <sub>n</sub> or B <sub>n</sub> to A <sub>n</sub>	2.0 2.0		6.0 6.0	2.0 2.0	6.5 6.5	ns
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay A <sub>n</sub> to PARITY	4.5 4.5		11.5 11.5	4.5 4.5	13 13	ns
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay EVEN/ODD to PARITY, $\overline{\text{ERROR}}$	2.0 2.0		7.5 7.5	2.0 2.0	8.5 8.5	ns
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay B <sub>n</sub> to $\overline{\text{ERROR}}$	4.0 4.0		15 15	3.5 3.5	16 16	ns
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay PARITY to $\overline{\text{ERROR}}$	5.0 5.0		11 11	4.0 4.0	12 12	ns
t <sub>PZH</sub> t <sub>PZL</sub>	Output Enable Time to HIGH or LOW Level	2.0 2.0		7.0 7.0	2.0 2.0	8.0 8.0	ns
t <sub>PHZ</sub> t <sub>PLZ</sub>	Output Disable Time from HIGH or LOW Level	2.0 2.0		6.0 6.0	2.0 2.0	6.5 6.5	ns

# MC74F657A, B

## LOGIC DIAGRAM

