



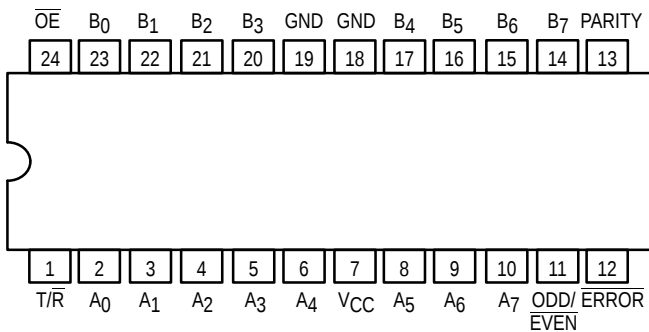
OCTAL BIDIRECTIONAL TRANSCEIVER WITH 8-BIT PARITY GENERATOR CHECKER (3-STATE OUTPUTS)

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

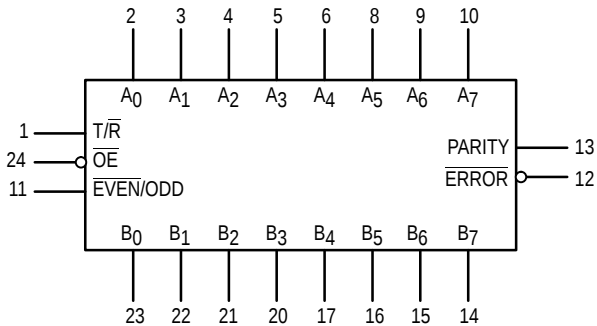
The A and B options are faster versions of the F657 and contain eight non-inverting buffers with 3-state outputs and an 8-bit parity generator/checker. These devices are intended for bus-oriented applications. The buffers have a guaranteed current sinking capability of 24 mA at the A ports and 64 mA at the B ports. The Transmit/Receiver ($\overline{T/R}$) 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 μ A in HIGH and LOW States)
- Ideal in Applications Where High Output Drive and Light Bus Loading are Required (I_{OL} is 20 μ A versus Fast std of 600 μ A)
- Combines F245 and F280A Functions in One Package
- 3-State Outputs
- B Outputs, $\overline{PARITY}$, $\overline{ERROR}$, 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



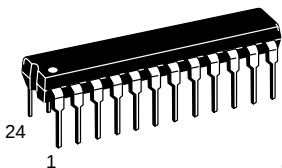
LOGIC SYMBOL



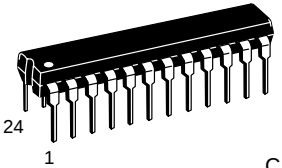
MC74F657A,B

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

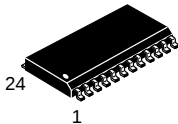
FAST™ SCHOTTKY TTL



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 _{CC}	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	74			–3.0/–15	mA
I _{OL}	Output Current — Low	74			24/64	mA

FUNCTION TABLE

Number of Inputs That are High	Inputs			Input/Output	Outputs	
	OE	T/ $\bar{R}$	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	H	Receive

Number of Inputs That are High	Inputs			Input/Output	Outputs	
	OE	T/ $\bar{R}$	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 _{IH}	Input HIGH Voltage			2.0			V	Guaranteed Input HIGH Voltage	
V _{IL}	Input LOW Voltage					0.8	V	Guaranteed Input LOW Voltage	
V _{IK}	Input Clamp Diode Voltage				−0.73	−1.2	V	V _{CC} = MIN, I _{IN} = −18 mA	
V _{OH}	Output HIGH Voltage	All Outputs	74	2.4			V	I _{OH} = −3.0 mA	V _{CC} = 4.5 V
				2.7	3.4				V _{CC} = 4.75 V
		B0–B7 PARITY, ERROR	74	2.0			V	I _{OH} = −15 mA	V _{CC} = 4.5 V
V _{OL}	Output LOW Voltage	A0–A7	74		0.35	0.5	V	I _{OL} = 24 mA	V _{CC} = MIN
		B0–B7 PARITY, ERROR	74		0.4	0.55	V	I _{OL} = 64 mA	
I _{IH}	Input HIGH Current	T/ $\overline{R}$, $\overline{OE}$, EVEN/ODD				100	μA	V _{CC} = 0 V, V _{IN} = 7.0 V	
		A0–A7				2.0	mA	V _{CC} = 5.5 V, V _{IN} = 5.5 V	
		B0–B7, PARITY				1.0		V _{CC} = 5.5 V, V _{IN} = 5.5 V	
		$\overline{EVEN/ODD}$				20	μA	V _{CC} = MAX, V _{IN} = 2.7 V	
		T/ $\overline{R}$, $\overline{OE}$				40			
I _{IL}	Input LOW Current	$\overline{EVEN/ODD}$				−20	μA	V _{CC} = MAX, V _{IN} = 0.5 V	
		T/ $\overline{R}$, $\overline{OE}$				−40			
I _{IH} +I _{OZH}	Off-State Current HIGH Level Voltage Applied	A0–A7 B0–B7 PARITY				70	μA	V _{CC} = MAX, V _{OUT} = 2.7 V	
I _{IL} +I _{OZL}	Off-State Current LOW Level Voltage Applied					−70		V _{CC} = MAX, V _{OUT} = 0.5 V	
I _{OZH}	Off-State Output Current, High-Level Voltage Applied	$\overline{ERROR}$				50	μA	V _{CC} = MAX, V _{OUT} = 2.7 V	
I _{OZL}	Off-State Output Current, Low-Level Voltage Applied					−50		V _{CC} = MAX, V _{OUT} = 0.5 V	
I _{OS}	Output Short Circuit Current (Note 2)	A _n Outputs		−60		−150	mA	V _{CC} = MAX, V _{OUT} = 0 V	
		PARITY, B _n Outputs, ERROR		−100		−225			
I _{CC}	Total Supply Current	I _{CC} H			90	135	mA	V _{CC} = MAX	
		I _{CC} L			106	150			
		I _{CC} 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 _A = +25°C V _{CC} = +5.0 V C _L = 50 pF			T _A = 0°C to +70°C V _{CC} = +5.0 V ± 10% C _L = 50 pF		
		Min	Typ	Max	Min	Max	
t _{PLH} t _{PHL}	Propagation Delay A _N to B _N or B _N to A _N	2.0 2.0		7.0 7.0	2.0 2.0	7.5 7.5	ns
t _{PLH} t _{PHL}	Propagation Delay A _N to PARITY	6.0 6.5		13 13	5.5 6.5	14 14	ns
t _{PLH} t _{PHL}	Propagation Delay EVEN/ODD to PARITY, ERROR	4.5 4.5		10.5 10.5	4.5 4.5	11 11.5	ns
t _{PLH} t _{PHL}	Propagation Delay B _N to ERROR	7.0 7.0		18 18	6.5 6.5	19 19	ns
t _{PLH} t _{PHL}	Propagation Delay PARITY to ERROR	8.0 7.0		14 14	7.0 7.0	15 15	ns
t _{PZH} t _{PZL}	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 _{PHZ} t _{PLZ}	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
		$T_A = +25^{\circ}\text{C}$ $V_{CC} = +5.0\text{ V}$ $C_L = 50\text{ pF}$			$T_A = 0^{\circ}\text{C to } +70^{\circ}\text{C}$ $V_{CC} = +5.0\text{ V} \pm 10\%$ $C_L = 50\text{ pF}$		
		Min	Typ	Max	Min	Max	
t _{PLH} t _{PHL}	Propagation Delay A _N to B _N or B _N to A _N	2.0 2.0		6.0 6.0	2.0 2.0	6.5 6.5	ns
t _{PLH} t _{PHL}	Propagation Delay A _N to PARITY	4.5 4.5		11.5 11.5	4.5 4.5	13 13	ns
t _{PLH} t _{PHL}	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 _{PLH} t _{PHL}	Propagation Delay B _N to $\overline{\text{ERROR}}$	4.0 4.0		15 15	3.5 3.5	16 16	ns
t _{PLH} t _{PHL}	Propagation Delay PARITY to $\overline{\text{ERROR}}$	5.0 5.0		11 11	4.0 4.0	12 12	ns
t _{PZH} t _{PZL}	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 _{PHZ} t _{PLZ}	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

