



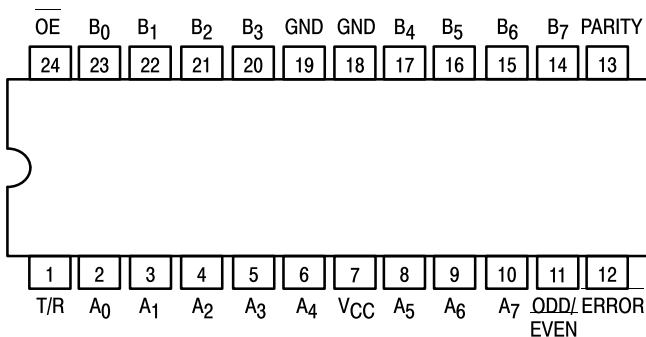
OCTAL BIDIRECTIONAL TRANSCEIVER WITH 8-BIT PARITY GENERATOR CHECKER (3-STATE OUTPUTS)

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

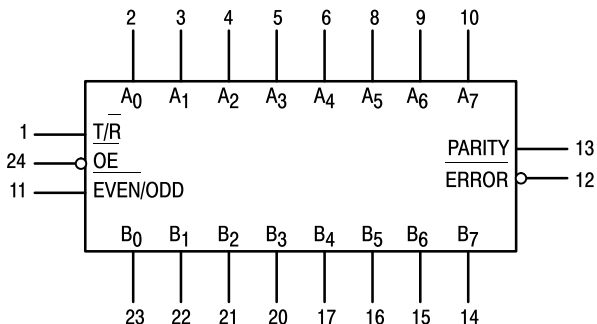
The A and B options are faster versions of the F657 and contain eight non-inverting buffers with 3-state outputs and an 8-bit parity generator/checker. These devices are intended for bus-oriented applications. The buffers have a guaranteed current sinking capability of 24 mA at the A ports and 64 mA at the B ports. The Transmit/Receiver (T/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, PARITY, 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



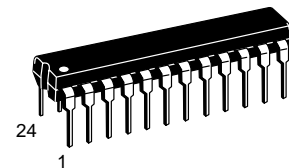
LOGIC SYMBOL



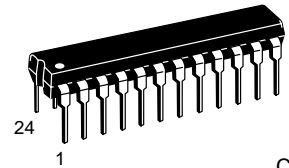
MC74F657A,B

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

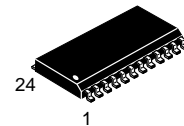
FAST™ SCHOTTKY TTL



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	5.5	V
T _A	Operating Ambient Temperature Range	74	0	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/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/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
V _{OL}	Output LOW Voltage	B0-B7 PARITY, ERROR	74	2.0			V	I _{OH} = -15 mA	V _{CC} = 4.5 V
		A0-A7	74		0.35	0.5	V	I _{OL} = 24 mA	V _{CC} = MIN
I _{IH}	Input HIGH Current	B0-B7 PARITY, ERROR	74		0.4	0.55	V	I _{OL} = 64 mA	
		T/R, OE, EVEN/ODD				100	μA	V _{CC} = 0 V, V _{IN} = 7.0 V	
I _{IH}	Input HIGH Current	A0-A7				2.0	mA	V _{CC} = 5.5 V, V _{IN} = 5.5 V	
		B0-B7, PARITY				1.0	mA	V _{CC} = 5.5 V, V _{IN} = 5.5 V	
		EVEN/ODD				20	μA	V _{CC} = MAX, V _{IN} = 2.7 V	
		T/R, OE				40	μA	V _{CC} = MAX, V _{IN} = 2.7 V	
I _{IL}	Input LOW Current	EVEN/ODD				-20	μA	V _{CC} = MAX, V _{IN} = 0.5 V	
		T/R, OE				-40	μA	V _{CC} = MAX, V _{IN} = 0.5 V	
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	μA	V _{CC} = MAX, V _{OUT} = 0.5 V	
I _{OZH}	Off-State Output Current, High-Level Voltage Applied	ERROR				50	μA	V _{CC} = MAX, V _{OUT} = 2.7 V	
I _{OZL}	Off-State Output Current, Low-Level Voltage Applied					-50	μA	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		7.0	2.0	7.5	ns
t _{PLH} t _{PHL}	Propagation Delay A _n to PARITY	6.0		13	5.5	14	ns
t _{PLH} t _{PHL}	Propagation Delay EVEN/ODD to PARITY, ERROR	4.5		10.5	4.5	11	ns
t _{PLH} t _{PHL}	Propagation Delay B _n to ERROR	7.0		18	6.5	19	ns
t _{PLH} t _{PHL}	Propagation Delay PARITY to ERROR	8.0		14	7.0	15	ns
t _{PZH} t _{PZL}	Output Enable Time to HIGH or LOW Level	3.0		8.0	3.0	9.0	ns
t _{PHZ} t _{PLZ}	Output Disable Time from HIGH or LOW Level	2.0		7.5	2.0	8.0	ns

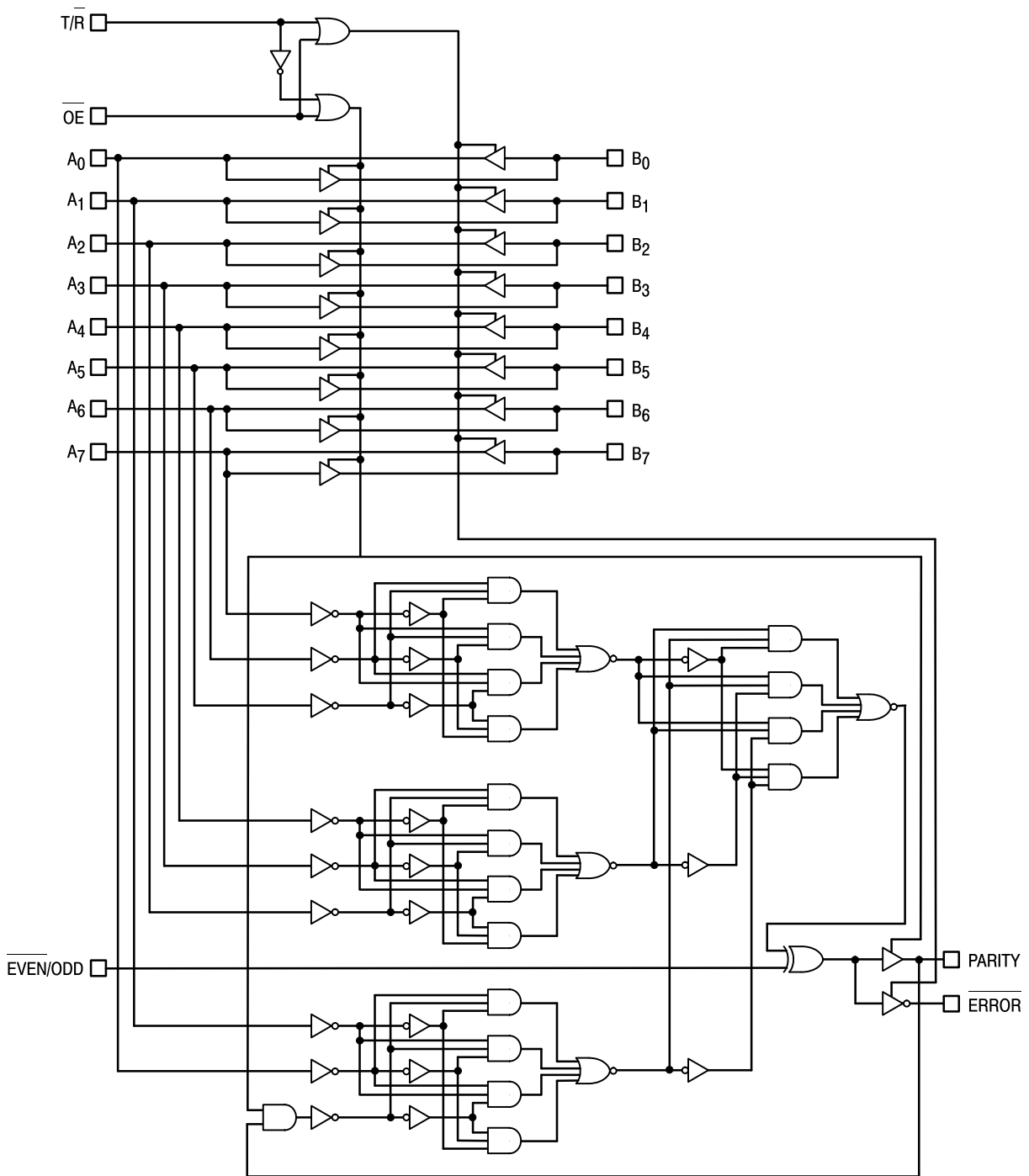
F657B

AC ELECTRICAL CHARACTERISTICS

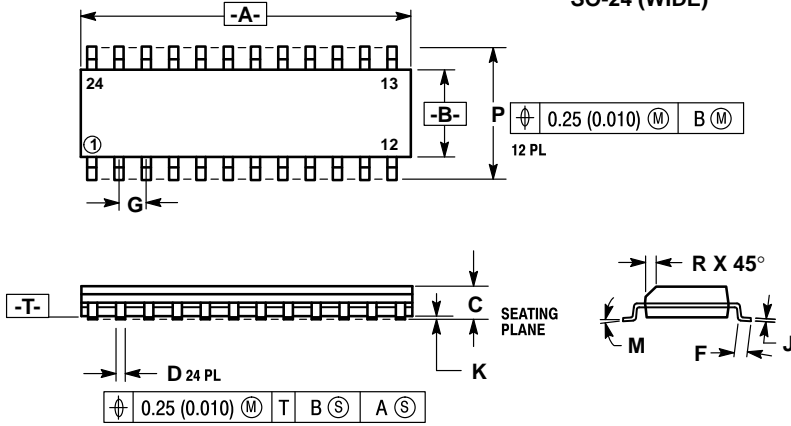
Symbol	Parameter	74F			74F		Unit
		T _A = +25°C V _{CC} = +5.0 V C _L = 50 pF			T _A = 0°C to +70°C V _{CC} = +5.0 V ± 10% C _L = 50 pF		
		Min	Typ	Max	Min	Max	
t _{PLH} t _{PHL}	Propagation Delay A _n to B _n or B _n to A _n	2.0		6.0	2.0	6.5	ns
t _{PLH} t _{PHL}	Propagation Delay A _n to PARITY	4.5		11.5	4.5	13	ns
t _{PLH} t _{PHL}	Propagation Delay EVEN/ODD to PARITY, ERROR	2.0		7.5	2.0	8.5	ns
t _{PLH} t _{PHL}	Propagation Delay B _n to ERROR	4.0		15	3.5	16	ns
t _{PLH} t _{PHL}	Propagation Delay PARITY to ERROR	5.0		11	4.0	12	ns
t _{PZH} t _{PZL}	Output Enable Time to HIGH or LOW Level	2.0		7.0	2.0	8.0	ns
t _{PHZ} t _{PLZ}	Output Disable Time from HIGH or LOW Level	2.0		6.0	2.0	6.5	ns

MC74F657A, B

LOGIC DIAGRAM



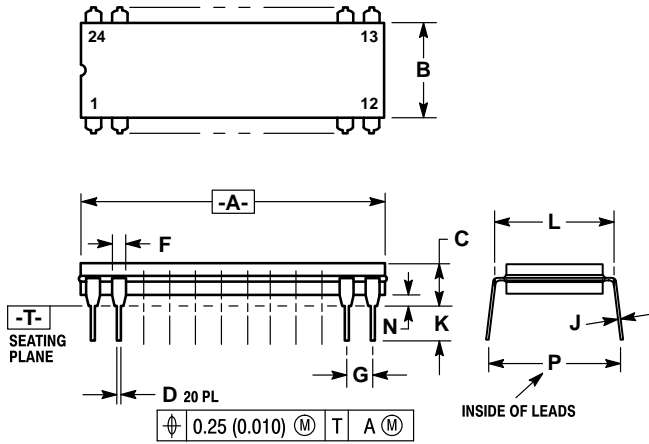
**Case 751E-03 DW Suffix
24-Pin Plastic
SO-24 (WIDE)**



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: MILLIMETER.
 3. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
 4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
 5. 751E-01 AND -02 OBSOLETE, NEW STANDARD 751E-03.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	15.25	15.54	0.601	0.612
B	7.40	7.60	0.292	0.299
C	2.35	2.65	0.093	0.104
D	0.35	0.49	0.014	0.019
F	0.41	0.90	0.016	0.035
G	1.27 BSC		0.050 BSC	
J	0.229	0.317	0.0090	0.0125
K	0.127	0.292	0.0050	0.0115
M	0°	8°	0°	8°
P	10.05	10.55	0.395	0.415
R	0.25	0.75	0.010	0.029

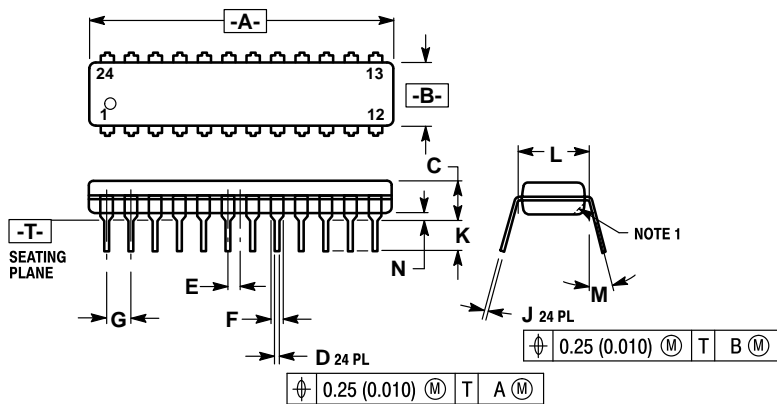
**Case 758-01 J Suffix
24-Pin Ceramic Dual In-Line**



- NOTES:
1. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
 2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5, 1973.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	31.50	32.64	1.240	1.285
B	7.24	7.75	0.285	0.305
C	3.68	4.44	0.145	0.175
D	0.38	0.53	0.015	0.021
F	1.14	1.57	0.045	0.062
G	2.54 BSC		0.100 BSC	
J	0.20	0.33	0.008	0.013
K	2.54	4.19	0.100	0.165
L	7.62	7.87	0.300	0.310
N	0.51	1.27	0.020	0.050
P	9.14	10.16	0.360	0.400

**Case 724-03 N Suffix
24-Pin Plastic**



- NOTES:
1. CHAMFERED CONTOUR OPTIONAL.
 2. DIM "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
 3. DIMENSIONS AND TOLERANCES PER ANSI Y14.5M, 1982.
 4. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	31.25	32.13	1.230	1.265
B	6.35	6.85	0.250	0.270
C	3.69	4.44	0.145	0.175
D	0.38	0.51	0.015	0.020
E	1.27 BSC		0.050 BSC	
F	1.02	1.52	0.040	0.060
G	2.54 BSC		0.100 BSC	
J	0.18	0.30	0.007	0.012
K	2.80	3.55	0.110	0.140
L	7.62 BSC		0.300 BSC	
M	0°	15°	0°	15°
N	0.51	1.01	0.020	0.040

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