**MOTOROLA**

OCTAL REGISTERED TRANSCEIVER, NON-INVERTING, 3-STATE

The MC74F543 Octal Registered Transceivers contain two sets of data flowing in either direction. Separate Latch Enable (LEAB, LEBA) and Enable (OEAB, OEBA) inputs are provided for each register to permit independent control of inputting and outputting in either direction of data flow. The MC74F543 has a noninverting data path. The A outputs are guaranteed to sink 20 mA while the B outputs are rated for 64 mA.

- Combines 74F245 and 74F373 Type Functions in One Chip
- 8-Bit Octal Transceiver
- Non-Inverting
- Back-to-Back Registers for Storage
- Separate Controls for Data Flow in Each Direction
- Glitchless Outputs During 3-State Power Up or Power Down Operation
- High Impedance Outputs in Power Off State
- A Outputs Sink 24 mA and Source 3.0 mA
- B Outputs Sink 64 mA and Source 15 mA
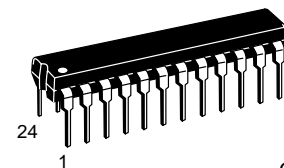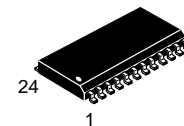- See F544 for Inverting Version
- ESD Protection > 4000 Volts
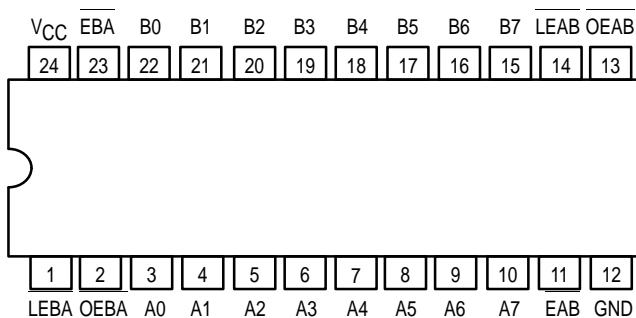
MC74F543

OCTAL REGISTERED TRANSCEIVER, NON-INVERTING, 3-STATE

FAST™ SCHOTTKY TTL

N SUFFIX
PLASTIC
CASE 724-03

DW SUFFIX
SOIC
CASE 751E-03

ORDERING INFORMATION

MC74FXXXN   Plastic
MC74FXXXDW   SOIC

PIN ASSIGNMENT

V_CC	EBA	B0	B1	B2	B3	B4	B5	B6	B7	LEAB	OEAB
24	23	22	21	20	19	18	17	16	15	14	13

1	2	3	4	5	6	7	8	9	10	11	12
LEBA	OEBA	A0	A1	A2	A3	A4	A5	A6	A7	EAB	GND

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

MC74F543

FUNCTION TABLE

Inputs				Outputs	Status
OEXX	**EXX**	**LEXX**	**Data**		
H	X	X	X	Z	Outputs disabled
L	H	L	l	Z	Outputs disabled
L	H	L	h	Z	Data latched
L	L	H	l	L	Data latched
L	L	H	h	H	
L	L	L	L	L	Transparent
L	L	L	H	H	

H = HIGH voltage level: h = HIGH state must be present one set-up time before the LOW-to-HIGH transition of LEXX or EXX (XX = AB or BA): L = LOW Voltage Level:
l = LOW state must be present one set-up time before the LOW-to-HIGH transition of LEXX or EXX (XX = AB or BA): X = Don't care: Z = HIGH impedance state.

FUNCTIONAL DESCRIPTION

The MC74F543 contains two sets of eight D-type latches, with separate input and controls for each set. For data flow from A to B, for example, the A-to-B Enable (EAB) Input must be LOW in order to enter data from A0–A7 or take data from B0–B7, as indicated in the Function Table. With EAB LOW, a LOW signal on the A-to-B Latch Enable (LEAB) input makes the A-to-B latches transparent; a subsequent LOW-to-HIGH transition of the LEAB signal puts the A latches in the storage mode and their outputs no longer change with the A inputs. With EAB and OEAB both LOW, the 3-State B output buffers are active and reflects the data present at the output of the A latches. Control of data flow from B to A is similar, but using the EBA, LEBA, and OEBA inputs.

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

Symbol	Parameter			Min	Typ	Max	Unit	Test Conditions	
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	A0–A7	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	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	74		0.4	0.55	V	I$_{OL}$ = 64 mA	
I$_{IH}$	Input HIGH Current		I/O Pins			1.0	mA	V$_{CC}$ = MAX, V$_{IN}$ = 5.5 V	
			Control Pins			100	µA	V$_{CC}$ = MAX, V$_{IN}$ = 7.0 V	
						20		V$_{CC}$ = MAX, V$_{IN}$ = 2.7 V	
I$_{IL}$	Input LOW Current		EAB, EBA			−1.2	mA	V$_{CC}$ = MAX, V$_{IN}$ = 0.5 V	
			Other Inputs			−0.6			
I$_{OZH}$	Off-State Output Current, High-Level Voltage Applied					70	µA	V$_{CC}$ = MAX	V$_{OUT}$ = 2.7 V
						1.0	mA		V$_{OUT}$ = 5.5 V
I$_{OZL}$	Off-State Output Current, Low-Level Voltage Applied					−600	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	
		B$_n$ Outputs		−100		−225			
I$_{CC}$	Total Supply Current	I$_{CCH}$			70	100	mA	V$_{CC}$ = MAX	
		I$_{CCL}$			95	125			
		I$_{CCZ}$			95	125			

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.

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AC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	74F $T_A = +25°C$ $V_{CC} = +5.0$ V $C_L = 50$ pF			74F $T_A = 0°C$ to $+70°C$ $V_{CC} = +5.0$ V $\pm10\%$ $C_L = 50$ pF		Unit
		Min	Typ	Max	Min	Max	
f_{MAX}	Maximum Clock Frequency	70	100		70		MHz
t_{PLH} t_{PHL}	Propagation Delay Transparent Mode A_n to B_n or B_n to A_n	3.0 3.0	5.5 5.0	7.5 6.5	3.0 3.0	8.5 7.5	ns
t_{PLH} t_{PHL}	Propagation Delay LEBA to A_n	4.5 4.5	8.5 8.5	11 11	4.5 4.5	12.5 12.5	ns
t_{PLH} t_{PHL}	Propagation Delay LEAB to B_n	4.5 4.5	8.5 8.5	11 11	4.5 4.5	12.5 12.5	ns
t_{PZH} t_{PZL}	Output Enable Time to $\overline{OEBA}$ or $\overline{OEAB}$ to A_n or B_n EBA or EAB to A_n or B_n	3.0 4.0	7.0 7.5	9.0 10.5	3.0 4.0	10 12	ns
t_{PHZ} t_{PLZ}	Output Disable Time to $\overline{OEBA}$ or $\overline{OEAB}$ to A_n or B_n EBA or EAB to A_n or B_n	2.5 2.0	6.0 5.5	8.0 7.5	2.5 2.0	9.0 8.5	ns

AC OPERATING REQUIREMENTS

Symbol	Parameter	74F $T_A = +25°C$ $V_{CC} = +5.0$ V $C_L = 50$ pF			74F $T_A = 0°C$ to $+70°C$ $V_{CC} = +5.0$ V $\pm10\%$ $C_L = 50$ pF			Unit
		Min	Typ	Max	Min	Typ	Max	
$t_{s(H)}$ $t_{s(L)}$	Setup Time, HIGH or LOW A_n or B_n to LEBA or LEAB	3.0 3.0			3.5 3.5			ns
$t_{h(H)}$ $t_{h(L)}$	Hold Time, HIGH or LOW A_n to B_n to LEBA or LEAB	3.0 3.0			3.5 3.5			ns
$t_{w(L)}$	Latch Enable, B to A Pulse Width, LOW	8.0			9.0			ns

MC74F543
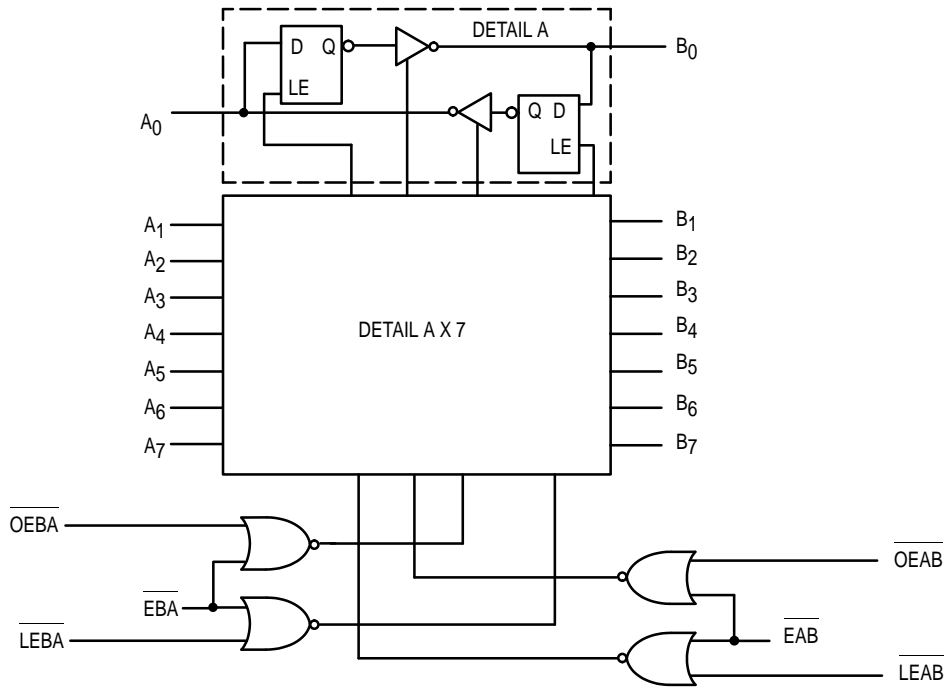
LOGIC DIAGRAM

NOTE:
Please note that this diagram is provided only for the understanding of logic
operations and should not be used to estimate propagation delays.

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