FAIRCHILD SEMICONDUCTOR™

April 1988
Revised July 1999

74F243
Quad Bus Transceiver with 3-STATE Outputs

General Description

The 74F243 is a quad bus transmitter/receiver designed for 4-line asynchronous 2-way data communications between data busses.

Features

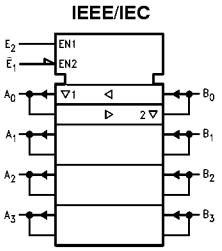
- 2-Way asynchronous data bus communication
- Input clamp diodes limit high-speed termination effects

Ordering Code:

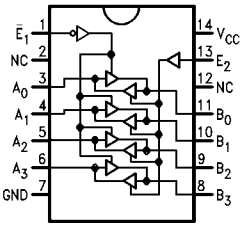
Order Code	Package Number	Package Description
74F243SC	M14A	14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150 Narrow

Devices also available in Tape and Reel. Specify by appending the suffix letter "X" to the ordering code.

Logic Symbol



Connection Diagram



Truth Table

Inputs		Inputs/Outputs	
$\overline{E}_1$	E_2	A_n	B_n
L	L	Input	B = A
L	H	N/A	N/A
H	L	Z	Z
H	H	A = B	Input

H = HIGH Voltage Level
L = LOW Voltage Level
Z = High Impedance
N/A = Not Allowed

Unit Loading/Fan Out

Pin Names	Description	U.L. HIGH/LOW	Input I_{IH}/I_{IL} Output I_{OH}/I_{OL}
$\overline{E}_1$	Enable Input (Active LOW)	1.0/1.67	20 µA/–1 mA
E_2	Enable Input (Active HIGH)	1.0/1.67	20 µA/–1 mA
A_n, B_n	Inputs	3.5/2.67	70 µA/–1.6 mA
	Outputs	600/106.6 (80)	–12 mA/64 mA (48 mA)

Absolute Maximum Ratings(Note 1)

Storage Temperature	–65°C to +150°C
Ambient Temperature under Bias	–55°C to +125°C
Junction Temperature under Bias	–55°C to +150°C
V_{CC} Pin Potential to Ground Pin	–0.5V to +7.0V
Input Voltage (Note 2)	–0.5V to +7.0V
Input Current (Note 2)	–30 mA to +5.0 mA
Voltage Applied to Output	
in HIGH State (with V_{CC} = 0V)	
Standard Output	–0.5V to V_{CC}
3-STATE Output	–0.5V to +5.5V
Current Applied to Output	
in LOW State (Max)	twice the rated I_{OL} (mA)
ESD Last Passing Voltage (Min)	4000V

Recommended Operating Conditions

Free Air Ambient Temperature	0°C to +70°C
Supply Voltage	+4.5V to +5.5V

Note 1: Absolute maximum ratings are values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

Note 2: Either voltage limit or current limit is sufficient to protect inputs.

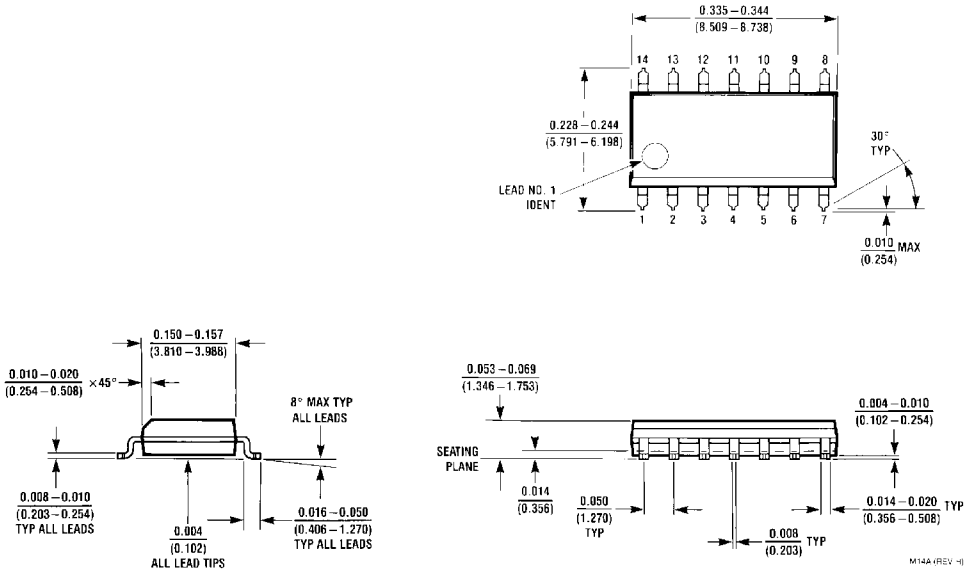
DC Electrical Characteristics

Symbol	Parameter		Min	Typ	Max	Units	V_{CC}	Conditions
V_{IH}	Input HIGH Voltage		2.0			V		Recognized as a HIGH Signal
V_{IL}	Input LOW Voltage				0.8	V		Recognized as a LOW Signal
V_{CD}	Input Clamp Diode Voltage				–1.2	V	Min	I_{IN} = –18 mA
V_{OH}	Output HIGH Voltage	10% V_{CC}	2.4			V	Min	I_{OH} = –3 mA (A_n, B_n)
		10% V_{CC}	2.0					I_{OH} = –15 mA (A_n, B_n)
		5% V_{CC}	2.7					I_{OH} = –3 mA (A_n, B_n)
V_{OL}	Output LOW Voltage	10% V_{CC}			0.55	V	Min	I_{OL} = 64 mA (A_n, B_n)
I_{IH}	Input HIGH Current				5.0	µA	Max	V_{IN} = 2.7V
I_{BVI}	Input HIGH Current Breakdown Test				7.0	µA	Max	V_{IN} = 7.0V ($\overline{E}_1$, E_2)
I_{BVIT}	Input HIGH Current Breakdown (I/O)				0.5	mA	Max	V_{IN} = 5.5V (A_n, B_n)
I_{CEX}	Output HIGH Leakage Current				50	µA	Max	V_{OUT} = V_{CC}
V_{ID}	Input Leakage Test		4.75			V	0.0	I_{ID} = 1.9 µA All Other Pins Grounded
I_{OD}	Output Leakage Circuit Current				3.75	µA	0.0	V_{IOD} = 150 mV All Other Pins Grounded
I_{IL}	Input LOW Current				–1.0	mA	Max	V_{IN} = 0.5V ($\overline{E}_1$, E_2)
I_{IH} + I_{OZH}	Output Leakage Current				70	µA	Max	V_{OUT} = 2.7V (A_n, B_n)
I_{IL} + I_{OZL}	Output Leakage Current				–1.6	mA	Max	V_{OUT} = 0.5V (A_n, B_n)
I_{OS}	Output Short-Circuit Current		–100		–225	mA	Max	V_{OUT} = 0V (A_n, B_n)
I_{CCH}	Power Supply Current			64	80	mA	Max	V_O = HIGH
I_{CCL}	Power Supply Current			64	90	mA	Max	V_O = LOW
I_{CCZ}	Power Supply Current			71	90	mA	Max	V_O = HIGH Z

AC Electrical Characteristics

Symbol	Parameter	$T_A = +25°C$, $V_{CC} = +5.0V$, $C_L = 50$ pF			$T_A = -55°C$ to $+125°C$, $V_{CC} = 5.0V$, $C_L = 50$ pF		$T_A = 0°C$ to $+70°C$, $V_{CC} = 5.0V$, $C_L = 50$ pF		Units
		Min	Typ	Max	Min	Max	Min	Max	
t_{PLH}	Propagation Delay	2.5	4.0	5.2	2.0	6.5	2.0	6.2	ns
t_{PHL}	A_n to B_n, B_n to A_n	2.5	4.0	5.2	2.0	8.5	2.0	6.5	
t_{PZH}	Output Enable Time	2.0	4.3	5.7	2.0	8.0	2.0	6.7	ns
t_{PZL}	$\overline{E}_1$ to B_n, E_2 to A_n	2.0	5.8	7.5	2.0	10.5	2.0	8.5	
t_{PHZ}	Output Disable Time	2.0	4.5	6.0	1.5	7.5	1.5	7.0	
t_{PLZ}	$\overline{E}_1$ to B_n, E_2 to A_n	2.0	4.5	6.0	2.0	8.5	2.0	7.0	

Physical Dimensions inches (millimeters) unless otherwise noted



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