

# 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

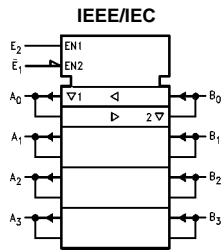
- 2-Way asynchronous data bus communication
- Input clamp diodes limit high-speed termination effects

### Ordering Code:

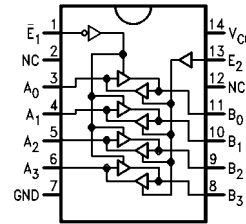
Order Code	Package Number	Package Description
74F243SC	M14A	14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150 Narrow

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

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

### Unit Loading/Fan Out

Pin Names	Description	U.L. HIGH/LOW	Input $I_{IH}/I_{IL}$ Output $I_{OH}/I_{OL}$
$\bar{E}_1$	Enable Input (Active LOW)	1.0/1.67	20 $\mu$ A/-1 mA
$E_2$	Enable Input (Active HIGH)	1.0/1.67	20 $\mu$ A/-1 mA
$A_n, B_n$	Inputs	3.5/2.67	70 $\mu$ A/-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 <sub>CC</sub> 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 <sub>CC</sub> = 0V)	
Standard Output	-0.5V to V <sub>CC</sub>
3-STATE Output	-0.5V to +5.5V
Current Applied to Output in LOW State (Max)	twice the rated I <sub>OL</sub> (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.

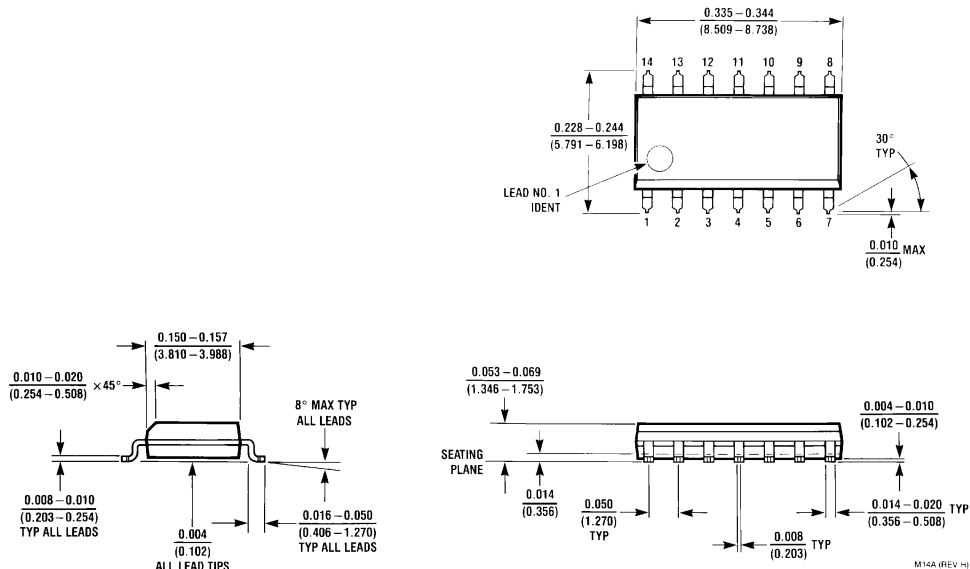
**DC Electrical Characteristics**

Symbol	Parameter	Min	Typ	Max	Units	V <sub>CC</sub>	Conditions
V <sub>IH</sub>	Input HIGH Voltage	2.0			V		Recognized as a HIGH Signal
V <sub>IL</sub>	Input LOW Voltage			0.8	V		Recognized as a LOW Signal
V <sub>CD</sub>	Input Clamp Diode Voltage			-1.2	V	Min	I <sub>IN</sub> = -18 mA
V <sub>OH</sub>	Output HIGH Voltage	10% V <sub>CC</sub>	2.4		V	Min	I <sub>OH</sub> = -3 mA (A <sub>n</sub> , B <sub>n</sub> )
		10% V <sub>CC</sub>	2.0				I <sub>OH</sub> = -15 mA (A <sub>n</sub> , B <sub>n</sub> )
		5% V <sub>CC</sub>	2.7				I <sub>OH</sub> = -3 mA (A <sub>n</sub> , B <sub>n</sub> )
V <sub>OL</sub>	Output LOW Voltage	10% V <sub>CC</sub>		0.55	V	Min	I <sub>OL</sub> = 64 mA (A <sub>n</sub> , B <sub>n</sub> )
I <sub>IH</sub>	Input HIGH Current			5.0	μA	Max	V <sub>IN</sub> = 2.7V
I <sub>BVI</sub>	Input HIGH Current Breakdown Test			7.0	μA	Max	V <sub>IN</sub> = 7.0V (E <sub>1</sub> , E <sub>2</sub> )
I <sub>BVIT</sub>	Input HIGH Current Breakdown (I/O)			0.5	mA	Max	V <sub>IN</sub> = 5.5V (A <sub>n</sub> , B <sub>n</sub> )
I <sub>CEX</sub>	Output HIGH Leakage Current			50	μA	Max	V <sub>OUT</sub> = V <sub>CC</sub>
V <sub>ID</sub>	Input Leakage Test	4.75			V	0.0	I <sub>ID</sub> = 1.9 μA All Other Pins Grounded
I <sub>OD</sub>	Output Leakage Circuit Current			3.75	μA	0.0	V <sub>IOD</sub> = 150 mV All Other Pins Grounded
I <sub>IL</sub>	Input LOW Current			-1.0	mA	Max	V <sub>IN</sub> = 0.5V (E <sub>1</sub> , E <sub>2</sub> )
I <sub>IH</sub> + I <sub>OZH</sub>	Output Leakage Current			70	μA	Max	V <sub>OUT</sub> = 2.7V (A <sub>n</sub> , B <sub>n</sub> )
I <sub>IL</sub> + I <sub>OZL</sub>	Output Leakage Current			-1.6	mA	Max	V <sub>OUT</sub> = 0.5V (A <sub>n</sub> , B <sub>n</sub> )
I <sub>OS</sub>	Output Short-Circuit Current	-100		-225	mA	Max	V <sub>OUT</sub> = 0V (A <sub>n</sub> , B <sub>n</sub> )
I <sub>CCH</sub>	Power Supply Current		64	80	mA	Max	V <sub>O</sub> = HIGH
I <sub>CCL</sub>	Power Supply Current		64	90	mA	Max	V <sub>O</sub> = LOW
I <sub>CCZ</sub>	Power Supply Current		71	90	mA	Max	V <sub>O</sub> = HIGH Z

## AC Electrical Characteristics

Symbol	Parameter	$T_A = +25^\circ\text{C}$			$T_A = -55^\circ\text{C to } +125^\circ\text{C}$		$T_A = 0^\circ\text{C to } +70^\circ\text{C}$		Units
		$V_{CC} = +5.0\text{V}$			$V_{CC} = 5.0\text{V}$		$V_{CC} = 5.0\text{V}$		
		$C_L = 50\text{ pF}$			$C_L = 50\text{ pF}$		$C_L = 50\text{ pF}$		
		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
$t_{PZL}$	$\bar{E}_1$ 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	
$t_{PLZ}$	$\bar{E}_1$ 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



14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150 Narrow Package Number M14A

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