

## 74F843 9-Bit Transparent Latch

### General Description

The 74F843 bus interface latch is designed to eliminate the extra packages required to buffer existing latches and provide extra data width for wider address/data paths or buses carrying parity.

### Features

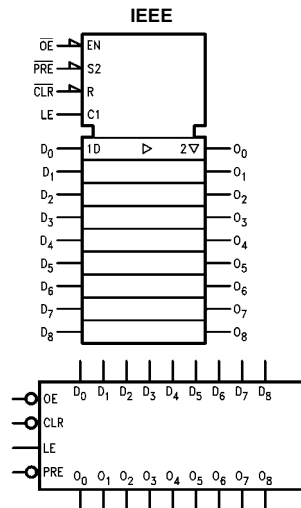
- 3-STATE output

### Ordering Code:

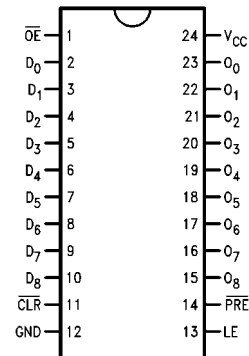
Order Number	Package Number	Package Description
74F843SC	M24B	24-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300 Wide
74F843SPC	N24C	24-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-100, 0.300 Wide

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

### Logic Symbols



### Connection Diagram



### Unit Loading/Fan Out

Pin Names	Description	U.L.	
		HIGH/LOW	Input $I_{IH}/I_{IL}$ Output $I_{OH}/I_{OL}$
D <sub>0</sub> -D <sub>8</sub>	Data Inputs	1.0/1.0	20 $\mu$ A/-0.6 mA
$\overline{OE}$	Output Enable Input	1.0/1.0	20 $\mu$ A/-0.6 mA
LE	Latch Enable	1.0/1.0	20 $\mu$ A/-0.6 mA
$\overline{CLR}$	Clear	1.0/1.0	20 $\mu$ A/-0.6 mA
$\overline{PRE}$	Preset	1.0/1.0	20 $\mu$ A/-0.6 mA
O <sub>0</sub> -O <sub>8</sub>	3-STATE Data Outputs	150/40	-3 mA/24 mA

### Functional Description

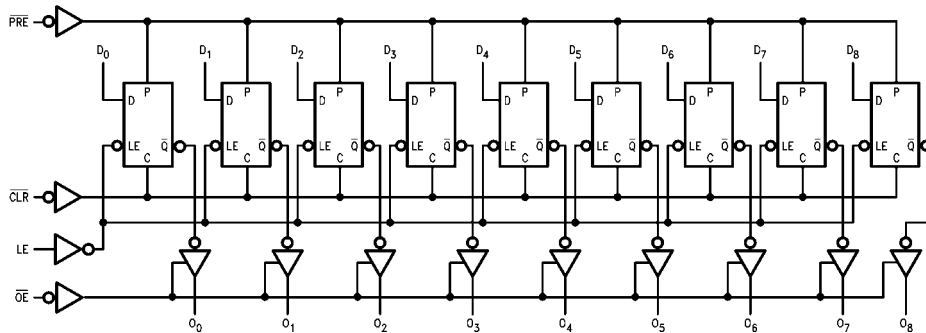
The 74F843 consists of nine D-type latches with 3-STATE outputs. The flip-flops appear transparent to the data when Latch Enable (LE) is HIGH. This allows asynchronous operation, as the output transition follows the data in transition. On the LE HIGH-to-LOW transition, the data that meets the setup times is latched. Data appears on the bus when the Output Enable ( $\overline{OE}$ ) is LOW. When  $\overline{OE}$  is HIGH, the bus output is in the high impedance state. In addition to the LE and  $\overline{OE}$  pins, the 74F843 has a Clear (CLR) pin and a Preset (PRE). These pins are ideal for parity bus interfacing in high performance systems. When CLR is LOW, the outputs are LOW if  $\overline{OE}$  is LOW. When  $\overline{CLR}$  is HIGH, data can be entered into the latch. When PRE is LOW, the Outputs are HIGH if  $\overline{OE}$  is LOW. Preset overrides  $\overline{CLR}$ .

### Function Table

Inputs					Internal	Output	Function
$\overline{CLR}$	$\overline{PRE}$	$\overline{OE}$	LE	D	Q	O	
H	H	X	X	X	X	Z	High Z
H	H	H	H	L	L	Z	High Z
H	H	H	H	H	H	Z	High Z
H	H	H	L	X	NC	Z	Latched
H	H	L	H	L	L	L	Transparent
H	H	L	H	H	H	H	Transparent
H	H	L	L	X	NC	NC	Latched
H	L	L	X	X	H	H	Preset
L	H	L	X	X	L	L	Clear
L	L	L	X	X	H	H	Preset
L	H	H	L	X	L	Z	Latched
H	L	H	L	X	H	Z	Latched

H = HIGH Voltage Level  
 L = LOW Voltage Level  
 X = Immaterial  
 Z = High Impedance  
 NC = No Change

### Logic Diagram



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

**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)

**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> 10% V <sub>CC</sub> 5% V <sub>CC</sub> 5% V <sub>CC</sub>	2.5 2.4 2.7 2.7		V	Min	I <sub>OH</sub> = -1 mA I <sub>OH</sub> = -3 mA I <sub>OH</sub> = -1 mA I <sub>OH</sub> = -3 mA
V <sub>OL</sub>	Output LOW Voltage	10% V <sub>CC</sub>		0.5	V	Min	I <sub>OL</sub> = 24 mA
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
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			-0.6	mA	Max	V <sub>IN</sub> = 0.5V
I <sub>OZH</sub>	Output Leakage Current			50	μA	Max	V <sub>OUT</sub> = 2.7V
I <sub>OZL</sub>	Output Leakage Current			-50	μA	Max	V <sub>OUT</sub> = 0.5V
I <sub>OS</sub>	Output Short-Circuit Current	-60		-150	mA	Max	V <sub>OUT</sub> = 0V
I <sub>ZZ</sub>	Bus Drainage Test			500	μA	0.0V	V <sub>OUT</sub> = 5.25V
I <sub>CC</sub>	Power Supply Current		65	90	mA	Max	

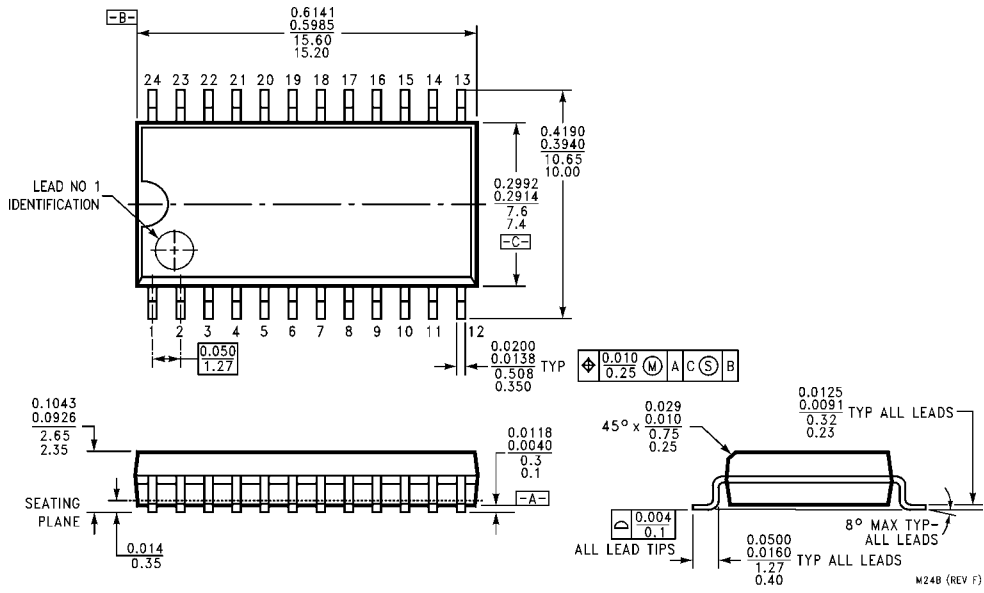
### AC Electrical Characteristics

Symbol	Parameter	T <sub>A</sub> = +25°C V <sub>CC</sub> = +5.0V C <sub>L</sub> = 50 pF			T <sub>A</sub> = 0°C to +70°C V <sub>CC</sub> = +5.0V C <sub>L</sub> = 50 pF		Units
		Min	Typ	Max	Min	Max	
t <sub>PLH</sub>	Propagation Delay	2.5	5.4	8.0	2.0	9.0	ns
t <sub>PHL</sub>	D <sub>n</sub> to O <sub>n</sub>	1.5	4.2	6.5	1.5	7.0	
t <sub>PLH</sub>	Propagation Delay	5.0	8.5	12.0	4.5	13.5	ns
t <sub>PHL</sub>	LE to O <sub>n</sub>	2.0	4.7	7.5	2.0	8.0	
t <sub>PLH</sub>	Propagation Delay PRE to O <sub>n</sub>	3.0	7.3	10.0	2.5	11.0	ns
t <sub>PHL</sub>	Propagation Delay CLR to O <sub>n</sub>	3.0	6.9	10.0	2.5	11.0	ns
t <sub>PZH</sub>	Output Enable Time	2.5	5.0	8.5	2.0	9.5	ns
t <sub>PZL</sub>	OE to O <sub>n</sub>	2.5	6.1	9.0	2.0	10.0	
t <sub>PHZ</sub>	Output Disable Time	1.0	3.6	6.5	1.0	7.5	ns
t <sub>PLZ</sub>	OE to O <sub>n</sub>	1.0	3.4	6.5	1.0	7.5	

### AC Operating Requirements

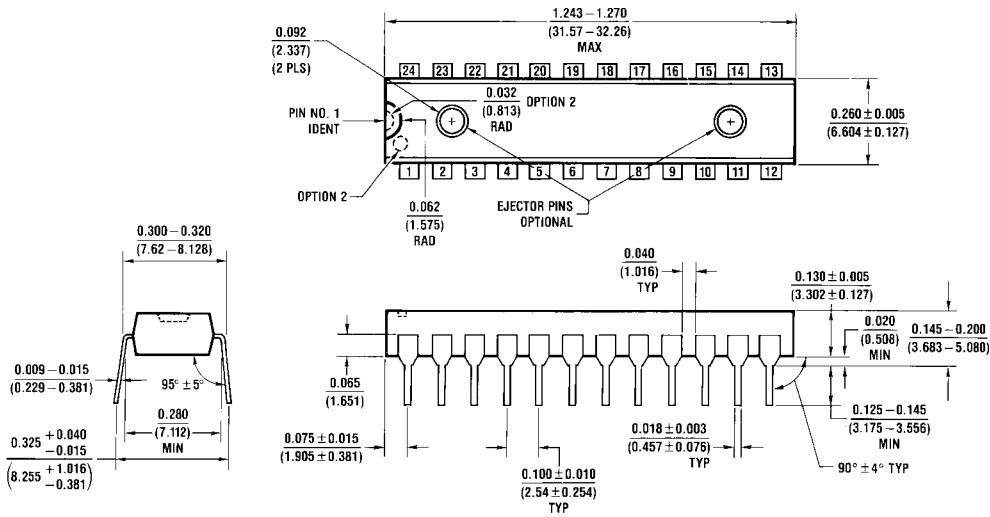
Symbol	Parameter	T <sub>A</sub> = +25°C V <sub>CC</sub> = +5.0V		T <sub>A</sub> = 0°C to +70°C V <sub>CC</sub> = +5.0V		Units
		Min	Max	Min	Max	
t <sub>S</sub> (H)	Setup Time, HIGH or LOW	2.0		2.5		ns
t <sub>S</sub> (L)	D <sub>n</sub> to LE	2.0		2.5		
t <sub>H</sub> (H)	Hold Time, HIGH or LOW	2.5		3.0		ns
t <sub>H</sub> (L)	D <sub>n</sub> to LE	3.0		3.5		
t <sub>W</sub> (H)	LE Pulse Width, HIGH	4.0		4.0		ns
t <sub>W</sub> (L)	PRE Pulse Width, LOW	5.0		5.0		ns
t <sub>W</sub> (L)	CLR Pulse Width, LOW	5.0		5.0		ns
t <sub>REC</sub>	PRE Recovery Time	10.0		10.0		ns
t <sub>REC</sub>	CLR Recovery Time	12.0		13.0		ns

**Physical Dimensions** inches (millimeters) unless otherwise noted



**24-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300 Wide**  
**Package Number M24B**

**Physical Dimensions** inches (millimeters) unless otherwise noted (Continued)



**24-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-100, 0.300 Wide Package Number N24C**

N24C (REV F)

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