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April 1988
Revised February 2004

74F827 • 74F828 10-Bit Buffers/Line Drivers

General Description

The 74F827 and 74F828 10-bit bus buffers provide high performance bus interface buffering for wide data/address paths or buses carrying parity. The 10-bit buffers have NOR output enables for maximum control flexibility.

The 74F828 is an inverting version of the 74F827.

Features

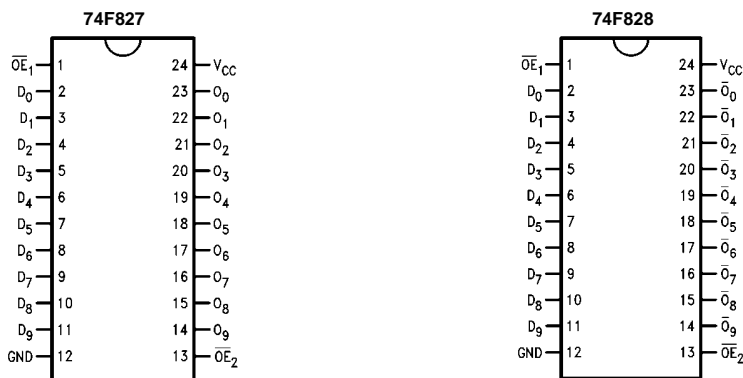
- 3-STATE output
- 74F828 is inverting

Ordering Code:

Order Number	Package Number	Package Description
74F827SC (Note 1)	M24B	24-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300" Wide
74F827SPC	N24C	24-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300" Wide
74F828SC	M24B	24-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300" Wide
74F828SPC (Note 1)	N24C	24-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300" Wide

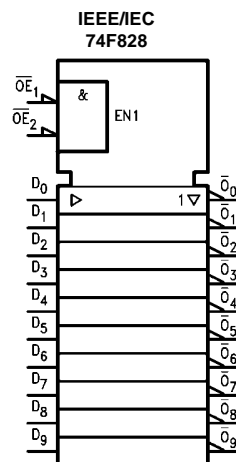
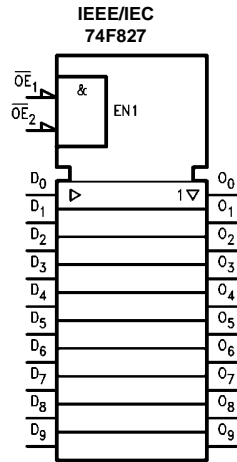
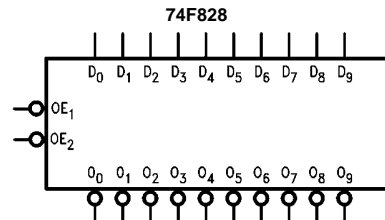
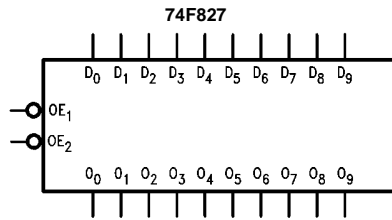
Note 1: Devices also available in Tape and Reel. Specify by appending the suffix letter "X" to the ordering code.

Connection Diagrams



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Logic Symbols



Unit Loading/Fan Out

Pin Names	Description	U.L. HIGH/LOW	Input I_H/I_L Output I_{OH}/I_{OL}
$\overline{OE}_1, \overline{OE}_2$	Output Enable Input	1.0/1.0	20 μ A/-0.6 mA
D_0 - D_7	Data Inputs	1.0/1.0	20 μ A/-0.6 mA
O_0 - O_7	Data Outputs, 3-STATE	600/106.6 (80)	-12 mA/64 mA (48 mA)

Functional Description

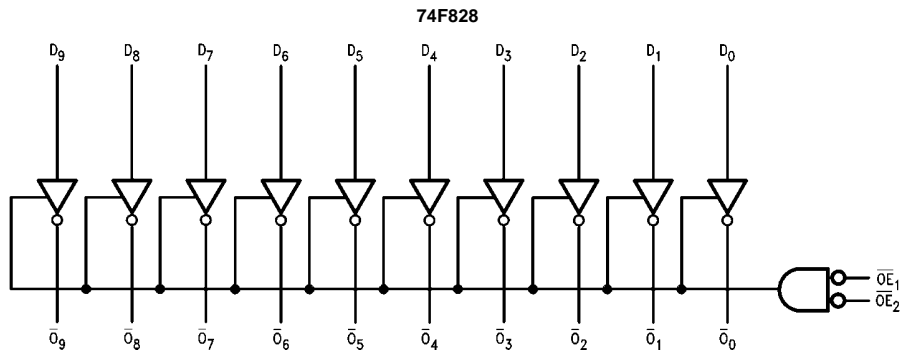
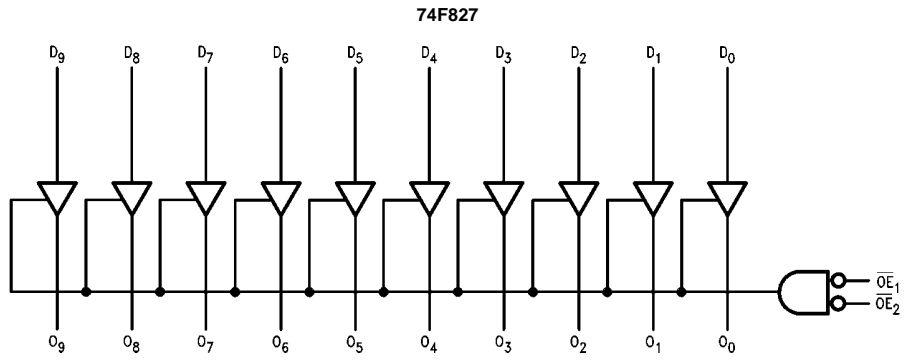
The 74F827 and 74F828 are line drivers designed to be employed as memory address drivers, clock drivers and bus-oriented transmitters/receivers which provide improved PC board density. The devices have 3-STATE outputs controlled by the Output Enable (\overline{OE}) pins. The outputs can sink 64 mA and source 15 mA. Input clamp diodes limit high-speed termination effects.

Function Table

Inputs		Outputs		Function
\overline{OE}	D_n	O_n		
		74F827	74F828	
L	H	H	L	Transparent
L	L	L	H	Transparent
H	X	Z	Z	High Z

H = HIGH Voltage level
L = LOW Voltage Level
Z = High Impedance
X = Immaterial

Logic Diagrams



Please note that these diagrams are provided only for the understanding of logic operations and should not be used to estimate propagation delays.

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Absolute Maximum Ratings (Note 2)

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 3)	-0.5V to +7.0V
Input Current (Note 3)	-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)

Recommended Operating Conditions

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

Note 2: 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 3: Either voltage limit or current limit is sufficient to protect inputs.

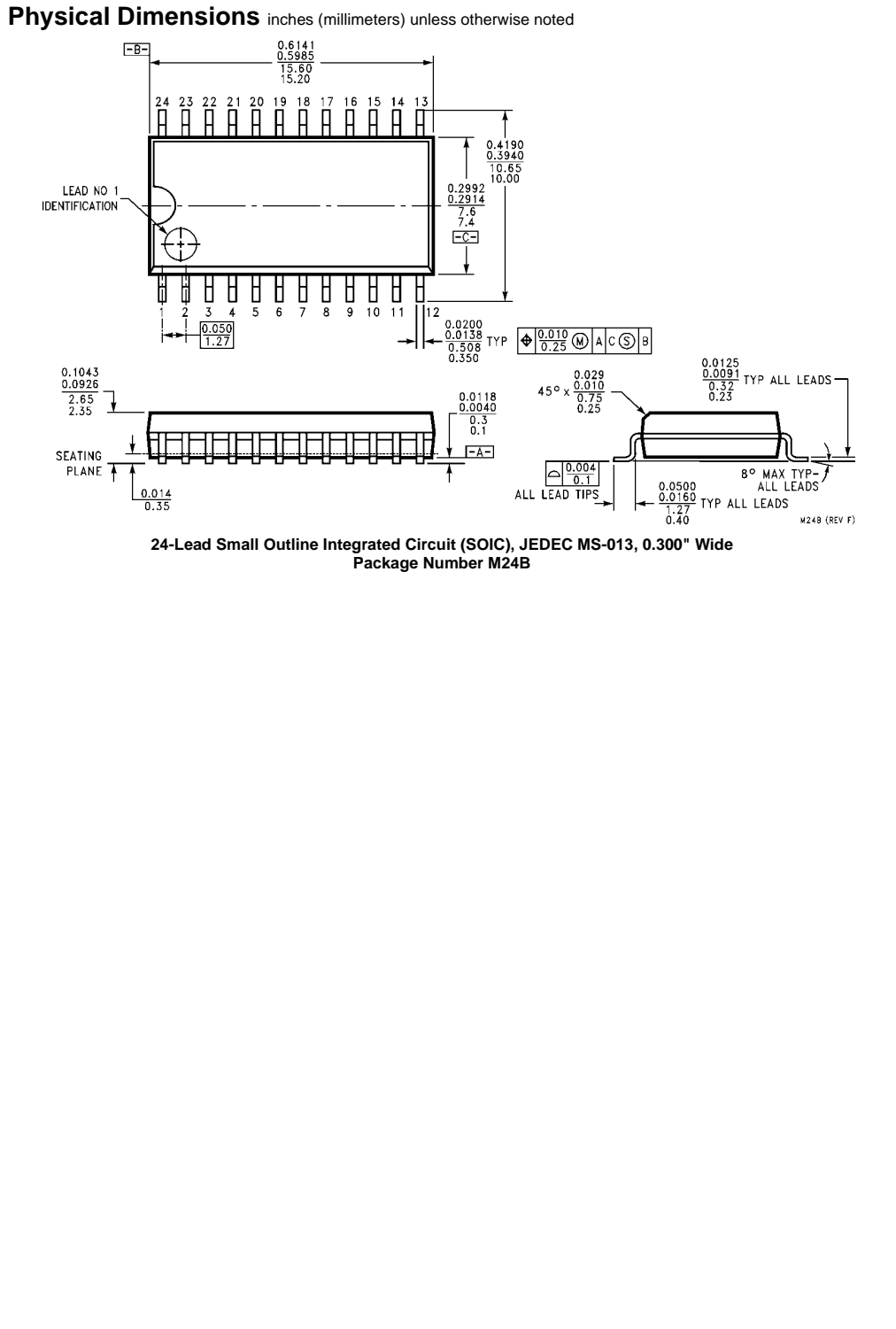
DC Electrical Characteristics

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 10% V _{CC} 2.0 5% V _{CC} 2.7			V	Min	I _{OH} = -3 mA I _{OH} = -15 mA I _{OH} = -3 mA
V _{OL}	Output LOW Voltage	10% V _{CC}		0.55	V	Min	I _{OL} = 64 mA
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
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			-0.6	mA	Max	V _{IN} = 0.5V
I _{OZH}	Output Leakage Current			50	μA	Max	V _{OUT} = 2.7V
I _{OZL}	Output Leakage Current			-50	μA	Max	V _{OUT} = 0.5V
I _{OS}	Output Short-Circuit Current	-100		-225	mA	Max	V _{OUT} = 0V
I _{ZZ}	Bus Drainage Test			500	μA	0.0V	V _{OUT} = 5.25V
I _{CCH}	Power Supply Current (74F827)		30	45	mA	Max	V _O = HIGH
I _{CCL}	Power Supply Current (74F827)		60	90	mA	Max	V _O = LOW
I _{CCZ}	Power Supply Current (74F827)		40	60	mA	Max	V _O = HIGH Z
I _{CCH}	Power Supply Current (74F828)		14	20	mA	Max	V _O = HIGH
I _{CCL}	Power Supply Current (74F828)		56	85	mA	Max	V _O = LOW
I _{CCZ}	Power Supply Current (74F828)		35	50	mA	Max	V _O = HIGH Z

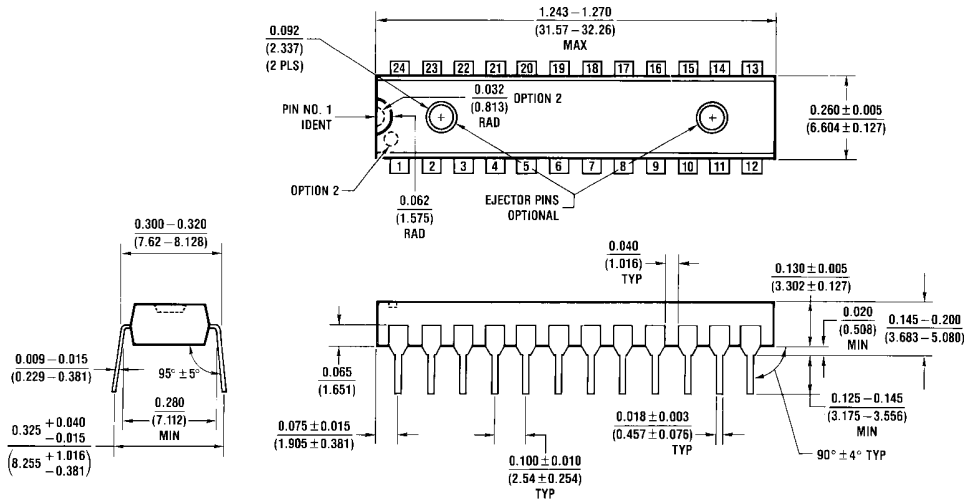
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AC Electrical Characteristics									
Symbol	Parameter	T _A = +25°C V _{CC} = +5.0V C _L = 50 pF			T _A = -55°C to +125°C V _{CC} = +5.0V C _L = 50 pF		T _A = 0°C to +70°C V _{CC} = +5.0V C _L = 50 pF		Units
		Min	Typ	Max	Min	Max	Min	Max	
t _{PLH}	Propagation Delay	1.0	3.0	5.5	1.0	7.5	1.0	6.5	ns
t _{PHL}	Data to Output (74F827)	1.5	3.3	5.5	1.5	7.0	1.5	6.0	
t _{PLH}	Propagation Delay	1.0	3.0	5.0			1.0	5.5	ns
t _{PHL}	Data to Output (74F828)	1.0	2.0	4.0			1.0	4.0	
t _{PZH}	Output Enable Time	3.0	5.7	9.0	2.5	10.0	2.5	9.5	ns
t _{PZL}	OE to O _n	3.5	6.8	11.5	3.0	12.5	3.0	12.0	
t _{PHZ}	Output Disable Time	1.5	3.3	8.0	1.5	9.0	1.5	8.5	ns
t _{PLZ}	OE to O _n	1.0	3.5	8.0	1.0	9.0	1.0	8.5	

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



24-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300" Wide Package Number N24C

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