FAIRCHILD SEMICONDUCTOR™

January 1995
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74F2240
Octal Buffer/Line Driver with 25Ω Series Resistors in the Outputs

General Description

The 74F2240 is an inverting octal buffer and line driver designed to drive capacitive inputs of MOS memory devices, address and clock lines or act as a low undershoot general purpose bus driver.

The 25Ω series resistor in the outputs reduces undershoot and ringing and eliminates the need for external resistors.

Features

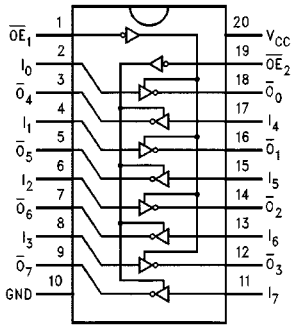
- 3-STATE outputs drive bus lines or buffer memory address registers
- Outputs sink 12 mA and source 15 mA
- 25Ω series resistors in outputs eliminate the need for external resistors
- Designed to drive the capacitive inputs of MOS devices
- Guaranteed 4000V minimum ESD protection

Ordering Code:

Order Number	Package Number	Package Description
74F2240SC	M20B	20-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300 Wide
74F2240QC	V20A	20-Lead Plastic Lead Chip Carrier (PLCC), JEDEC MO-047, 0.350 Square

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

Connection Diagram



Truth Table

$\overline{OE}_1$	D_{1n}	O_{1n}	$\overline{OE}_2$	D_{2n}	O_{2n}
H	X	Z	H	X	Z
L	H	L	L	H	L
L	L	H	L	L	H

Unit Loading/Fan Out

Pin Names	Description	U.L. HIGH/LOW	Output I_{OH}/I_{OL}
$\overline{OE}_1$, $\overline{OE}_2$	3-STATE Output Enable Input (Active LOW)	1.0/1.667	20 μA/–1 mA
I_0 - I_7	Inputs	1.0/1.667	20 μA/–1 mA
$\overline{O}_0$ - $\overline{O}_7$	Outputs	750/20	–15 mA/12 mA

Absolute Maximum Ratings(Note 1)

Storage Temperature	−65°C to + 150°C
Ambient Temperature under Bias	−55° 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.

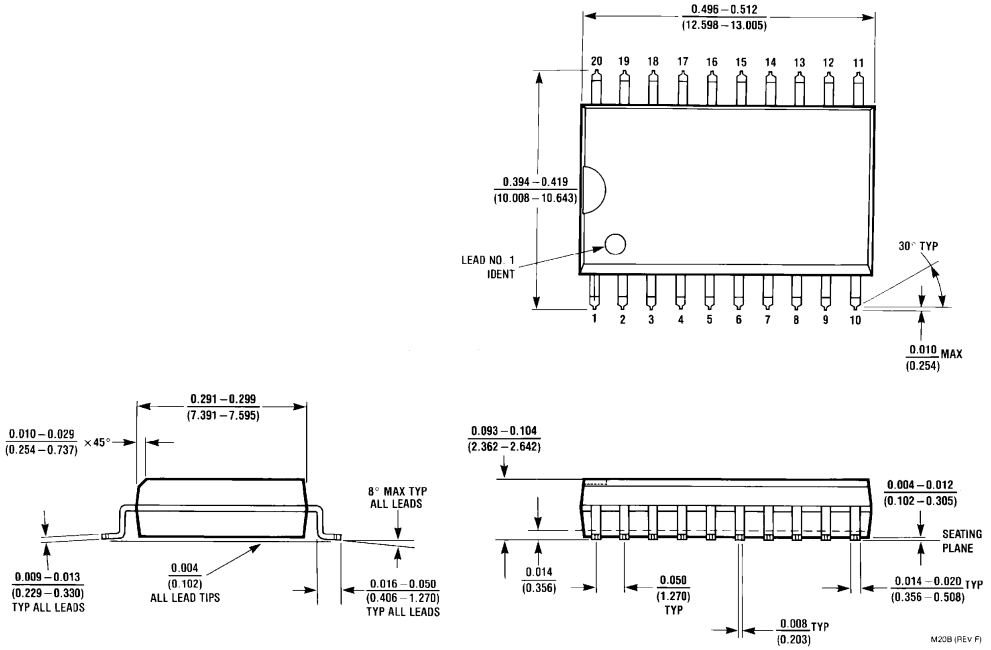
DC Electrical Characteristics

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 10% V_{CC}	2.4			V	Min	I_{OH} = −3 mA
	Voltage 10% V_{CC}	2.0					I_{OH} = −15 mA
V_{OL}	Output LOW Voltage 10% V_{CC}			0.75	V	Min	I_{OL} = 12 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			−1.0	mA	Max	V_{IN} = 0.5V ($\overline{OE_1}$, $\overline{OE_2}$, D_n)
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	0.0	V_{OUT} = 5.25V
I_{CCH}	Power Supply Current		16	29	mA	Max	V_O = HIGH
I_{CCL}	Power Supply Current		47	75	mA	Max	V_O = LOW
I_{CCZ}	Power Supply Current		45	63	mA	Max	V_O = HIGH Z

AC Electrical Characteristics

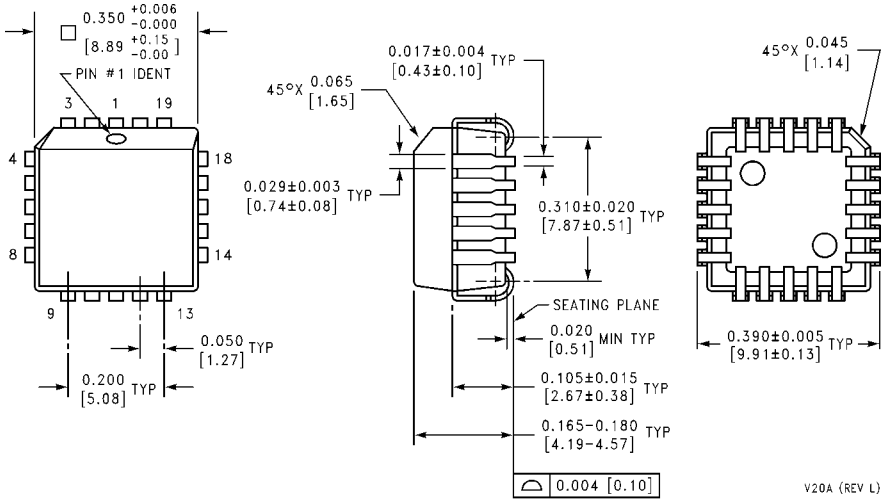
Symbol	Parameter	$T_A = +25°C$, $V_{CC} = +5.0V$, $C_L = 50$ pF			$T_A = 0°C$ to $+70°C$, $V_{CC} = +5.0V$, $C_L = 50$ pF		Units
		Min	Typ	Max	Min	Max	
t_{PLH}	Propagation Delay	3.0	4.9	7.5	3.0	7.5	ns
t_{PHL}	Data to Output	2.0	3.7	6.0	2.0	6.0	
t_{PZH}	Output Enable Time	2.0	3.9	6.5	2.0	7.0	ns
t_{PZL}		4.0	6.7	9.5	4.0	10.0	
t_{PHZ}	Output Disable Time	2.0	4.1	6.5	2.0	7.0	ns
t_{PLZ}		2.0	4.9	8.5	2.0	9.5	

Physical Dimensions inches (millimeters) unless otherwise noted



20-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300 Wide
Package Number M20B

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



20-Lead Plastic Lead Chip Carrier (PLCC), JEDEC MO-047, 0.350 Square
Package Number V20A

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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