## FAIRCHILD

SEMICONDUCTOR

## 74F2240 Octal Buffer/Line Driver with 25 $\Omega$ 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  $25\Omega$  series resistor in the outputs reduces undershoot and ringing and eliminates the need for external resistors.

January 1995 Revised May 1999

## 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**

OE <sub>1</sub>	D <sub>1n</sub>	O <sub>1n</sub>	OE <sub>2</sub>	D <sub>2n</sub>	O <sub>2n</sub>
Н	Х	Z	Н	Х	Z
L	Н	L	L	Н	L
L	L	Н	L	L	Н

#### **Unit Loading/Fan Out**

Pin	Description	U.L.	Output	
Names	Description	HIGH/LOW	I <sub>OH</sub> /I <sub>OL</sub>	
$\overline{\text{OE}}_1, \overline{\text{OE}}_2$	3-STATE Output			
	Enable Input	1.0/1.667	20 µA/–1 mA	
	(Active LOW)			
l <sub>0</sub> - l <sub>7</sub>	Inputs	1.0/1.667	20 µA/–1 mA	
$\overline{O}_0 - \overline{O}_7$	Outputs	750/20	–15 mA/12 mA	

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### Absolute Maximum Ratings(Note 1)

Storage Temperature	-65°C to + 150°C
Ambient Temperature under Bias	$-55^{\circ}$ to $+125^{\circ}C$
Junction Temperature under Bias	$-55^{\circ}C$ to $+150^{\circ}C$
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 $V_{CC} = 0V$ )	
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 $I_{OL}$ (mA)
ESD Last Passing Voltage (Min)	4000V

# Recommended Operating Conditions

Free Air Ambient	Temperature
Supply Voltage	

0°C to 70°C +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	Тур	Max	Units	V <sub>cc</sub>	Conditions
VIH	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	$I_{IN} = -18 \text{ mA}$
V <sub>OH</sub>	Output HIGH 10% V <sub>CC</sub>	2.4			V	Min	$I_{OH} = -3 \text{ mA}$
	Voltage 10% V <sub>CC</sub>	2.0			v	IVIIII	I <sub>OH</sub> = -15 mA
V <sub>OL</sub>	Output LOW Voltage 10% V <sub>CC</sub>			0.75	V	Min	I <sub>OL</sub> = 12 mA
I <sub>IH</sub>	Input HIGH Current			5.0	μΑ	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
ICEX	Output HIGH Leakage Current			50	μΑ	Max	V <sub>OUT</sub> = V <sub>CC</sub>
V <sub>ID</sub>	Input Leakage	4 75			V	0.0	I <sub>ID</sub> = 1.9 μA
	Test	4.75			v	0.0	All Other Pins Grounded
I <sub>OD</sub>	Output Leakage			3 75	ıιΔ	0.0	V <sub>IOD</sub> = 150 mV
	Circuit Current			5.75	μΛ	0.0	All Other Pins Grounded
IIL	Input LOW			1.0	0 mA Max	Мак	$V_{IN} = 0.5V$
	Current			-1.0		$(\overline{OE}_1, \overline{OE}_2, D_n)$	
I <sub>OZH</sub>	Output Leakage Current			50	μΑ	Max	V <sub>OUT</sub> = 2.7V
I <sub>OZL</sub>	Output Leakage Current			-50	μΑ	Max	$V_{OUT} = 0.5V$
I <sub>OS</sub>	Output Short-Circuit Current	-100		-225	mA	Max	$V_{OUT} = 0V$
I <sub>ZZ</sub>	Bus Drainage Test			500	μΑ	0.0	$V_{OUT} = 5.25V$
ICCH	Power Supply Current		16	29	mA	Max	V <sub>O</sub> = HIGH
I <sub>CCL</sub>	Power Supply Current		47	75	mA	Max	V <sub>O</sub> = LOW
I <sub>CCZ</sub>	Power Supply Current		45	63	mA	Max	V <sub>O</sub> = HIGH Z

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t<sub>PLH</sub>

t<sub>PHL</sub>

 $t_{\mathsf{PZH}}$ 

t<sub>PZL</sub>

t<sub>PHZ</sub>

t<sub>PLZ</sub>

Propagation Delay

Output Enable Time

Output Disable Time

Data to Output

	AC EI	ectrical Characteristics				
	Symbol			$T_A = +25^{\circ}C$		
		Parameter	$V_{CC} = +5.0V$			
			$C_L = 50 \text{ pF}$			
			Min	Тур	Max	

3.0

2.0

2.0

4.0

2.0

2.0

4.9

3.7

3.9

6.7

4.1

4.9

7.5

6.0

6.5

9.5

6.5

8.5

74F2240

Units

ns

ns

ns

 $T_A = 0^\circ C \text{ to } +70^\circ C$  $V_{CC} = +5.0V$ 

 $C_L = 50 \ pF$ 

Min

3.0

2.0

2.0

4.0

2.0

2.0

Max

7.5

6.0

7.0

10.0

7.0

9.5





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