

**OCTAL BUFFER/LINE DRIVER WITH  
3-STATE OUTPUTS**

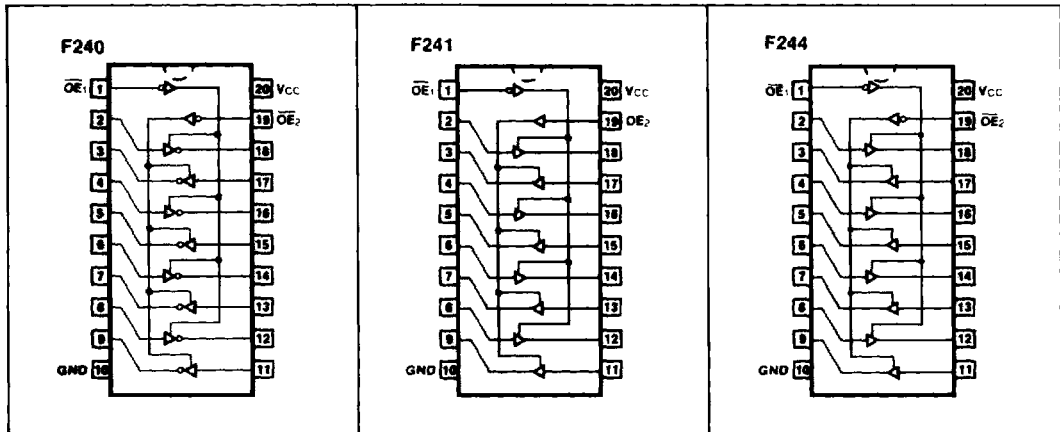
**DESCRIPTION** — The F240, F241 and F244 are octal buffers and line drivers designed to be employed as memory address drivers, clock drivers and bus oriented transmitters/receivers which provide improved PC board density.

- 3-STATE OUTPUTS DRIVE BUS LINES OR BUFFER MEMORY ADDRESS REGISTERS
- OUTPUTS SINK 64 mA
- 15 mA SOURCE CURRENT
- INPUT CLAMP DIODES LIMIT HIGH-SPEED TERMINATION EFFECTS

**MC54F/74F240**  
**MC54F/74F241**  
**MC54F/74F244**

**OCTAL BUFFER/LINE DRIVER  
with 3-STATE OUTPUTS**

**FAST™ SCHOTTKY TTL**

**CONNECTION DIAGRAMS**


J Suffix — Case 732-03 (Ceramic)  
N Suffix — Case 738-03 (Plastic)  
DW Suffix — Case 751D-03 (SOIC)

**TRUTH TABLES**

**F240**

INPUTS			OUTPUT
$\overline{OE}_1$	$\overline{OE}_2$	D	
L	L	H	H
L	H	L	L
H	X	Z	Z

**F241**

INPUTS			OUTPUT
$\overline{OE}_1$	$\overline{OE}_2$	D	
L	H	L	L
L	H	H	H
H	L	X	Z

**F244**

INPUTS			OUTPUT
$\overline{OE}_1$	$\overline{OE}_2$	D	
L	L	L	L
L	H	H	H
H	X	Z	Z

H = HIGH Voltage Level

L = LOW Voltage Level

X = Immaterial

Z = High Impedance

**GUARANTEED OPERATING RANGES**

SYMBOL	PARAMETER		MIN	TYP	MAX	UNIT
V <sub>CC</sub>	Supply Voltage	54, 74	4.50	5.0	5.50	V
T <sub>A</sub>	Operating Ambient Temperature Range	54 74	-55 0	25 25	125 70	°C
I <sub>OH</sub>	Output Current — High	54 74			-12 -15	mA
I <sub>OL</sub>	Output Current — Low	54 74			48 64	mA

**DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE** (unless otherwise specified)

SYMBOL	PARAMETER		LIMITS			UNITS	TEST CONDITIONS	
			MIN	TYP	MAX			
V <sub>IH</sub>	Input HIGH Voltage		2.0			V	Guaranteed Input HIGH Voltage	
V <sub>IL</sub>	Input LOW Voltage				0.8	V	Guaranteed Input LOW Voltage	
V <sub>IK</sub>	Input Clamp Diode Voltage				-1.2	V	I <sub>IN</sub> = -18 mA	V <sub>CC</sub> = MIN
V <sub>OH</sub>	Output HIGH Voltage	54, 74	2.4	3.4		V	I <sub>OH</sub> = -3.0 mA	V <sub>CC</sub> = 4.50 V
		74	2.7	3.4		V	I <sub>OH</sub> = -3.0 mA	V <sub>CC</sub> = 4.75 V
		54	2.0			V	I <sub>OH</sub> = -12 mA	V <sub>CC</sub> = 4.50 V
		74	2.0			V	I <sub>OH</sub> = -15 mA	V <sub>CC</sub> = 4.5 V
V <sub>OL</sub>	Output LOW Voltage	54			0.55	V	I <sub>OL</sub> = 48 mA	V <sub>CC</sub> = MIN
		74			0.55	V	I <sub>OL</sub> = 64 mA	
I <sub>OZH</sub>	Output Off Current HIGH				50	μA	V <sub>OUT</sub> = 2.7 V	V <sub>CC</sub> = MAX
I <sub>OZL</sub>	Output Off Current LOW				-50	μA	V <sub>OUT</sub> = 0.5 V	V <sub>CC</sub> = MAX
I <sub>IH</sub>	Input HIGH Current				20	μA	V <sub>IN</sub> = 2.7 V	V <sub>CC</sub> = MAX
					100		V <sub>IN</sub> = 7.0 V	
I <sub>IL</sub>	Input LOW Current	Data Inputs F241, F244			-1.6	mA	V <sub>IN</sub> = 0.5 V	V <sub>CC</sub> = MAX
		Other			-1.0			
I <sub>OS</sub>	Output Drive Current Note 2	54	-100		-275	mA	V <sub>OUT</sub> = GND	V <sub>CC</sub> = MAX
		74	-100		-275			
I <sub>CCH</sub>	Power Supply Current HIGH	F240			35	mA	V <sub>CC</sub> = MAX	
		F241, F244			60			
I <sub>CCL</sub>	Power Supply Current LOW	F240			75			
		F241, F244			90			
I <sub>CCZ</sub>	Power Supply Current OFF	F240			75			
		F241, F244			90			

**NOTES:**

1. For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable device type.
2. Not more than one output should be shorted at a time, nor for more than 1 second.

**F240  
AC CHARACTERISTICS**

SYMBOL	PARAMETER	54/74F T <sub>A</sub> = +25°C V <sub>CC</sub> = +5.0 V C <sub>L</sub> = 50 pF			54F T <sub>A</sub> = -55 to +125°C V <sub>CC</sub> = 5.0 V ± 10% C <sub>L</sub> = 50 pF		74F T <sub>A</sub> = 0 to +70°C. V <sub>CC</sub> = 5.0 V ± 10% C <sub>L</sub> = 50 pF		UNITS
		MIN	TYP	MAX	MIN	MAX	MIN	MAX	
<sup>t</sup> PLH <sup>t</sup> PHL	Propagation Delay, Data to Output	2.5 1.5	5.1 3.5	7.0 4.7	2.5 1.5	9.0 6.0	2.5 1.5	8.0 5.7	ns
<sup>t</sup> PZH <sup>t</sup> PZL	Output Enable Time	2.0 4.0	3.5 6.9	5.2 9.0	2.0 4.0	6.5 13.5	2.0 4.0	5.7 10	ns
<sup>t</sup> PHZ <sup>t</sup> PLZ	Output Disable Time	2.0 2.0	4.0 6.0	5.3 8.0	2.0 2.0	6.5 12.5	2.0 2.0	6.3 9.5	ns

**F241  
AC CHARACTERISTICS**

<sup>t</sup> PLH <sup>t</sup> PHL	Propagation Delay, Data to Output	2.5 2.5	4.0 4.0	5.2 5.2	2.0 2.0	6.5 7.0	2.5 2.5	6.2 6.5	ns
<sup>t</sup> PZH <sup>t</sup> PZL	Output Enable Time	2.0 2.0	4.3 5.4	5.7 7.0	2.0 2.0	7.0 8.5	2.0 2.0	6.7 8.0	ns
<sup>t</sup> PHZ <sup>t</sup> PLZ	Output Disable Time	2.0 2.0	4.5 4.5	6.0 6.5	2.0 2.0	7.0 12.5	2.0 2.0	7.0 7.5	ns

**F244  
AC CHARACTERISTICS**

<sup>t</sup> PLH <sup>t</sup> PHL	Propagation Delay, Data to Output	2.5 2.5	4.0 4.0	5.2 5.2	2.5 2.5	6.5 7.0	2.5 2.5	6.2 6.5	ns
<sup>t</sup> PZH <sup>t</sup> PZL	Output Enable Time	2.0 2.0	4.3 5.4	5.7 7.0	2.0 2.0	7.0 8.5	2.0 2.0	6.7 8.0	ns
<sup>t</sup> PHZ <sup>t</sup> PLZ	Output Disable Time	2.0 2.0	4.5 4.5	6.0 6.0	2.0 2.0	7.0 10.0	2.0 2.0	7.0 7.0	ns