



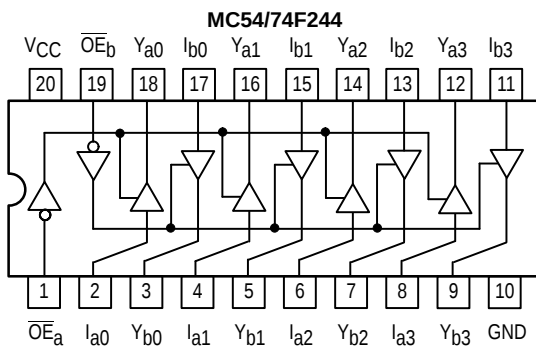
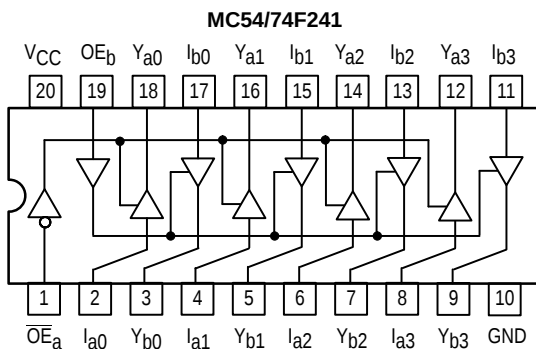
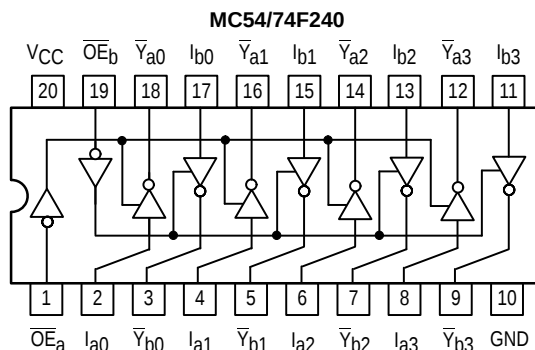
MOTOROLA

OCTAL BUFFER/LINE DRIVER WITH 3-STATE OUTPUTS

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
- ESD > 4000 Volts

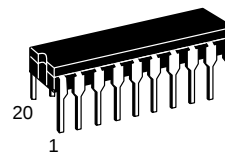
CONNECTION DIAGRAMS



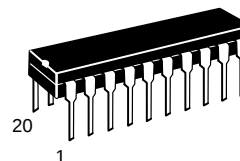
MC54/74F240
MC54/74F241
MC54/74F244

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

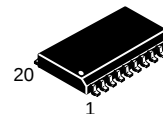
FAST™ SCHOTTKY TTL



J SUFFIX
CERAMIC
CASE 732-03



N SUFFIX
PLASTIC
CASE 738-03



DW SUFFIX
SOIC
CASE 751D-03

ORDERING INFORMATION

MC54FXXXJ	Ceramic
MC74FXXXN	Plastic
MC74FXXXDW	SOIC

MC54/74F240 • MC54/74F241 • MC54/74F244

FUNCTION TABLE
MC54/74F240

Inputs				Outputs	
$\overline{OE}_a$	I_a	$\overline{OE}_b$	I_b	$\overline{Y}_a$	$\overline{Y}_b$
L	L	L	L	H	H
L	H	L	H	L	L
H	X	H	X	Z	Z

FUNCTION TABLE
MC54/74F241

Inputs				Outputs	
$\overline{OE}_a$	I_a	$\overline{OE}_b$	I_b	Y_a	Y_b
L	L	H	L	L	L
L	H	H	H	H	H
H	X	L	X	Z	Z

FUNCTION TABLE
MC54/74F244

Inputs				Outputs	
$\overline{OE}_a$	I_a	$\overline{OE}_b$	I_b	Y_a	Y_b
L	L	L	L	L	L
L	H	L	H	H	H
H	X	H	X	Z	Z

H = HIGH Voltage Level; L = LOW Voltage Level; X = Don't Care; Z = High Impedance

GUARANTEED OPERATING RANGES

Symbol	Parameter		Min	Typ	Max	Unit
V_{CC}	Supply Voltage	54, 74	4.5	5.0	5.5	V
T_A	Operating Ambient Temperature Range	54	-55	25	125	°C
		74	0	25	70	
I_{OH}	Output Current — High	54			-12	mA
		74			-15	
I_{OL}	Output Current — Low	54			48	mA
		74			64	

MC54/74F240 • MC54/74F241 • MC54/74F244

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

Symbol	Parameter		Limits			Unit	Test Conditions	
			Min	Typ	Max			
V _{IH}	Input HIGH Voltage		2.0			V	Guaranteed Input HIGH Voltage	
V _{IL}	Input LOW Voltage				0.8	V	Guaranteed Input LOW Voltage	
V _{IK}	Input Clamp Diode Voltage				−1.2	V	I _{IN} = −18 mA	V _{CC} = MIN
V _{OH}	Output HIGH Voltage	54, 74	2.4	3.4		V	I _{OH} = −3.0 mA	V _{CC} = 4.50 V
		74	2.7	3.4		V	I _{OH} = −3.0 mA	V _{CC} = 4.75 V
		54	2.0			V	I _{OH} = −12 mA	V _{CC} = 4.50 V
		74	2.0			V	I _{OH} = −15 mA	V _{CC} = 4.50 V
V _{OL}	Output LOW Voltage	54			0.55	V	I _{OL} = 48 mA	V _{CC} = MIN
		74			0.55	V	I _{OL} = 64 mA	
I _{OZH}	Output Off Current HIGH				50	μA	V _{OUT} = 2.7 V	V _{CC} = MAX
I _{OZL}	Output Off Current LOW				−50	μA	V _{OUT} = 0.5 V	V _{CC} = MAX
I _{IH}	Input HIGH Current				20	μA	V _{IN} = 2.7 V	V _{CC} = MAX
					100		V _{IN} = 7.0 V	
I _{IL}	Input LOW Current	Data Inputs F241, F244			−1.6	mA	V _{IN} = 0.5 V	V _{CC} = MAX
		Other			−1.0			
I _{OS}	Output Short Circuit Current (Note 2)	74	−100		−225	mA	V _{OUT} = GND	V _{CC} = MAX
		54	−100		−275	mA		
I _{CCH}	Power Supply Current HIGH	F240			35	mA	V _{CC} = MAX	
		F241, F244			60			
I _{CCL}	Power Supply Current LOW	F240			75			
		F241, F244			90			
I _{CCZ}	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.

MC54/74F240 • MC54/74F241 • MC54/74F244

AC CHARACTERISTICS – MC54/74F240

Symbol	Parameter	54/74F			54F		74F		Unit
		T _A = +25°C V _{CC} = +5.0 V C _L = 50 pF			T _A = -55°C to +125°C V _{CC} = 5.0 V ± 10% C _L = 50 pF		T _A = 0°C to +70°C V _{CC} = 5.0 V ± 10% C _L = 50 pF		
		Min	Typ	Max	Min	Max	Min	Max	
t _{PLH}	Propagation Delay, Data to Output	2.5	5.1	7.0	2.5	9.0	2.5	8.0	ns
t _{PHL}		1.5	3.5	4.7	1.5	6.0	1.5	5.7	
t _{PZH}	Output Enable Time	2.0	3.5	5.2	2.0	6.5	2.0	5.7	ns
t _{PZL}		4.0	6.9	9.0	4.0	13.5	4.0	10	
t _{PHZ}	Output Disable Time	2.0	4.0	5.3	2.0	6.5	2.0	6.3	ns
t _{PLZ}		1.5	6.0	8.0	2.0	12.5	1.5	9.5	

AC CHARACTERISTICS – MC54/74F241

Symbol	Parameter	54/74F			54F		74F		Unit
		$T_A = +25^{\circ}\text{C}$ $V_{CC} = +5.0\text{ V}$ $C_L = 50\text{ pF}$			$T_A = -55^{\circ}\text{C to } +125^{\circ}\text{C}$ $V_{CC} = 5.0\text{ V} \pm 10\%$ $C_L = 50\text{ pF}$		$T_A = 0^{\circ}\text{C to } +70^{\circ}\text{C}$ $V_{CC} = 5.0\text{ V} \pm 10\%$ $C_L = 50\text{ pF}$		
		Min	Typ	Max	Min	Max	Min	Max	
t_{PLH}	Propagation Delay, Data to Output	2.5	4.0	5.2	2.0	6.5	2.5	6.2	ns
t_{PHL}		2.5	4.0	5.2	2.0	7.0	2.5	6.5	
t_{PZH}	Output Enable Time	2.0	4.3	5.7	2.0	7.0	2.0	6.7	ns
t_{PZL}		2.0	5.4	7.0	2.0	8.5	2.0	8.0	
t_{PHZ}	Output Disable Time	2.0	4.5	6.0	2.0	7.0	2.0	7.0	ns
t_{PLZ}		2.0	4.5	6.5	2.0	12.5	2.0	7.5	

AC CHARACTERISTICS – MC54/74F244

Symbol	Parameter	54/74F			54F		74F		Unit
		$T_A = +25^{\circ}\text{C}$ $V_{CC} = +5.0\text{ V}$ $C_L = 50\text{ pF}$			$T_A = -55^{\circ}\text{C to } +125^{\circ}\text{C}$ $V_{CC} = 5.0\text{ V} \pm 10\%$ $C_L = 50\text{ pF}$		$T_A = 0^{\circ}\text{C to } +70^{\circ}\text{C}$ $V_{CC} = 5.0\text{ V} \pm 10\%$ $C_L = 50\text{ pF}$		
		Min	Typ	Max	Min	Max	Min	Max	
t_{PLH}	Propagation Delay, Data to Output	2.5	4.0	5.2	2.5	6.5	2.5	6.2	ns
t_{PHL}		2.5	4.0	5.2	2.5	7.0	2.5	6.5	
t_{PZH}	Output Enable Time	2.0	4.3	5.7	2.0	7.0	2.0	6.7	ns
t_{PZL}		2.0	5.4	7.0	2.0	8.5	2.0	8.0	
t_{PHZ}	Output Disable Time	2.0	4.5	6.0	2.0	7.0	2.0	7.0	ns
t_{PLZ}		2.0	4.5	6.0	2.0	10.0	2.0	7.0	

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