

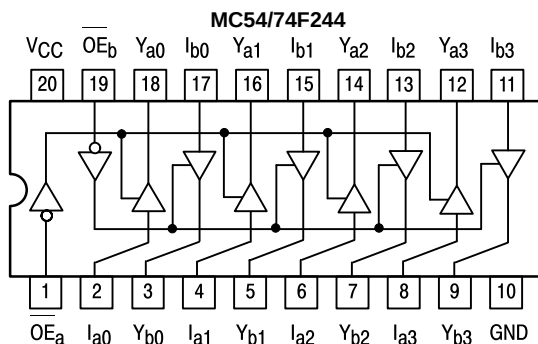
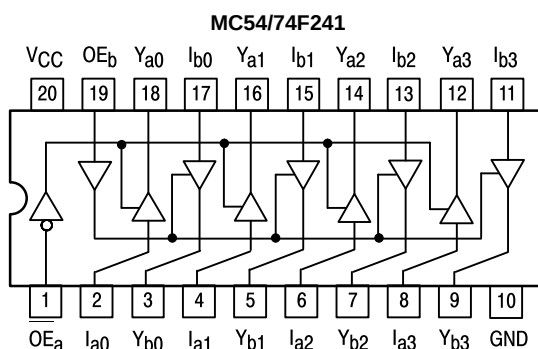
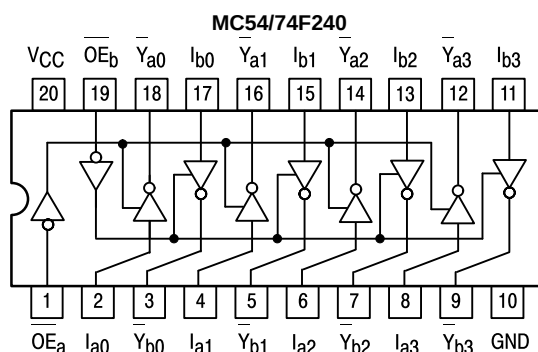


OCTAL BUFFER/LINE DRIVER WITH 3-STATE OUTPUTS

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

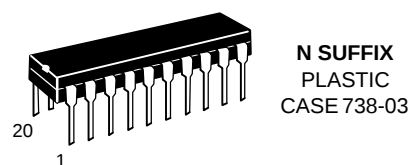
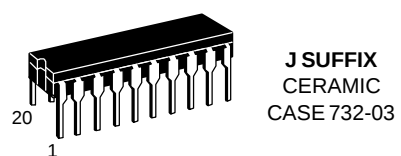
CONNECTION DIAGRAMS



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

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

FAST™ SCHOTTKY TTL



ORDERING INFORMATION

MC54FXXXJ	Ceramic
MC74FXXXN	Plastic
MC74FXXXDW	SOIC

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

FUNCTION TABLE
MC54/74F240

Inputs				Outputs	
OE _a	I _a	OE _b	I _b	Y _a	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	
OE _a	I _a	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	
OE _a	I _a	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:

- For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable device type.
- 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	

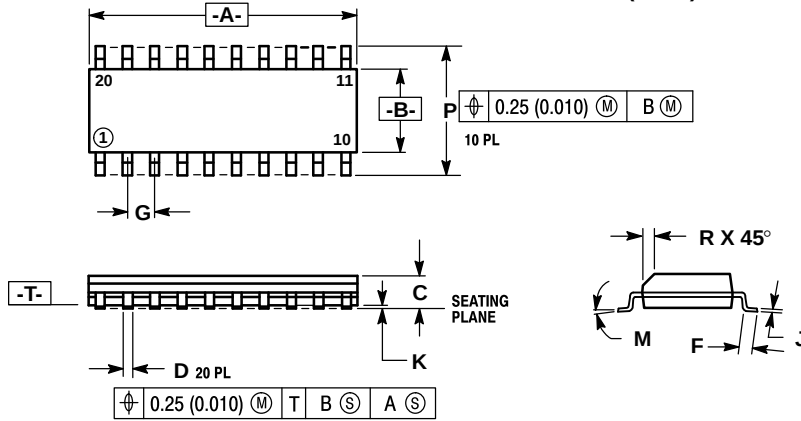
AC CHARACTERISTICS – MC54/74F241

Symbol	Parameter	54/74F			54F		74F		Unit
		T _A = +25°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	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°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	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	

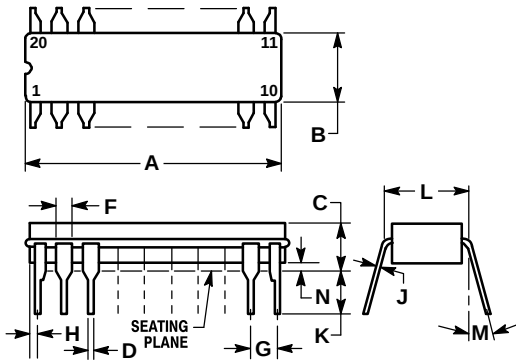
Case 751D-03 DW Suffix
20-Pin Plastic
SO-20 (WIDE)



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: MILLIMETER.
 3. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
 4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
 5. 751D-01, AND -02 OBSOLETE, NEW STANDARD 751D-03.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	12.65	12.95	0.499	0.510
B	7.40	7.60	0.292	0.299
C	2.35	2.65	0.093	0.104
D	0.35	0.49	0.014	0.019
F	0.50	0.90	0.020	0.035
G	1.27 BSC	0.050 BSC		
J	0.25	0.32	0.010	0.012
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	10.05	10.55	0.395	0.415
R	0.25	0.75	0.010	0.029

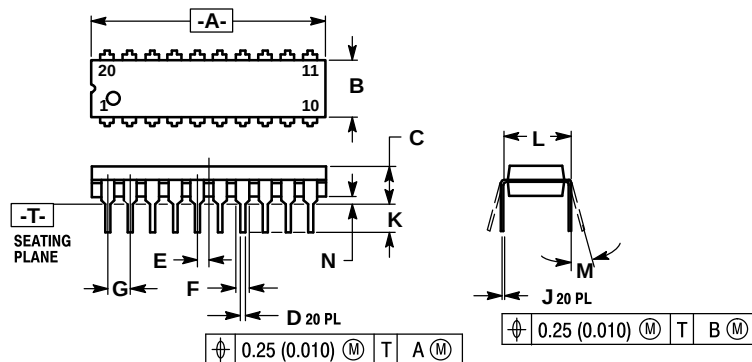
Case 732-03 J Suffix
20-Pin Ceramic Dual In-Line



- NOTES:
1. LEADS WITHIN 0.25 mm (0.010) DIA., TRUE POSITION AT SEATING PLANE, AT MAXIMUM MATERIAL CONDITION.
 2. DIM L TO CENTER OF LEADS WHEN FORMED PARALLEL.
 3. DIM A AND B INCLUDES MENISCUS.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	23.88	25.15	0.940	0.990
B	6.60	7.49	0.260	0.295
C	3.81	5.08	0.150	0.200
D	0.38	0.56	0.015	0.022
F	1.40	1.65	0.055	0.065
G	2.54 BSC	0.100 BSC		
H	0.51	1.27	0.020	0.050
J	0.20	0.30	0.008	0.012
K	3.18	4.06	0.125	0.160
L	7.62 BSC	0.300 BSC		
M	0°	15°	0°	15°
N	0.25	1.02	0.010	0.040

Case 738-03 N Suffix
20-Pin Plastic



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION "L" TO CENTER OF LEAD WHEN FORMED PARALLEL.
 4. DIMENSION "B" DOES NOT INCLUDE MOLD FLASH.
 5. 738-02 OBSOLETE, NEW STANDARD 738-03.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	25.66	27.17	1.010	1.070
B	6.10	6.60	0.240	0.260
C	3.81	4.57	0.150	0.180
D	0.39	0.55	0.015	0.022
E	1.27 BSC	0.050 BSC		
F	1.27	1.77	0.050	0.070
G	2.54 BSC	0.100 BSC		
J	0.21	0.38	0.008	0.015
K	2.80	3.55	0.110	0.140
L	7.62 BSC	0.300 BSC		
M	0°	15°	0°	15°
N	0.51	1.01	0.020	0.040

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