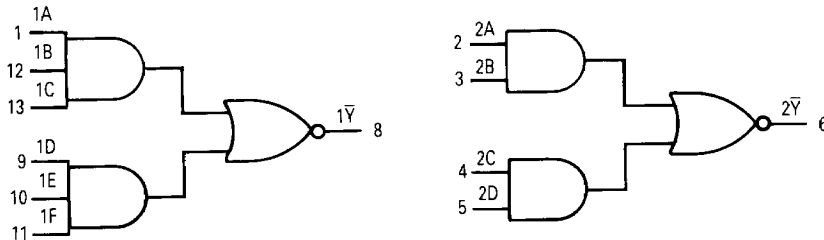


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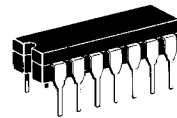
**MC54F51**  
**MC74F51**

*Advance Information*

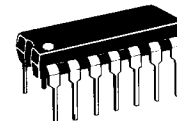
**Dual 2-Wide 2-Input, 2-Wide 3-Input**  
**AND-OR-Invert Gate**  
**FAST™ Schottky TTL**



Logic Diagram



J SUFFIX  
 CASE 632-07  
 CERAMIC



N SUFFIX  
 CASE 646-06  
 PLASTIC



D SUFFIX  
 CASE 751A-02  
 SOIC

**FUNCTIONAL TABLES**

For 3-Input Gates							For 2-Input Gates				
Inputs						Output	Inputs				Output
A	B	C	D	E	F	1Ȳ	A	B	C	D	2Ȳ
H	H	H	X	X	X	L	H	H	X	X	L
X	X	X	H	H	H	L	X	X	H	H	L
All other combinations						H	All other combinations				H

H = HIGH voltage level  
 L = LOW voltage level  
 X = Don't care

2

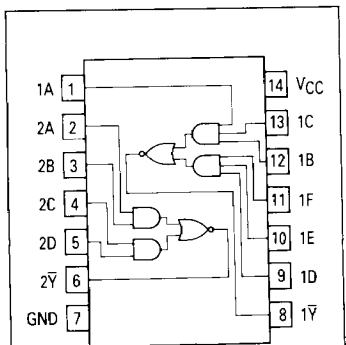
RES

orig

006245

6245

MOT



CONNECTION  
 DIAGRAM

**GUARANTEED OPERATING RANGES**

Symbol	Parameter		Min	Typ	Max	Unit
VCC	Supply Voltage	54, 74	4.5	5	5.5	V
TA	Operating Ambient Temperature Range	54	-55	25	125	°C
		74	0	25	70	
IOH	Output Current — High	54, 74			-1	mA
IOL	Output Current — Low	54, 74			20	mA

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 This document contains information on a new product. Specifications and information herein are subject to change without notice.



**MOTOROLA**

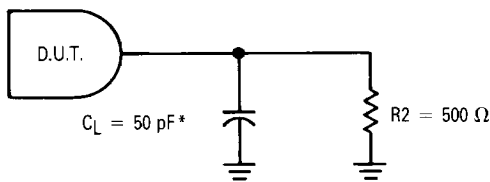
**DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE** (unless otherwise specified)

Symbol	Parameter	Limits			Unit	Test Conditions	
		Min	Typ	Max			
V <sub>IH</sub>	Input HIGH Voltage	2			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	V <sub>CC</sub> = MIN, I <sub>IN</sub> = -18 mA	
V <sub>OH</sub>	Output HIGH Voltage	54, 74	2.5		V	I <sub>OH</sub> = -1 mA	V <sub>CC</sub> = 4.5 V
		74	2.7		V	I <sub>OH</sub> = -1 mA	V <sub>CC</sub> = 4.75 V
V <sub>OL</sub>	Output LOW Voltage			0.5	V	I <sub>OL</sub> = 20 mA	V <sub>CC</sub> = MIN
I <sub>IH</sub>	Input HIGH Current			20	μA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 2.7 V	
				0.1	mA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 7 V	
I <sub>IL</sub>	Input LOW Current			-0.6	mA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 0.5 V	
I <sub>OS</sub>	Output Short Circuit Current (Note 2)	-60		-150	mA	V <sub>CC</sub> = MAX, V <sub>OUT</sub> = 0 V	
I <sub>CC</sub>	Total Supply Current	I <sub>CC</sub> H	1.8	3	mA	V <sub>IN</sub> = GND	V <sub>CC</sub> = MAX
		I <sub>CC</sub> L	5.5	7.5		V <sub>IN</sub> = 4.5 V	

- 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.

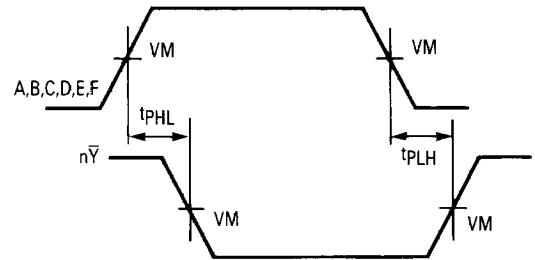
**AC ELECTRICAL CHARACTERISTICS**

Symbol	Parameter	54/74F			54F		74F		Units
		T <sub>A</sub> = 25°C V <sub>CC</sub> = +5 V C <sub>L</sub> = 50 pF			T <sub>A</sub> = -55°C to +125°C V <sub>CC</sub> = 5 V ± 10% C <sub>L</sub> = 50 pF		T <sub>A</sub> = 0°C to +70°C V <sub>CC</sub> = 5 V ± 10% C <sub>L</sub> = 50 pF		
		Min	Typ	Max	Min	Max	Min	Max	
t <sub>PLH</sub>	Propagation Delay	2		5.5	1.5	7.5	1.5	6.5	ns
t <sub>PHL</sub>	A, B, C, D, E, F, to n $\bar{Y}$	1		4	1	5.5	1	4.5	



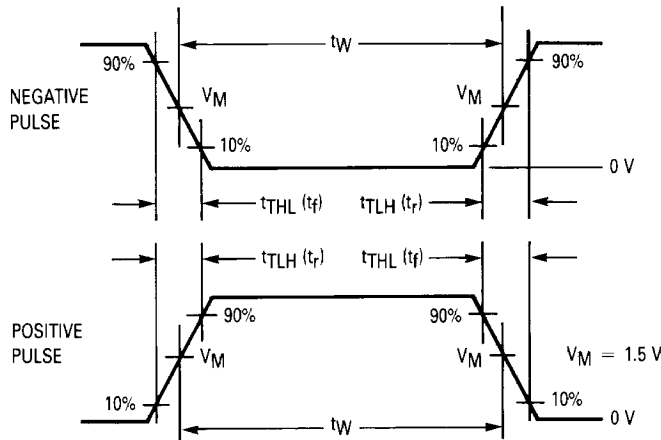
**AC Test Circuit**

\* = INCLUDES ALL PROBE AND JIG CAPACITANCE.



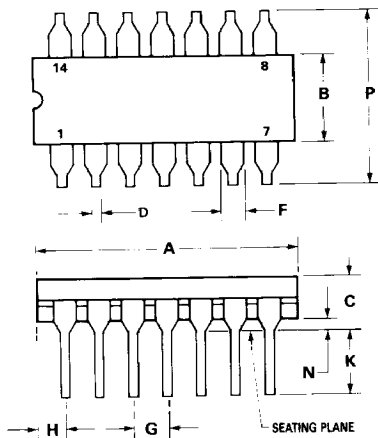
**AC Waveform**

NOTE: FOR ALL WAVEFORMS, V<sub>M</sub> = 1.5 V.  
PROPAGATION DELAY INPUT TO OUTPUT

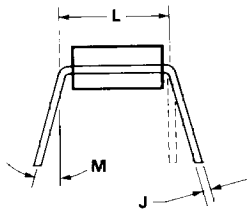


**Input Pulse Definition**

## OUTLINE DIMENSIONS

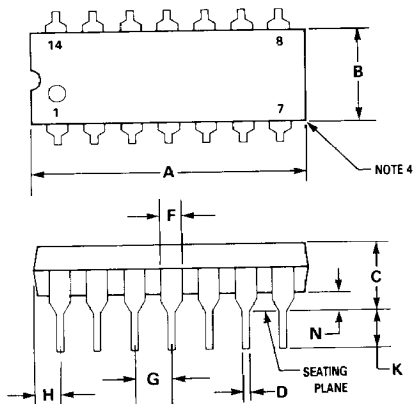


- NOTES:
1. ALL RULES AND NOTES ASSOCIATED WITH MO-001 AA OUTLINE SHALL APPLY.
  2. DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
  3. DIMENSION "A" AND "B" (632-07) DO NOT INCLUDE GLASS RUN-OUT.
  4. LEADS WITHIN 0.25 mm (0.010) DIA OF TRUE POSITION AT SEATING PLANE AND MAXIMUM MATERIAL CONDITION.

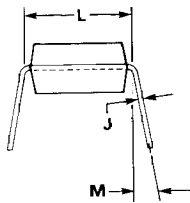


DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	19.05	19.94	0.750	0.785
B	6.10	7.49	0.240	0.295
C	—	5.08	—	0.200
D	0.38	0.58	0.015	0.023
F	1.40	1.77	0.055	0.070
G	2.54 BSC		0.100 BSC	
H	1.91	2.29	0.075	0.090
J	0.20	0.38	0.008	0.015
K	3.18	4.32	0.125	0.170
L	7.62 BSC		0.300 BSC	
M	—	15°	—	15°
N	0.51	1.02	0.020	0.040

**J SUFFIX  
CASE 632-07  
CERAMIC**

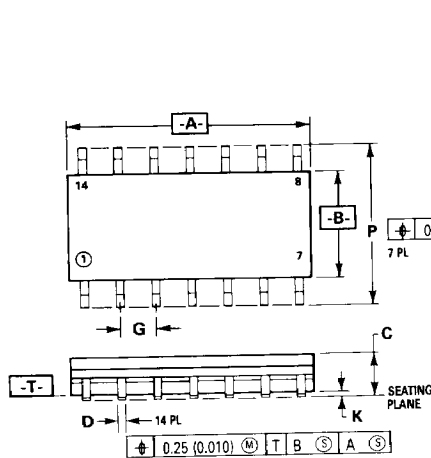


- NOTES:
1. LEADS WITHIN 0.13 mm (0.005) RADIUS OF TRUE POSITION AT SEATING PLANE AT MAXIMUM MATERIAL CONDITION.
  2. DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
  3. DIMENSION "B" DOES NOT INCLUDE MOLD FLASH.
  4. ROUNDED CORNERS OPTIONAL.

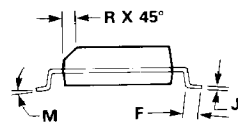


DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	18.16	19.56	0.715	0.770
B	6.10	6.60	0.240	0.260
C	3.69	4.69	0.145	0.185
D	0.38	0.53	0.015	0.021
F	1.02	1.78	0.040	0.070
G	2.54 BSC		0.100 BSC	
H	1.32	2.41	0.052	0.095
J	0.20	0.38	0.008	0.015
K	2.92	3.43	0.115	0.135
L	7.62 BSC		0.300 BSC	
M	0°	10°	0°	10°
N	0.39	1.01	0.015	0.039

**N SUFFIX  
CASE 646-06  
PLASTIC**



- NOTES:
1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
  2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  3. CONTROLLING DIMENSION: MILLIMETER.
  4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
  5. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.55	8.75	0.337	0.344
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC		0.050 BSC	
J	0.19	0.25	0.008	0.009
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

**D SUFFIX  
CASE 751A-02  
SOIC**

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