

## CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

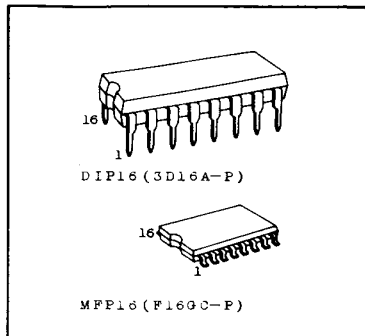
# TC40H151P/F

### TC40H151 8-TO-1-LINE DATA SELECTOR/MULTIPLEXER

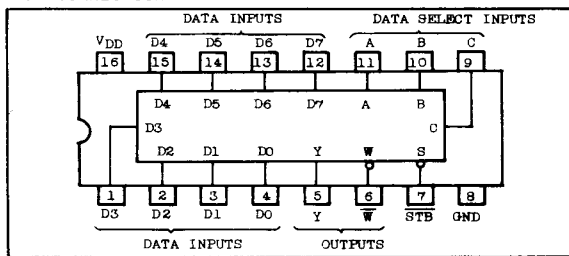
The TC40H151 is an 8-channel data selector/multiplexer, and has the non-inverting output and the inverting output.

#### MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	$V_{DD}$	$V_{SS}-0.5 \sim V_{SS}+10$	V
Input Voltage	$V_{IN}$	$V_{SS}-0.5 \sim V_{DD}+0.5$	V
Output Voltage	$V_{OUT}$	$V_{SS}-0.5 \sim V_{DD}+0.5$	V
Input Current	$I_{IN}$	$\pm 10$	mA
Power Dissipation	PD	300(DIP)/180(MFP)	mW
Storage Temperature	$T_{stg}$	$-65 \sim 150$	$^{\circ}\text{C}$
Lead Temp./Time	$T_{sol}$	$260^{\circ}\text{C} \cdot 10 \text{ sec}$	



#### PIN CONNECTION

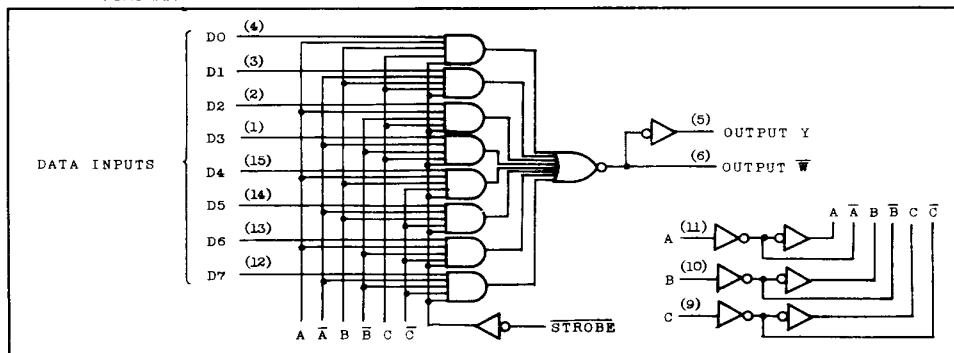


#### TRUTH TABLE

INPUTS			OUTPUTS		
SELECT			STROBE	$\bar{Y}$	Y
A	B	C	$\bar{S}$	$\bar{Y}$	Y
X	X	X	H	H	L
L	L	L	L	$\bar{D}_0$	$D_0$
H	L	L	L	$\bar{D}_1$	$D_1$
L	H	L	L	$\bar{D}_2$	$D_2$
H	H	L	L	$\bar{D}_3$	$D_3$
L	L	H	L	$\bar{D}_4$	$D_4$
H	L	H	L	$\bar{D}_5$	$D_5$
L	H	H	L	$\bar{D}_6$	$D_6$
H	H	H	L	$\bar{D}_7$	$D_7$

\* Don't care

#### CIRCUIT DIAGRAM



## TC40H151P/F

RECOMMENDED OPERATING CONDITIONS ( $V_{SS}=0V$ )

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	$V_{DD}$	-	2	-	8	V
Input Voltage	$V_{IN}$	-	0	-	$V_{DD}$	V
Operating Temperature	$T_{opr}$	-	-40	-	85	°C

ELECTRICAL CHARACTERISTICS ( $V_{SS}=0.0V$ )

CHARACTERISTIC	SYMBOL	TEST CONDITION	$V_{DD}$ (V)	-40°C		25°C			85°C		UNIT
				MIN.	MAX.	MIN.	TYP.	MAX.	MIN.	MAX.	
High Level Output Voltage	$V_{OH}$	$ I_{OUT}  < 1\mu A$ $V_{IN}=V_{SS}, V_{DD}$	5	4.95	-	4.95	5.0	-	4.95	-	V
Low Level Output Voltage	$V_{OL}$	$ I_{OUT}  < 1\mu A$ $V_{IN}=V_{SS}, V_{DD}$	5	-	0.05	-	0.0	0.05	-	0.05	V
High Level Output Current	$I_{OH}$	$V_{OH}=4.6V$ $V_{IN}=V_{SS}, V_{DD}$	5	-0.52	-	-0.44	-	-	-0.36	-	mA
Low Level Output Current	$I_{OL}$	$V_{OL}=0.4V$ $V_{IN}=V_{SS}, V_{DD}$	5	1.4	-	1.1	-	-	0.8	-	mA
Input Voltage	High Level	$V_{IH}$	5	4.0	-	4.0	-	-	4.0	-	V
	Low Level	$V_{IL}$		5	-	1.0	-	-	1.0	-	
Input Current	High Level	$I_{IH}$	8	-	0.3	-	$10^{-5}$	0.3	-	1.0	$\mu A$
	Low Level	$I_{IL}$	8	-	-0.3	-	$-10^{-5}$	-0.3	-	-1.0	
Quiescent Supply Current	$I_{DD}$	$*V_{IN}=V_{SS}, V_{DD}$	5	-	12.5	-	0.005	12.5	-	75	$\mu A$

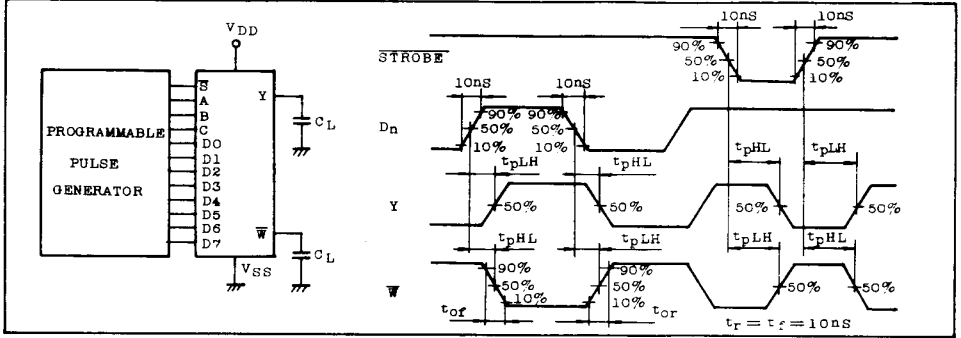
\* All valid input combinations.

SWITCHING CHARACTERISTICS ( $T_a=25^\circ C$ ,  $V_{SS}=0.0V$ ,  $V_{DD}=5V$ ,  $C_L=15pF$ )

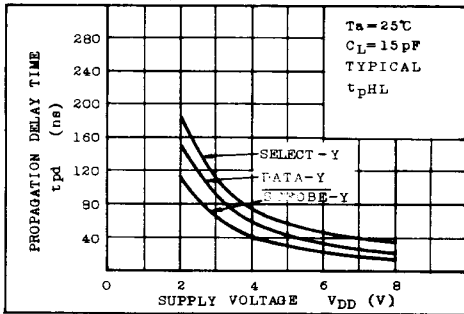
CHARACTERISTIC	SYMBOL	FROM (INPUT)	TO (OUT)	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Rise Time	$t_{or}$				-	20	40	ns
Output Fall Time	$t_{of}$				-	18	36	
Propagation Delay Time	(Low-High)	$t_{pLH}$	A, B, or C (4 levels)	Y/ $\bar{W}$	-	52	78	ns
	(High-Low)	$t_{pHL}$			-	60	90	
Propagation Delay Time	(Low-High)	$t_{pLH}$	Strobe	Y/ $\bar{W}$	-	31	47	ns
	(High-Low)	$t_{pHL}$			-	34	51	
Propagation Delay Time	(Low-High)	$t_{pLH}$	D0 through D7	Y/ $\bar{W}$	-	45	68	ns
	(High-Low)	$t_{pHL}$			-	52	78	
Input Capacitance	$C_{IN}$				-	5	-	ns

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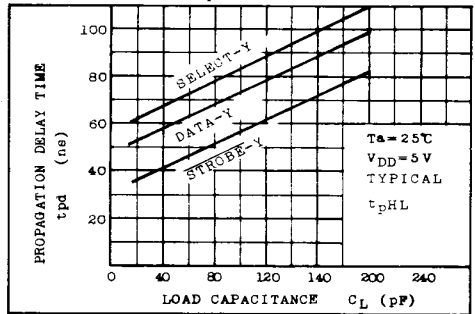
## SWITCHING TIME TEST CIRCUIT AND WAVEFORM



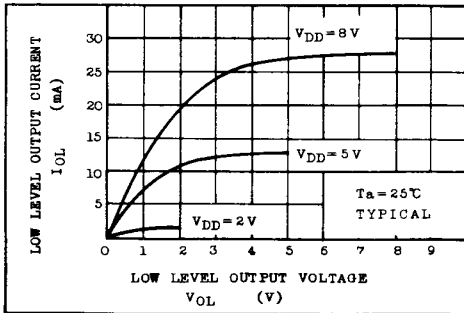
$t_{pd} - V_{DD}$



$t_{pd} - C_L$



$I_{OL} - V_{OL}$



$I_{OH} - (V_{DD} - V_{OH})$

