

TC40H153P/F

C²MOS DIGITAL INTEGRATED CIRCUIT
SILICON MONOLITHIC

TC40H153 DUAL 4-TO-1-LINE DATA SELECTOR/MULTIPLEXER

The TC40H153 is a dual data selector which can select 4-line data according to SELECT inputs A and B.

4-channel data of C₀ to C₃ are selected to be output Y according to SELECT inputs A and B.

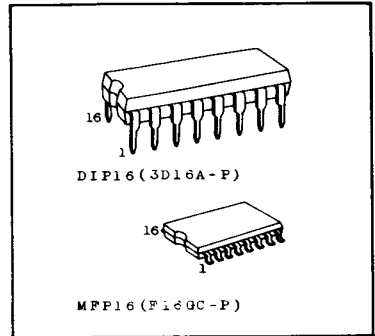
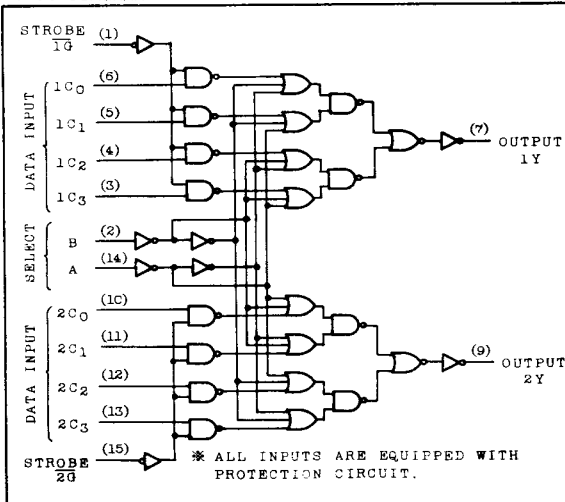
When STROBE input is set to "H" level, each output goes to "L" level regardless of other inputs.

This data selector can be widely applied to synthesis of signals, parallel to serial conversion and selection of various signals.

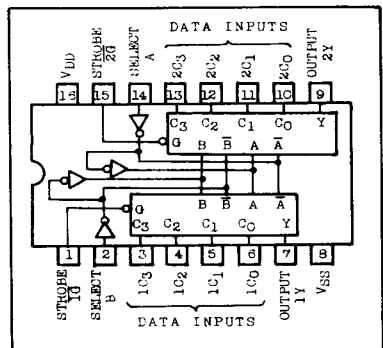
MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{DD}	V _{SS} -0.5 ~ V _{SS} +10	V
Input Voltage	V _{IN}	V _{SS} -0.5 ~ V _{DD} +0.5	V
Output Voltage	V _{OUT}	V _{SS} -0.5 ~ V _{DD} +0.5	V
Input Current	I _{IN}	±10	mA
Power Dissipation	P _D	300(DIP)/180(MFP)	mW
Storage Temperature	T _{stg}	-65 ~ 150	°C
Lead Temp./Time	T _{sol}	260°C • 10 sec	

LOGIC DIAGRAM



PIN CONNECTION



TRUTH TABLE

SELECT		DATA				STROBE	OUTPUT
A	B	C ₀	C ₁	C ₂	C ₃	\bar{G}	Y
*	*	*	*	*	*	H	L
L	L	L	*	*	*	L	L
L	L	H	*	*	*	L	H
H	L	*	L	*	*	L	L
H	L	*	H	*	*	L	H
L	H	*	*	L	*	L	L
L	H	*	*	H	*	L	H
H	H	*	*	*	L	L	L
H	H	*	*	*	H	L	H

* = Don't care

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	VDD	-	2.0	-	8.0	V
Input Voltage	VIN	-	0	-	VDD	V
Operating Temperature	Topr	-	-40	-	85	°C

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	VDD (V)	-40°C		25°C			85°C		UNIT
				MIN.	MAX.	MIN.	TYP.	MAX.	MIN.	MAX.	
High Level Output Voltage	VOH	$ 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	VOL	$ 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	IOH	$V_{OH}=4.6V$ $V_{IN}=V_{SS}, V_{DD}$	5	-0.52	-	-0.44	-	-	-0.36	-	mA
Low Level Output Current	IOL	$V_{OL}=0.4V$ $V_{IN}=V_{SS}, V_{DD}$	5	1.4	-	1.1	-	-	0.8	-	mA
Input Voltage	"H" Level VIH	$ I_{OUT} < 1\mu A$ $V_{OUT}=0.5V$ $V_{OUT}=4.5V$	5	4.0	-	4.0	-	-	4.0	-	V
	"L" Level VIL		5	-	1.0	-	-	1.0	-	1.0	
Input Current	"H" Level IIH	VIH=8.0	8	-	0.3	-	10^{-5}	0.3	-	1.0	μA
	"L" Level IIL	VIL=0.0V	8	-	-0.3	-	-10^{-5}	-0.3	-	-1.0	
Quiescent Supply Current	IDD	$*V_{IN}=V_{SS}, V_{DD}$	5	-	2.5	-	10^{-3}	2.5	-	75	μA

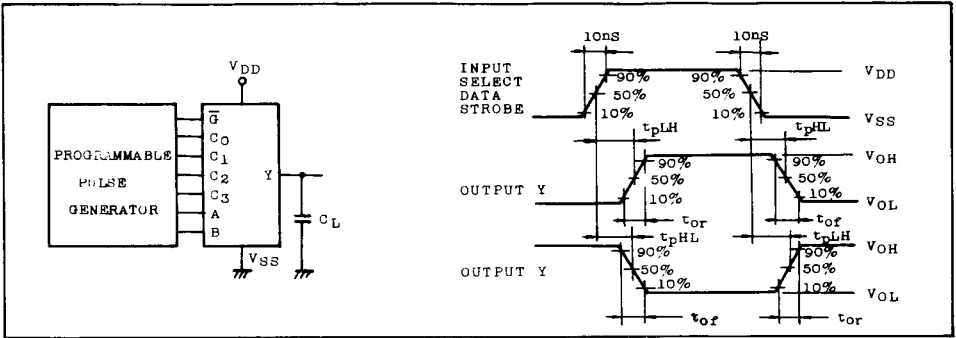
* All valid input combinations.

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

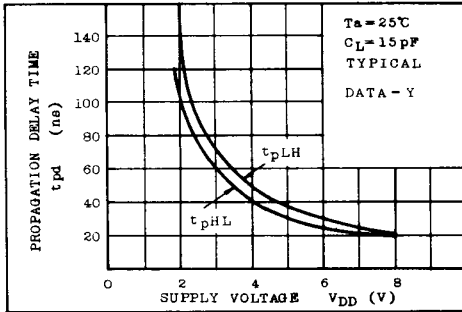
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Rise Time	t _{or}		-	18	35	ns
Output Fall Time	t _{of}		-	14	30	
Propagation Delay Time	(Low-High) t _{PLH}	DATA - Y	-	38	57	ns
	(High-Low) t _{pHL}		-	33	50	
Propagation Delay Time	(Low-High) t _{pLH}	SELECT - Y	-	41	62	ns
	(High-Low) t _{pHL}		-	36	54	
Propagation Delay Time	(Low-High) t _{pLH}	STROBE - Y	-	45	68	ns
	(High-Low) t _{pHL}		-	38	57	
Input Capacitance	C _{IN}		-	5	-	pF

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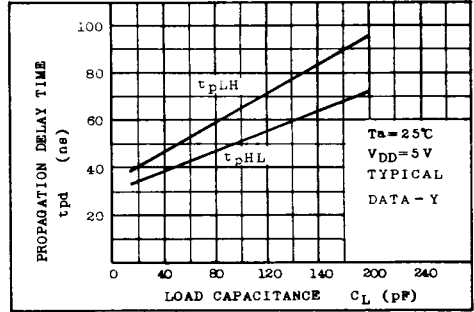
SWITCHING TIME TEST CIRCUIT AND WAVEFORM



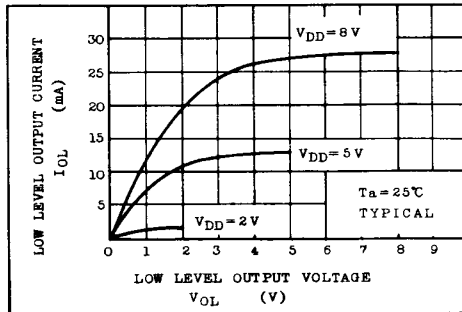
$t_{pd} - V_{DD}$



$t_{pd} - C_L$



$I_{OL} - V_{OL}$



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

