

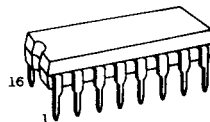
# TC40H139P/F

C<sup>2</sup>MOS DIGITAL INTEGRATED CIRCUIT  
SILICON MONOLITHIC

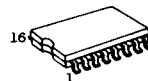
## TC40H139 DUAL 2-TO-4-LINE DECODER/DEMULTIPLEXER

The TC40H139 is a dual decoder/demulti-plexer, which can select one of four output lines through two input lines A and B according to the following truth table. The selected output at this time is at "L" level.

Further, when ENABLE input  $\bar{G}$  is set to "H" level, the selection is inhibited regardless of SELECT signal and all the outputs go to "H" level.



DIP16(3D16A-P)

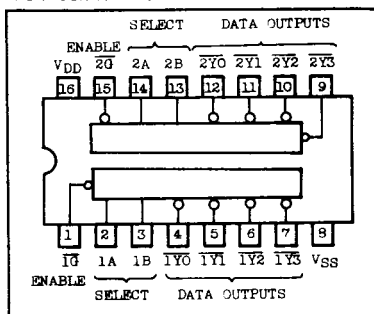


MFP16(F16QC-P)

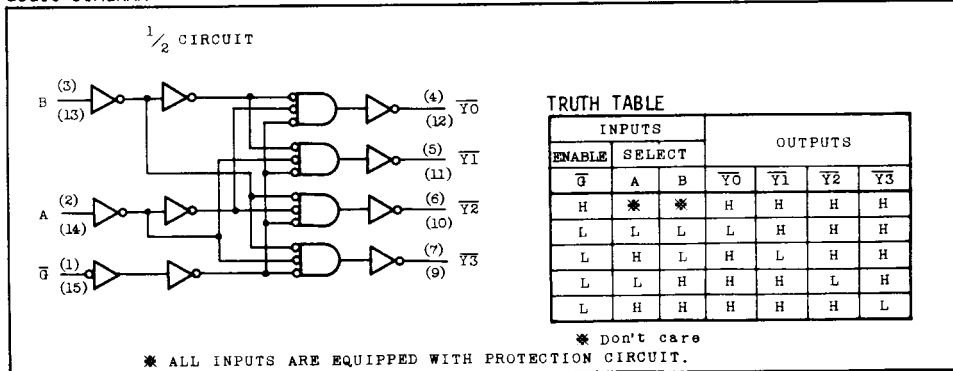
### MAXIMUM RATINGS

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	$T_{stg}$	$-65 \sim 150$	°C
Lead Temp./Time	$T_{sol}$	$260^{\circ}\text{C} \cdot 10 \text{ sec}$	

### PIN CONNECTION



### LOGIC DIAGRAM



## TC40H139P/F

RECOMMENDED OPERATING CONDITIONS ( $V_{SS}=0.0V$ )

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	VDD	-	2.0	-	8.0	V
Input Voltage	VIN	-	0.0	-	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	VOH=4.6V $V_{IN}=V_{SS}, V_{DD}$	5	-0.52	-	-0.44	-	-	-0.36	-	mA
Low Level Output Current	IOL	VOL=0.4V $V_{IN}=V_{SS}, V_{DD}$	5	1.4	-	1.1	-	-	0.8	-	mA
Input Voltage	"H" Level	$ I_{OUT}  < 1\mu A$ VOH=4.5V VOL=0.5V	5	4.0	-	4.0	-	-	4.0	-	V
	"L" Level		VIL	5	-	1.0	-	-	1.0	-	
Input Current	"H" Level	IIH	8	-	0.3	-	$10^{-5}$	0.3	-	1.0	μA
	"L" Level	IIL	8	-	-0.3	-	$-10^{-5}$	-0.3	-	-1.0	
Quiescent Supply Current	IDD	* $V_{IN}=V_{SS}, V_{DD}$	5	-	12.5	-	$10^{-3}$	12.5	-	75	μA

\* All valid input combinations.

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

CHARACTERISTIC		SYMBOL	TEST CONDITION	VDD(V)	MIN.	TYP.	MAX.	UNIT
Output Rise Time		t <sub>or</sub>		5	-	17	35	ns
Output Fall Time		t <sub>of</sub>		5	-	13	30	
Propagation Delay Time	(Low-High)	t <sub>PLH</sub>	SELECT - Y	5	-	32	48	ns
	(High-Low)	t <sub>pHL</sub>		5	-	30	45	
Propagation Delay Time	(Low-High)	t <sub>pLH</sub>	ENABLE - Y	5	-	32	48	ns
	(High-Low)	t <sub>pHL</sub>		5	-	30	45	
Input Capacitance		C <sub>IN</sub>			-	5	-	pF

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## SWITCHING TIME TEST CIRCUIT AND WAVEFORM

