

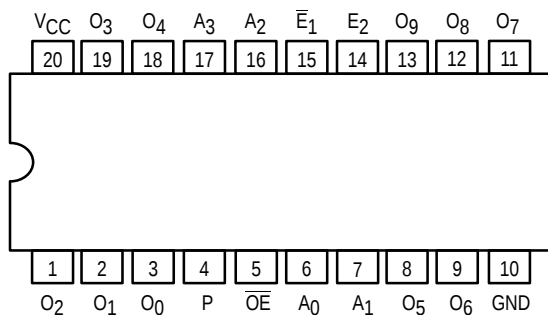


1-OF-10 DECODER WITH 3-STATE OUTPUTS

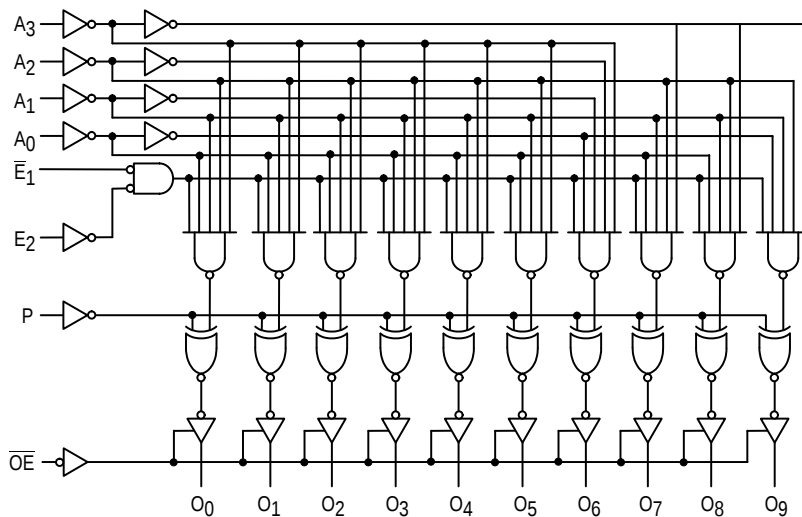
The MC54/74F537 is a one-of-ten decoder/demultiplexer with four active HIGH BCD inputs and ten mutually exclusive outputs. A polarity control input determines whether the outputs are active LOW or active HIGH. The MC54/74F537 has 3-state outputs, and a HIGH signal on the Output Enable ($\overline{OE}$) input forces all outputs to the high impedance state. Two input enables, active HIGH E_2 and active LOW $\overline{E}_1$, are available for demultiplexing data to the selected output in either non-inverted or inverted form. Input codes greater than BCD nine cause all outputs to go to the inactive state (i.e., same polarity as the P input).

- Demultiplexing Capability
- 3-State Outputs
- Multiple Input Enable for Expansion
- Polarity Control Input
- ESD Protection > 4000 Volts

CONNECTION DIAGRAM DIP (TOP VIEW)



LOGIC DIAGRAM

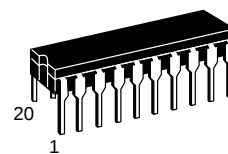


Please note that this diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

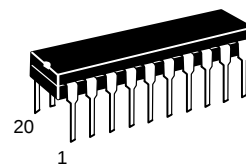
MC54/74F537

1-OF-10 DECODER
WITH 3-STATE OUTPUTS

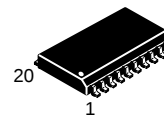
FAST™ SCHOTTKY TTL



J SUFFIX
CERAMIC
CASE 732-03



N SUFFIX
PLASTIC
CASE 738-03

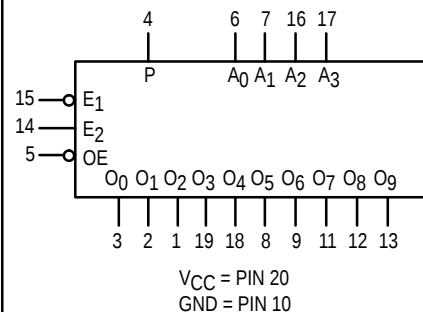


DW SUFFIX
SOIC
CASE 751D-03

ORDERING INFORMATION

MC54FXXXJ Ceramic
 MC74FXXXN Plastic
 MC74FXXXDW SOIC

LOGIC SYMBOL



MC54/74F537

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, 74			−3.0	mA
I _{OL}	Output Current — Low	54, 74			24	mA

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		V	I _{OH} = −3.0 mA	V _{CC} = 4.5 V
		74	2.7		V	I _{OH} = −3.0 mA	V _{CC} = 4.75 V
V _{OL}	Output LOW Voltage			0.5	V	I _{OL} = 24 mA	V _{CC} = MIN
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 _{CC} = MAX, V _{IN} = 2.7 V	
				0.1	mA	V _{CC} = MAX, V _{IN} = 7.0 V	
I _{IL}	Input LOW Current			−0.6	mA	V _{CC} = MAX, V _{IN} = 0.5 V	
I _{OS}	Output Short Circuit Current (Note 2)	−60		−150	mA	V _{CC} = MAX, V _{OUT} = 0 V	
I _{CCZ}	Power Supply Current		44	66	mA	V _{CC} = MAX: A ₀ –A ₃ , $\bar{E}_1$ = GND OE, E ₂ , P = HIGH	

AC CHARACTERISTICS

Symbol	Parameter	54/74F			54F		74F		Unit
		T _A = +25°C V _{CC} = +5.0 V C _L = 50 pF			T _A = −55 to +125°C V _{CC} = 5.0 V ± 10% C _L = 50 pF		T _A = 0 to 70°C V _{CC} = 5.0 V ± 10% C _L = 50 pF		
		Min	Typ	Max	Min	Max	Min	Max	
t _{PLH} t _{PHL}	Propagation Delay A _n to O _n	4.0 2.5		14 11	3.5 2.0	19 15	3.5 2.0	16 12	ns
t _{PLH} t _{PHL}	Propagation Delay E ₁ to O _n	4.0 3.0		11 11	4.0 3.0	14 14	4.0 3.0	12 12	
t _{PLH} t _{PHL}	Propagation Delay E ₂ to O _n	6.0 4.0		11.5 11.5	5.0 4.0	15 14.5	5.0 4.0	13 12.5	ns
t _{PLH} t _{PHL}	Propagation Delay P to O _n	5.0 3.5		16 11.5	5.0 3.5	21 13	4.5 3.5	17 12	
t _{PZH} t _{PZL}	Output Enable Time OE to O _n	2.5 4.0		7.0 8.0	2.5 4.0	11 10	2.5 4.0	8.0 9.0	ns
t _{PHZ} t _{PLZ}	Output Disable Time OE to O _n	1.5 1.5		6.0 6.5	1.0 1.0	8 8	1.0 1.0	7.0 7.0	

MC54/74F537

TRUTH TABLE

FUNCTION	INPUTS							OUTPUTS									
	$\overline{OE}$	$\overline{E_1}$	E_2	A_3	A_2	A_1	A_0	O_0	O_1	O_2	O_3	O_4	O_5	O_6	O_7	O_8	O_9
HIGH Impedance	H	X	X	X	X	X	X	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
Disable	L	H	X	X	X	X	X	Outputs Equal P Input									
	L	X	L	X	X	X	X										
Active HIGH Output (P = L)	L	L	H	L	L	L	L	H	L	L	L	L	L	L	L	L	L
	L	L	H	L	L	L	H	L	H	L	L	L	L	L	L	L	L
	L	L	H	L	L	H	L	L	L	H	L	L	L	L	L	L	L
	L	L	H	L	L	H	H	L	L	L	H	L	L	L	L	L	L
	L	L	H	L	H	L	L	L	L	L	L	H	L	L	L	L	L
	L	L	H	L	H	L	H	L	L	L	L	L	H	L	L	L	L
	L	L	H	L	H	H	L	L	L	L	L	L	L	L	L	L	L
	L	L	H	L	H	L	H	L	L	L	L	L	L	L	L	L	L
	L	L	H	L	H	H	X	L	L	L	L	L	L	L	L	L	L
	L	L	H	L	H	H	X	H	L	L	L	L	L	L	L	L	L
	L	L	H	L	H	X	X	L	L	L	L	L	L	L	L	L	L
	L	L	H	L	H	X	X	L	H	L	L	L	L	L	L	L	L
	L	L	H	L	H	X	X	L	L	L	L	L	L	L	L	L	L
	L	L	H	L	H	X	X	L	L	L	L	L	L	L	L	L	L
	L	L	H	L	H	X	X	L	L	L	L	L	L	L	L	L	L
	L	L	H	L	H	X	X	L	L	L	L	L	L	L	L	L	L
	L	L	H	L	H	X	X	L	L	L	L	L	L	L	L	L	L
Active LOW Output (P = H)	L	L	H	L	L	L	L	L	H	H	H	H	H	H	H	H	H
	L	L	H	L	L	L	H	H	L	H	H	H	H	H	H	H	H
	L	L	H	L	L	H	L	H	H	L	H	H	H	H	H	H	H
	L	L	H	L	L	H	H	H	H	H	L	H	H	H	H	H	H
	L	L	H	L	L	H	L	H	H	H	H	L	H	H	H	H	H
	L	L	H	L	L	H	H	H	H	H	H	H	L	H	H	H	H
	L	L	H	L	L	H	H	H	H	H	H	H	H	L	H	H	H
	L	L	H	L	L	H	H	H	H	H	H	H	H	H	L	H	H
	L	L	H	L	L	H	H	H	H	H	H	H	H	H	L	H	H
	L	L	H	L	L	H	H	H	H	H	H	H	H	H	L	H	H
	L	L	H	L	L	H	H	H	H	H	H	H	H	H	L	H	H
	L	L	H	L	L	H	H	H	H	H	H	H	H	H	L	H	H
	L	L	H	L	L	H	H	H	H	H	H	H	H	H	L	H	H
	L	L	H	L	L	H	H	H	H	H	H	H	H	H	L	H	H
	L	L	H	L	L	H	H	H	H	H	H	H	H	H	L	H	H
	L	L	H	L	L	H	H	H	H	H	H	H	H	H	L	H	H
	L	L	H	L	L	H	H	H	H	H	H	H	H	H	L	H	H

H = HIGH Voltage Level
L = LOW Voltage Level
X = Don't Care
Z = High Impedance