MOTOROLA

MC54/74F533

OCTAL TRANSPARENT LATCH WITH 3-STATE OUTPUTS

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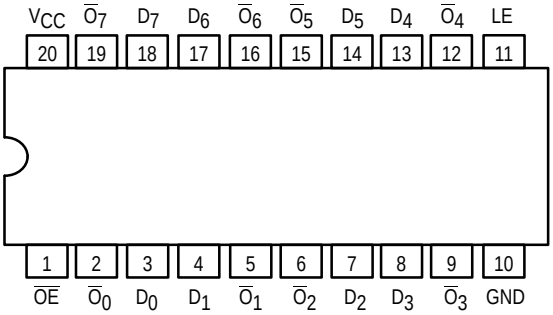
FAST™ SCHOTTKY TTL

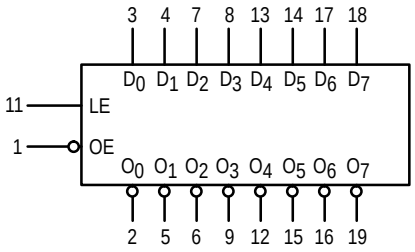
The MC54/74F533 consists of eight latches with 3-state outputs for bus organized system applications.The flip-flops appear transparent to the data when Latch Enable (LE) is HIGH. When LE is LOW, the data that meets the setup times is latched. Data appears on the bus when the Output Enable ($\overline{OE}$) is LOW. When $\overline{OE}$ is HIGH the bus output is in the high-impedance state. The F533 is the same as the F373, except that the outputs are inverted. For description and logic diagram please see the F373 data sheet.

- Eight Latches in a Single Package
- 3-State Outputs for Bus Interfacing
- ESD Protection > 4000 Volts

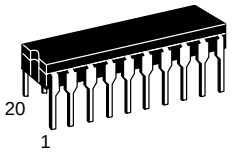
CONNECTION DIAGRAM



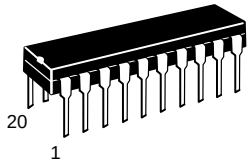
LOGIC SYMBOL



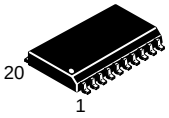
VCC = PIN 20
GND = PIN 10



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

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 Min	Limits Typ	Limits Max	Unit	Test Conditions	
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	3.3		V	I_{OH} = –3.0 mA	V_{CC} = 4.5 V
		74	2.7	3.3		V	I_{OH} = –3.0 mA	V_{CC} = 4.75 V
V_{OL}	Output LOW Voltage			0.35	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_{IN} = 2.7 V	V_{CC} = MAX
					100		V_{IN} = 7.0 V	
I_{IL}	Input LOW Current				–0.6	mA	V_{IN} = 0.5 V	V_{CC} = MAX
I_{OS}	Output Short Circuit Current (Note 2)		–60		–150	mA	V_{OUT} = 0 V	V_{CC} = MAX
I_{CCZ}	Power Supply Current			41	61	mA	$\overline{OE}$ = 4.5 V D_n, LE = Gnd	V_{CC} = MAX

NOTES:
1. For conditions such as MIN or MAX, use the appropriate value specified under guaranteed operating ranges.
2. Not more than one output should be shorted at a time, nor for more than 1 second.

AC CHARACTERISTICS

Symbol	Parameter	54/74F T_A = +25°C V_{CC} = +5.0 V C_L = 50 pF		54F T_A = –55 to +125°C V_{CC} = 5.0 V ±10% C_L = 50 pF		74F T_A = 0 to +70°C V_{CC} = 5.0 V ±10% C_L = 50 pF		Unit
		Min	Max	Min	Max	Min	Max	
t_{PLH} t_{PHL}	Propagation Delay D_n to O_n	4.0 3.0	9.0 7.0	4.0 3.0	12 9.0	4.0 3.0	10 8.0	ns
t_{PLH} t_{PHL}	Propagation Delay LE to $\overline{O}_n$	5.0 3.0	11 7.0	5.0 3.0	14 9.0	5.0 3.0	13 8.0	ns
t_{PZH} t_{PZL}	Output Enable Time	2.0 2.0	10 7.5	2.0 2.0	12.5 9.0	2.0 2.0	11 8.5	ns
t_{PHZ} t_{PLZ}	Output Disable Time	1.5 1.5	6.5 5.5	1.5 1.5	8.5 7.5	1.5 1.5	7.0 6.5	ns

AC OPERATING REQUIREMENTS

Symbol	Parameter	54/74F T_A = +25°C V_{CC} = +5.0 V		54F T_A = –55 to +125°C V_{CC} = 5.0 V ±10%		74F T_A = 0 to +70°C V_{CC} = 5.0 V ±10%		Unit
		Min	Max	Min	Max	Min	Max	
t_s (H) t_s (L)	Setup Time, HIGH or LOW D_n to LE	2.0 2.0		2.0 2.0		2.0 2.0		ns
t_h (H) t_h (L)	Hold Time, HIGH or LOW D_n to LE	3.0 3.0		3.0 3.0		3.0 3.0		ns
t_w (H)	LE Pulse Width HIGH	6.0		6.0		6.0		ns