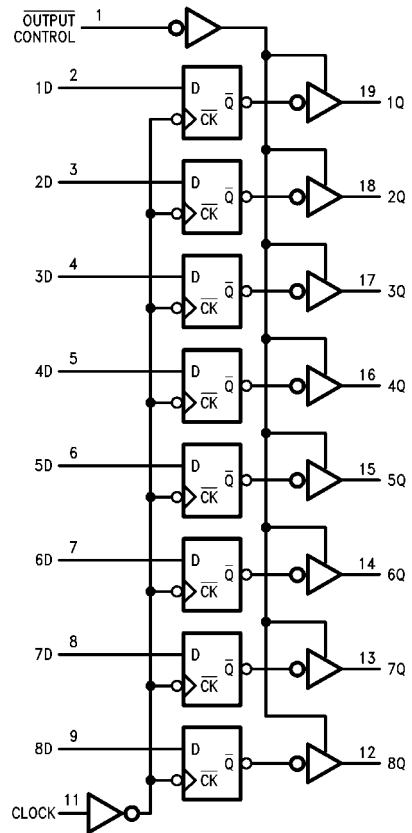


Function Table

Output Control	Clock	D	Output Q
L	↑	H	H
L	↑	L	L
L	L	X	Q ₀
H	X	X	Z

L = LOW State
 H = HIGH State
 X = Don't Care
 ↑ = Positive Edge Transition
 Z = High Impedance State
 Q₀ = Previous Condition of Q

Logic Diagram



Absolute Maximum Ratings(Note 1)

Supply Voltage	7V
Input Voltage	7V
Voltage Applied to Disabled Output	5.5V
Operating Free Air Temperature Range	0°C to +70°C
Storage Temperature Range	-65°C to +150°C
Typical θ_{JA}	
N Package	52.0°C/W
M Package	70.0°C/W

Note 1: The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the Electrical Characteristics tables are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

Recommended Operating Conditions

Symbol	Parameter	Min	Nom	Max	Units
V_{CC}	Supply Voltage	4.5	5	5.5	V
V_{IH}	HIGH Level Input Voltage	2			V
V_{IL}	LOW Level Input Voltage			0.8	V
I_{OH}	HIGH Level Output Current			-15	mA
I_{OL}	LOW Level Output Current			48	mA
f_{CLK}	Clock Frequency	0		80	MHz
t_{WCLK}	Width of Clock Pulse	HIGH	4		ns
		LOW	6		
t_{SU}	Data Setup Time (Note 2)	4 \uparrow			ns
t_H	Data Hold Time (Note 2)	2 \uparrow			ns
T_A	Free Air Operating Temperature	0		70	°C

Note 2: The (\uparrow) arrow indicates the positive edge of the clock is used for reference.

Electrical Characteristics

over recommended operating free air temperature range. All typical values are measured at $V_{CC} = 5V$, $T_A = 25^\circ C$.

Symbol	Parameter	Conditions	Min	Typ	Max	Units	
V_{IK}	Input Clamp Voltage	$V_{CC} = 4.5V$, $I_I = -18 mA$			-1.2	V	
V_{OH}	HIGH Level Output Voltage	$V_{CC} = 4.5V$, $V_{IL} = V_{IL Max}$, $I_{OH} = Max$	2.4	3.2		V	
		$I_{OH} = -2 mA$, $V_{CC} = 4.5V$ to $5.5V$	$V_{CC} - 2$				
V_{OL}	LOW Level Output Voltage	$V_{CC} = 4.5V$, $V_{IH} = 2V$, $I_{OL} = Max$		0.35	0.5	V	
I_I	Input Current @ Max Input Voltage	$V_{CC} = 5.5V$, $V_{IH} = 7V$			0.1	mA	
I_{IH}	HIGH Level Input Current	$V_{CC} = 5.5V$, $V_{IH} = 2.7V$			20	μA	
I_{IL}	LOW Level Input Current	$V_{CC} = 5.5V$, $V_{IL} = 0.4V$			-0.5	mA	
I_O (Note 3)	Output Drive Current	$V_{CC} = 5.5V$, $V_O = 2.25V$	-30		-112	mA	
I_{OZH}	OFF-State Output Current, HIGH Level Voltage Applied	$V_{CC} = 5.5V$, $V_{IH} = 2V$, $V_O = 2.7V$			50	μA	
I_{OZL}	OFF-State Output Current, LOW Level Voltage Applied	$V_{CC} = 5.5V$, $V_{IH} = 2V$, $V_O = 0.4V$			-50	μA	
I_{CC}	Supply Current	$V_{CC} = 5.5V$ Outputs Open	Outputs HIGH	73	116	mA	
			Outputs LOW		85		134
			Outputs Disabled		84		134

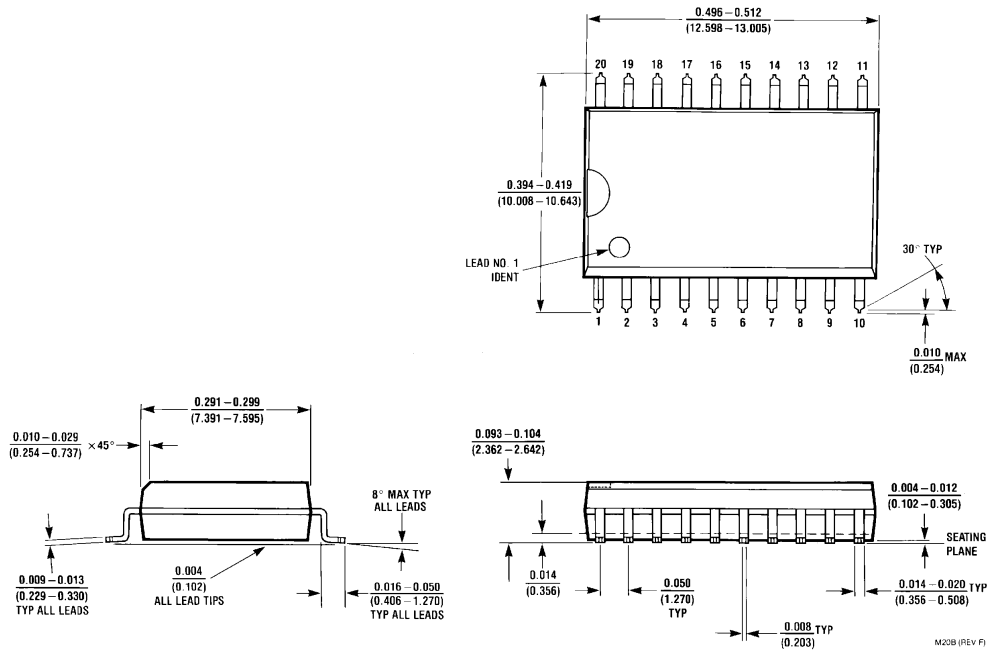
Note 3: The output conditions have been chosen to produce a current that closely approximates one half of the true short circuit output current, I_{OS} .

Switching Characteristics

over recommended operating free air temperature range

Symbol	Parameter	Conditions	From	To	Min	Max	Units
f_{MAX}	Maximum Clock Frequency	$V_{CC} = 4.5V$ to $5.5V$ $R_L = 500\Omega$ $C_L = 50$ pF			80		MHz
t_{PLH}	Propagation Delay Time LOW-to-HIGH Level Output		Clock	Any Q	3	8	ns
t_{PHL}	Propagation Delay Time HIGH-to-LOW Level Output		Clock	Any Q	4	9	ns
t_{PZH}	Output Enable Time to HIGH Level Output		$\overline{\text{Output Control}}$	Any Q	2	6	ns
t_{PZL}	Output Enable Time to LOW Level Output		$\overline{\text{Output Control}}$	Any Q	3	10	ns
t_{PHZ}	Output Disable Time from HIGH Level Output		$\overline{\text{Output Control}}$	Any Q	2	6	ns
t_{PLZ}	Output Disable Time from LOW Level Output		$\overline{\text{Output Control}}$	Any Q	2	6	ns

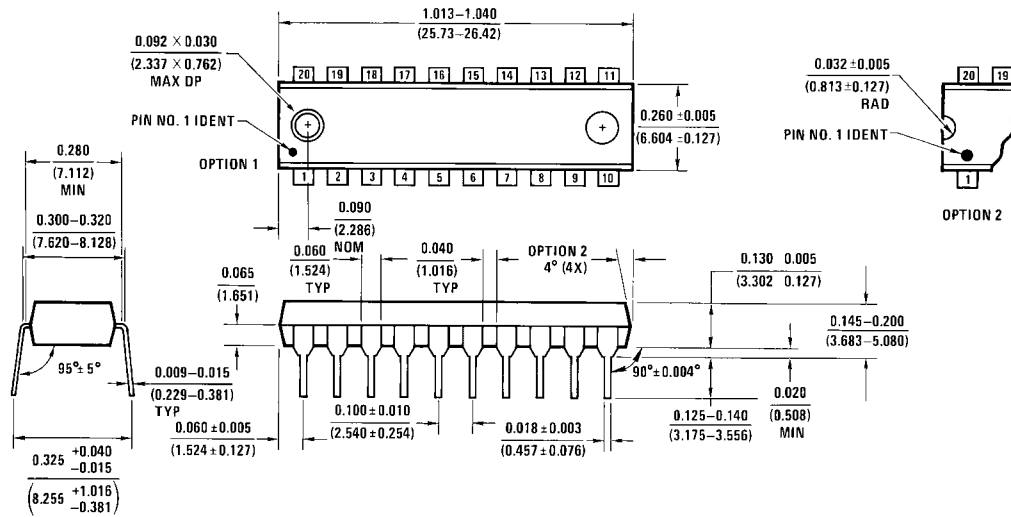
Physical Dimensions inches (millimeters) unless otherwise noted



**20-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300 Wide
Package Number M20B**

M20B (REV F)

Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



N20A (REV G)

20-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide Package Number N20A

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