



**THE DATASHEET OF  
DM74ALS645AWM**





**Absolute Maximum Ratings**(Note 1)

Supply Voltage	7V
Input Voltage;	
Control Inputs	7V
I/O Ports	5.5V
Operating Free Air Temperature Range	0°C to +70°C
Storage Temperature Range	-65°C to +150°C
Typical $\theta_{JA}$	
N Package	53.0°C/W
M Package	72.0°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	Typ	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			24	mA
$T_A$	Operating Free Air Temperature Range	0		70	°C

**Electrical Characteristics**

Over Recommended Free Air Temperature Range

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units	
$V_{IC}$	Input Clamp Voltage	$V_{CC} = \text{Min}, I_I = -18 \text{ mA}$			-1.5	V	
$V_{OH}$	HIGH Level Output Voltage	$V_{CC} = 4.5 \text{ to } 5.5 \text{ V}$	$I_{OH} = -0.4 \text{ mA}$	$V_{CC} - 2$		V	
		$V_{CC} = \text{Max}$	$I_{OH} = -3 \text{ mA}$	2.4	3.2		
			$I_{OH} = \text{Max}$	2			
$V_{OL}$	LOW Level Output Voltage	$V_{CC} = \text{Min}$	$I_{OL} = 12 \text{ mA}$	0.25	0.4	V	
			$I_{OL} = 24 \text{ mA}$		0.35		0.5
$I_I$	Input Current at Maximum Input Voltage	$V_{CC} = \text{Max}$			100	$\mu\text{A}$	
			I/O Ports, $V_I = 5.5 \text{ V}$		100		
$I_{IH}$	HIGH Level Input Current	$V_{CC} = \text{Max}, V_I = 2.7 \text{ V}$ (Note 2)			20	$\mu\text{A}$	
$I_{IL}$	LOW Level Input Current	$V_{CC} = \text{Max}, V_I = 0.4 \text{ V}$ (Note 2)			-100	$\mu\text{A}$	
$I_O$	Output Drive Current	$V_{CC} = \text{Max}, V_O = 2.25 \text{ V}$				mA	
			-30		-112		
$I_{CC}$	Supply Current	$V_{CC} = \text{Max}$	Outputs HIGH	30	45	mA	
			Outputs LOW		36		55
			Outputs Disabled		38		58

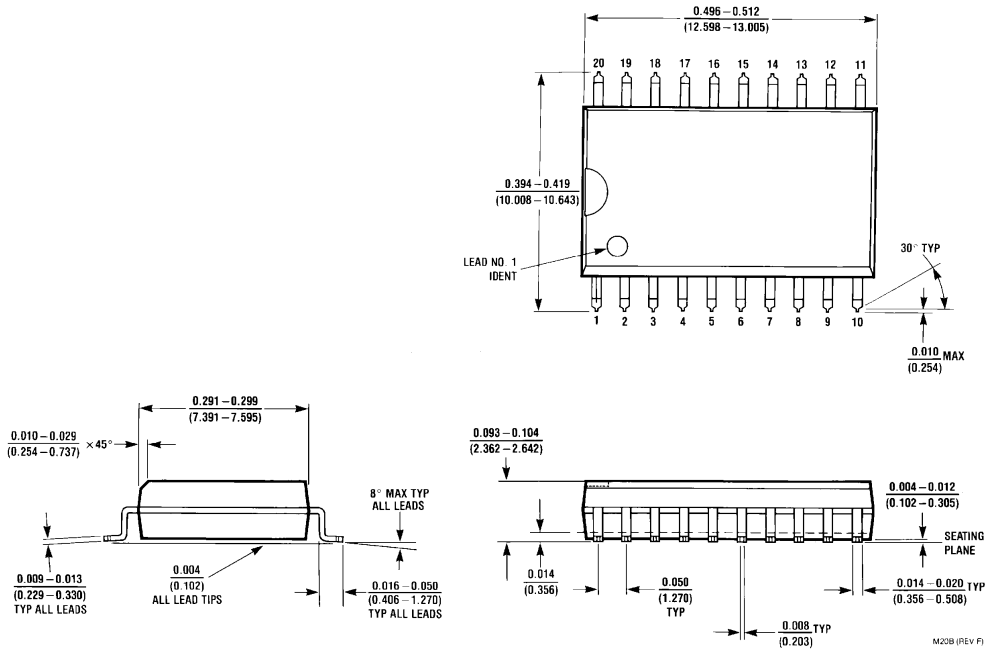
**Note 2:** For I/O ports,  $I_{IH}$  and  $I_{IL}$  parameters include the 3-STATE output current ( $I_{OZH}$  and  $I_{OZH}$ ).

**Switching Characteristics**

Over Recommended Operating Free Air Temperature Range

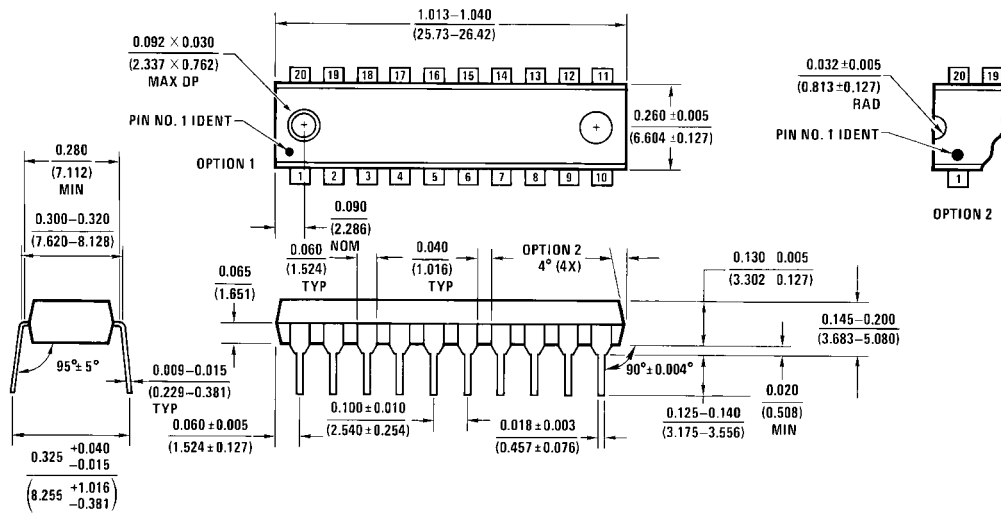
Symbol	Parameter	From (Input)	To (Output)	Conditions	Min	Max	Units
$t_{PLH}$	Propagation Delay Time LOW-to-HIGH Level Output	A or B	B or A	$V_{CC} = 4.5 \text{ to } 5.5 \text{ V},$ $C_L = 50 \text{ pF},$ $R_1 = R_2 = 500\Omega$	3	10	ns
$t_{PHL}$	Propagation Delay Time HIGH-to-LOW Level Output	A or B	B or A		3	10	ns
$t_{PZH}$	Output Enable Time to HIGH Level Output	$\bar{G}$	A or B		5	20	ns
$t_{PZL}$	Output Enable Time to LOW Level Output	$\bar{G}$	A or B		5	20	ns
$t_{PHZ}$	Output Disable Time from HIGH Level Output	$\bar{G}$	A or B		2	10	ns
$t_{PLZ}$	Output Disable Time from LOW Level Output	$\bar{G}$	A or B		4	15	ns

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



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

**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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