Functional Description

Reset — Asynchronous, active high

Display Select — High, displays output of counter
Low, displays output of latch

Latch Enable — High, flow through condition
Low, latch condition

Clock —Negative edge sensitive

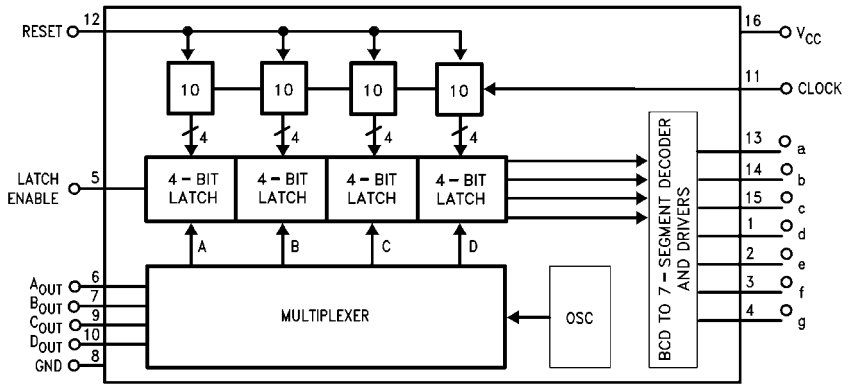
Segment Output — Current sourcing with 40 mA @V_{OUT} = V_{CC} − 1.6V (typ.) Also, sink capability = 2 LTTL loads

Digit Output — Current sourcing with 1 mA @V_{OUT} = 1.75V. Also, sink capability = 2 LTTL loads

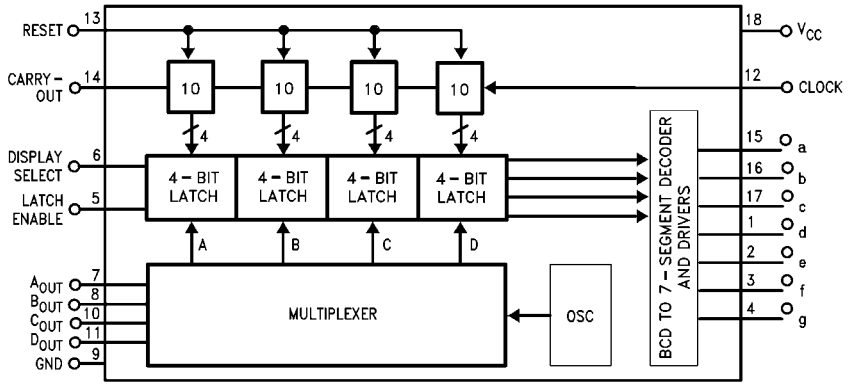
Carry-Out — 2 LTTL loads. See carry-out waveforms.

Logic Diagrams

MM74C925



MM74C926



Absolute Maximum Ratings(Note 1)

Voltage at Any Output Pin	GND – 0.3V to V_{CC} + 0.3V
Voltage at Any Input Pin	GND – 0.3V to +15V
Operating Temperature Range (T_A)	–40°C to +85°C
Storage Temperature Range	–65°C to +150°C
Power Dissipation (P_D)	Refer to $P_{D(MAX)}$ vs T_A Graph
Operating V_{CC} Range	3V to 6V
V_{CC}	6.5V
Lead Temperature (Soldering, 10 seconds)	260°C

Note 1: "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. Except for "Operating Temperature Range" they are not meant to imply that the devices should be operated at these limits. The Electrical Characteristics table provides conditions for actual device operation.

DC Electrical Characteristics

Min/Max limits apply at –40°C ≤ t_j ≤ + 85°C, unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Units
CMOS TO CMOS						
$V_{IN(1)}$	Logical "1" Input Voltage	V_{CC} = 5V	3.5			V
$V_{IN(0)}$	Logical "0" Input Voltage	V_{CC} = 5V			1.5	V
$V_{OUT(1)}$	Logical "1" Output Voltage (Carry-Out and Digit Output Only)	V_{CC} = 5V, I_O = –10 µA	4.5			V
$V_{OUT(0)}$	Logical "0" Output Voltage	V_{CC} = 5V, I_O = 10 µA			0.5	V
$I_{IN(1)}$	Logical "1" Input Current	V_{CC} = 5V, V_{IN} = 15V		0.005	1	µA
$I_{IN(0)}$	Logical "0" Input Current	V_{CC} = 5V, V_{IN} = 0V	–1	–0.005		µA
I_{CC}	Supply Current	V_{CC} = 5V, Outputs Open Circuit, V_{IN} = 0V or 5V		20	1000	µA
CMOS/LPTTL INTERFACE						
$V_{IN(1)}$	Logical "1" Input Voltage	V_{CC} = 4.75V	V_{CC} – 2			V
$V_{IN(0)}$	Logical "0" Input Voltage	V_{CC} = 4.75V			0.8	V
$V_{OUT(1)}$	Logical "1" Output Voltage (Carry-Out and Digit Output Only)	V_{CC} = 4.75V, I_O = –360 µA	2.4			V
$V_{OUT(0)}$	Logical "0" Output Voltage	V_{CC} = 4.75V, I_O = 360 µA			0.4	V
OUTPUT DRIVE						
V_{OUT}	Output Voltage	I_{OUT} = –65 mA, V_{CC} = 5V, T_j = 25°C	V_{CC} – 2	V_{CC} – 1.3		V
	(Segment Sourcing Output)	I_{OUT} = –40 mA, V_{CC} = 5V T_j = 100°C	V_{CC} – 1.6	V_{CC} – 1.2		V
		T_j = 150°C	V_{CC} – 2	V_{CC} – 1.4		V
R_{ON}	Output Resistance	I_{OUT} = –65 mA, V_{CC} = 5V, T_j = 25°C		20	32	Ω
	(Segment Sourcing Output)	I_{OUT} = –40 mA, V_{CC} = 5V T_j = 100°C		30	40	Ω
		T_j = 150°C		35	50	Ω
	Output Resistance (Segment Output) Temperature Coefficient			0.6	0.8	%/°C
I_{SOURCE}	Output Source Current (Digit Output)	V_{CC} = 4.75V, V_{OUT} = 1.75V, T_j = 150°C	–1	–2		mA
I_{SOURCE}	Output Source Current (Carry-Out)	V_{CC} = 5V, V_{OUT} = 0V, T_j = 25°C	–1.75	–3.3		mA
I_{SINK}	Output Sink Current (All Outputs)	V_{CC} = 5V, V_{OUT} = V_{CC}, T_j = 25°C	1.75	3.6		mA
θ_{jA}	Thermal Resistance	MM74C925: (Note 2)		75	100	°C/W
		MM74C926		70	90	°C/W

Note 2: θ_{jA} measured in free-air with device soldered into printed circuit board.

AC Electrical Characteristics (Note 3)

$T_A = 25°C$, $C_L = 50$ pF, unless otherwise noted

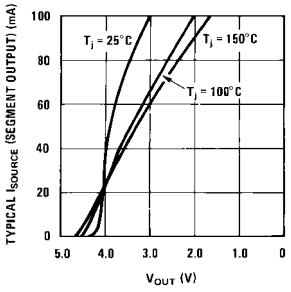
Symbol	Parameter	Conditions		Min	Typ	Max	Units
f_{MAX}	Maximum Clock Frequency	$V_{CC} = 5V$,	$T_j = 25°C$	2	4		MHz
		Square Wave Clock	$T_j = 100°C$	1.5	3		MHz
t_r, t_f	Maximum Clock Rise or Fall Time	$V_{CC} = 5V$				15	µs
t_{WR}	Reset Pulse Width	$V_{CC} = 5V$	$T_j = 25°C$	250	100		ns
			$T_j = 100°C$	320	125		ns
t_{WLE}	Latch Enable Pulse Width	$V_{CC} = 5V$	$T_j = 25°C$	250	100		ns
			$T_j = 100°C$	320	125		ns
$t_{SET(CK, LE)}$	Clock to Latch Enable Set-Up Time	$V_{CC} = 5V$	$T_j = 25°C$	2500	1250		ns
			$T_j = 100°C$	3200	1600		ns
t_{LR}	Latch Enable to Reset Wait Time	$V_{CC} = 5V$	$T_j = 25°C$	0	–100		ns
			$T_j = 100°C$	0	–100		ns
$t_{SET(R, LE)}$	Reset to Latch Enable Set-Up Time	$V_{CC} = 5V$	$T_j = 25°C$	320	160		ns
			$T_j = 100°C$	400	200		ns
f_{MUX}	Multiplexing Output Frequency	$V_{CC} = 5V$		1000			Hz
C_{IN}	Input Capacitance	Any Input (Note 4)		5			pF

Note 3: AC Parameters are guaranteed by DC correlated testing.

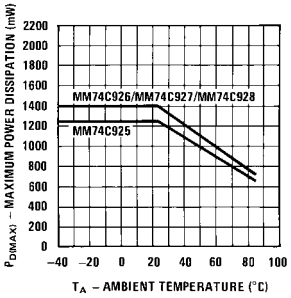
Note 4: Capacitance is guaranteed by periodic testing.

Typical Performance Characteristics

Typical Segment Current vs Output Voltage

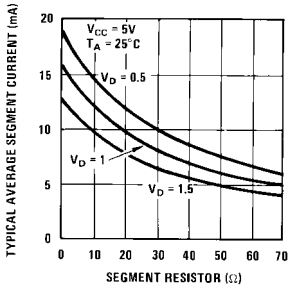


Maximum Power Dissipation vs Ambient Temperature



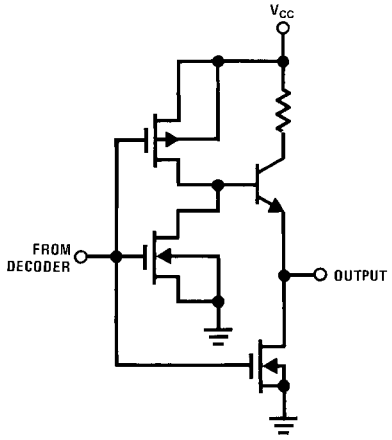
Note: V_D = Voltage across digit driver

Typical Average Segment Current vs Segment Resistor Value

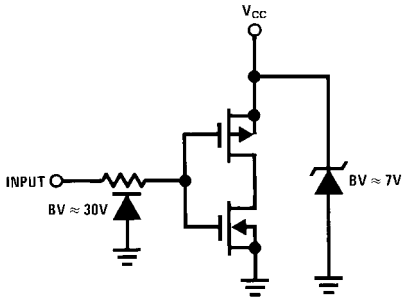


Typical Performance Characteristics (Continued)

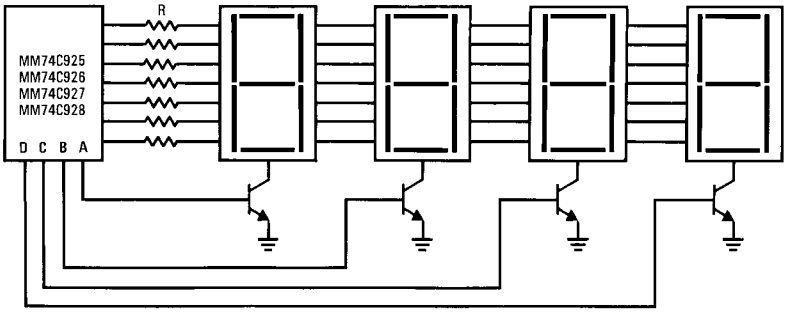
Segment Output Driver



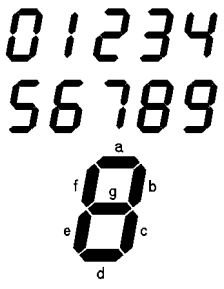
Input Protection



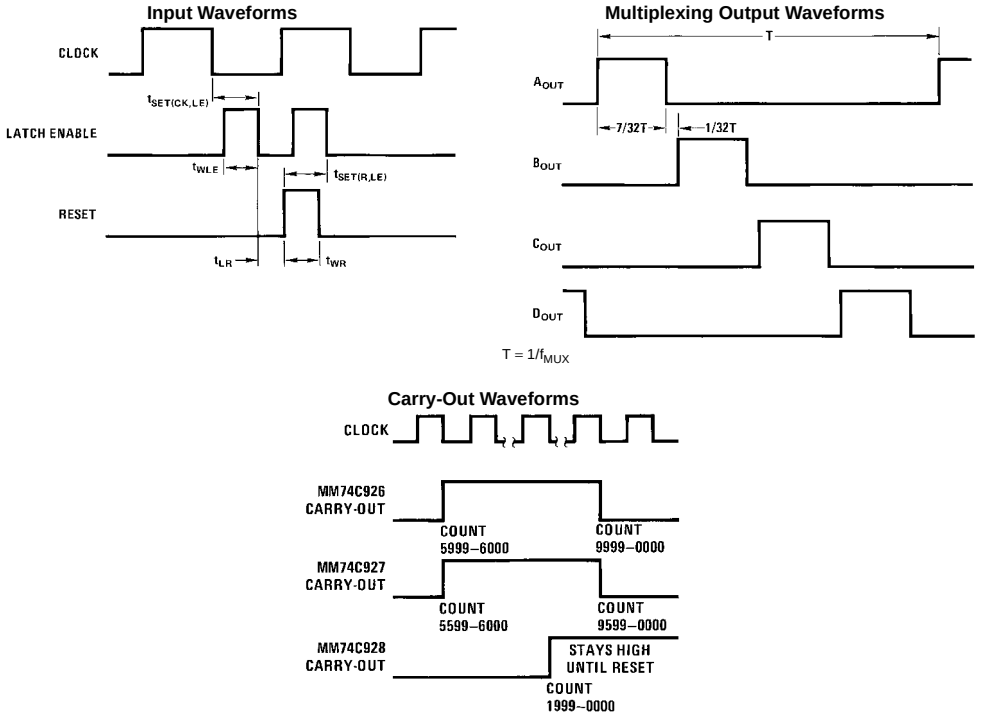
Common Cathode LED Display



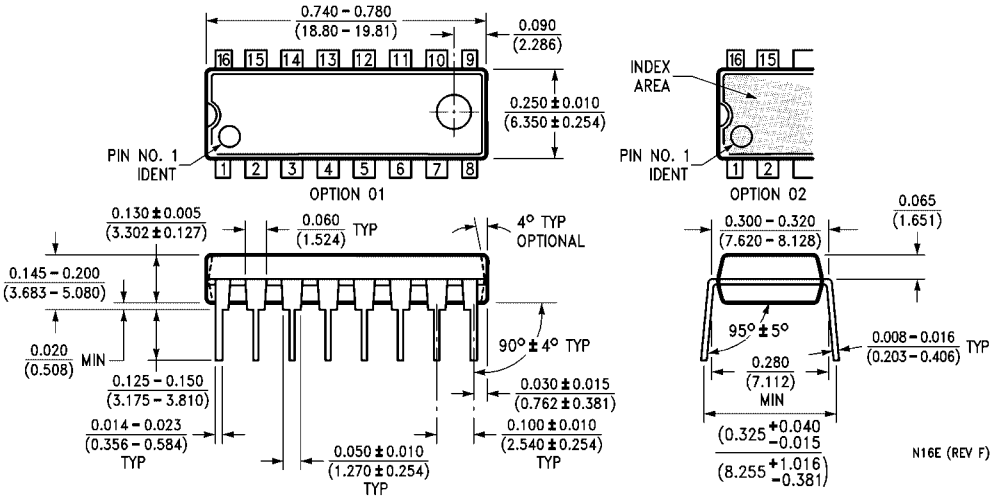
Segment Identification



Switching Time Waveforms

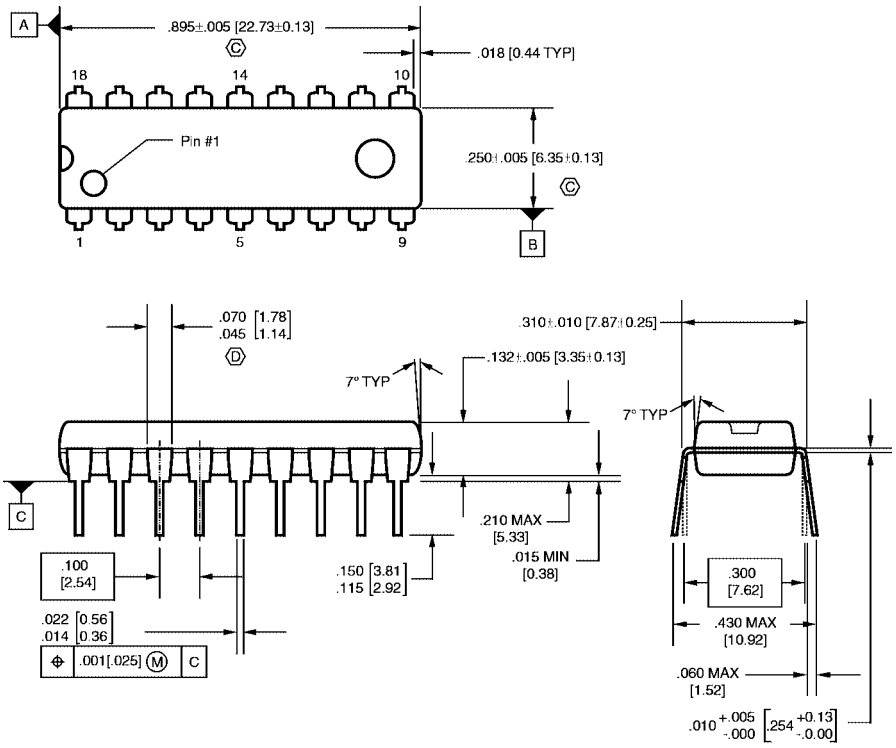


Physical Dimensions inches (millimeters) unless otherwise noted



16-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300" Wide
Package Number N16E

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



NOTES:
A. CONFORMS TO JEDEC REGISTRATION MS-001, VARIATIONS AC, DATED 6/1993.
B. CONTROLLING DIMENSIONS ARE IN INCHES REFERENCE DIMENSIONS ARE IN MILLIMETERS.
C. DOES NOT INCLUDE MOLD FLASH OR PROTRUSIONS. MOLD FLASH OR PROTRUSIONS SHALL NOT EXCEED .010 INCHES OR 0.25MM.
D. DOES NOT INCLUDE DAMBAR PROTRUSIONS. DAMBAR PROTRUSIONS SHALL NOT EXCEED .010 INCHES OR 0.25MM.
E. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.

N18BrevA

18-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300" Wide
Package Number N18B

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