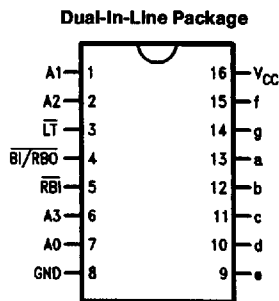


# DM74LS248 BCD to 7-Segment Decoder with 2 kΩ Pull-Up Resistors

## General Description

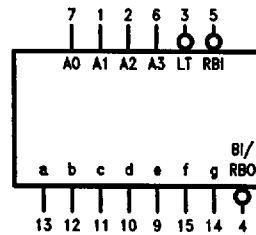
The 'LS248 has active HIGH outputs with internal 2 kΩ pull-up resistors. It has the same electrical characteristics and pin connections as the 'LS48. The only difference is that the 'LS248 will light the top bar (segment a) for numeral 6 and the bottom bar (segment d) for numeral 9. For detailed description and specifications please refer to the 'LS48 data sheet.

## Connection Diagram



TL/F/10181-1

## Logic Symbol



V<sub>CC</sub> = Pin 16  
GND = Pin 8

TL/F/10181-2

Order Number DM74LS248M or DM74LS248N  
See NS Package Number M16A or N16E

Pin Names	Description
A0-A3	BCD Inputs
$\overline{\text{RBI}}$	Ripple Blanking Input (Active LOW)
$\overline{\text{LT}}$	Lamp Test Input (Active LOW)
$\overline{\text{BI/RBO}}$	Blanking Input (Active LOW) or Ripple Blanking Output (Active LOW)
a-g	Segment Outputs (Active HIGH)

### Absolute Maximum Ratings (Note)

Supply Voltage	7V
Input Voltage	7V
Operating Free Air Temperature Range	0°C to +70°C
Storage Temperature Range	-65°C to +150°C

Note: 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" table 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 <sub>CC</sub>	Supply Voltage	4.75	5	5.25	V
V <sub>IH</sub>	High Level Input Voltage	2			V
V <sub>IL</sub>	Low Level Input Voltage			0.8	V
I <sub>OH</sub>	High Level Output Current			-0.1	mA
I <sub>OL</sub>	Low Level Output Current			6	mA
T <sub>A</sub>	Free Air Operating Temperature	0		70	°C

### Electrical Characteristics over recommended operating free air temperature range (unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ (Note 1)	Max	Units
V <sub>I</sub>	Input Clamp Voltage	V <sub>CC</sub> = Min, I <sub>I</sub> = -18 mA			-1.5	V
V <sub>OH</sub>	High Level Output Voltage	V <sub>CC</sub> = Min, I <sub>OH</sub> = Max, V <sub>IL</sub> = Max	2.4			
V <sub>OL</sub>	Low Level Output Voltage	V <sub>CC</sub> = Min, I <sub>OL</sub> = Max, V <sub>IH</sub> = Min			0.5	V
		I <sub>OL</sub> = 3.2 mA, V <sub>CC</sub> = Min			0.4	
I <sub>I</sub>	Input Current @ Max Input Voltage	V <sub>CC</sub> = Max, V <sub>I</sub> = 7V			0.1	mA
I <sub>IH</sub>	High Level Input Current	V <sub>CC</sub> = Max, V <sub>I</sub> = 2.7V			20	μA
I <sub>IL</sub>	Low Level Input Current	V <sub>CC</sub> = Max, V <sub>I</sub> = 0.4V			-0.4	mA
I <sub>OS</sub>	Short Circuit Output Current	V <sub>CC</sub> = Max (Note 2)	-0.3		-2.0	mA
I <sub>CC</sub>	Supply Current	V <sub>CC</sub> = Max			38	mA
I <sub>OFF</sub>	Output High Current	Segment Inputs, V <sub>O</sub> = 0.85V	-1.3			μA

Note 1: All typicals are at V<sub>CC</sub> = 5V, T<sub>A</sub> = 25°C.

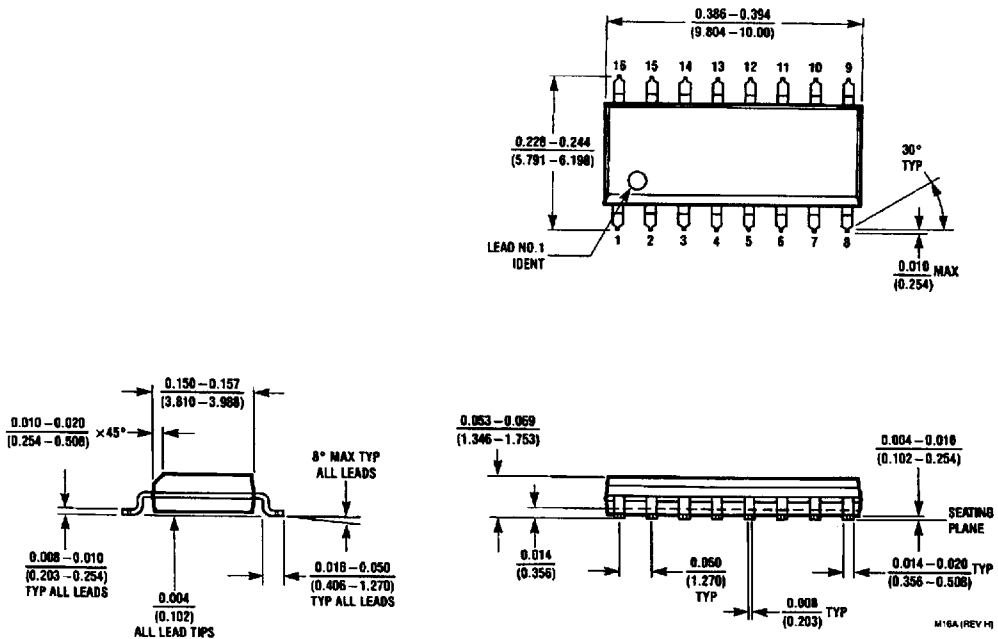
Note 2: Not more than one output should be shorted at a time, and the duration should not exceed one second.

### Switching Characteristics

V<sub>CC</sub> = +5.0V, T<sub>A</sub> = +25°C

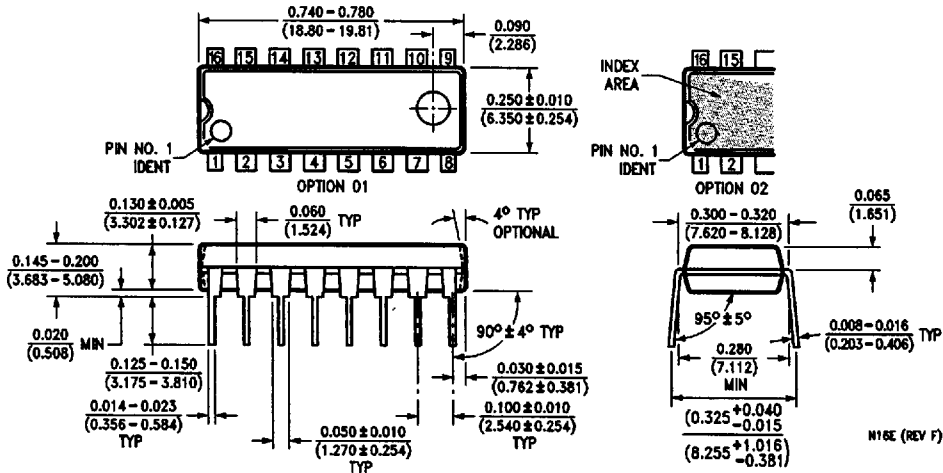
Symbol	Parameter	R <sub>L</sub> = 2 kΩ, C <sub>L</sub> = 15 pF		Units
		Min	Max	
t <sub>PLH</sub>	Propagation Delay Time Low to High Level Output		100	ns
t <sub>PHL</sub>	Propagation Delay Time High to Low Level Output		100	ns

**Physical Dimensions** inches (millimeters)



**16-Lead Small Outline Molded Package (M)**  
**Order Number DM74LS248M**  
**NS Package Number M16A**

**Physical Dimensions** inches (millimeters) (Continued)



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4