

DM74LS247

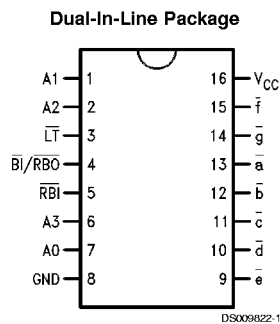
BCD to 7-Segment Decoder/Driver with Open-Collector Outputs

General Description

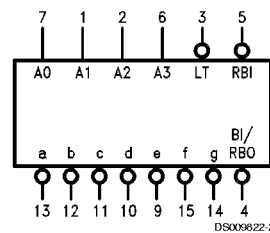
The 'LS247 has active LOW open-collector outputs guaranteed to sink 24 mA. It has the same electrical characteristics and pin connections as the 'LS47. The only difference is that

the 'LS247 will light the top bar (segment a) for numeral 6 and the bottom bar (segment d) for number 9. For detailed description and specifications please refer to the 'LS47 data sheet.

Connection Diagram



Logic Symbol



V_{CC} = Pin 16
GND = Pin 8

Order Number DM74LS247M or DM74LS247N
See 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) |
| $\overline{\text{a-g}}$ | Segment Outputs (Active LOW) |

DM74LS247 BCD to 7-Segment Decoder/Driver with Open-Collector Outputs

Absolute Maximum Ratings (Note 1)

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

Recommended Operating Conditions

| Symbol | Parameter | Min | Nom | Max | Units |
|-----------------|--|------|-----|------|-------|
| V _{CC} | Supply Voltage | 4.75 | 5 | 5.25 | V |
| V _{IH} | High Level Input Voltage | 2 | | | V |
| V _{IL} | Low Level Input Voltage | | | 0.8 | V |
| I _{OH} | High Level Output Current $\overline{\text{BI}}/\overline{\text{RBO}}$ | | | -50 | μA |
| I _{OL} | Low Level Output Current | | | 24 | mA |
| T _A | Free Air Operating Temperature | 0 | | 70 | °C |

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" table are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

Electrical Characteristics

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

| Symbol | Parameter | Conditions | Min | Typ (Note 2) | Max | Units |
|------------------|--|---|--|--|------|-------|
| V _I | Input Clamp Voltage | V _{CC} = Min, I _I = -18 mA | | | -1.5 | V |
| V _{OH} | High Level Output Voltage | V _{CC} = Min, I _{OH} = Max, V _{IL} = Max | 2.4 | 3.4 | | V |
| I _{OFF} | Output High Current Segment Outputs | V _{CC} = 5.5V, V _O = 15V | | | 250 | μA |
| V _{OL} | Low Level Output Voltage | V _{CC} = Min I _{OL} = Max, V _{IH} = Min | | 0.35 | 0.5 | V |
| | | | I _{OL} = 3.2 mA | $\overline{\text{BI}}/\overline{\text{RBO}}$ | 0.5 | |
| | | | I _{OL} = 12 mA | a-g | 0.25 | |
| | | | I _{OL} = 1.6 mA | $\overline{\text{BI}}/\overline{\text{RBO}}$ | 0.4 | |
| I _I | Input Current @ Max Input Voltage | V _{CC} = Max, V _I = 7V | | | 0.1 | mA |
| I _{IH} | High Level Input Current | V _{CC} = Max, V _I = 2.7V | | | 20 | μA |
| I _{IL} | Low Level Input Current | V _{CC} = Max, V _I = 0.4V | Other Inputs | | -0.4 | mA |
| | | V _{CC} = Max, V _I = 0.4V | $\overline{\text{BI}}/\overline{\text{RBO}}$ Input | | -1.2 | mA |
| I _{OS} | Short Circuit Output Current | V _{CC} = Max (Note 3) | -0.3 | | -2.0 | mA |
| I _{CC} | Supply Current | V _{CC} = Max | | | 13 | mA |

Note 2: All typicals are at V_{CC} = 5V, T_A = 25°C.

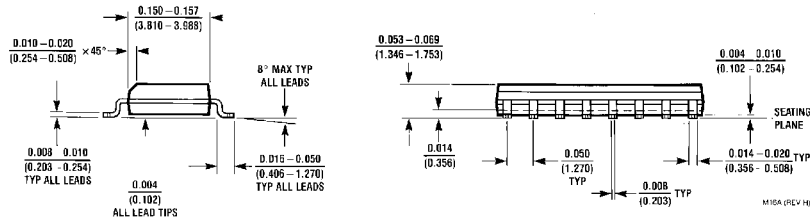
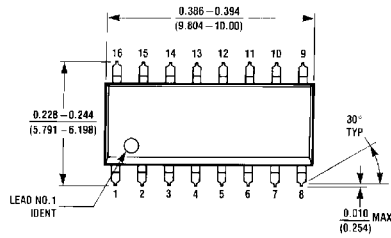
Note 3: Not more than one output should be shorted at a time, and the duration should not exceed one second.

Switching Characteristics

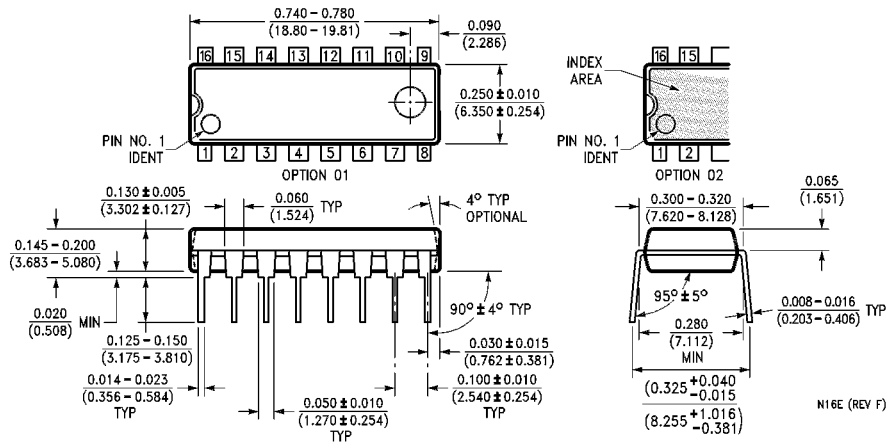
V_{CC} = +5V, T_A = +25°C

| Symbol | Parameter | R _L = 2 kΩ | | Units |
|------------------|--|------------------------|-----|-------|
| | | C _L = 15 pF | | |
| | | Min | Max | |
| t _{PLH} | Propagation Delay Time Low to High Level Output | | 100 | ns |
| t _{PHL} | Propagation Delay Time High to Low Level Output | | 100 | ns |

Physical Dimensions inches (millimeters) unless otherwise noted



16-Lead Small Outline Molded Package (M)
Order Number DM74LS247M
Package Number M16A



16-Lead Molded Dual-In-Line Package (N)
Order Number DM74LS247N
Package Number N16E