

Module: 4-Digit 7-Segment LED Display (Common Anode)

Color: Yellow (GaAsP/GaP)

Format: 30-Pin Carrier PCB to Standard 16-Pin Schematic

1. General Description

The LTC-3822YCA2 is an industrial-grade, 0.28-inch (7.0 mm) quadruple-digit yellow LED display module. It adapts the standard 16-pin internal multiplexing logic of the LTC-2000 series into a robust 30-contact edge-connector PCB format. Operating as a Common Anode device, it requires a positive supply voltage to be switched across its four digit-enable pins while the individual segment shapes (A-G), decimal points, and specialized colon indicators are activated by pulling their corresponding cathode pins to ground through current-limiting resistors.

2. Technical Specifications

Parameter	Specifications
Digit Height	0.28 inch (7.0 mm)
Emitting Color	Yellow (GaAsP/GaP), Peak $\lambda_p = 585$ nm
Circuit Configuration	Common Anode, Multiplexed Logic
Forward Voltage (V_F)	2.1V (Typical) / 2.6V (Max) @ $I_F = 20$ mA
Continuous Forward Current	20 mA per segment
Peak Forward Current	60 mA (1/10 Duty Cycle, 0.1ms Pulse Width)
Power Dissipation	60 mW per segment

Parameter	Specifications
Luminous Intensity	800 μcd (Min) / 2400 μcd (Typ) @ $I_{\text{F}} = 10 \text{ mA}$
Reverse Voltage (V_{R})	5.0 Volts (Maximum)
Operating Temperature	-35°C to +85°C

3. 30-Pin to 16-Pin Schematic Mapping

This table maps the physical 30-pin layout of the LTC-3822YCA2 to the standard logical functions of a 16-pin multiplexed display.

Pin (Top)	Top Row Function	Pin (Bottom)	Bottom Row Function
1	Segment E (Cathode)	16	Digit 1 (Common Anode)
2	Segment D (Cathode)	17	Digit 2 (Common Anode)
3	Decimal Point DP (Cathode)	18	Digit 3 (Common Anode)
4	Segment C (Cathode)	19	Digit 4 (Common Anode)
5	Segment G (Cathode)	20	Segment A (Cathode)
6-15	<i>No Connection (NC)</i>	21	Segment B (Cathode)
		22	Segment F (Cathode)

Pin (Top)	Top Row Function	Pin (Bottom)	Bottom Row Function
		23	Colon Dot Upper (Cathode)
		24	Colon Dot Lower (Cathode)
		25-30	No Connection (NC)

4. Hardware Implementation Guidelines

To successfully drive this display using a microcontroller (e.g., Arduino, ESP32, or Raspberry Pi):

- **Digit Selection:** Connect pins 16, 17, 18, and 19 to your microcontroller via PNP transistors or P-channel MOSFETs. Apply HIGH voltage to enable a specific digit.
- **Segment Activation:** Connect the segment pins (1-5, 20-24) to digital output pins. You **must** place a current-limiting resistor (e.g., 220Ω to 330Ω for 5V logic) in series with each segment line. Pull the pin LOW to light the segment.
- **Multiplexing:** The display requires time-division multiplexing. Only one digit should be powered at a time. Loop through all four digits at a frequency of $>60\text{Hz}$ to create the illusion of a continuous display.