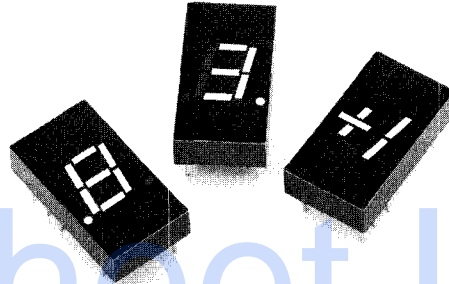


Features

- **5082-7730**
Common Anode
Left Hand D.P.
- **5082-7731**
Common Anode
Right Hand D.P.
- **5082-7732**
Common Anode
Polarity and Overflow Indicator
- **EXCELLENT CHARACTER APPEARANCE**
Continuous Uniform Segments
Wide Viewing Angle
High Contrast
- **IC COMPATIBLE**
- **STANDARD 0.3" DIP LEAD CONFIGURATION**
PC Board or Standard Socket Mountable
- **CATEGORIZED FOR LUMINOUS INTENSITY**
Assures Uniformity of Light Output from Unit to Unit within a Single Category

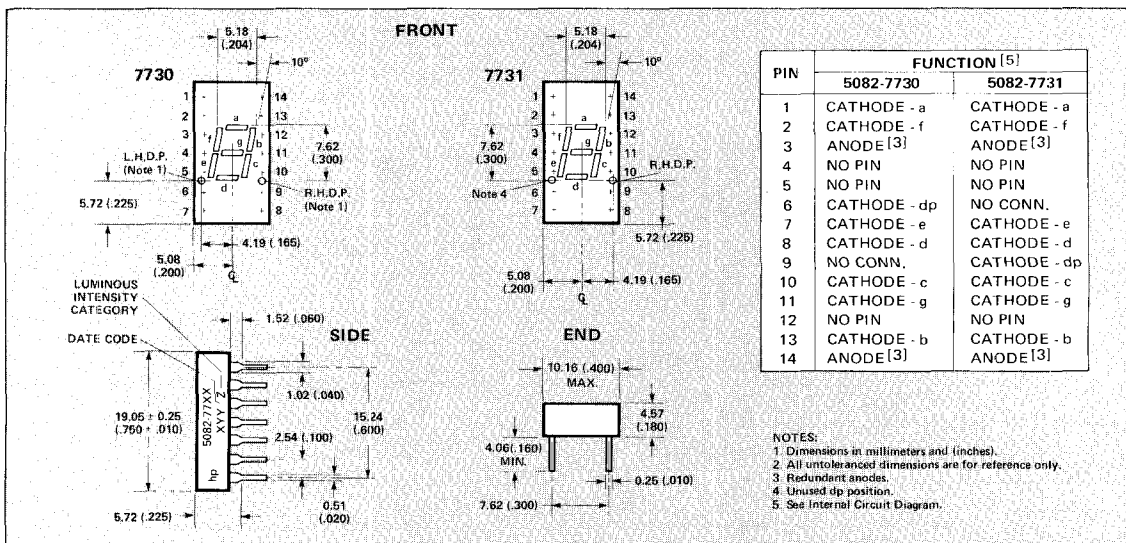


Description

The HP 5082-7730 series devices are common anode LED displays. The series includes a left hand and a right hand decimal point numeric display as well as a polarity and overflow indicator. The large 7.62mm (0.3 in.) high character size generates a bright, continuously uniform seven segment display. Designed for viewing distances of up to 10 feet, these single digit displays provide a high contrast ratio and a wide viewing angle.

The 5082-7730 series devices utilize a standard 7.62mm (0.3 in.) dual-in-line package configuration that permits mounting on PC boards or in standard IC sockets. Requiring a low forward voltage, these displays are inherently IC compatible, allowing for easy integration into electronic instrumentation, point of sale terminals, TVs, radios, and digital clocks.

Package Dimensions



Maximum Ratings

Power Dissipation $T_A = 25^\circ\text{C}$	460 mW
Operating Temperature Range	-20°C to $+85^\circ\text{C}$
Storage Temperature Range	-20°C to $+85^\circ\text{C}$
Average Forward Current/Segment or Decimal Pt. $T_A = 25^\circ\text{C}$ [1]	25 mA
Peak Forward Current/Segment or Decimal Pt. $T_A = 25^\circ\text{C}$ (Pulse Duration $\leq 500\mu\text{s}$)	150 mA
Reverse Voltage/Segment or Decimal Pt.	6V
Maximum Solder Temperature 1.59mm (1.16 in.) Below Seating Plane ($t \leq 3$ sec) [2]	230°C

NOTES:

- Derate from 35°C at $0.3\text{mA}/^\circ\text{C}$ per segment or decimal point.
- Clean only in Freon TE, Freon TF, Isopropanol, Ethanol, Genesolv DI-15 or DE-15, or water.

Electrical/Optical Characteristics at $T_A = 25^\circ\text{C}$

Description	Symbol	Test Condition	Min.	Typ.	Max.	Units
Luminous Intensity/Segment [1] (Digit Average)	I_v	$I_{\text{PEAK}} = 100\text{mA}$ 10% Duty Cycle		200		μcd
		$I_F = 20\text{mA DC}$	100	350		
Peak Wavelength	λ_{PEAK}			655		nm
Dominant Wavelength [2]	λ_d			639		nm
Forward Voltage/Segment or D.P.	V_F	$I_F = 20\text{mA}$		1.6	2.0	V
Reverse Current/Segment or D.P.	I_R	$V_R = 6\text{V}$		10		μA
Rise and Fall Time [3]	t_r, t_f			10		ns
Temperature Coefficient of Forward Voltage	$\Delta V_F / ^\circ\text{C}$			-2.0		$\text{mV}/^\circ\text{C}$
Temperature Coefficient of Luminous Intensity	$\Delta I_v / ^\circ\text{C}$			-1.0		$\%/^\circ\text{C}$

NOTES:

- The digits are categorized for luminous intensity with the intensity category designated by a letter located on the right hand side of the package.
- Dominant wavelength, λ_d , is derived from the C.I.E. Chromaticity diagram and represents that single wavelength which is perceived by the eye.
- Time for a 10%-90% change of light intensity for step change in current.

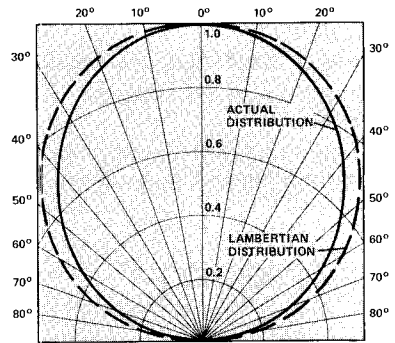


Figure 1. Normalized Angular Distribution of Luminous Intensity.

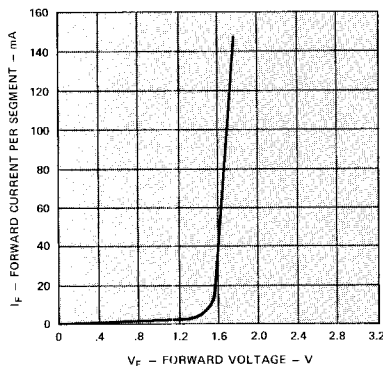


Figure 2. Forward Current versus Forward Voltage.

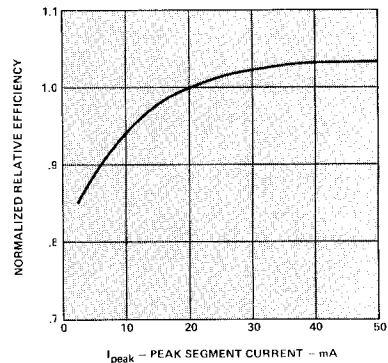


Figure 3. Relative Efficiency (Luminous Intensity per Unit Current) versus Peak Current per Segment.

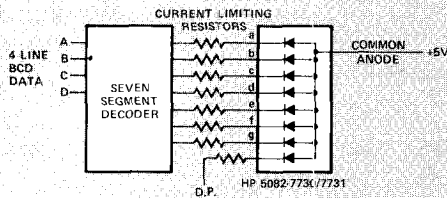


Figure 4. Direct Drive Circuit for the 5082-7730/7731 Common Anode Display.

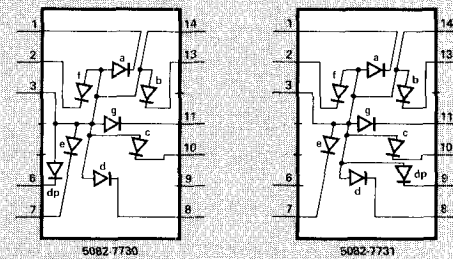


Figure 5. Internal Circuit Diagram.

The common anode 5082-7730 series devices are arrays of eight discrete light emitting diodes, which are optically magnified to form seven individual segments plus a decimal point. As depicted in Figure 4, character encoding on the 7730 and the 7731 can be performed by commercially available BCD-7 segment decoder/driver circuits. Through the use of strobing techniques, only one decoder/driver is required to drive a display containing up to 16 characters as outlined in Figure 6. When each character in the display is illuminated in sequence, at a minimum of 100 times per second, flicker-free characters are formed. Under average current drive conditions of 10mA/segment, the display is easily readable to distances of ten feet and will retain good contrast under relatively high ambient lighting conditions.

The 5082-7730 series devices are constructed utilizing a lead frame in a standard DIP package. The individual packages

may be close-packed at 10.16mm (.4 in.) centers on a PC board. Also, the larger character height allows other character spacing options when desired. The lead frame has an integral seating plane which will hold the package approximately 1.52mm (.060 in.) above the PC board during standard soldering and flux removal operation. To optimize device performance, new materials are used that are limited to certain solvent materials for flux removal. It is recommended that only Freon TF, Freon TE, (for Freons, up to 2 min. max. at boiling temp.), Isoproponal, Ethanol, Genesolv DI-15, Genesolv DE-15, or water be used for cleaning operations. To improve display contrast, the entire front surface of the display, except for emitting areas, is finished in a uniform flat black. Additional filters may be incorporated, if desired, to further lower the ambient reflectance and improve display contrast. See Hewlett Packard Application Note 964 for further information regarding the contrast enhancement.

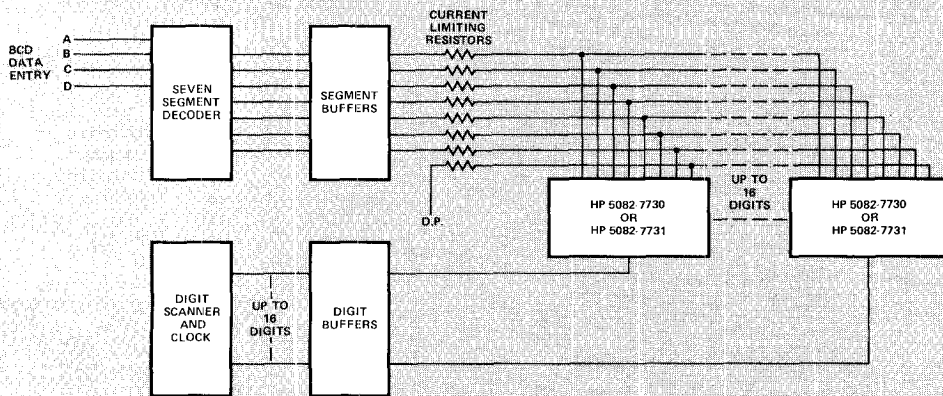


Figure 6. General Strobe Drive Scheme for Common Anode (5082-7730/7731) Displays.

Polarity and Overflow Indicator—5082-7732

ABSOLUTE MAXIMUM RATINGS

Power Dissipation $T_A = 25^\circ\text{C}$	345mW
Operating Temperature Range	-20°C to $+85^\circ\text{C}$
Storage Temperature Range	-20°C to $+85^\circ\text{C}$
Average Forward Current/Segment or Decimal Point ^[1] $T_A = 25^\circ\text{C}$	25mA
Peak Forward Current/Segment or Decimal Point $T_A = 25^\circ\text{C}$ (Pulse Duration $\leq 500\mu\text{s}$)	150mA
Reverse Voltage Segment or Decimal Point	6V
Reverse Voltage Segment a-b or d	12V
Maximum Solder Temperature 1.59mm (1.16 in.) Below Seating Plane ($t \leq 3 \text{ sec}$) ^[2]	230°C

NOTES:

- Derate from 35°C at $0.3\text{mA}/^\circ\text{C}$ per segment or decimal point.
- Clean only in Freon TE, Freon TF, Isopropanol, Ethanol, Genesolv DI-15 or DE-15, or water.

ELECTRICAL/OPTICAL CHARACTERISTICS AT 25°C

Description	Symbol	Test Condition	Min.	Typ.	Max.	Units
Luminous Intensity/Segment ^[1]	$I_{V\text{AVE}}$	$I_{\text{PEAK}} = 100\text{mA}$ 10% Duty Cycle $I_F = 20\text{mA}$		200 350		μcd
Peak Wavelength	λ_{PEAK}			655		nm
Forward Voltage, Segments a-b or d	V_F	$I_F = 20\text{mA}$		3.2	4.0	V
Forward Voltage, Segments c or dp	V_F	$I_F = 20\text{mA}$		1.6	2.0	V
Reverse Current, Segments a-b or d	I_R	$V_R = 12\text{V}$		10		μA
Reverse Current, Segments c or dp	I_R	$V_R = 6\text{V}$		10		μA
Rise and Fall Time ^[2]	t_r, t_f			10		ns
Temperature Coefficient of Forward Voltage Segments a-b or d	$\Delta V_F / ^\circ\text{C}$			-4.0		$\text{mV}/^\circ\text{C}$
Temperature Coefficient of Forward Voltage Segments c or dp	$\Delta V_F / ^\circ\text{C}$			-2.0		$\text{mV}/^\circ\text{C}$
Temperature Coefficient of Luminous Intensity	$\Delta I_v / ^\circ\text{C}$			-1.0		$\%/^\circ\text{C}$

NOTES: 1. The digits are categorized for luminous intensity with the intensity categories designated by a letter located on the right hand side of the package.

- Time for a 10%-90% change of light intensity for step change in current.

PACKAGE DIMENSIONS -- 5082-7732

