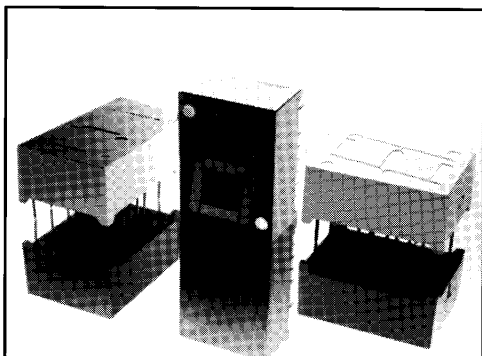


HIGH EFFICIENCY GREEN MAN8400 SERIES



FEATURES

- High Efficiency Green nitrogen-doped GaAsP on GaP
- Large, easy to read, digits
- Common anode or common cathode models
- Fast switching — excellent for multiplexing
- Low power consumption
- Bold solid segments that are highly legible
- Solid state reliability — long operation life
- Rugged plastic construction
- Directly compatible with integrated circuits
- High brightness with high contrast
- Categorized for Luminous Intensity (See Note 5)
- Wide angle viewing...150°
- Low forward voltage
- Two-digit package simplifies alignment and assembly

DESCRIPTION

The MAN8400 Series is a family of large digits 0.8-inches in height. This series combines high brightness, large size, good aesthetics and is designed to be used where accurate readable displays need to be viewed over a distance. All models use right hand decimal points. The display ON and OFF contrast has been optimized for high ambient light conditions by use of a neutral Grey face and diffused White segments. Construction makes use of a metal leadframe, plastic reflector cap with epoxy-filled segments and back.

APPLICATIONS

- For industrial and consumer applications such as:
- Digital readout displays
 - Instrument panels
 - Point of sale equipment
 - Digital clocks
 - TV and radios

| MODEL NUMBERS | | | |
|----------------------|-----------------------|------------------------------------|------------------------|
| PART NUMBER | COLOR | DESCRIPTION | PACKAGE DRAWING |
| MAN8410 | High Efficiency Green | Common Anode; Right Hand Decimal | 1 |
| MAN8440 | High Efficiency Green | Common Cathode; Right Hand Decimal | 1 |

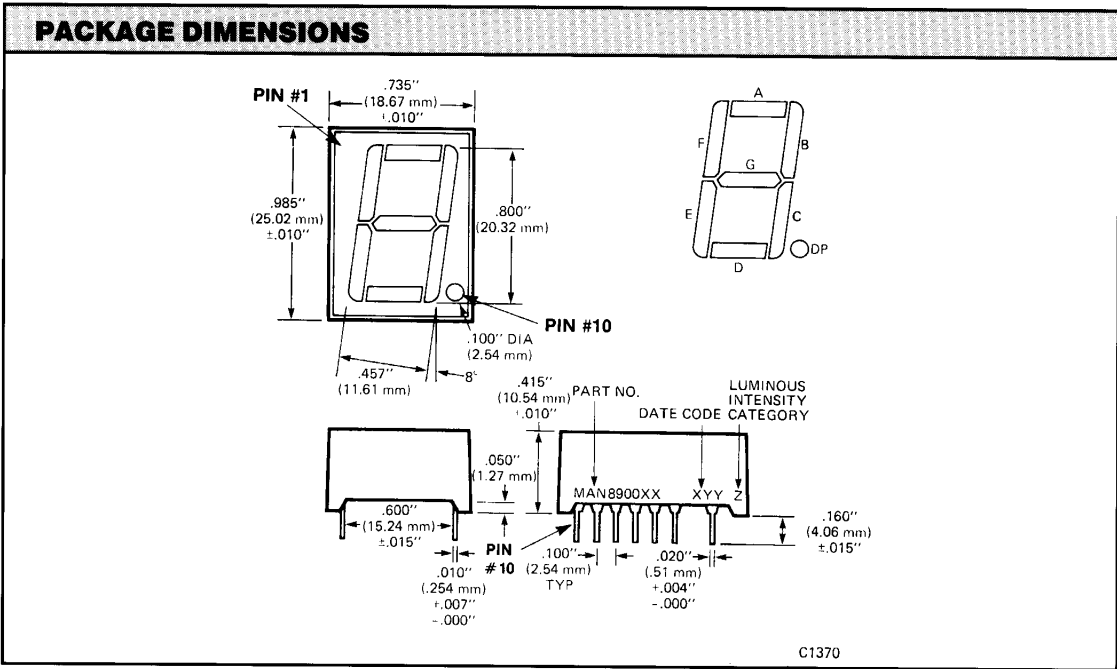
| RECOMMENDED OPTICAL FILTERS | |
|---|--|
| For optimum ON and OFF contrast, one of the following filters or equivalents should be used over the display: | |
| <u>DEVICE TYPE</u> | <u>FILTER</u> |
| MAN8400 Series | Panelgraphic Green 48 Homalite 100-1440 Green Panelgraphic Grey 10 Homalite 100-1266 Grey |

| ELECTRO-OPTICAL CHARACTERISTICS (Per Diode at 25°C Free Air Temperature Unless Otherwise Specified) | | | | | |
|---|------|------|------|-------|--------------------------------------|
| | MIN. | TYP. | MAX. | UNITS | TEST CONDITIONS |
| Luminous Intensity, digit average (See Notes 1 and 4) | 750 | 3200 | | μcd | I _f =10 mA |
| Pulsed Luminous Intensity, digit average | 900 | 4000 | | μcd | I _f =60 mA peak 1:6 DF |
| Peak emission wavelength | | 562 | | nm | |
| Dominant wavelength | | 567 | | nm | |
| Spectral line half width | | 30 | | nm | |
| Forward voltage | | 2.2 | 3.0 | V | I _f =20 mA |
| Dynamic resistance (See Figure 1) | | 12 | | Ω | I _f =20 mA |
| Light rise time | | 500 | | nsec | I _f =10 mA |
| Capacitance | | 40 | | pF | V=0, f=MHz |
| Reverse current | | | 100 | μA | V _r =3.0 V |

| ABSOLUTE MAXIMUM RATINGS | |
|---|----------------|
| Power dissipation at 25°C ambient | 600 mW |
| Derate linearly from 50°C | -12 mW/°C |
| Storage and operating temperature | -40°C to +85°C |
| Continuous forward current | |
| Total | 240 mA |
| Per segment | 30 mA |
| Decimal point | 30 mA |
| Reverse voltage | |
| Per segment | 6.0 V |
| Decimal point | 6.0 V |
| Soldering time at 260°C (See Notes 2 and 3) | 5 sec. |

| TYPICAL THERMAL CHARACTERISTICS | |
|---|------------|
| Thermal resistance junction to free air Φ_{ja} | 160°C/W |
| Wavelength temperature coefficient (case temperature) | 1.0Å/°C |
| Forward voltage temperature coefficient | -1.4 mV/°C |

| NOTES | |
|---|--|
| 1. The digit average Luminous Intensity is obtained by summing the Luminous Intensity of each segment and dividing by the total number of segments. Intensity will not vary more than ±33.3% between all segments within a digit. | |
| 2. Leads of the device immersed to 1/16 inch from the body. Maximum device surface temperature is 140°C. | |
| 3. For flux removal, Freon TF, Freon TE, Isoproponal or water may be used up to their boiling points. | |
| 4. Intensity adjusted for smaller areas of the "+" and decimal points. | |
| 5. All displays are categorized for Luminous Intensity. The Intensity category is marked on each part as a suffix letter to the part number. | |



ELECTRICAL CONNECTIONS

| ELECTRICAL CONNECTIONS | | |
|------------------------|--------------------|--------------------|
| | MAN8410 | MAN8440 |
| | Digit | Digit |
| | Common Anode | Common Cathode |
| PIN # | Package Dimensions | Package Dimensions |
| 1 | No Connection | No Connection |
| 2 | A Cathode | A Anode |
| 3 | F Cathode | F Anode |
| 4 | Common Anode | Common Cathode |
| 5 | E Cathode | E Anode |
| 6 | — | — |
| 7 | E Cathode | E Anode |
| 8 | — | — |
| 9 | D Cathode | Common Cathode |
| 10 | DP Cathode | DP Anode |
| 11 | D Cathode | D Anode |
| 12 | Common Anode | Common Cathode |
| 13 | C Cathode | C Anode |
| 14 | G Cathode | G Anode |
| 15 | B Cathode | B Anode |
| 16 | — | — |
| 17 | Common Anode | Common Anode |
| 18 | — | — |

TYPICAL CHARACTERISTIC CURVES

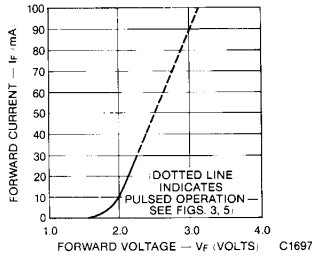


Fig. 1. Forward Current vs. Forward Voltage

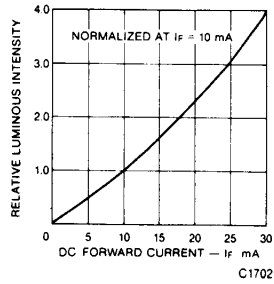


Fig. 2. Relative Luminous Intensity vs. DC Forward Current

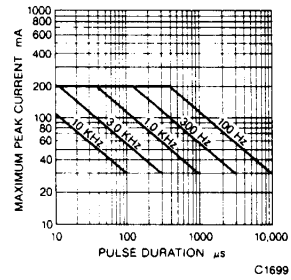


Fig. 3. Maximum Peak Current vs. Pulse Duration

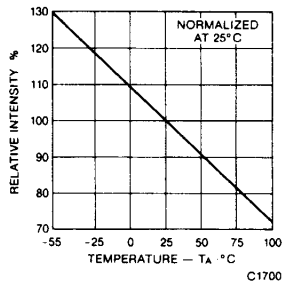


Fig. 4. Relative Luminous Intensity vs. Temperature

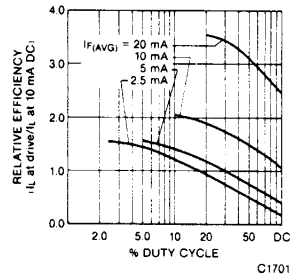
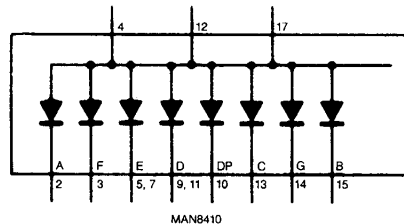
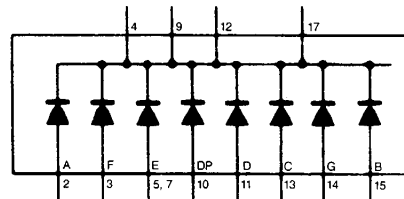


Fig. 5. Relative Efficiency vs. Duty Cycle

INTERNAL CONNECTIONS



MAN8410



MAN8440



0.800-INCH SEVEN SEGMENT DISPLAYS

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.