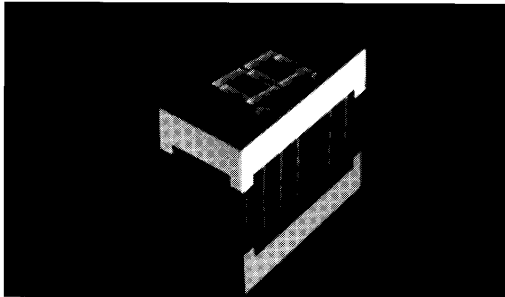




# THE DATASHEET OF MAN3920A



**HIGH EFFICIENCY RED MAN3900A SERIES**



**DESCRIPTION**

The MAN3900A Series is a High Efficiency Red LED display. Standard units are also available in Red, Green, Orange and Yellow, with common anode right hand decimal, common anode left hand decimal, and common cathode right hand decimal. They can be mounted in arrays with 0.400-inch (10.16 mm) center-to-center spacing. Units are constructed with Red face and segment color.

**FEATURES**

- Common anode or common cathode models
- High Efficiency Red
- Fast switching—excellent for multiplexing
- Low power consumption
- Bold solid segments that are highly legible
- Solid state reliability—long operation life
- Impact resistant plastic construction
- Directly compatible with integrated circuits
- High brightness with high contrast
- Categorized for Luminous Intensity (See Note 6)
- Standard dual-in-line package configuration
- Wide angle viewing . . . 150°
- These devices have a Red face and Red segments

**APPLICATIONS**

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

**MODEL NUMBERS**

| PART NUMBER | COLOR               | PACKAGE | DESCRIPTION                        | PIN OUT SPECIFICATION |
|-------------|---------------------|---------|------------------------------------|-----------------------|
| MAN3910A    | High Efficiency Red | A       | Common Anode; Right Hand Decimal   | A                     |
| MAN3920A    | High Efficiency Red | B       | Common Anode; Left Hand Decimal    | B                     |
| MAN3940A    | High Efficiency Red | C       | Common Cathode; Right Hand Decimal | C                     |
| MAN3980A    | High Efficiency Red | D       | Common Cathode; Right Hand Decimal | D                     |

**RECOMMENDED OPTICAL FILTERS**

For optimum ON and OFF contrast, one of the following filters or equivalents should be used over the display:

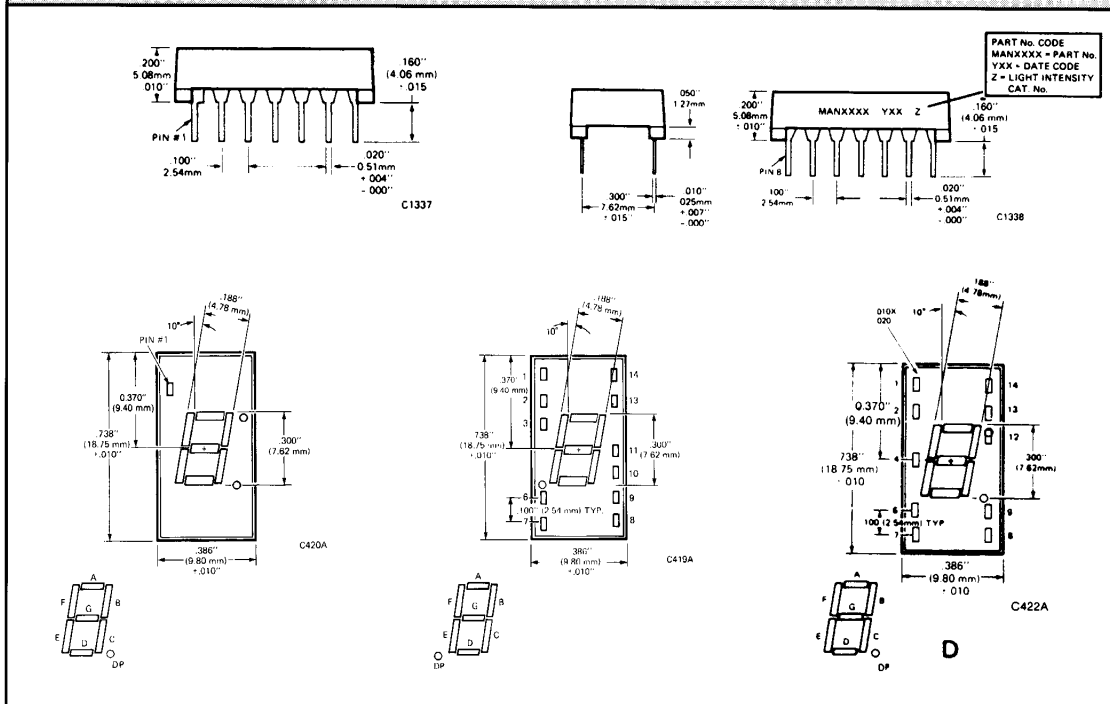
| DEVICE TYPE | FILTER                  |
|-------------|-------------------------|
| MAN3910A    |                         |
| MAN3920A    | Panelgraphic Scarlet 65 |
| MAN3940A    | Homalite 100-1670       |
| MAN3980A    |                         |

| <b>ELECTRO-OPTICAL CHARACTERISTICS</b><br>(25°C Free Air Temperature Unless Otherwise Specified) |      |      |      |       |                        |
|--|------|------|------|-------|------------------------|
|  | MIN. | TYP. | MAX. | UNITS | TEST CONDITONS         |
| <b>MAN3910A, 3920A, 3940A, 3980A</b>   |      |      |      |       |                        |
| Luminous Intensity, digit average<br>(See Note 1 and 3)  | 450  | 1900 |      | μcd   | I <sub>f</sub> = 10 mA |
| Peak emission wavelength   |      | 635  |      | nm    |                        |
| Spectral line half width   |      | 40   |      | nm    |                        |
| Forward voltage  |      |      |      |       |                        |
| Segment  |      |      | 2.5  | V     | I <sub>f</sub> = 20 mA |
| Decimal point  |      |      | 2.5  | V     | I <sub>f</sub> = 20 mA |
| Dynamic resistance   |      |      |      |       |                        |
| Segment  |      | 26   |      | Ω     | I <sub>f</sub> = 20 mA |
| Decimal point  |      | 26   |      | Ω     | I <sub>f</sub> = 20 mA |
| Capacitance  |      |      |      |       |                        |
| Segment  |      | 35   |      | pF    | V = 0                  |
| Decimal point  |      | 35   |      | pF    | V = 0                  |
| Reverse current  |      |      |      |       |                        |
| Segment  |      |      | 100  | μA    | V <sub>R</sub> = 5.0V  |
| Decimal point  |      |      | 100  | μA    | V <sub>R</sub> = 5.0 V |

| <b>ABSOLUTE MAXIMUM RATINGS</b>               |                |
|---|----------------|
| <b>MAN3910A, MAN3920A, MAN3940A, MAN3980A</b> |                |
| Power dissipation at 25°C ambient             | 600 mW         |
| Derate linearly from 50°C                     | -8.6 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 4 and 5)   | 5 sec.         |

| <b>TYPICAL THERMAL CHARACTERISTICS</b>                  |            |
|---|------------|
| <b>HIGH EFFICIENCY RED</b>                              |            |
| Thermal resistance junction to free air Φ <sub>JA</sub> | 160°C/W    |
| Wavelength temperature coefficient (case temperature)   | 1.0Å/°C    |
| Forward voltage temperature coefficient                 | -2.0 mV/°C |

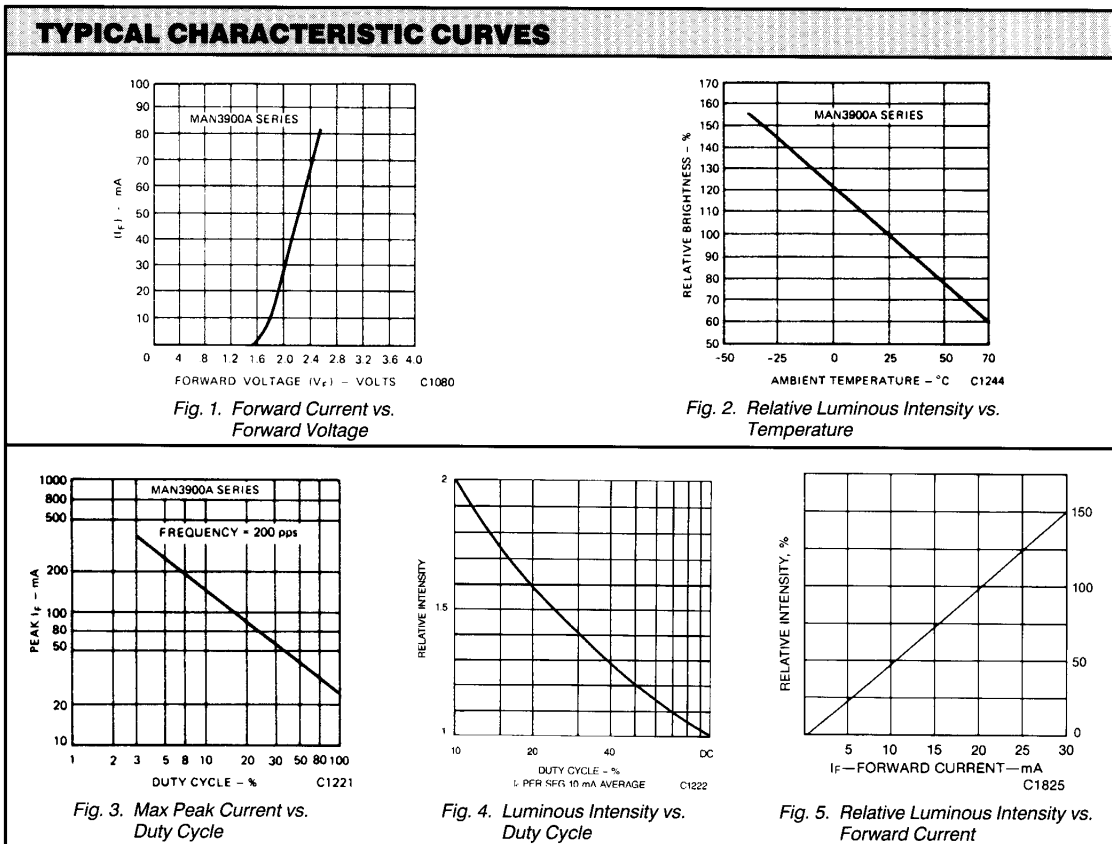
**PACKAGE DIMENSIONS**



**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  $\pm 33.3\%$  between all segments within a digit.
2. The curve in Figure 3 is normalized to the brightness at 25°C to indicate the relative Luminous Intensity over the operating temperature range.
3. The decimal point is designed to have the same surface brightness as the segments, therefore, the Luminous Intensity of the decimal point is .3 times the Luminous Intensity of the segments, since the area of the decimal point is .3 times the area of the average segment.
4. Leads of the device immersed to 1/16 inch from the body. Maximum device surface temperature is 140°C.
5. For flux removal, Freon TF, Freon TE, Isoproponal or water may be used to their boiling points.
6. 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 |                        |               |                |                |
|------------------------|------------------------|---------------|----------------|----------------|
| PIN NO.                | ELECTRICAL CONNECTIONS |               |                |                |
|                        | A<br>MAN3910A          | B<br>MAN3920A | C<br>MAN3940A  | D<br>MAN3980A  |
| 1                      | Cathode A              | Cathode A     | Anode F        | Common Cathode |
| 2                      | Cathode F              | Cathode F     | Anode G        | Anode F        |
| 3                      | Common Anode           | Common Anode  | No Pin         | Anode G        |
| 4                      | No Pin                 | No Pin        | Common Cathode | Anode E        |
| 5                      | No Pin                 | No Pin        | No Pin         | Anode D        |
| 6                      | No Connection          | Cathode D.P.  | Anode E        | Common Cathode |
| 7                      | Cathode E              | Cathode E     | Anode D        | Anode D.P.     |
| 8                      | Cathode D              | Cathode D     | Anode C        | Anode C        |
| 9                      | Cathode D.P.           | No Connection | Anode D.P.     | Anode B        |
| 10                     | Cathode C              | Cathode C     | No Pin         | Anode A        |
| 11                     | Cathode G              | Cathode G     | No Pin         |                |
| 12                     | No Pin                 | No Pin        | Common Cathode |                |
| 13                     | Cathode B              | Cathode B     | Anode B        |                |
| 14                     | Common Anode           | Common Anode  | Anode A        |                |





## 0.300-INCH SEVEN SEGMENT DISPLAYS

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