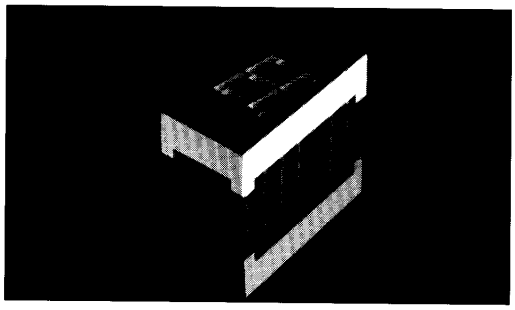
FAIRCHILD
SEMICONDUCTOR™

0.400-INCH SEVEN SEGMENT DISPLAYS

HIGH EFFICIENCY RED MAN4900A SERIES



DESCRIPTION

The MAN4900A Series provides superior brightness High Efficiency Red LED display. Standard units are also available in Red, Green, and Orange. 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°
- Package size and lead configuration is the same as MAN3600A/70A Series
- 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
- High ambient light conditions

MODEL NUMBERS

PART NUMBER	COLOR	DESCRIPTION	PACKAGE DRAWING	PIN OUT SPECIFICATION
MAN4910A	High Efficiency Red	Common Anode; Right Hand Decimal	A	A
MAN4940A	High Efficiency Red	Common Cathode; Right Hand Decimal	A	B

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
MAN4910A	Panelgraphic Scarlet 65
MAN4940A	Homalite 100-1670

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ELECTRO-OPTICAL CHARACTERISTICS
(25°C Free Air Temperature Unless Otherwise Specified)

	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
MAN4910A/4940A					
Luminous Intensity, digit average (See Note 1 and 3)	450	1900		μcd	I_F=10 mA
Peak emission wavelength		635		nm	
Forward voltage					
Segment		2.2	2.5	V	I_F=20 mA
Decimal point		2.2	2.5	V	I_F=20 mA
Dynamic resistance					
Segment		26		Ω	I_F=20 mA
Decimal point		26		Ω	I_F=20 mA
Capacitance					
Segment		35		pF	V=0
Decimal point		35		pF	V=0
Reverse current					
Segment			100	μA	V_R=5.0 V
Decimal point			100	μA	V_R=5.0 V

ABSOLUTE MAXIMUM RATINGS

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.

TYPICAL THERMAL CHARACTERISTICS

Thermal resistance junction to free air Φ_{JA} ..... 160°C/W
Wavelength temperature coefficient (case temperature) ..... 1.0 Å/°C
Forward voltage temperature coefficient ..... −2.0 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. *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 up 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.*

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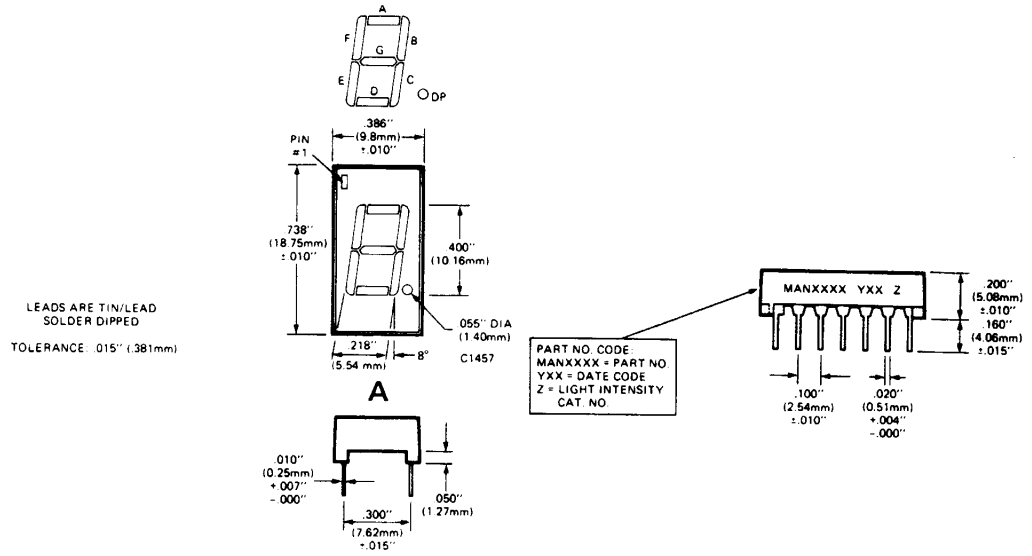
PACKAGE DIMENSIONS



ELECTRICAL CONNECTIONS

PIN NO.	ELECTRICAL CONNECTIONS A MAN4910A	ELECTRICAL CONNECTIONS B MAN4940A
1	Cathode A	Anode F
2	Cathode F	Anode G
3	Common Anode	No Pin
4	No Pin	Common Cathode
5	No Pin	No Pin
6	No Connection	Anode E
7	Cathode E	Anode D
8	Cathode D	Anode C
9	Cathode D.P.	Anode D.P.
10	Cathode C	No Pin
11	Cathode G	No Connection
12	No Pin	Common Cathode
13	Cathode B	Anode B
14	Common Anode	Anode A

TYPICAL CHARACTERISTIC CURVES

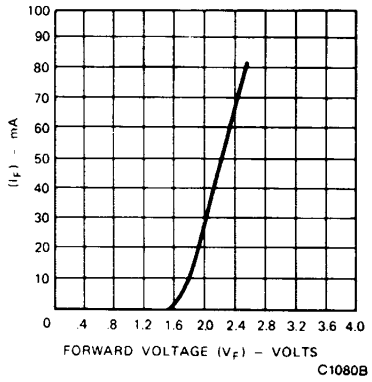


Fig. 1. Forward Current vs. Forward Voltage

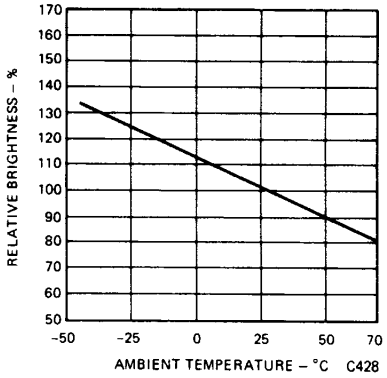


Fig. 2. Relative Luminous Intensity vs. Temperature

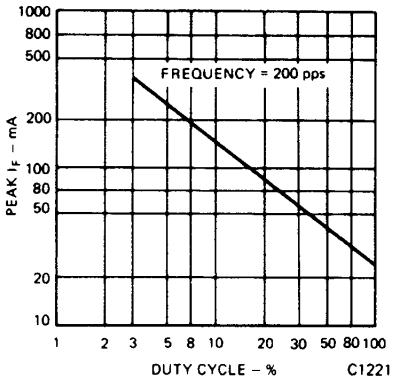


Fig. 3. Max Peak Current vs. Duty Cycle

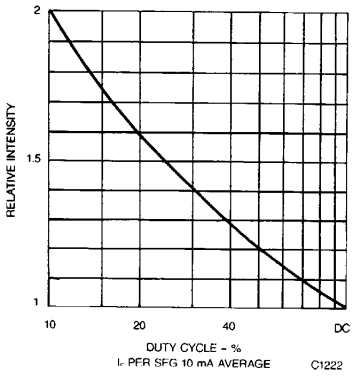


Fig. 4. Luminous Intensity vs. Duty Cycle

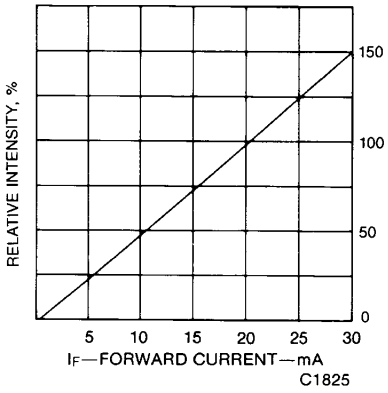


Fig. 5. Relative Luminous Intensity vs. Forward Current

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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.