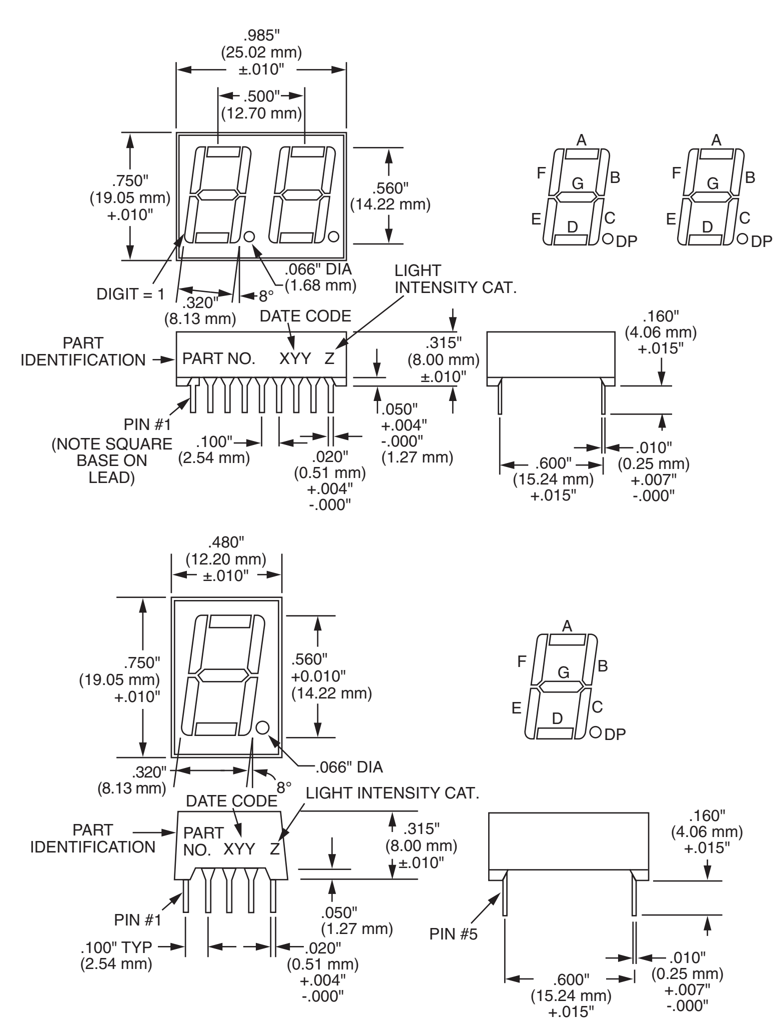
FAIRCHILD
SEMICONDUCTOR®

0.560-INCH SEVEN SEGMENT DISPLAYS

HIGH EFFICIENCY GREEN MAN6400 SERIES

PACKAGE DIMENSIONS



Description

The MAN6400 Series is a family of large digits which includes double and single digits. The series features the sculptured font which minimizes “gappiness” at the segment intersections. All models have right hand decimal points and are available in common anode or common cathode configuration. This device has a Grey face and clear segments to enhance ON and OFF contrast.

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

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	Pin Out Specification
MAN6410	High Eff. Green	2 Digit; Common Anode; Rt. Hand Decimal	A	A
MAN6440	High Eff. Green	2 Digit; Common Cathode; Rt. Hand Decimal	A	B
MAN6460	High Eff. Green	Single Digit; Common Anode; Rt. Hand Decimal	B	C
MAN6980	High Eff. Green	Single Digit; Common Cathode; Rt. Hand Decimal	B	D

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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
MAN6400 Series	Panelgraphic Green 48 Homalite 100-1440 Green Panelgraphic Grey 10 Homalite 100-1266 Grey

ELECTRO-OPTICAL CHARACTERISTICS

(Per Diode 25°C Free Air Temperature Unless Otherwise Specified)

	Min.	Typ.	Max.	Units	Test Conditions
Luminous Intensity, digit average (See Note 1)	510	2200		µcd	I_F = 10 mA
Peak emission wavelength		565		nm	
Spectral line half width		30		nm	
Forward voltage Segment Decimal point		 2.1 2.1	 2.8 2.8	 V V	 I_F = 20 mA I_F = 20 mA
Dynamic resistance Segment Decimal point		 26 26		 Ω Ω	 I_F = 20 mA I_F = 20 mA
Capacitance Segment Decimal point		 35 35		 pF pF	 V = 0 V = 0
Reverse current Segment Decimal point			 100 100	 µA µA	 V_R = 3.0V V_R = 3.0V
Ratio I_L			2:1	—	I_F = 10 mA

ABSOLUTE MAXIMUM RATINGS

	MAN64X0
Power dissipation at 25°C ambient	600mW
Derate linearly from 50°C	
Storage and operating temperature	-40°C to +85°C
Continuous forward current Total Per segment Decimal point	 30 mA 30 mA
Reverse voltage Per segment Decimal point	 6.0 V 6.0 V
Soldering time at 260°C (See Notes 3 and 4)	5 sec.

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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	-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 efficiency over the operating temperature range.
3. Leads of the device immersed to 1/16 inch from the body. Maximum device surface temperature is 140°C.
4. For flux removal, Freon TF, Freon TE, Isoproponal or water may be used up to their boiling 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

Pin No.	ELECTRICAL CONNECTIONS			
	A MAN6410	**B MAN6440**	**C MAN6460**	**D MAN6480**
1	Cathode E 1	Anode E 1	Cathode E	Anode E
2	Cathode D 1	Anode D 1	Cathode D	Anode D
3	Cathode C 1	Anode C 1	Common Anode	Common Cathode
4	Cathode D.P. 1	Anode D.P. 1	Cathode C	Anode C
5	Cathode E 2	Anode E 2	Cathode D.P.	Anode D.P.
6	Cathode D 2	Anode D 2	Cathode B	Anode B
7	Cathode G 2	Anode G 2	Cathode A	Anode A
8	Cathode C 2	Anode C 2	Common Anode	Common Cathode
9	Cathode D.P. 2	Anode D.P. 2	Cathode F	Anode F
10	Cathode B 2	Anode B 2	Cathode G	Anode G
11	Cathode A 2	Anode A 2		
12	Cathode F 2	Anode F 2		
13	Anode Digit 2	Cathode Digit 2		
14	Anode Digit 1	Cathode Digit 1		
15	Cathode B 1	Anode B 1		
16	Cathode A 1	Anode A 1		
17	Cathode G 1	Anode G 1		
18	Cathode F 1	Anode F 1		

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TYPICAL CHARACTERISTIC CURVES

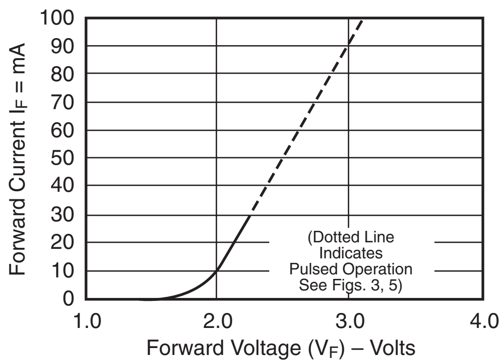

Fig. 1 Forward Current vs. Forward Voltage

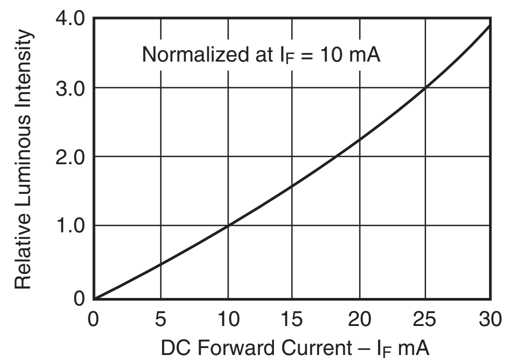

Fig. 2. Relative Luminous Intensity vs. DC Forward Current

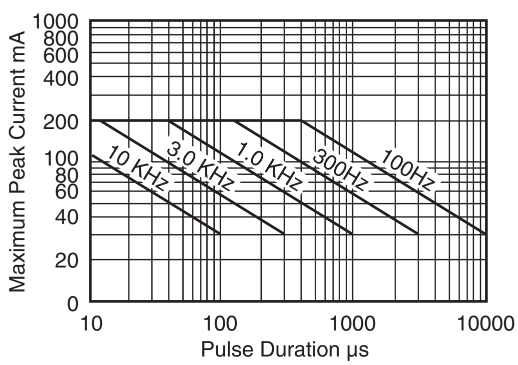

Fig. 3 Maximum Peak Current vs. Pulse Duration

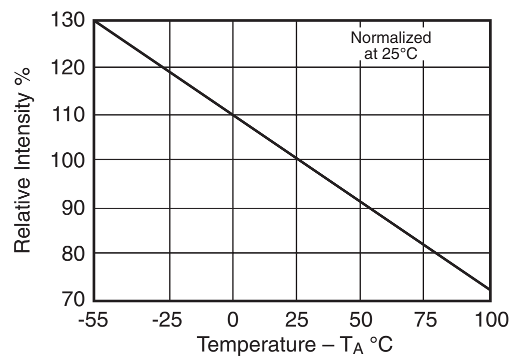

Fig. 4 Relative Luminous Intensity vs. Temperature

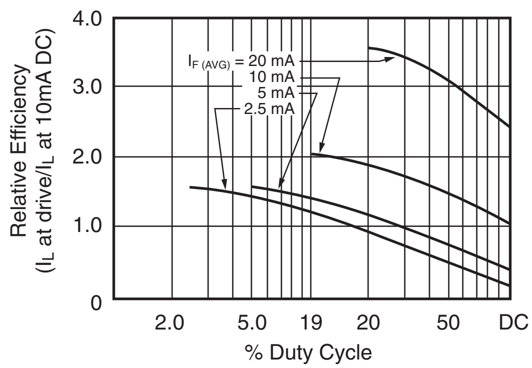

Fig. 5 Relative Efficiency vs. Duty Cycle

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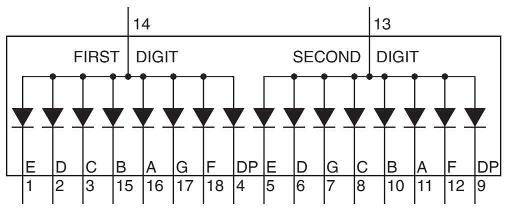
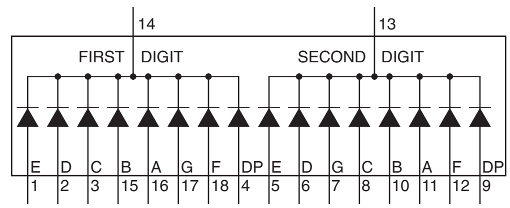
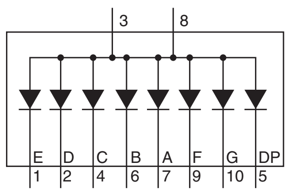
INTERNAL CONNECTIONS



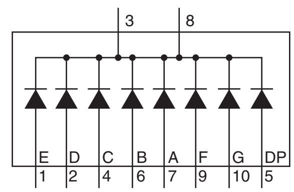
MAN6410



MAN6640



MAN6460



MAN6480

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