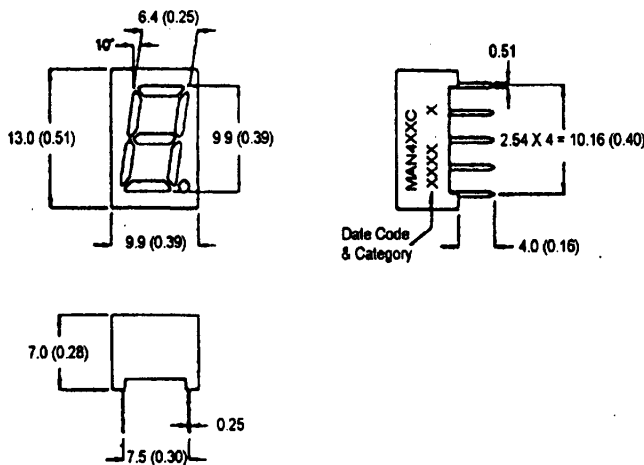


**BRIGHT RED MAN412C, MAN413C  
GREEN MAN442C, MAN443C  
HIGH EFF. RED MAN492C, MAN493C**

**PACKAGE DIMENSIONS**



**NOTES: Dimensions are in mm (inch).  
All pins are 0.5 (0.02) diameter  
Tolerances are ± 0.25 (0.1) unless otherwise noted.**

**FEATURES**

- Easy to read digits.
- Common anode or cathode.
- Low power consumption.
- Bold segments that are highly visible.
- High brightness with high contrast
- White segments on a grey face.
- Directly compatible with integrated circuits.
- Rugged plastic/epoxy construction.

**APPLICATIONS**

- Digital readout displays.
- Instrument panels.

**MODEL NUMBERS**

<u>Part number</u>	<u>Color</u>	<u>Description</u>
MAN412C	Bright Red	1 Digit, Common Anode, Rt. Hand Decimal
MAN413C	Bright Red	1 Digit, Common Cathode, Rt Hand Decimal.
MAN442C	Green	1 Digit, Common Anode, Rt Hand Decimal.
MAN443C	Green	1 Digit, Common Cathode, Rt Hand Decimal.
MAN492C	High Eff. Red	1 Digit, Common Anode, Rt Hand Decimal.
MAN493C	High Eff. Red	1 Digit, Common Cathode, Rt Hand Decimal.

**(For other color options, contact your local area Sales Office)**

**ABSOLUTE MAXIMUM RATING** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

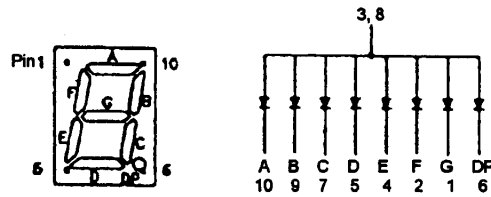
	B.Red MAN 412C 413C	Green MAN 442C 443C	High Eff. Red MAN 492C 493C	Units
Part number				
Continuous forward current ( $I_f$ )				
Per Segment.....	15	25	25	mA
Peak forward current per die ( $I_f$ )..... (at $f = 10.0$ KHz, Duty factor = 1/10)	60	90	90	mA
Power dissipation ( $P_D$ ).....	40*	70*	70*	mW
*Derate Linearly from $25^\circ\text{C}$ .....	0.17	0.33	0.33	mW/ $^\circ\text{C}$
Reverse voltage per dice.....				5V
Operating and Storage temperature range.....				- $40^\circ\text{C}$ to $+85^\circ\text{C}$
Lead soldering time (at 1/16 inch from the bottom of lamp).....				5 seconds @ $230^\circ\text{C}$

**ELECTRO - OPTICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

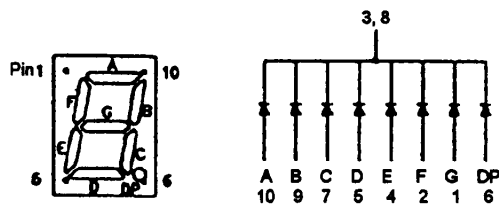
	B. Red MAN 412C 413C	Green MAN 442C 443C	High Eff. Red MAN 492C 493C	Test Condition
<u>Part number</u>				
Luminous intensity (ucd)				
minimum	300	800	900	$I_f = 20$ mA
typical	700	2000	2200	$I_f = 20$ mA
Forward voltage ( $V_f$ )				
typical	2.1	2.1	2.0	$I_f = 20$ mA
maximum	2.6	2.8	2.8	$I_f = 20$ mA
Peak wavelength (nm)	697	570	635	$I_f = 20$ mA
Spectral line half width (nm)	90	30	45	$I_f = 20$ mA
Reverse breakdown voltage ( $V_R$ )	5	5	5	$I_r = 100$ uA

**PINOUT**

**MAN4X2C - Common Anode**



**MAN4X3C - Common Cathode**



**GRAPHICAL DETAIL: Bright Red ( $T_A = 25^\circ\text{C}$  unless otherwise specified)**

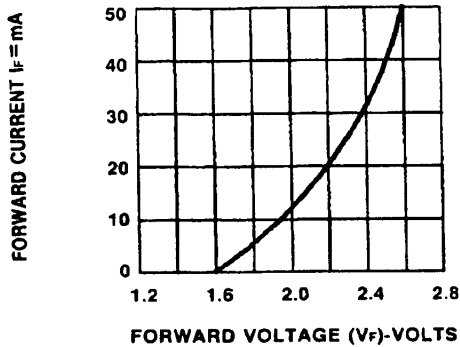


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE.

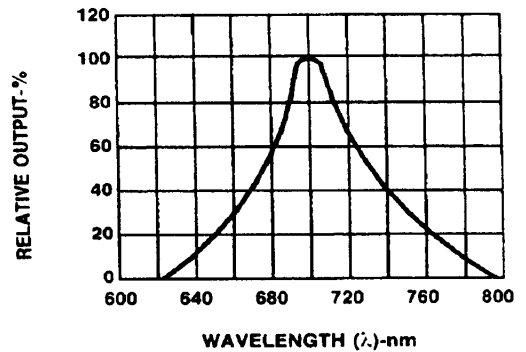


Fig.2 SPECTRAL RESPONSE

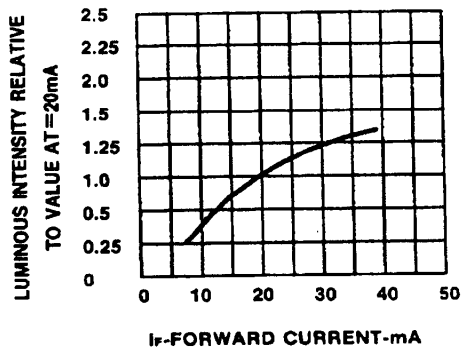


Fig.3 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

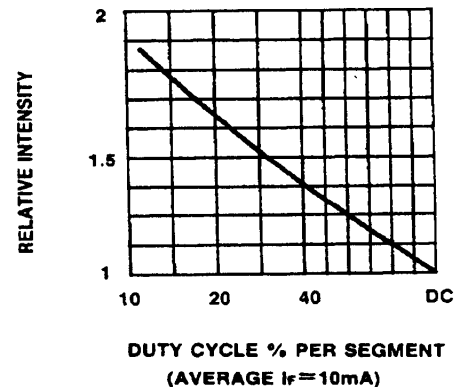


Fig.5 LUMINOUS INTENSITY VS. DUTY CYCLE

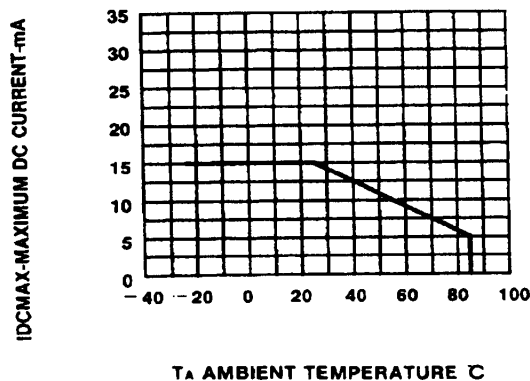


Fig.4 MAXIMUM ALLOWABLE DC CURRENT PER SEGMENT VS. A FUNCTION OF AMBIENT TEMPERATURE.

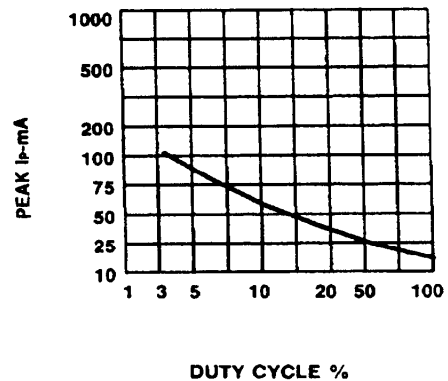


Fig.6 MAX PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE  $f = 1 \text{ KHz}$ )

**GRAPHICAL DETAIL: Green** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

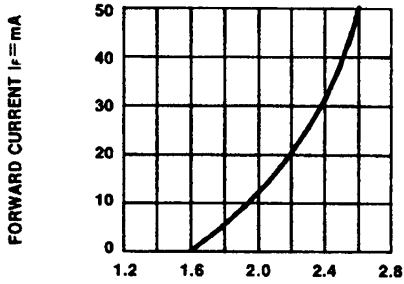


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE.

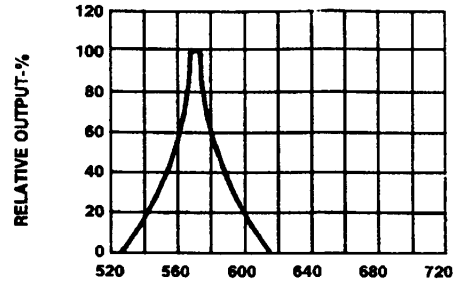


Fig.2 SPECTRAL RESPONSE

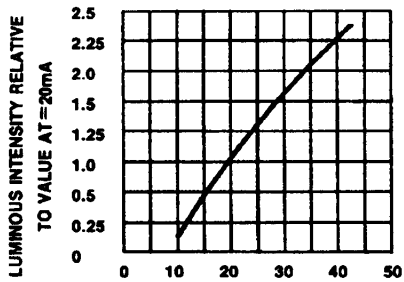


Fig.3 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

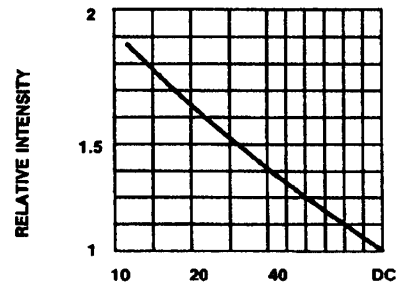


Fig.5 LUMINOUS INTENSITY VS. DUTY CYCLE

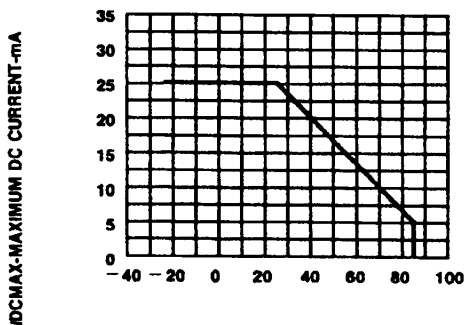


Fig.4 MAXIMUM ALLOWABLE DC CURRENT PER SEGMENT CS. A FUNCTION OF AMBIENT TEMPERATURE.

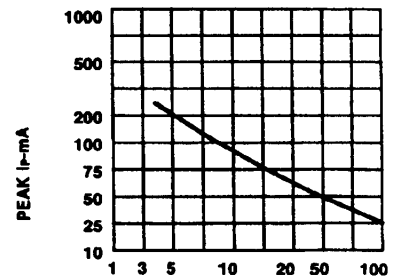


Fig. 6 MAX PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE  $f=1\text{KHz}$ )

**GRAPHICAL DETAIL: High Efficiency Red ( $T_A = 25^\circ\text{C}$  unless otherwise specified)**

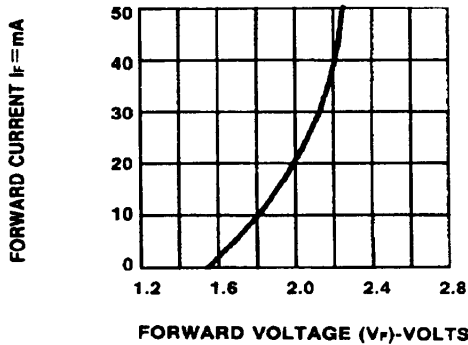


Fig. 1 FORWARD CURRENT VS. FORWARD VOLTAGE.

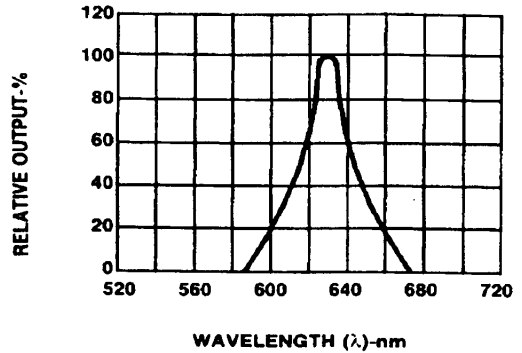


Fig. 2 SPECTRAL RESPONSE

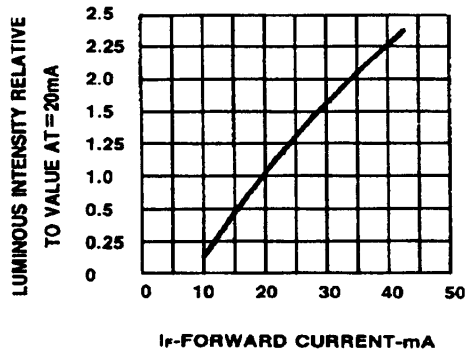


Fig. 3 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

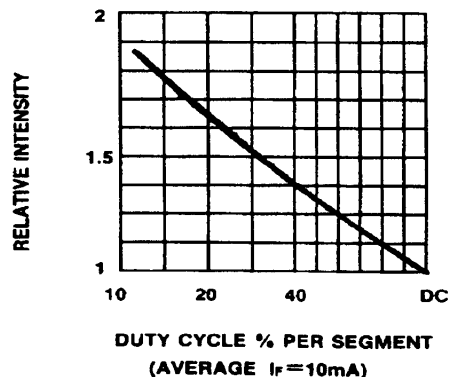


Fig. 5 LUMINOUS INTENSITY VS. DUTY CYCLE

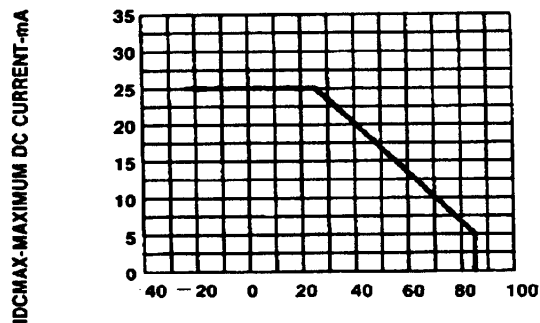


Fig. 4 MAXIMUM ALLOWABLE DC CURRENT PER SEGMENT VS. A FUNCTION OF AMBIENT TEMPERATURE.

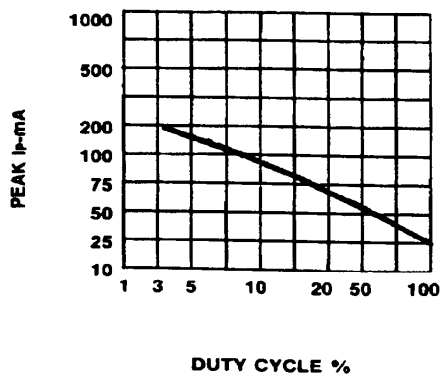


Fig. 6 MAX PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE  $f = 1 \text{ KHz}$ )

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