

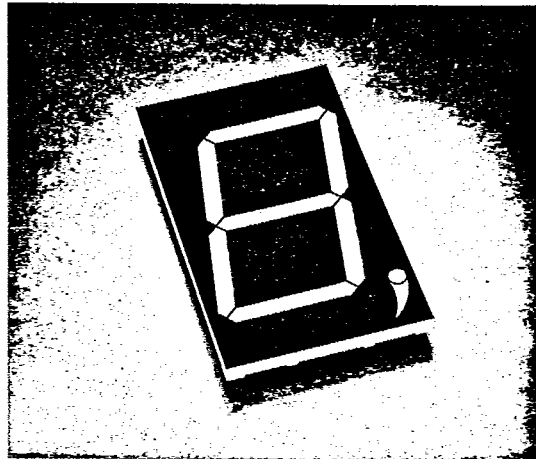


LTS- 50301/50801 50302A/50802A SERIES

5 INCH SINGLE COLOR & MULTICOLOR ULTRA LARGE
SINGLE DIGIT LED NUMERICAL DISPLAY

FEATURES

- 5 INCH (127.0mm) ULTRA LARGE DIGIT HEIGHT.
- CONTINUOUS UNIFORM SEGMENTS.
- LOW POWER REQUIREMENT.
- EXCELLENT CHARACTERS APPEARANCE.
- HIGH CONTRAST.
- HIGH BRIGHTNESS.
- WIDE VIEWING ANGLE.
- SOLID STATE RELIABILITY.
- CATEGORIZED FOR LUMINOUS INTENSITY.
- I.C. COMPATIBLE.
- EASY MOUNTING ON P.C. BOARD.
- SINGLE COLOR DISPLAYS HAVE THE CHOICE OF TWO BRIGHT COLORS — GREEN/HIGH EFFICIENCY RED.
- MULTICOLOR DISPLAYS ARE APPLICABLE TO THREE BRIGHT COLORS — GREEN, ORANGE AND YELLOW (GREEN AND ORANGE MIXED).



DESCRIPTION

The LTS-50000 series are 5 inch (76.2mm) height ultra large single digit displays.

The LTS-50301/50801 series are single color displays. The green displays have black face and green segment color, the high efficiency red displays have black face and red segment color.

The LTS-50302A/50802A are multicolor displays. The multicolor displays have black face and white segment color.

The green series utilize LED chips which are made from GaP on a transparent GaP substrate. The high efficiency red series devices utilize LED chips which are made from GaAsP on a transparent GaP substrate.

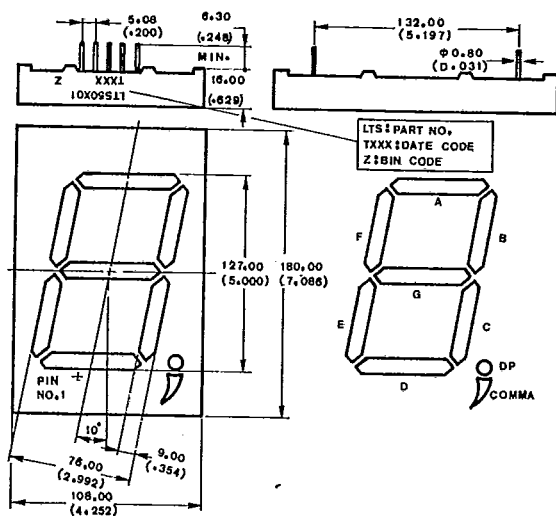
DEVICES

PART NO. LTS—			DESCRIPTION	PACKAGE DIMENSION	INTERNAL CIRCUIT DIAGRAM
GREEN	HI-EFF. RED	MULTI-COLOR			
50301G	50301HRB	—	Common Cathode	A	A
50801G	50801HRB	—	Common Anode	A	B
—	—	50302A	Common Cathode	B	C
—	—	50802A	Common Anode	B	D

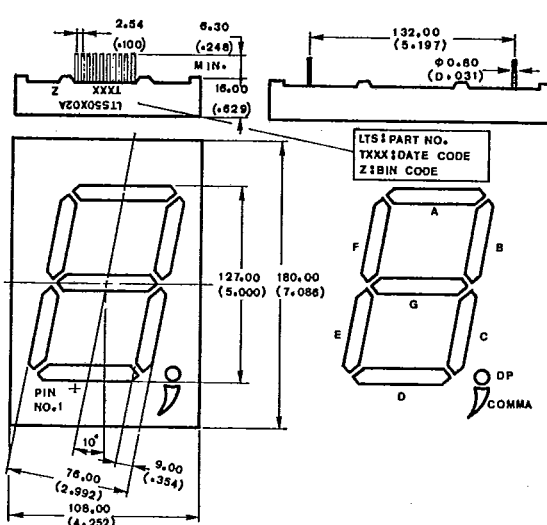
SEVEN-SEGMENT
LED DISPLAYS

PACKAGE DIMENSIONS

A. LTS-50301/50801



B. LTS-50302A /50802 A



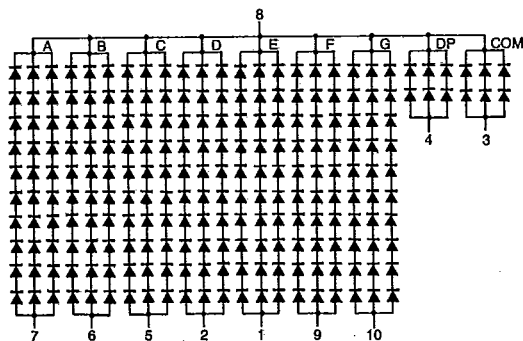
NOTE: All dimensions are in $\frac{\text{millimeters}}{\text{(inches)}}$, tolerance is $\frac{0.25\text{mm}}{(0.010")}$ unless otherwise noted.

PIN CONNECTION

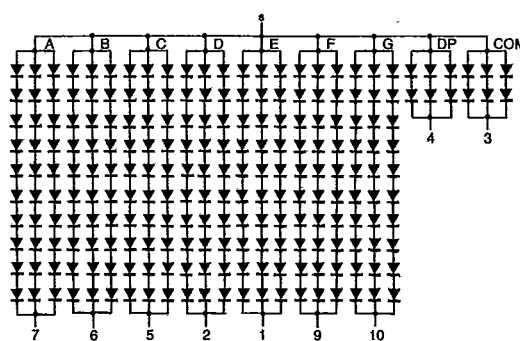
PIN NO.	CONNECTION			
	LTS-50301	LTS-50801	LTS-50302A	LTS-50802A
1	Segment E Anode	Segment E Cathode	Anode E, Green	Cathode E, Green
2	Segment D Anode	Segment D Cathode	Anode E, Orange	Cathode E, Orange
3	Comma Cathode	Comma Anode	Anode D, Green	Cathode D, Green
4	D.P. Anode	D.P. Cathode	Anode D, Orange	Cathode D, Orange
5	Segment C Anode	Segment C Cathode	Cathode Comma, Green	Anode Comma, Green
6	Segment B Anode	Segment B Cathode	Cathode Comma, Orange	Anode Comma, Orange
7	Segment A Anode	Segment A Cathode	Anode DP, Green	Cathode DP, Green
8	Common Cathode	Common Anode	Anode DP, Orange	Cathode DP, Orange
9	Segment F Anode	Segment F Cathode	Anode C, Green	Cathode C, Green
10	Segment G Anode	Segment G Cathode	Anode C, Orange	Cathode C, Orange
11			Anode B, Green	Cathode B, Green
12			Anode B, Orange	Cathode B, Orange
13			Anode A, Green	Cathode A, Green
14			Anode A, Orange	Cathode A, Orange
15			Cathode Common, Green	Anode Common, Green
16			Cathode Common, Orange	Anode Common, Orange
17			Anode G, Green	Cathode G, Green
18			Anode G, Orange	Cathode G, Orange
19			Anode F, Green	Cathode F, Green
20			Anode E, Orange	Cathode F, Orange

INTERNAL CIRCUIT DIAGRAM

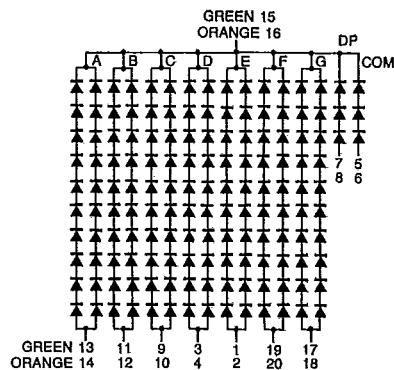
A. LTS-50301



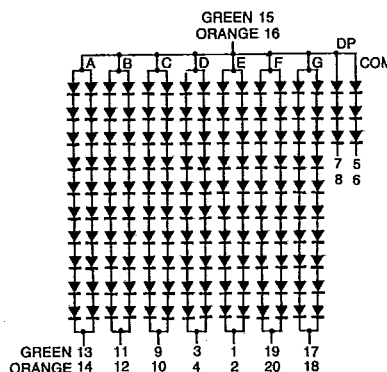
B. LTS-50801



C. LTS-50302A



D. LTS-50802A

ABSOLUTE MAXIMUM RATINGS AT $T_A = 25^\circ\text{C}$

PARAMETER	50x01		50x02A		UNIT
	GREEN	HI.-EFF. RED	GREEN	ORANGE	
Power Dissipation Per Segment	1200	1200	900	900	mW
Peak Forward Current Per Segment (1/10 Duty Cycle, 0.1ms Pulse Width)	180	180	160	160	mA
Continuous Forward Current Per Segment	60	60	40	40	mA
Derating Linear From 25°C Per Segment	0.72	0.72	0.48	0.48	mA/°C
Reverse Voltage Per Segment	50	50	50	50	V
Operating Temperature Range	- 25°C to + 85°C				
Storage Temperature Range	- 25°C to + 85°C				
Solder Temperature 1/16 inch Below Seating Plane for 3 Seconds at 260°C					

SEVEN-SEGMENT
LED DISPLAYS6-30
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ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$

LTS-50301G/50801G

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I_v	24	60		mcd	$I_F = 30\text{ mA}$
Peak Emission Wavelength	λ_p		565		nm	$I_F = 60\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		30		nm	$I_F = 60\text{ mA}$
Forward Voltage, any Segment (D.P.)	V_F		21 (6.3)	28 (8.4)	V	$I_F = 60\text{ mA}$
Reverse Current, any Segment	I_R			300	μA	$V_R = 50\text{ V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 60\text{ mA}$

Note: The BIN brightness classification see page 6-161, category G

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

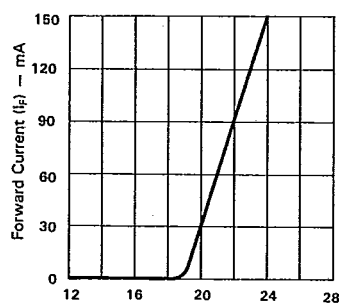


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

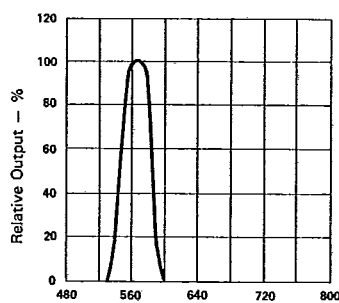


Fig. 2 SPECTRAL RESPONSE.

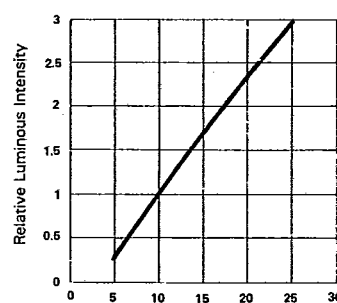


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

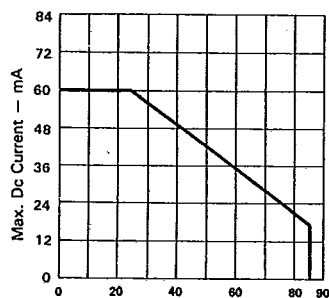
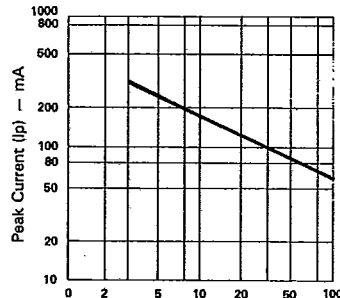
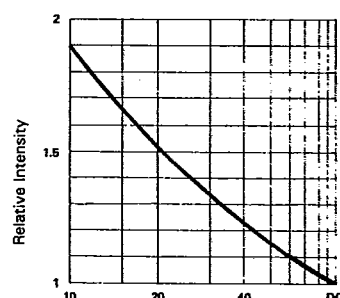


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE - $F = 1\text{ KHz}$)Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE $I_F = 10\text{ mA PER SEG.}$)

ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$

LTS-50301HRB/50801HRB

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I_v	24	60		mod	$I_F = 30\text{ mA}$
Peak Emission Wavelength	λ_P		630		nm	$I_F = 60\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		40		nm	$I_F = 60\text{ mA}$
Forward Voltage, any Segment (D.P.)	V_F		21 (6.3)	28 (8.4)	V	$I_F = 60\text{ mA}$
Reverse Current, any Segment	I_R			300	μA	$V_R = 50\text{ V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 60\text{ mA}$

Note: The BIN brightness classification see page 6-161, category G

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

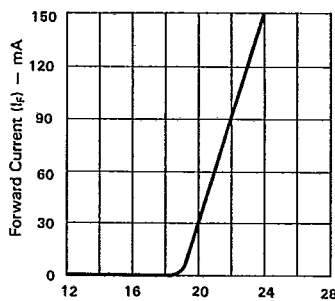


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

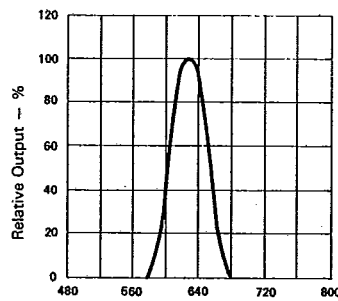


Fig. 2 SPECTRAL RESPONSE.

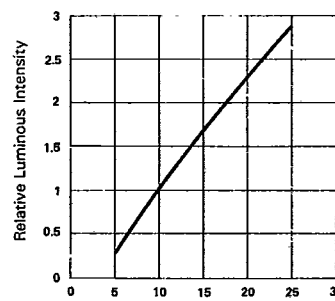


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

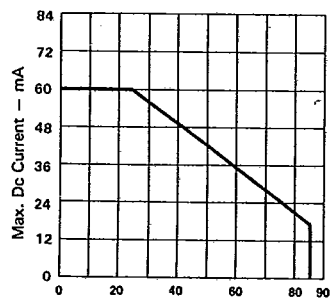


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

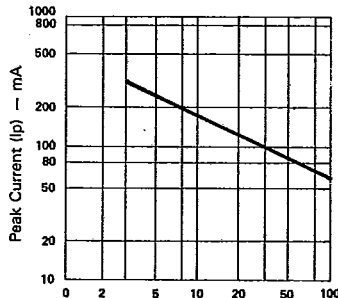


Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE - $F = 1\text{ KHz}$)

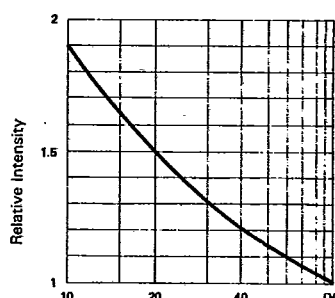


Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE $I_F = 10\text{ mA PER SEG.}$)

SEVEN-SEGMENT
LED DISPLAYS

ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$ LTS-50302A/50802A (GREEN)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I_v	16	40		mcd	$I_F = 20\text{ mA}$
Peak Emission Wavelength	λ_p		565		nm	$I_F = 40\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		30		nm	$I_F = 40\text{ mA}$
Forward Voltage, any Segment (D.P.)	V_F		21 (4.2)	28 (5.6)	V	$I_F = 40\text{ mA}$
Reverse Current, any Segment	I_R			200	μA	$V_R = 50\text{V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 40\text{ mA}$

Note: The BIN brightness classification see page 6-161, category G

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

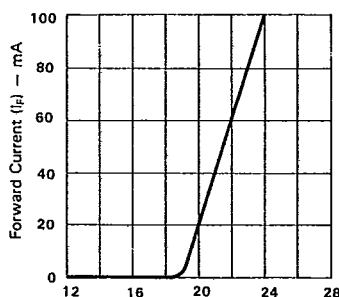


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

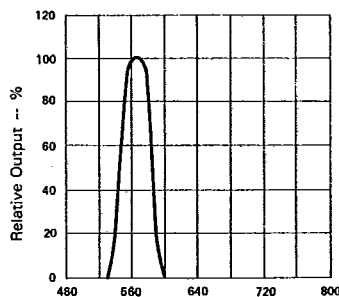


Fig. 2 SPECTRAL RESPONSE.

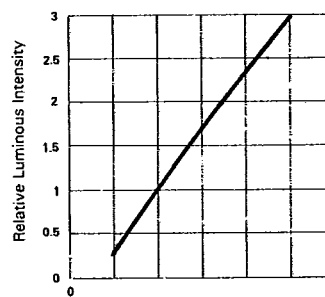


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

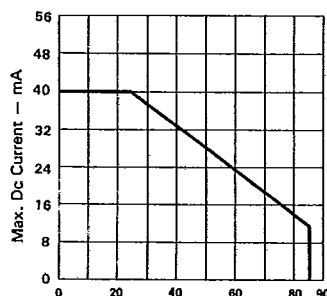


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

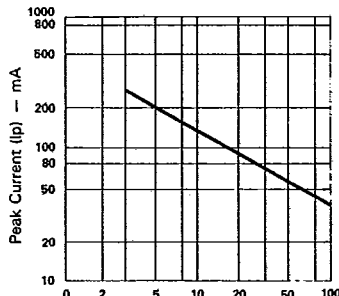


Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE. (REFRESH RATE - $F = 1\text{ KHz}$)

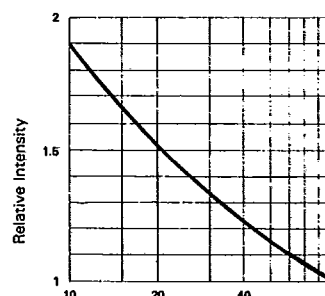


Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE. (AVERAGE $I_F = 10\text{ mA}$ PER SEG.)

ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$ LTS-50302A/50802A (ORANGE)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I_v	16	40		mcd	$I_F = 20\text{ mA}$
Peak Emission Wavelength	λ_p		630		nm	$I_F = 40\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		40		nm	$I_F = 40\text{ mA}$
Forward Voltage, any Segment (D.P.)	V_F		21 (4.2)	28 (5.6)	V	$I_F = 40\text{ mA}$
Reverse Current, any Segment	I_R			200	μA	$V_R = 50\text{V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 40\text{ mA}$

Note: The BIN brightness classification see page 6-161, category G

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

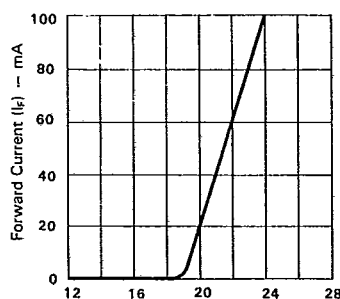


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

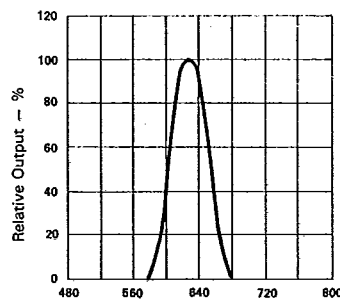


Fig. 2 SPECTRAL RESPONSE.

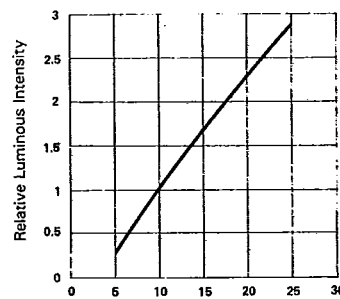


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

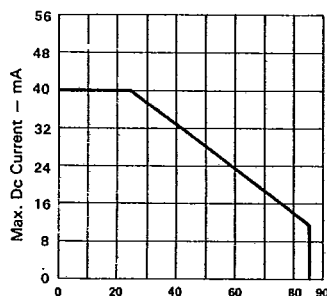


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

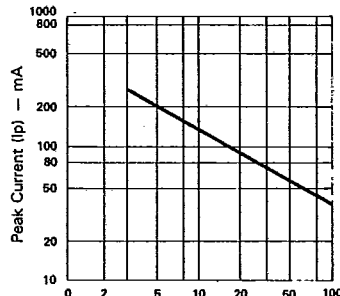


Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE - $F = 1\text{ KHz}$)

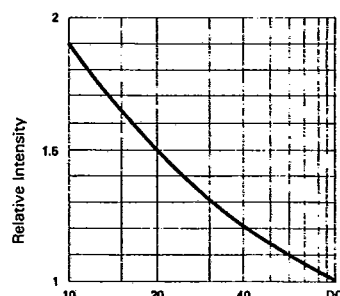


Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE $I_F = 10\text{mA}$ PER SEG.)

SEVEN-SEGMENT
LED DISPLAYS