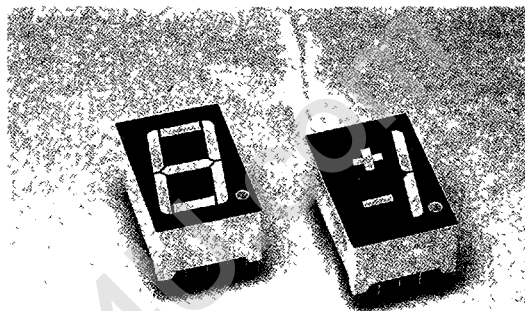


**LITEON****LTS-6000 SERIES**

T-41-33

**0.56 SINGLE DIGIT NUMERIC DISPLAYS****FEATURES**

- 0.56 INCH (14.2mm) DIGIT HEIGHT.
- CHOICE OF SIX BRIGHT COLORS-RED/BRIGHT RED / GREEN / YELLOW/ORANGE/HIGH EFFICIENCY RED.
- LOW POWER REQUIREMENT.
- EXCELLENT CHARACTERS APPEARANCE.
- CATEGORIZED FOR LUMINOUS INTENSITY.
- I.C. COMPATIBLE.
- EASY MOUNTING ON P.C. BOARD OR SOCKETS.

**DESCRIPTION**

The LTS-6000, series are 0.56 inch (14.2mm) height single digit displays.

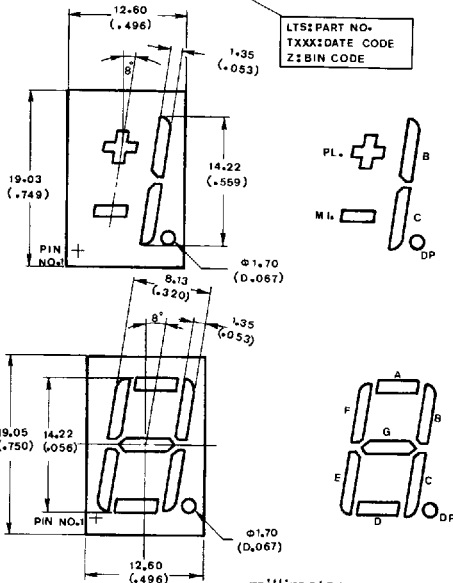
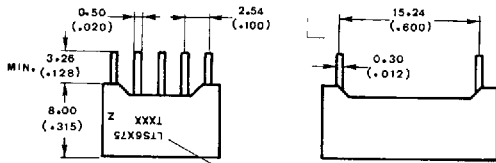
The red series devices utilize LED chips which are made from GaAsP on a GaAs substrate. The bright red and green series devices utilize LED chips which are made from GaP on a transparent GaP substrate. The yellow, orange and high efficiency red series devices utilize LED chips which are made from GaAsP on a transparent GaP substrate. Red and bright red displays have black face and red segment color. Green and yellow displays have gray face and white segment color. Orange displays have orange face and orange segment color. High efficiency red displays have red face and red segment color.

**DEVICES**

PART NO.						DESCRIPTION	INTERNAL CIRCUIT DIAGRAM
RED	BRIGHT RED	GREEN	YELLOW	ORANGE	HI. EFF. RED		
LTS-6760R	6760P	6460G	6860Y	6660E	6960HR	Common Anode, Rt. Hand Decimal	A
LTS-6780R	6780P	6480G	6880Y	6680E	6980HR	Common Cathode, Rt. Hand Decimal	B
LTS-6775R	6775P	6475G	6875Y	6675E	6975HR	Common Anode, $\pm 1$ Overflow	C
LTS-6795R	6795P	6495G	6895Y	6695E	6995HR	Common Cathode, $\pm 1$ Overflow	D

PACKAGE DIMENSION

LTS-6x60/6x80/6x75/6x95



SEVEN-SEGMENT LED DISPLAYS  
& ALPHANUMERIC DISPLAYS

NOTE: All dimensions are in millimeters (inches) tolerance are:

- Lead length (from seating plane): minimum value  $\frac{+1.00}{-0.00} \text{ mm}$  ( $\frac{+0.040''}{-0.000''}$ )
- $\frac{\pm 0.25 \text{ mm}}{(0.010'')}$  unless otherwise noted.

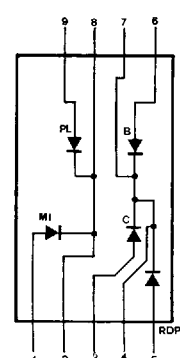
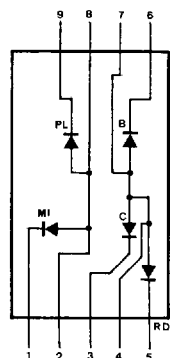
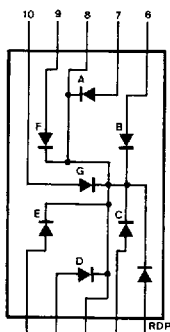
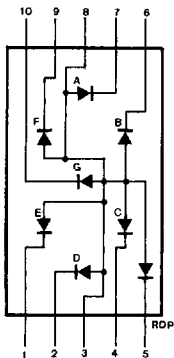
INTERNAL CIRCUIT DIAGRAM

A. LTS-6x60

B. LTS-6x80

C. LTS-6x75

D. LTS-6x95



**PIN CONNECTION**

PIN	CONNECTION			
	A. LTS-6x60	B. LTS-6x80	C. LTS-6x75	D. LTS-6x95
1	Cathode E	Anode E	Cathode Minus Sign	Anode Minus Sign
2	Cathode D	Anode D	Anode Pl., Mi *2	Cathode Pl., Mi. *2
3	Common Anode *1	Common Cathode *1	Cathode C	Anode C
4	Cathode C	Anode C	Anode B.C.Dp *3	Cathode B.C.Dp *3
5	Cathode D.P	Anode D.P.	Cathode Cp	Anode Dp
6	Cathode B	Anode B	Cathode B	Anode B
7	Cathode A	Anode A	Anode B.C.Dp *3	Cathode B.C Dp *3
8	Common Anode *1	Common Cathode *1	Anode Pl., Mi. *2	Cathode Pl., Mi. *2
9	Cathode F	Anode F	Cathode Plus Sign	Anode Plus Sign
10	Cathode G	Anode G	No Connection	No Connection

- NOTES: 1. Pin 3 & 8 are internally connected.  
 2. Pin 2 & 8 are internally connected.  
 3. Pin 4 & 7 are internally connected.

**ABSOLUTE MAXIMUM RATINGS AT T<sub>A</sub> = 25°C**

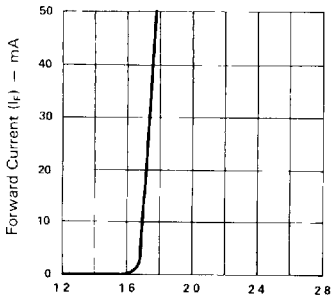
PARAMETER	RED	BRIGHT RED	GREEN	YELLOW	ORANGE	HI. EFF. RED	UNIT
Power Dissipation Per Segment	55	40	75	60	75	75	mW
Peak Forward Current Per Segment (1/10 Duty Cycle, 0.1ms Pulse Width)	160	60	100	80	100	100	mA
Continuous Forward Current Per Segment	25	15	25	20	25	25	mA
Derating Linear From 25°C Per Segment	0.3	0.18	0.3	0.24	0.3	0.3	mA/°C
Reverse Voltage Per Segment	5	5	5	5	5	5	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							

**ELECTRICAL/OPTICAL CHARACTERISTICS AT TA = 25°C**  
**LTS-6700R SERIES**

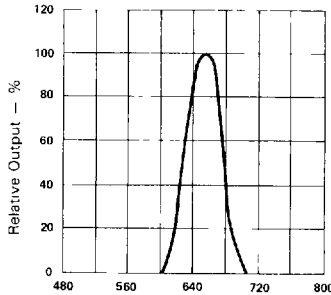
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	200	600		$\mu$ cd	$I_F = 10$ mA
Peak Emission Wavelength	$\lambda_P$		655		nm	$I_F = 20$ mA
Spectral Line Half-Width	$\Delta\lambda$		24		nm	$I_F = 20$ mA
Forward Voltage, any Segment or D.P.	$V_F$		1.7	2.0	V	$I_F = 20$ mA
Reverse Current, any Segment or D.P.	$I_R$			100	$\mu$ A	$V_R = 5$ V
Luminous Intensity Matching Ratio	$I_{v-m}$			2:1		$I_F = 20$ mA

**TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES**

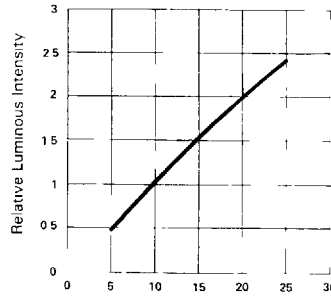
(25°C Ambient Temperature Unless Otherwise Noted)



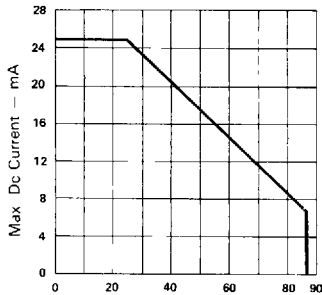
Forward Voltage ( $V_F$ ) — Volts  
 Fig 1 FORWARD CURRENT VS FORWARD VOLTAGE



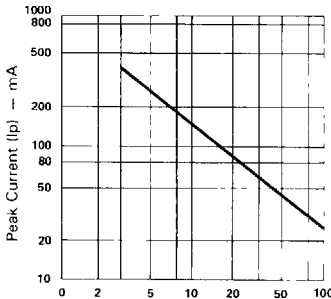
Wavelength ( $\lambda$ ) — nm  
 Fig 2 SPECTRAL RESPONSE



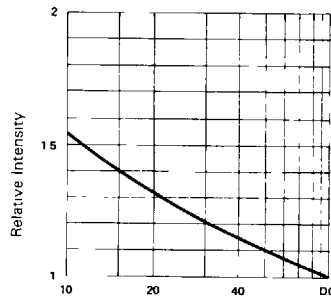
Forward Current ( $I_F$ ) — mA  
 Fig 3 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT (PER SEGMENT)



Ambient Temperature ( $T_a$ ) — °C  
 Fig 4 MAX ALLOWABLE DC CURRENT PER SEG VS AMBIENT TEMPERATURE



Duty Cycle %  
 Fig 5 MAX PEAK CURRENT VS DUTY CYCLE % (REFRESH RATE — F = 1 KHz)



Duty Cycle %  
 Fig 6 LUMINOUS INTENSITY VS DUTY CYCLE % (AVERAGE  $I_F = 10$  mA PER SEG)

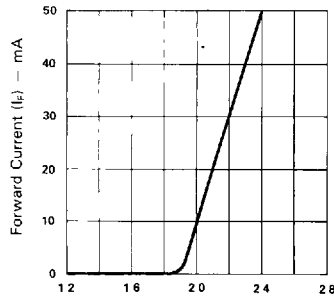
SEVEN-SEGMENT LED DISPLAYS  
 & ALPHANUMERIC DISPLAYS

**ELECTRICAL/OPTICAL CHARACTERISTICS AT TA = 25°C**  
**LTS-6700P SERIES**

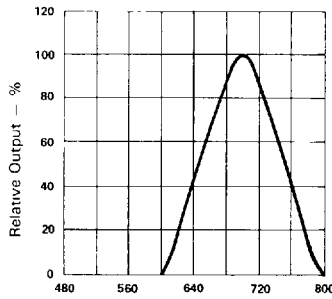
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	300	950		$\mu\text{cd}$	$I_F = 10 \text{ mA}$
Peak Emission Wavelength	$\lambda_P$		687		nm	$I_F = 20 \text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		90		nm	$I_F = 20 \text{ mA}$
Forward Voltage, any Segment or D.P.	$V_F$		2.1	2.8	V	$I_F = 20 \text{ mA}$
Reverse Current, any Segment or D.P.	$I_R$			100	$\mu\text{A}$	$V_R = 5 \text{ V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2.1		$I_F = 20 \text{ mA}$

**TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES**

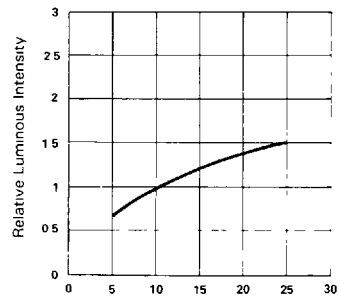
(25°C Ambient Temperature Unless Otherwise Noted)



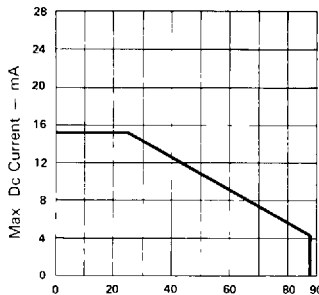
Forward Voltage ( $V_F$ ) – Volts  
 Fig 1 FORWARD CURRENT VS FORWARD VOLTAGE



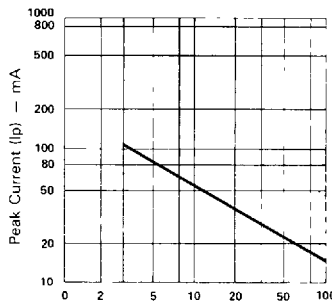
Wavelength ( $\lambda$ ) – nm  
 Fig 2 SPECTRAL RESPONSE



Forward Current ( $I_F$ ) – mA  
 Fig 3 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT (PER SEGMENT)



Ambient Temperature ( $T_a$ ) – °C  
 Fig 4 MAX ALLOWABLE DC CURRENT PER SEG VS AMBIENT TEMPERATURE



Duty Cycle %  
 Fig 5 MAX PEAK CURRENT VS DUTY CYCLE % (REFRESH RATE – F – 1 KHz)

**ELECTRICAL/OPTICAL CHARACTERISTICS AT TA = 25°C**  
**LTS-6400G SERIES**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	800	2400		$\mu\text{cd}$	$I_F = 10 \text{ mA}$
Peak Emission Wavelength	$\lambda_P$		565		nm	$I_F = 20 \text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		30		nm	$I_F = 20 \text{ mA}$
Forward Voltage, any Segment or D.P.	$V_F$		2.1	2.8	V	$I_F = 20 \text{ mA}$
Reverse Current, any Segment or D.P.	$I_R$			100	$\mu\text{A}$	$V_R = 5 \text{ V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 20 \text{ mA}$

**TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES**  
 (25°C Ambient Temperature Unless Otherwise Noted)

SEVEN-SEGMENT LED DISPLAYS  
& ALPHANUMERIC DISPLAYS

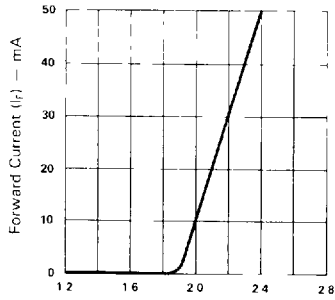


Fig 1 FORWARD CURRENT VS FORWARD VOLTAGE

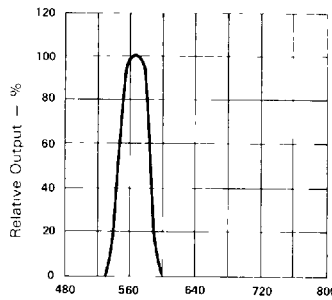


Fig 2 SPECTRAL RESPONSE

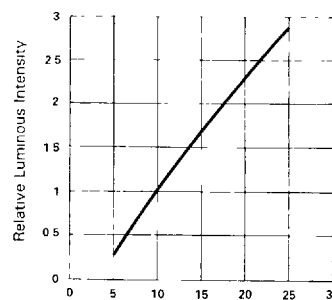


Fig 3 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT (PER SEGMENT)

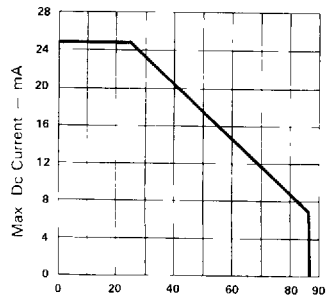


Fig 4 MAX ALLOWABLE DC CURRENT PER SEG VS AMBIENT TEMPERATURE

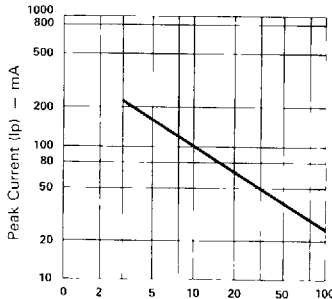


Fig 5 MAX PEAK CURRENT VS DUTY CYCLE % (REFRESH RATE F = 1 KHz)

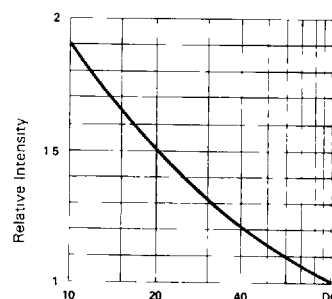


Fig 6 LUMINOUS INTENSITY VS DUTY CYCLE % (AVERAGE  $I_F = 10\text{mA}$  PER SEG)

**ELECTRICAL/OPTICAL CHARACTERISTICS AT T<sub>A</sub> = 25°C**  
**LTS-6800Y**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I <sub>v</sub>	800	2400		μcd	I <sub>F</sub> = 10 mA
Peak Emission Wavelength	λ <sub>P</sub>		585		nm	I <sub>F</sub> = 20 mA
Spectral Line Half-Width	Δλ		35		nm	I <sub>F</sub> = 20 mA
Forward Voltage, any Segment or D.P.	V <sub>F</sub>		2.1	2.8	V	I <sub>F</sub> = 20 mA
Reverse Current, any Segment or D.P.	I <sub>R</sub>			100	μA	V <sub>R</sub> = 5 V
Luminous Intensity Matching Ratio	I <sub>v</sub> -m			2:1		I <sub>F</sub> = 20 mA

**TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES**

(25°C Ambient Temperature Unless Otherwise Noted)

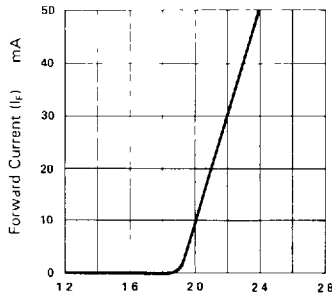


Fig 1 FORWARD CURRENT VS FORWARD VOLTAGE

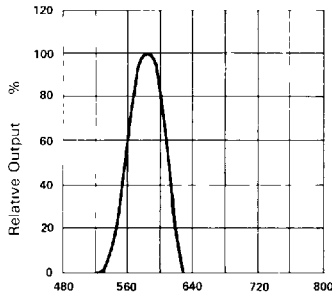


Fig 2 SPECTRAL RESPONSE

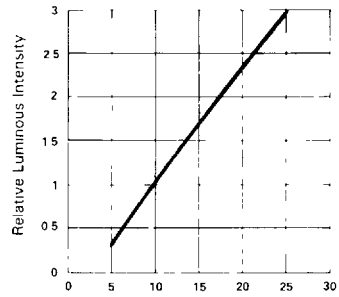


Fig 3 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT (PFR SEGMENT)

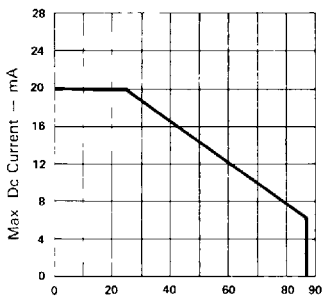


Fig 4 MAX ALLOWABLE DC CURRENT PER SEG VS AMBIENT TEMPERATURE

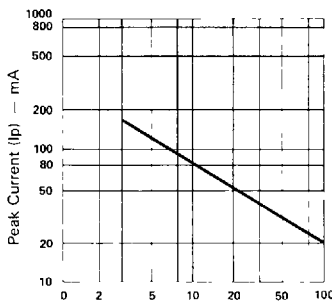


Fig 5 MAX PEAK CURRENT VS DUTY CYCLE % (REFRESH RATE F = 1 KHz)

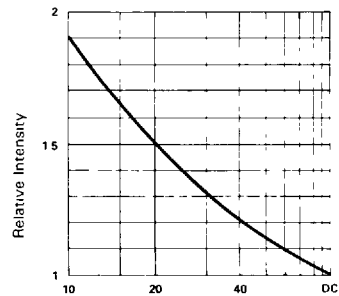


Fig 6 LUMINOUS INTENSITY VS DUTY CYCLE% (AVERAGE I<sub>v</sub> = 10mA PER SEG)

**ELECTRICAL/OPTICAL CHARACTERISTICS AT  $T_A = 25^\circ\text{C}$**   
**LTS-6600E SERIES**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	800	2400		$\mu\text{cd}$	$I_F = 10\text{ mA}$
Peak Emission Wavelength	$\lambda_P$		630		nm	$I_F = 20\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		45		nm	$I_F = 20\text{ mA}$
Forward Voltage, any Segment or D.P.	$V_F$		2.1	2.8	V	$I_F = 20\text{ mA}$
Reverse Current, any Segment or D.P.	$I_R$			100	$\mu\text{A}$	$V_R = 5\text{ V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 20\text{ mA}$

**TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES**

( $25^\circ\text{C}$  Ambient Temperature Unless Otherwise Noted)

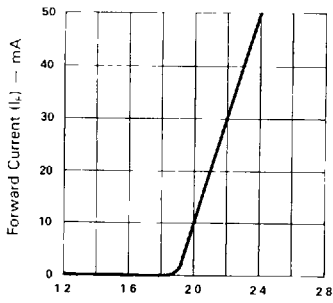


Fig 1 FORWARD CURRENT Vs FORWARD VOLTAGE

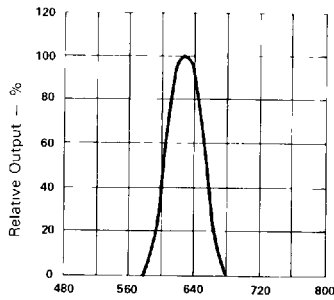


Fig 2 SPECTRAL RESPONSE

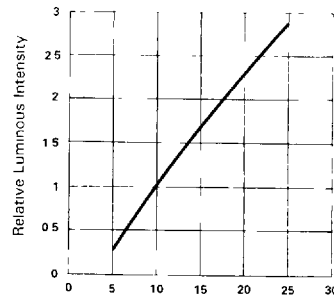


Fig 3 RELATIVE LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)

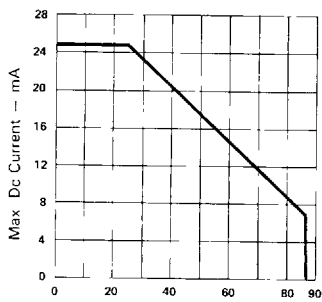


Fig 4 MAX ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

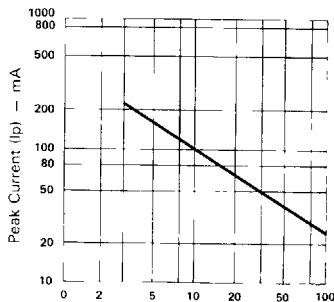


Fig 5 MAX PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE  $F = 1\text{ KHz}$ )

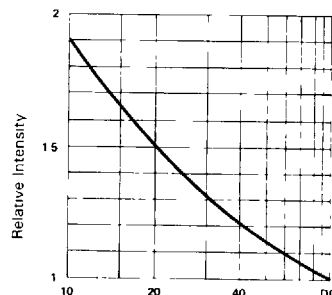


Fig 6 LUMINOUS INTENSITY Vs DUTY CYCLE % (AVERAGE  $I_f = 10\text{mA}$  PER SEG)



**ELECTRICAL/OPTICAL CHARACTERISTICS AT  $T_A = 25^\circ\text{C}$**   
**LTS-6900HR SERIES**

PARAMETER	SYMBOL	MIN	TYP	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	800	2400		$\mu\text{cd}$	$I_f = 10\text{ mA}$
Peak Emission Wavelength	$\lambda_p$		635		nm	$I_f = 20\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		45		nm	$I_f = 20\text{ mA}$
Forward Voltage, any Segment or D.P	$V_f$		2.1	2.8	V	$I_f = 20\text{ mA}$
Reverse Current, any Segment or D.P	$I_r$			100	$\mu\text{A}$	$V_r = 5\text{ V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_f = 20\text{ mA}$

**TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES**  
 (25°C Ambient Temperature Unless Otherwise Noted)

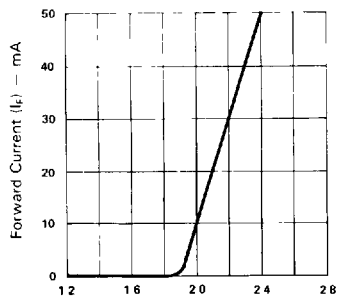


Fig 1 FORWARD CURRENT Vs FORWARD VOLTAGE

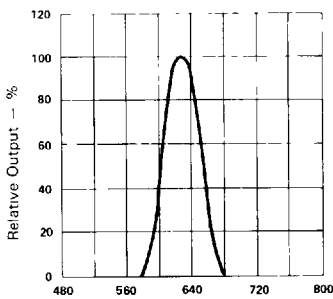


Fig 2 SPECTRAL RESPONSE

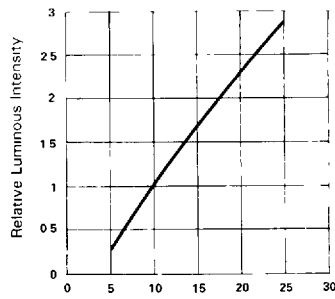


Fig 3 RELATIVE, LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)

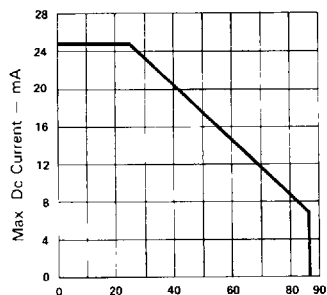


Fig 4 MAX ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

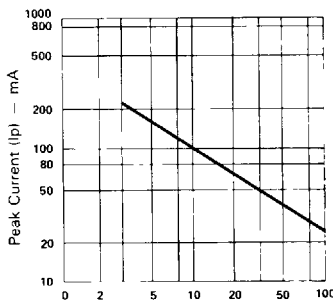


Fig 5 MAX PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE - F = 1 KHz)

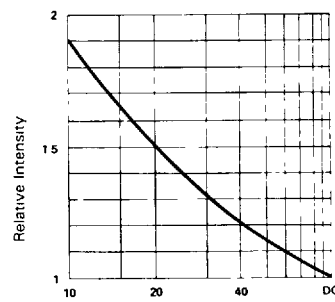


Fig 6 LUMINOUS INTENSITY Vs DUTY CYCLE% (AVERAGE  $I_f = 10\text{ mA}$  PER SEG)