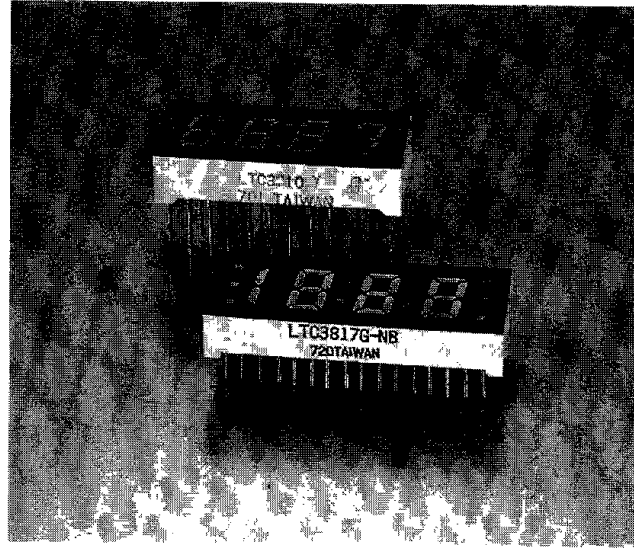


**LITEON****LTC-3710 SERIES****0.3" FOUR LED CLOCK FREQUENCY DISPLAYS**

T-41-35

## FEATURES

- 0.3 INCH (7.62mm) DIGIT HEIGHT.
- CONTINUOUS UNIFORM SEGMENTS.
- CHOICE OF SIX BRIGHT COLORS RED/BRIGHT RED/GREEN/YELLOW/ORANGE/HIGH EFFICIENCY RED.
- 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 OR SOCKETS.



## DESCRIPTION

The LTC-3710 series devices are 0.3 inch (7.62mm) height four 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 orange displays have black face and white segment color. Yellow displays have black face and yellow segment color. High efficiency red displays have red face and red segment color.

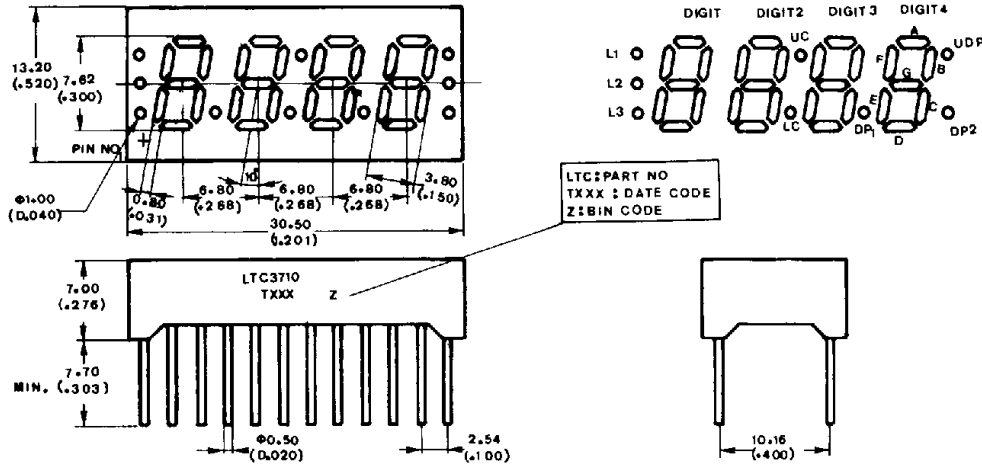
## DEVICES

PART NO. LTC-						DESCRIPTION
RED	BRIGHT RED	GREEN	YELLOW	ORANGE	HI.-EFF. RED	
3710R	3710P	3710G	3710Y	3710E	3710HR	Multiplex, Common Cathode
3718R	3718P	3718G	3718Y	3718E	3718HR	Multiplex, Common Cathode

LED CLOCK &amp; FREQUENCY DISPLAYS

PACKAGE DIMENSIONS

A. LTC-3710 Series



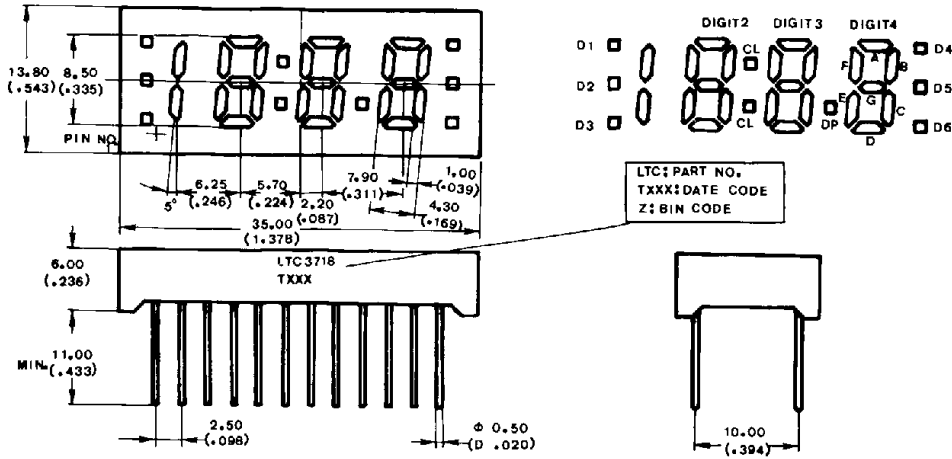
NOTE: All dimensions are in millimeters (inches) tolerance are:

- Lead length (from setting plane) MINIMUM VALUM  $\frac{+1.00}{-0.00} \text{ mm}$  ( $\frac{+0.040^n}{-0.000^n}$ )
- $\frac{\pm 0.25 \text{ mm}}{(0.010^n)}$  unless otherwise noted.

PIN NO.	CONNECTION	PIN NO.	CONNECTION
1	Anode L3	13	Cathode U.D.P.
2	Common Cathode Digit 1	14	Cathode D.P. 2.
3	Anode D, Digit 1, 2, 3, 4	15	Anode U.D.P.
4	Anode L2	16	Cathode D.P.1.
5	Common Cathode, Digit 2	17	Anode A, Digit 1, 2, 3, 4
6	Cathode UC, LC	18	Anode F, Digit 1, 2, 3, 4
7	Anode UC, LC	19	Anode B, Digit 1, 2, 3, 4
8	Common Cathode, Digit 3	20	Anode C, Digit 1, 2, 3, 4
9	Anode D.P.1.	21	Anode E, Digit 1
10	Common Cathode, Digit 4	22	Anode G, Digit 1, 2, 3, 4
11	Anode E, Digit 2, 3, 4	23	Anode L1
12	Anode D.P.2	24	Cathode L1, L2, L3

PACKAGE DIMENSIONS

B. LTC-3718 Series



NOTE: All dimensions are in  $\frac{\text{millimeters}}{\text{(inches)}}$  tolerance are:

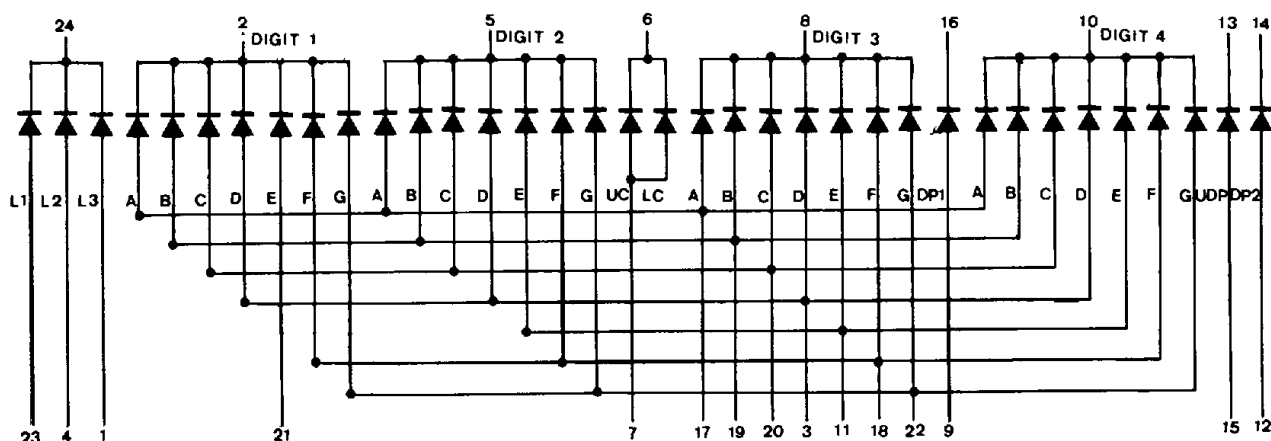
- Lead length (from setting plane). MINIMUM VALUM  $\frac{+1.00}{-0.00} \text{ mm}$  ( $\frac{+0.040''}{-0.000''}$ )
- $\pm 0.25 \text{ mm}$  ( $0.010''$ ) unless otherwise noted.

PIN NO.	CONNECTION	PIN NO.	CONNECTION
1	ANODE D1	13	ANODE G
2	ANODE D3	14	COMMON CATHODE DIGIT 4
3	COMMON CATHODE DIGIT 1	15	ANODE B
4	ANODE D	16	ANODE A
5	ANODE 3	17	ANODE F
6	CATHODE UC, LC	18	ANODE UC, LC
7	COMMON CATHODE DIGIT 3	19	COMMON CATHODE DIGIT 2
8	ANODE D.P.	20	ANODE E
9	CATHODE D.P.	21	ANODE D2
10	ANODE D6	22	ANODE 4
11	ANODE D5	23	CATHODE D2, D4
12	CATHODE D5, D6	24	CATHODE D1, D3

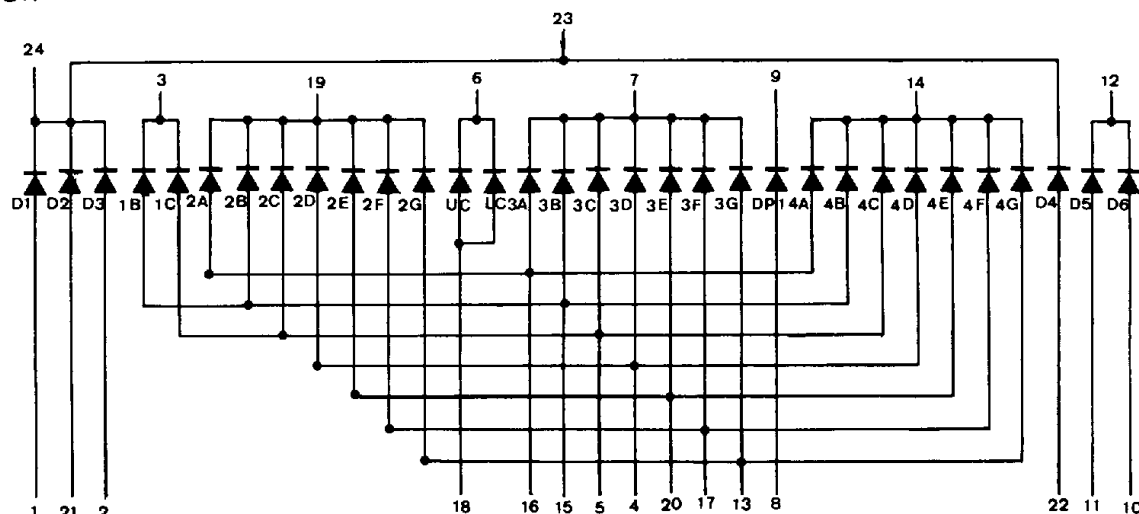
LED CLOCK & FREQUENCY DISPLAYS

### INTERNAL CIRCUIT DIAGRAM

LTC-3710 Series



LTC-3718 Series



### ABSOLUTE MAXIMUM RATINGS

PARAMETER	RED	BRIGHT RED	GREEN	YELLOW	ORANGE	HI-EFF. RED	UNIT
Power Dissipation Per Segment	45	30	60	50	60	60	mW
Peak Forward Current Per Segment (1/10 Duty Cycle, 0.1ms Pulse Width)	120	40	80	60	80	80	mA
Continuous Forward Current Per Segment	20	12	20	16	20	20	mA
Derating Linear From 25°C Per Segment	0.24	0.14	0.24	0.2	0.24	0.24	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							

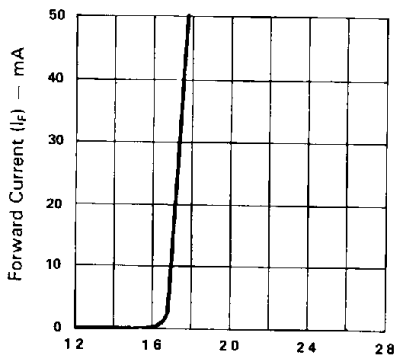


**ELECTRICAL/OPTICAL CHARACTERISTICS AT  $T_A = 25^\circ\text{C}$**   
**LTC-3710R**

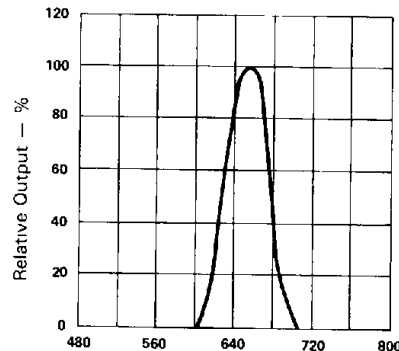
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	200	450		$\mu\text{cd}$	$I_F = 10 \text{ mA}$
Peak Emission Wavelength	$\lambda_p$		655		nm	$I_F = 20 \text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		24		nm	$I_F = 20 \text{ mA}$
Forward Voltage any Segment or D.P.	$V_F$		1.7	2.0	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**

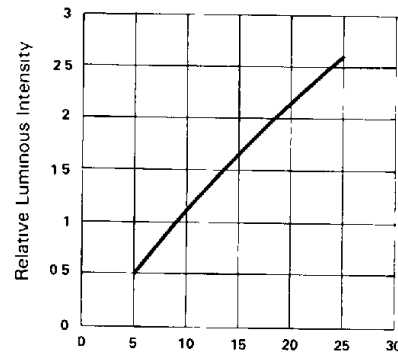
( $25^\circ\text{C}$  Ambient Temperature Unless Otherwise Noted)



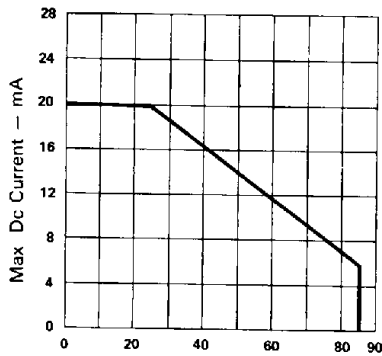
Forward Voltage ( $V_F$ ) — Volts  
 Fig 1 FORWARD CURRENT Vs FORWARD VOLTAGE



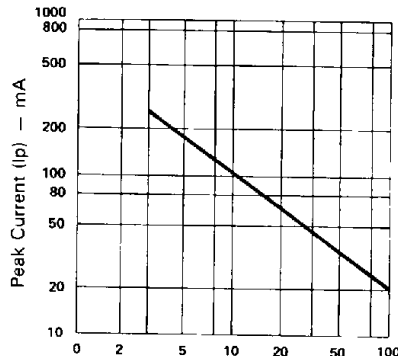
Wavelength ( $\lambda$ ) — nm  
 Fig 2 SPECTRAL RESPONSE



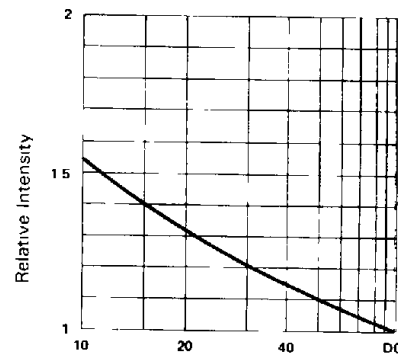
Forward Current ( $I_F$ ) — mA  
 Fig 3 RELATIVE, LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)



Ambient Temperature ( $T_A$ ) —  $^\circ\text{C}$   
 Fig 4 MAX ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE



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



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

LED CLOCK & FREQUENCY DISPLAYS

**ELECTRICAL/OPTICAL CHARACTERISTICS AT  $T_A = 25^\circ\text{C}$**   
**LTC-3710P**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	250	600		$\mu\text{cd}$	$I_F = 10\text{ mA}$
Peak Emission Wavelength	$\lambda_p$		697		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**

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

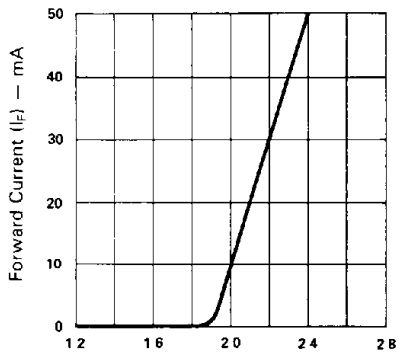


Fig 1 FORWARD CURRENT  $I_F$  Vs FORWARD VOLTAGE  $V_F$

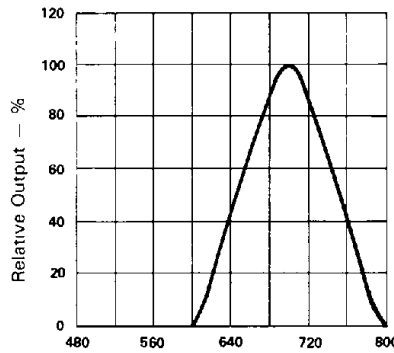


Fig 2 SPECTRAL RESPONSE

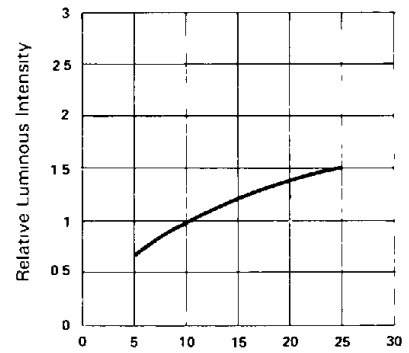


Fig 3 RELATIVE, LUMINOUS INTENSITY Vs FORWARD CURRENT ( $I_F$  PER SEGMENT)

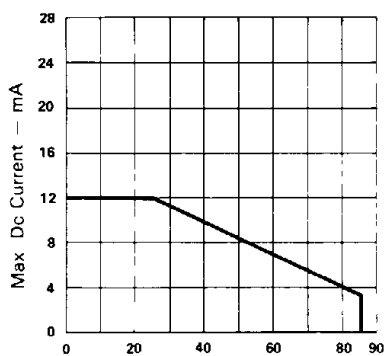


Fig 4 MAX ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

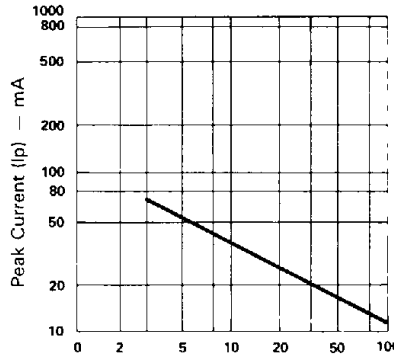


Fig 5 MAX PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE  $F = 1\text{ KHz}$ )

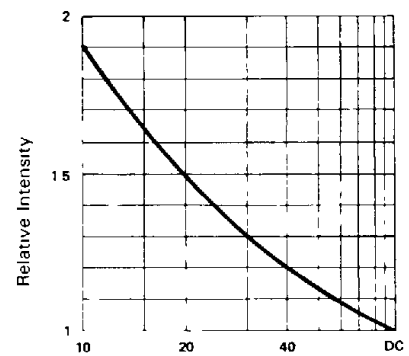


Fig 6 LUMINOUS INTENSITY Vs DUTY CYCLE % (AVERAGE  $I_F = 10\text{ mA PER SEG}$ )

**ELECTRICAL/OPTICAL CHARACTERISTICS AT  $T_A = 25^\circ C$**   
**LTC-3710G**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	750	1800		$\mu cd$	$I_F = 10 \text{ mA}$
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	$\mu A$	$V_R = 5 \text{ V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 20 \text{ mA}$

**TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES**

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

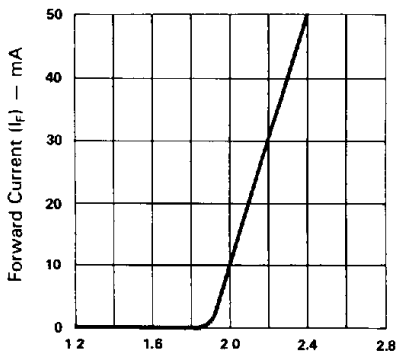


Fig. 1 FORWARD CURRENT  $I_F$  Vs FORWARD VOLTAGE.

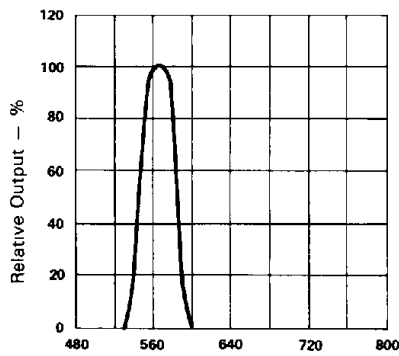


Fig. 2 SPECTRAL RESPONSE

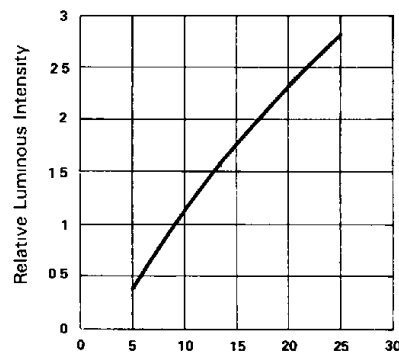


Fig. 3 RELATIVE, LUMINOUS INTENSITY  $I_v$  Vs FORWARD CURRENT ( $I_F$  PER SEGMENT)

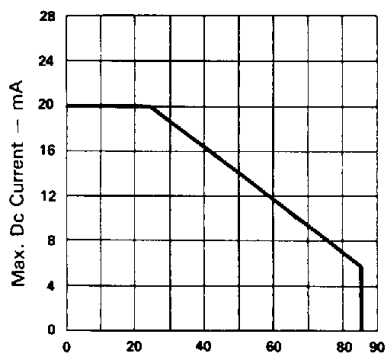


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

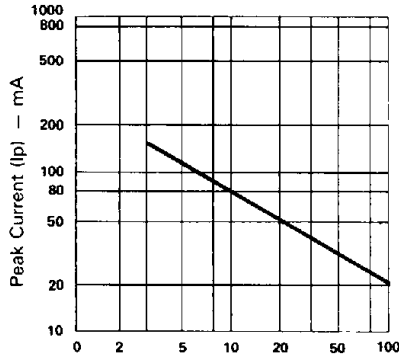


Fig. 5 MAX. PEAK CURRENT  $I_p$  Vs DUTY CYCLE % (REFRESH RATE  $F = 1 \text{ KHz}$ )

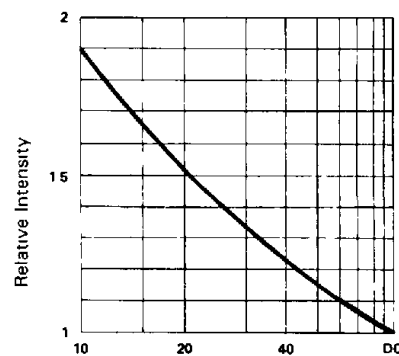


Fig. 6 LUMINOUS INTENSITY Vs DUTY CYCLE % (AVERAGE  $I_F = 10 \text{ mA}$  PER SEG)

LED CLOCK & FREQUENCY DISPLAYS

**ELECTRICAL/OPTICAL CHARACTERISTICS AT  $T_A = 25^\circ\text{C}$**   
**LTC-3710Y**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	600	1300		$\mu\text{cd}$	$I_F = 10 \text{ mA}$
Peak Emission Wavelength	$\lambda_p$		585		nm	$I_F = 20 \text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		35		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)

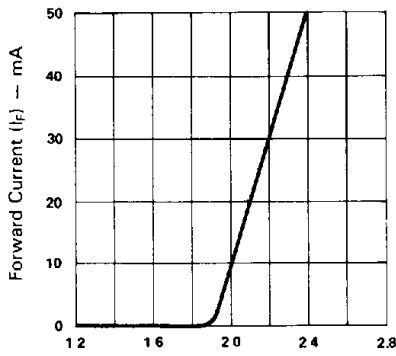


Fig 1 FORWARD CURRENT Vs. FORWARD VOLTAGE

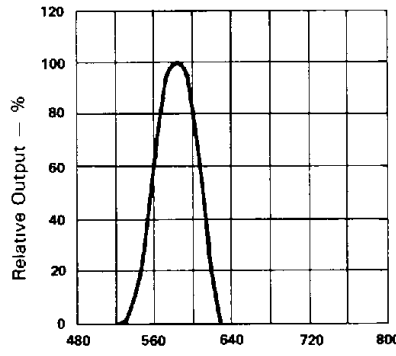


Fig 2 SPECTRAL RESPONSE

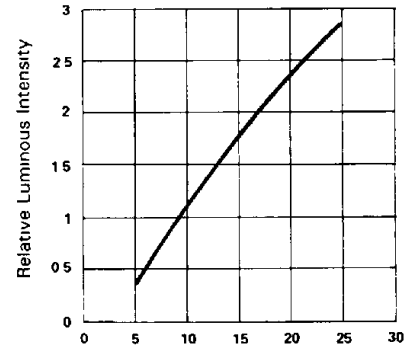


Fig 3 RELATIVE, LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)

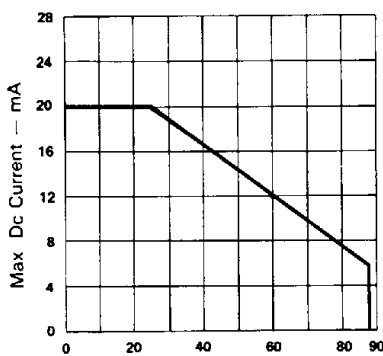


Fig 4 MAX ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

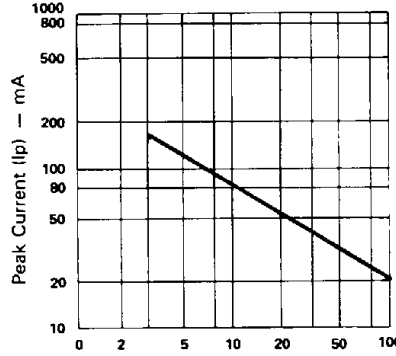


Fig 5 MAX PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE  $F = 1 \text{ KHz}$ )

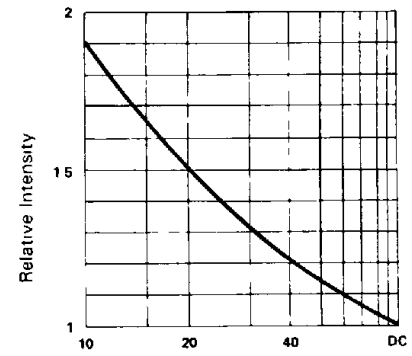


Fig 6 LUMINOUS INTENSITY Vs DUTY CYCLE % (AVERAGE  $I_F = 10\text{mA}$  PER SEG)



**ELECTRICAL/OPTICAL CHARACTERISTICS AT  $T_A = 25^\circ\text{C}$**   
**LTC-3710E**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	750	1800		$\mu\text{cd}$	$I_F = 10\text{ mA}$
Peak Emission Wavelength	$\lambda_p$		630		nm	$I_F = 20\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		40		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)

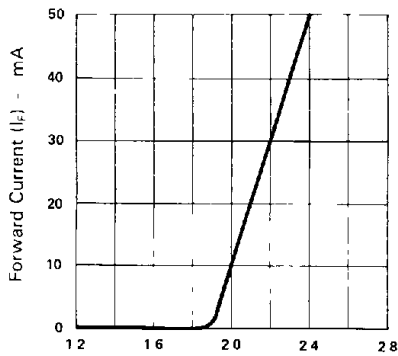


Fig. 1 FORWARD CURRENT Vs FORWARD VOLTAGE

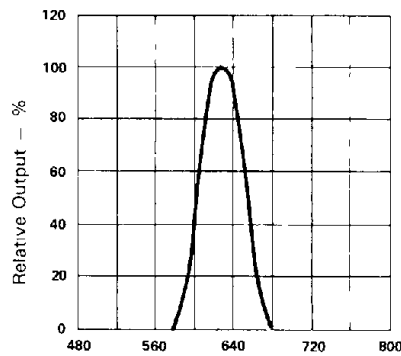


Fig. 2 SPECTRAL RESPONSE

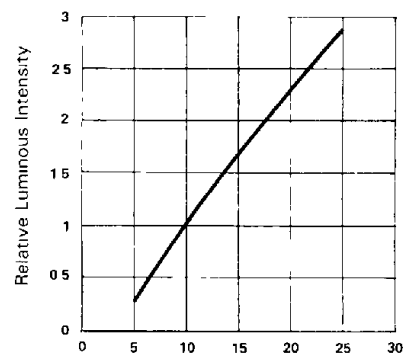


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)

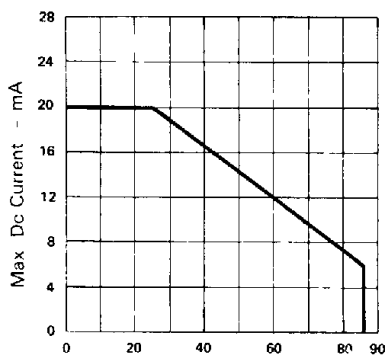


Fig. 4 MAX ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

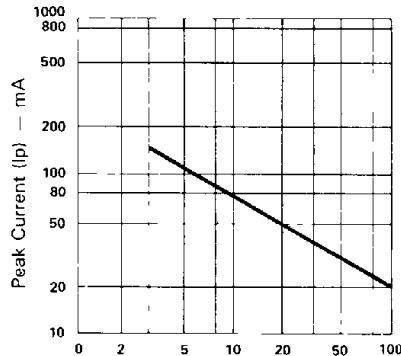


Fig. 5 MAX PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE  $f = 1\text{ KHz}$ )

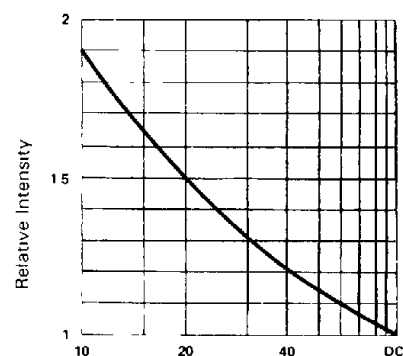


Fig. 6 LUMINOUS INTENSITY Vs DUTY CYCLE % (AVERAGE  $I_F = 10\text{mA}$  PER SEG)

LED CLOCK & FREQUENCY DISPLAYS

**ELECTRICAL/OPTICAL CHARACTERISTICS AT  $T_A = 25^\circ\text{C}$   
LTC-3710HR**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	750	1800		$\mu\text{cd}$	$I_F = 10\text{ mA}$
Peak Emission Wavelength	$\lambda_p$		635		nm	$I_F = 20\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		40		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)

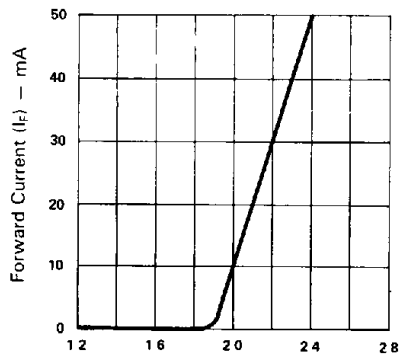


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE

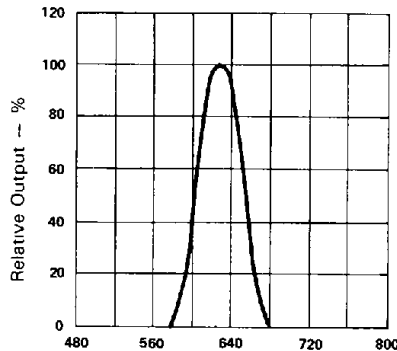


Fig. 2 SPECTRAL RESPONSE

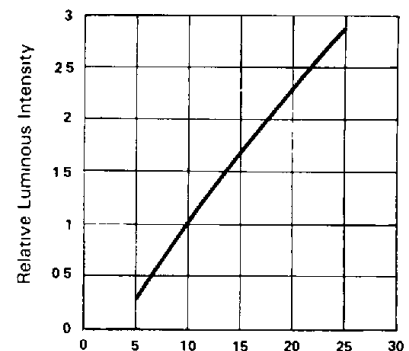


Fig. 3 RELATIVE, LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)

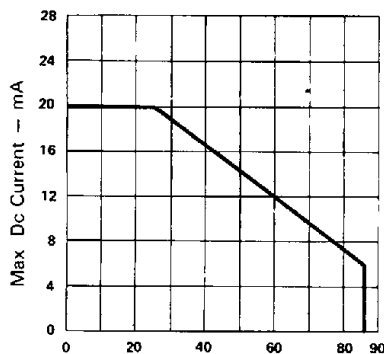


Fig. 4 MAX ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

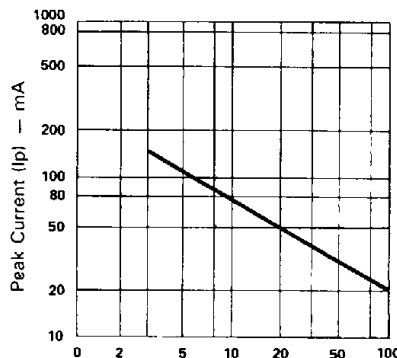


Fig. 5 MAX PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE -  $F = 1\text{ KHz}$ )

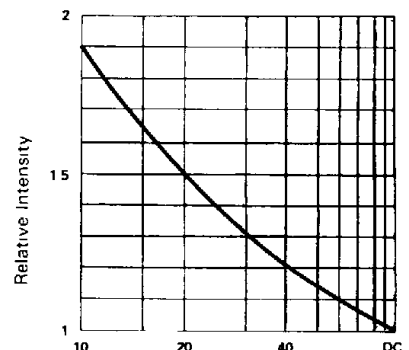


Fig. 6 LUMINOUS INTENSITY Vs DUTY CYCLE % (AVERAGE  $I_F = 10\text{ mA}$  PER SEG)

**ELECTRICAL/OPTICAL CHARACTERISTICS AT  $T_A = 25^\circ\text{C}$**   
**LTC-3718R**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	200	450		$\mu\text{cd}$	$I_F = 10\text{ mA}$
Peak Emission Wavelength	$\lambda_p$		655		nm	$I_F = 20\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		24		nm	$I_F = 20\text{ mA}$
Forward Voltage any Segment or D.P.	$V_F$		1.7	2.0	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)

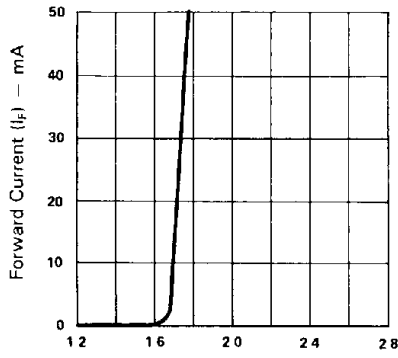


Fig 1 FORWARD CURRENT Vs FORWARD VOLTAGE

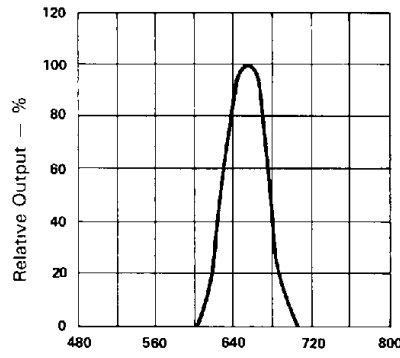


Fig. 2 SPECTRAL RESPONSE

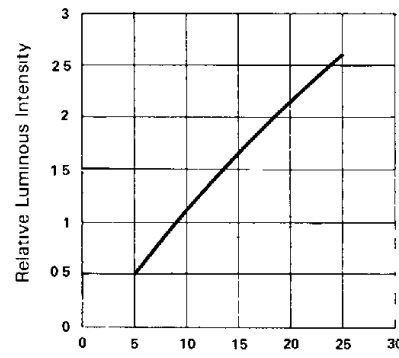


Fig 3 RELATIVE, LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)

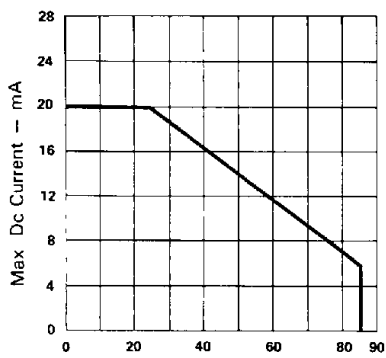


Fig 4 MAX ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

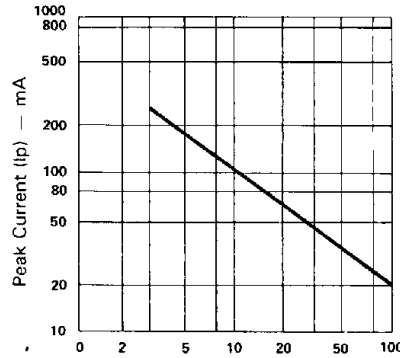


Fig 5 MAX PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE - F = 1 KHz)

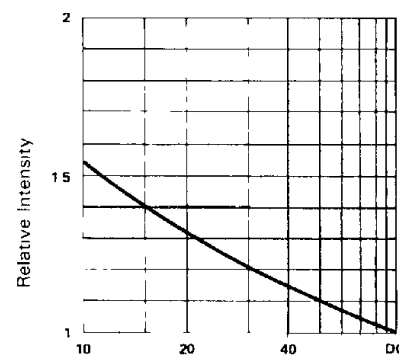


Fig 6 LUMINOUS INTENSITY Vs DUTY CYCLE% (AVERAGE  $I_F = 10\text{mA}$  PER SEG)

LED CLOCK & FREQUENCY DISPLAYS

**ELECTRICAL/OPTICAL CHARACTERISTICS AT  $T_A = 25^\circ\text{C}$**   
**LTC-3718P**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	250	600		$\mu\text{cd}$	$I_F = 10\text{ mA}$
Peak Emission Wavelength	$\lambda_p$		697		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**

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

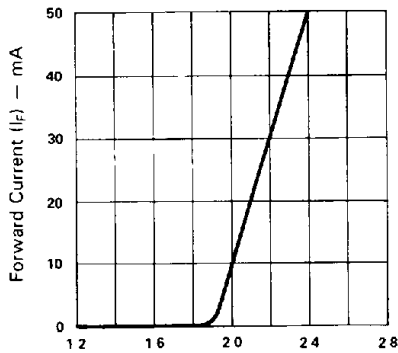


Fig 1 FORWARD CURRENT Vs FORWARD VOLTAGE

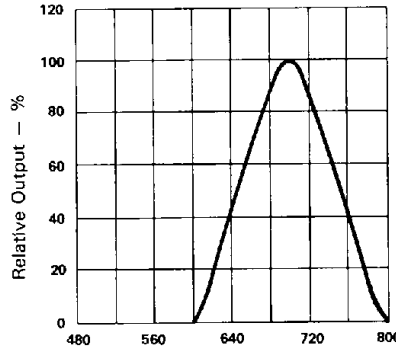


Fig 2 SPECTRAL RESPONSE

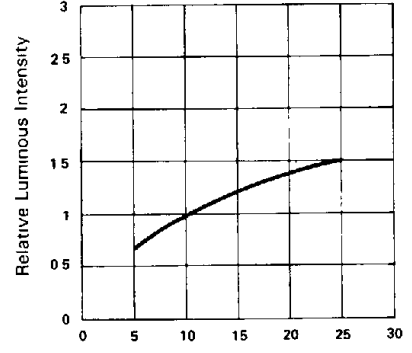


Fig 3 RELATIVE, LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)

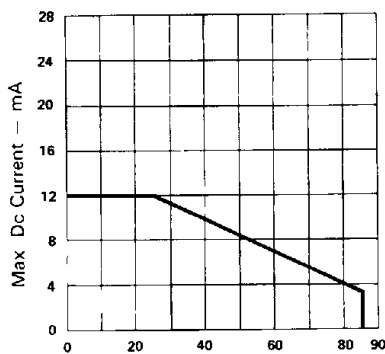


Fig 4 MAX ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

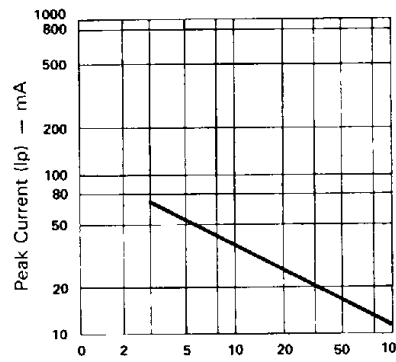


Fig 5 MAX PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE - F = 1 KHz)

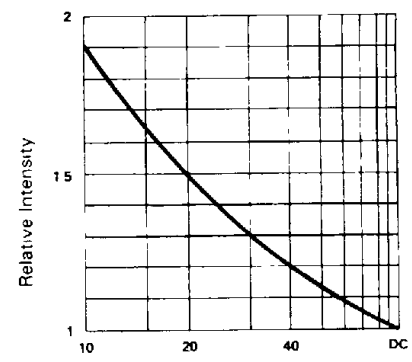


Fig 6 LUMINOUS INTENSITY Vs DUTY CYCLE% (AVERAGE  $I_F = 10\text{mA}$  PER SEG)



**ELECTRICAL/OPTICAL CHARACTERISTICS AT T<sub>A</sub> = 25°C**  
**LTC-3718G**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I <sub>v</sub>	750	1800		μcd	I <sub>F</sub> = 10 mA
Peak Emission Wavelength	λ <sub>p</sub>		565		nm	I <sub>F</sub> = 20 mA
Spectral Line Half-Width	Δλ		30		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)

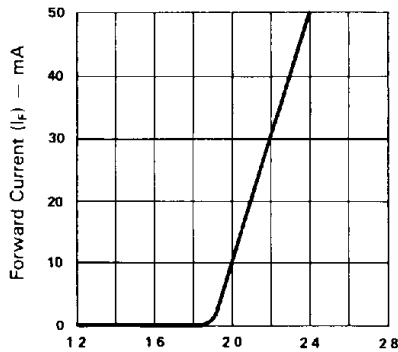


Fig 1 FORWARD CURRENT V<sub>s</sub> FORWARD VOLTAGE

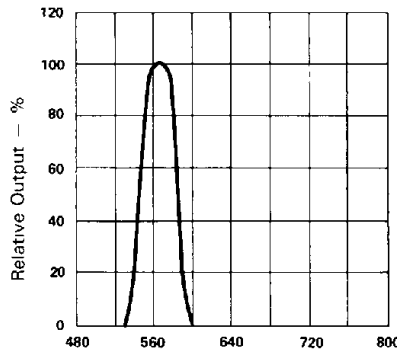


Fig 2 SPECTRAL RESPONSE

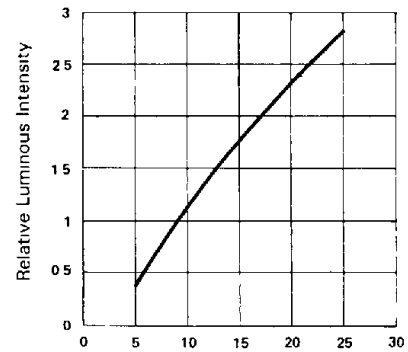


Fig 3 RELATIVE LUMINOUS INTENSITY V<sub>s</sub> FORWARD CURRENT (PER SEGMENT)

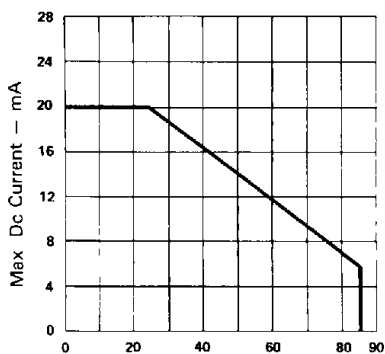


Fig 4 MAX ALLOWABLE DC CURRENT PER SEG V<sub>s</sub> AMBIENT TEMPERATURE

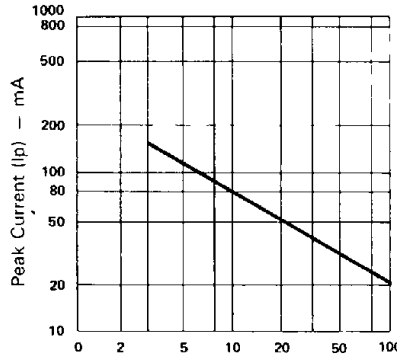


Fig 5 MAX. PEAK CURRENT V<sub>s</sub> DUTY CYCLE % (REFRESH RATE F = 1 KHz)

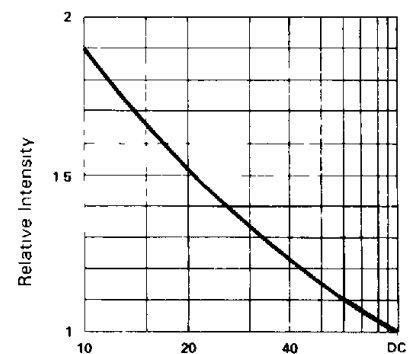


Fig 6 LUMINOUS INTENSITY V<sub>s</sub> DUTY CYCLE% (AVERAGE I<sub>F</sub> = 10mA PER SEG)

LED CLOCK & FREQUENCY DISPLAYS

**ELECTRICAL/OPTICAL CHARACTERISTICS AT  $T_A = 25^\circ\text{C}$**   
**LTC-3718Y**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	600	1300		$\mu\text{cd}$	$I_F = 10\text{ mA}$
Peak Emission Wavelength	$\lambda_p$		585		nm	$I_F = 20\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		35		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)

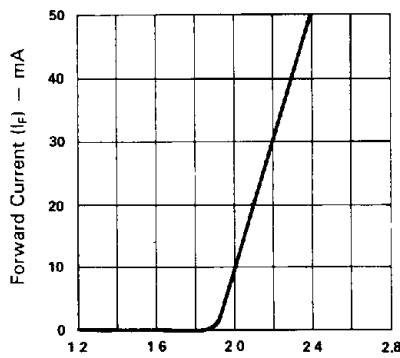


Fig 1 FORWARD CURRENT Vs FORWARD VOLTAGE

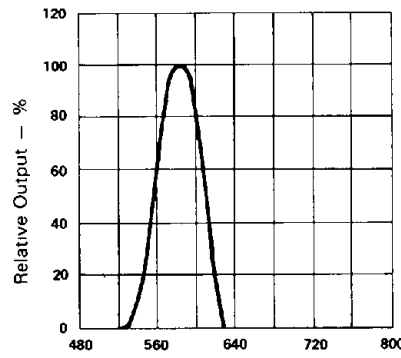


Fig 2 SPECTRAL RESPONSE

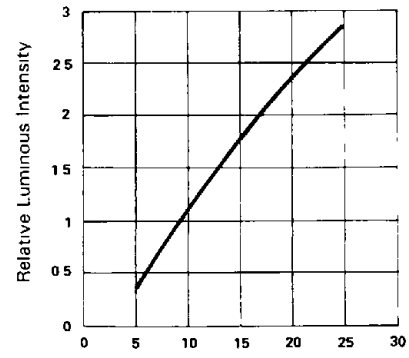


Fig 3 RELATIVE, LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT)

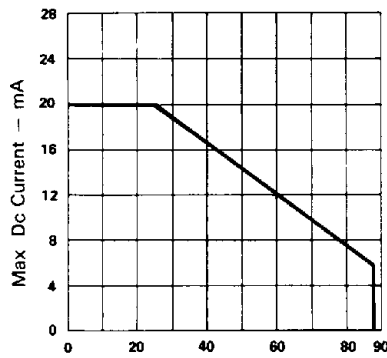


Fig 4 MAX ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

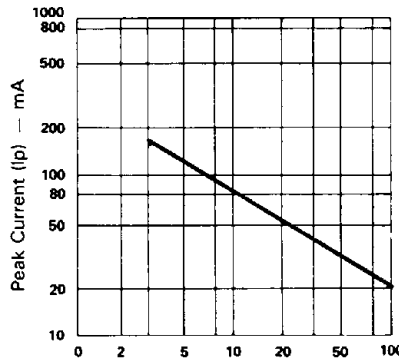


Fig 5 MAX PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE - F = 1 KHz)

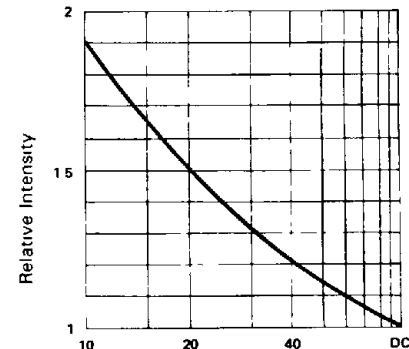


Fig 6 LUMINOUS INTENSITY Vs DUTY CYCLE % (AVERAGE  $I_F = 10\text{mA}$  PER SEG)

**ELECTRICAL/OPTICAL CHARACTERISTICS AT  $T_A = 25^\circ\text{C}$**   
**LTC-3718E**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	750	1800		$\mu\text{cd}$	$I_F = 10\text{ mA}$
Peak Emission Wavelength	$\lambda_p$		630		nm	$I_F = 20\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		40		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)

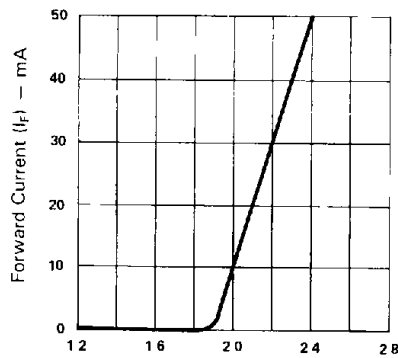


Fig 1 FORWARD CURRENT  $I_F$  Vs. FORWARD VOLTAGE  $V_F$

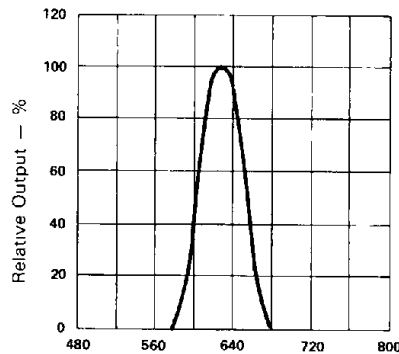


Fig 2 SPECTRAL RESPONSE

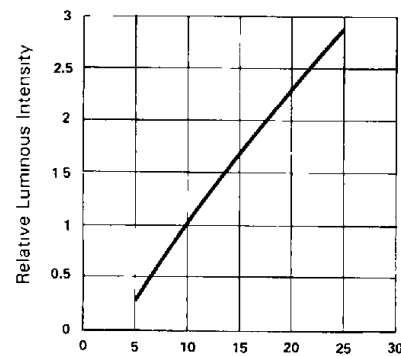


Fig 3 RELATIVE LUMINOUS INTENSITY  $I_v$  Vs FORWARD CURRENT  $I_F$  (PER SEGMENT)

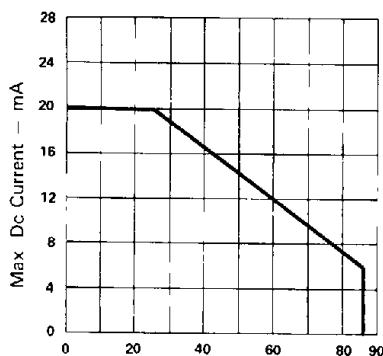


Fig 4 MAX ALLOWABLE DC CURRENT PER SEGMENT Vs AMBIENT TEMPERATURE

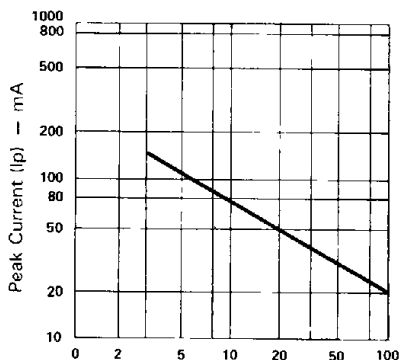


Fig 5 MAX PEAK CURRENT  $I_p$  Vs DUTY CYCLE % (REFRESH RATE -  $F = 1\text{ KHz}$ )

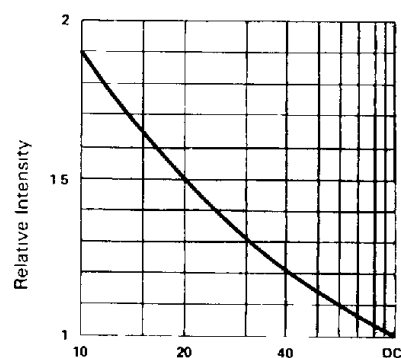


Fig 6 LUMINOUS INTENSITY  $I_v$  Vs DUTY CYCLE % (AVERAGE  $I_F = 10\text{mA}$  PER SEGMENT)

LED CLOCK & FREQUENCY DISPLAYS

**ELECTRICAL/OPTICAL CHARACTERISTICS AT TA = 25°C**  
**LTC-3718HR**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	750	1800		$\mu\text{cd}$	$I_F = 10 \text{ mA}$
Peak Emission Wavelength	$\lambda_p$		635		nm	$I_F = 20 \text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		40		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)

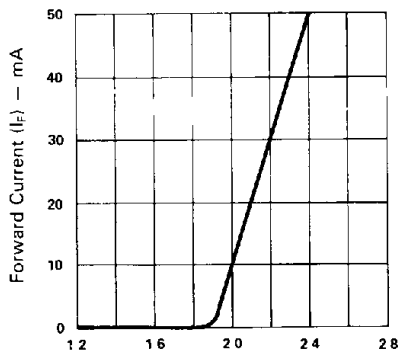


Fig 1 FORWARD CURRENT Vs FORWARD VOLTAGE

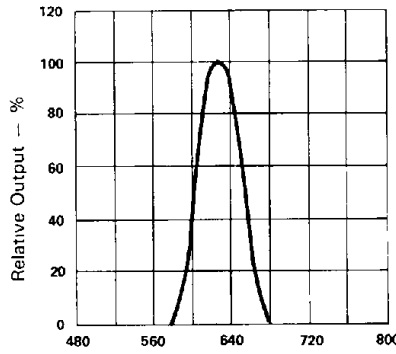


Fig 2 SPECTRAL RESPONSE

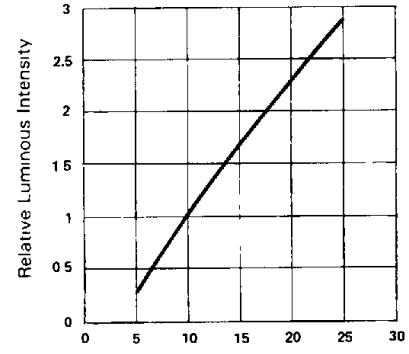


Fig 3 RELATIVE LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)

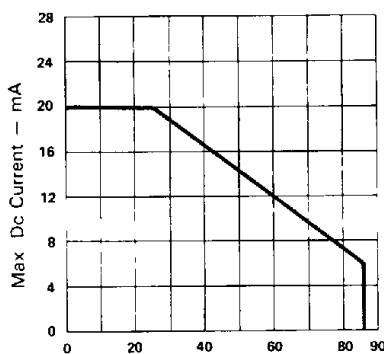


Fig 4 MAX ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

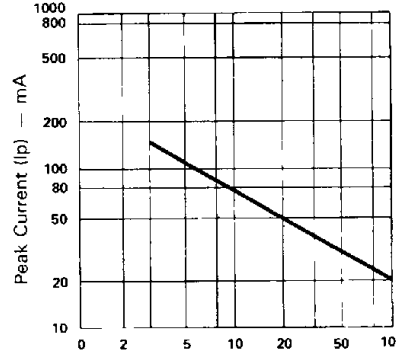


Fig 5 MAX PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE - F - 1 KHz)

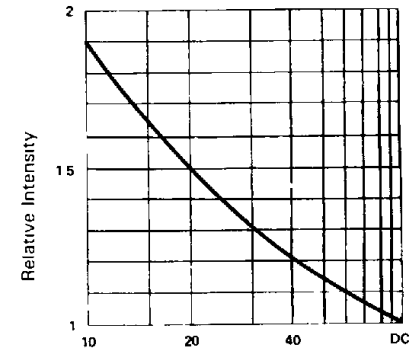


Fig 6 LUMINOUS INTENSITY Vs DUTY CYCLE% (AVERAGE  $I_f = 10\text{mA}$  PER SEG)