

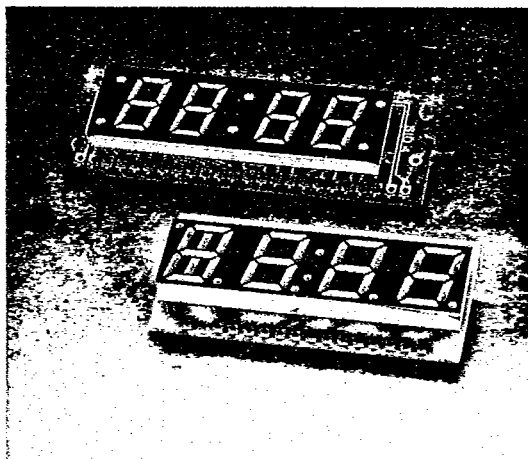


LTC-5000 SERIES

0.5" FOUR DIGIT LED CLOCK FREQUENCY DISPLAYS

FEATURES

- 0.5 INCH (12.7mm) HEIGHT CHARACTER RED OR GREEN COLOR.
- COMMON CATHODE, COMMON ANODE; DIRECT, DUPLEX AND MULTIPLEX PIN OUT ARE AVAILABLE.
- FLEXIBLE TO SELECT BOTH 12/24 HOURS AND FULL FEATURE.
- CONTINUOUS UNIFORM SEGMENTS.
- WIDE ANGLE, LONG DISTANCE VIEWING.
- COLOR FILTER PROVIDES HIGH CONTRAST.
- LOW POWER REQUIREMENTS, HIGH RELIABILITY AND LONG LIFE.
- PRACTICAL BRIGHTNESS ARE OBTAINED AT ABOUT 8MA/SEGMENT DIRECT DRIVE; 20MA (WITH 1/2 DUTY RATIO) FOR DUPLEX DRIVE; 50MA (WITH 1/6 DUTY RATIO) FOR MULTIPLEX DRIVE.
- BRIGHT RED (GaP) 4 DIGIT LED COLOCK DISPLAY VERSION STANDARD [GREEN (GaP) DISPLAY SUFFIX G.].



DESCRIPTION

The LTC-5000 Series devices are designed for viewing distance of up to two meters and for using in instrument, test equipment, communication equipment, business machines, computers, micro processor . . . etc.

DEVICES

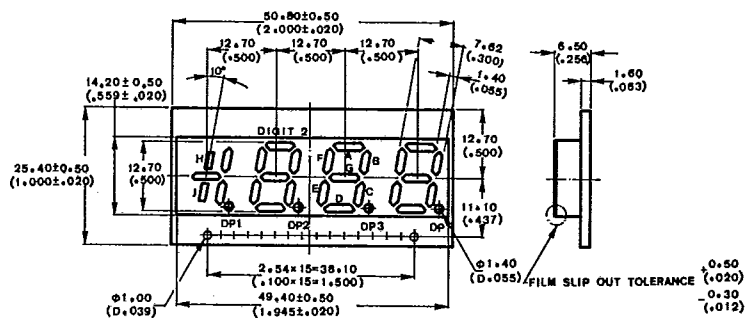
PART NO. LTC-	DESCRIPTION				PIN OUT			INTERNAL CIRCUIT DIAGRAM	PACKAGE DIMENSION
	DRIVE		COLOR		SEG A.G.D. E.F.J.H. OF 1ST DIGIT	ALARM			
	FORM	CIRCUIT	BRIGHT RED	GREEN		UP	LOW	PM	
5382A1P	C.A.	MPX	V		J.H.G.		V	A	A
5382A1G	C.A.	MPX		V	J.H.G.		V	A	A
5382P	C.A.	MPX	V		J.H.G.		V	A	B
5382G	C.A.	MPX		V	J.H.G.		V	A	B
5388A1P	C.C.	MPX	V		J.H.G.		V	B	C

5388A1G	C.C.	MPX		V	J.H.G.		V		B	C
5388P	C.C.	MPX	V		J.H.G.		V		B	D
5388G	C.C.	MPX		V	J.H.G.		V		B	D
15401A1P	C.A.	D.D.	V		YES			/V	C	E
15401A1G	C.A.	D.D.		V	YES			/V	C	E
15401P	C.A.	D.D.	V		YES			/V	C	F
15401G	C.A.	D.D.		V	YES			/V	C	F
5502A1P-12	C.C.	DPX	V		NO		V	V/V	D	G
5502A1G-12	C.C.	DPX		V	NO		V	V/V	D	G
5703A1P	C.C.	MPX	V		YES				E	H
5703A1G	C.C.	MPX		V	YES			/	E	H
5703P	C.C.	MPX	V		YES				E	I
5703G	C.C.	MPX		V	YES			/	E	I
5881A1G	C.C.	MPX		V	YES		V	/	F	J
5881A1P	C.C.	MPX	V		YES		V	/	F	J
5881P	C.C.	MPX	V		YES		V	/	F	K
5881G	C.C.	MPX		V	YES		V	/	F	K
5882A1P	C.A.	MPX	V		YES		V	/	G	J
5882A1G	C.A.	MPX		V	YES		V	/	G	J
5882P	C.A.	MPX	V		YES		V	/	G	K
5882G	C.A.	MPX		V	YES		V	/	G	K

NOTES: 1. C.A.: common anode C.C.: common cathode 2. MPX: multiplex DPX: duplex D.D.: direct drive

PACKAGE DIMENSIONS

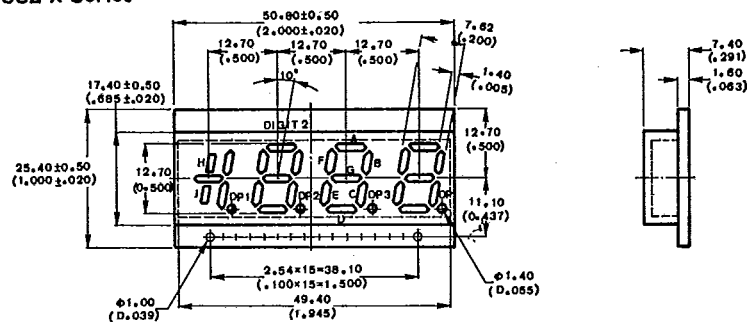
A. LTC-5382A1 x Series



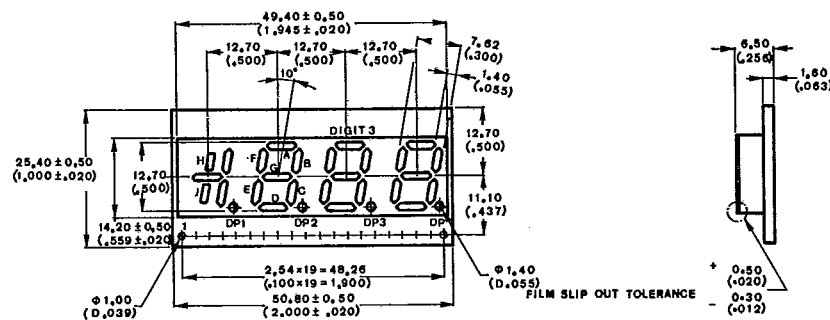
**LED CLOCK &
FREQUENCY DISPLAYS**

7-32
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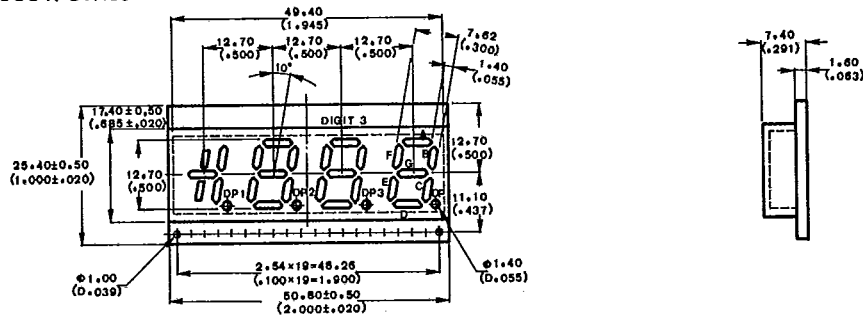
B. LTC-5382 x Series



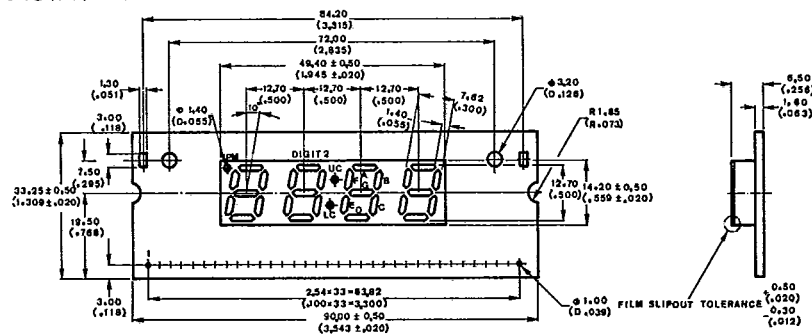
C. LTC-5388A1 x Series



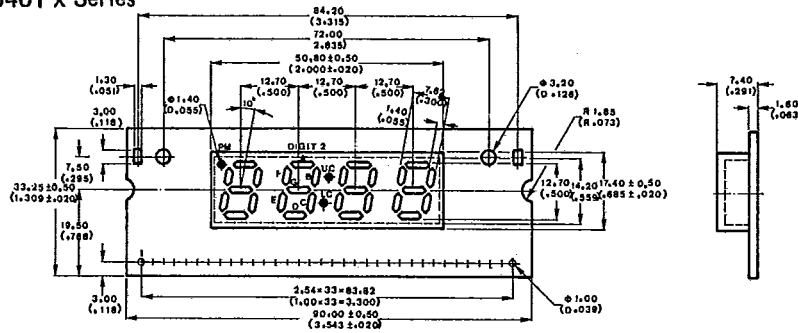
D. LTC-5388 x Series



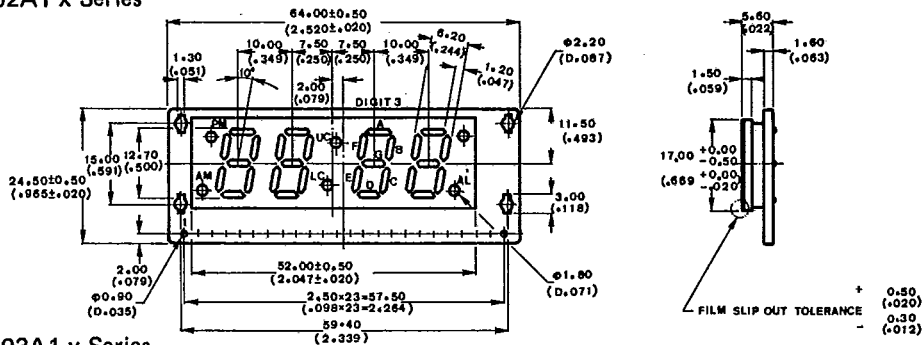
E. LTC-15401A1 x Series



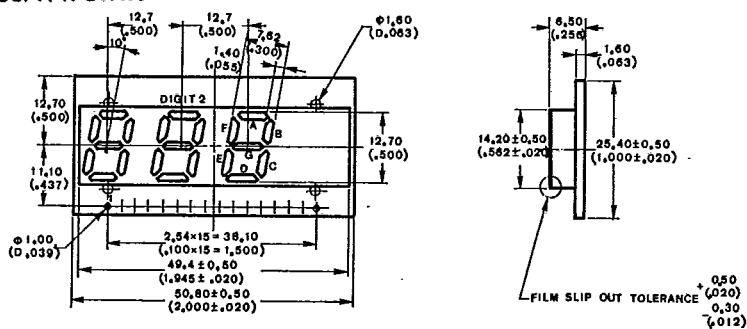
F. LTC-15401 x Series



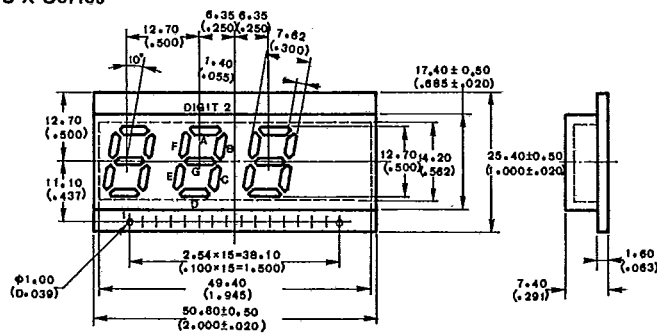
G. LTC-5502A1 x Series



H. LTC-5703A1 x Series

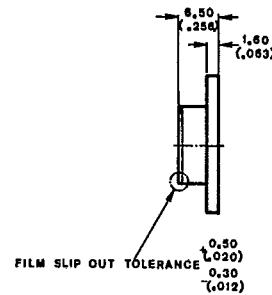
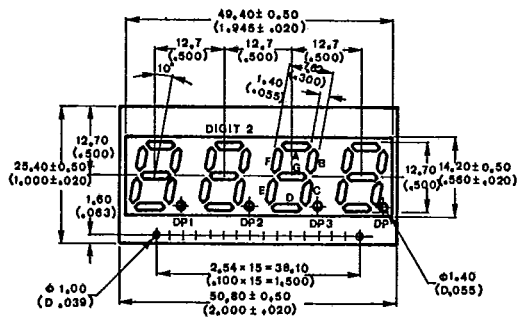


I. LTC-5703 x Series

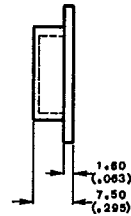
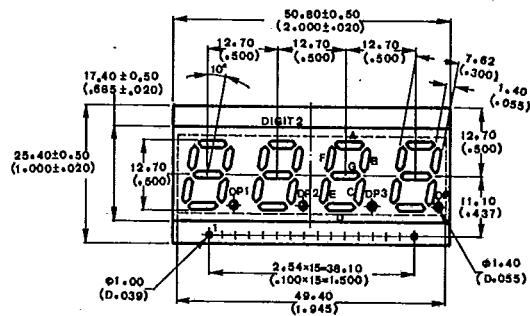


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J. LTC-5881A1 x /5882A1 x Series



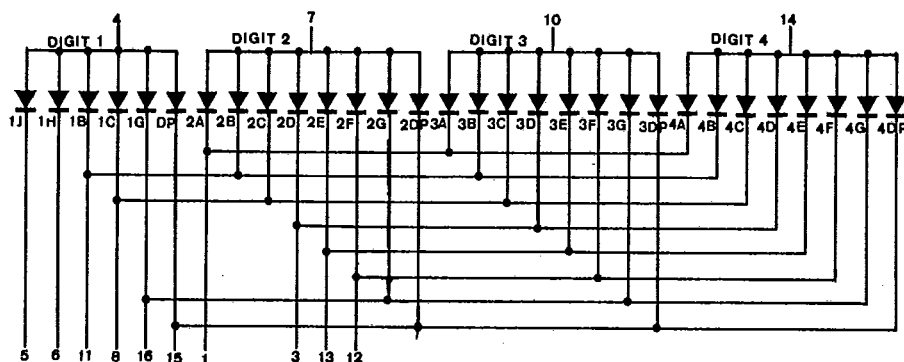
K. LTC-5881x /5882 x Series



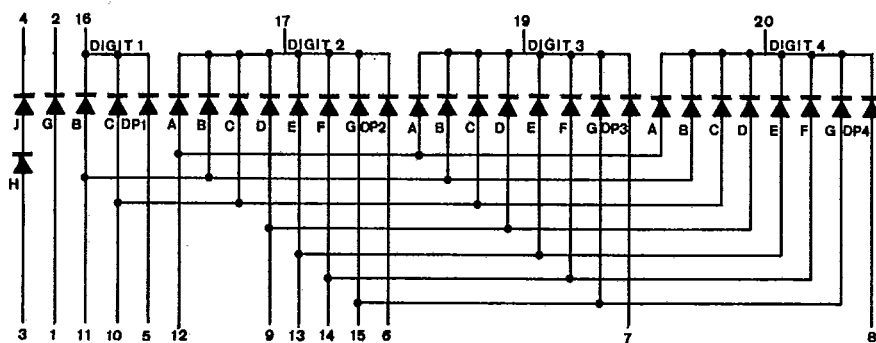
NOTE: All dimensions are in $\frac{\text{millimeters}}{\text{(inches)}}$ tolerance is $\frac{0.25\text{mm}}{(0.010'')}$ unless otherwise noted.

INTERNAL CIRCUIT DIAGRAM

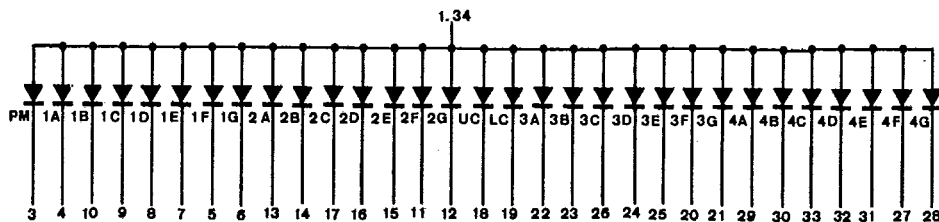
A. LTC-5382



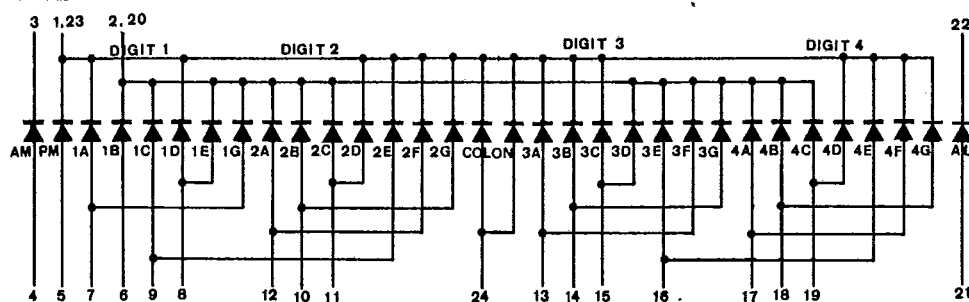
B. LTC-5388



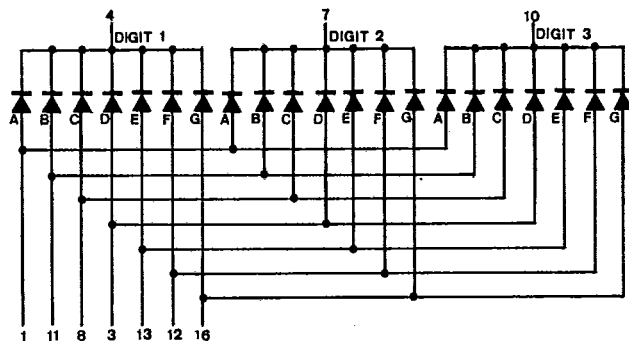
C. LTC-15401

LED CLOCK &
FREQUENCY DISPLAYS

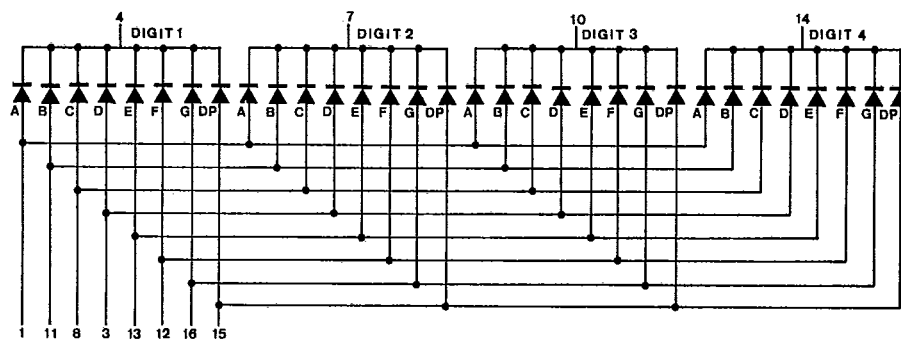
D. LTC-5502



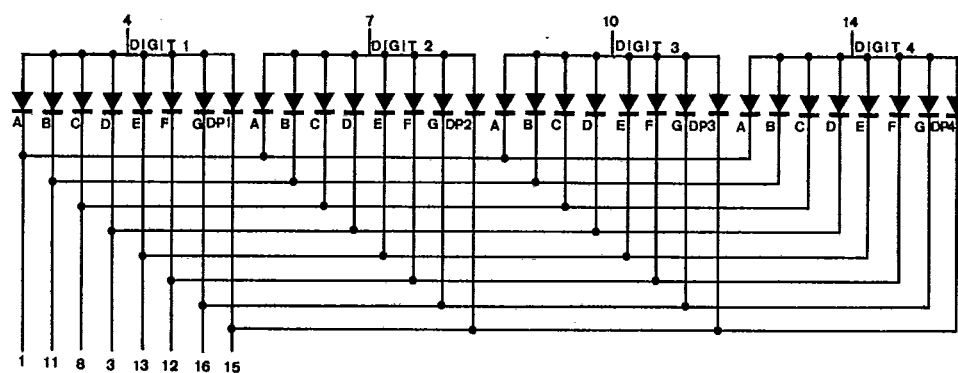
E. LTC-5703



F. LTC-5881



G. LTC-5882



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

PARAMETER	SYMBOL	RED	GREEN	UNIT
Average Forward Current Per Segment/D.P. Direct Drive Current	I_{CF}	25	20	mA
Peak Forward Current Per Segment/D.P. (Duty 1/10 1 KHz)	I_{PF}	200	150	mA
Continuous Forward Current Duplex Circuit (Duty 1/2)	I_F/pulse	30	30	mA
Reverse Voltage (Segment of Decimal Point)	V_R	5	5	V
Operating Temperature Range	T_{opr}	-25°C to 60°C		
Storage Temperature Range	T_{stg}	-25°C to 70°C		
Derating Linear From 25°C	P_D	2.4	2.4	mW
Derating Linear From 25°C		0.42	0.42	$\text{mA}/^\circ\text{C}$
Max. Solder Temperature 260°C For 3 Seconds at 2 mm From The Case Or Reflector Edge				

NOTE: Caution

Please be careful of the following.

- 1) Avoid washing the LED DISPLAY in water.
- 2) Except for the printed wiring board, Avoid heating the LED DISPLAY over MAXIMUM RATING.
- 3) Avoid using chemicals except for the following, when washing off flux and wiping off stain on surface of the LED DISPLAY

Freon TE or TF
Methyl or Ethyl Alcohol
Dal-From Solvent S3 or S3-E

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

PARAMETER	SYMBOL	DEVICES	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Luminous Intersity	I_v	BRIGHT RED	140	350		μcd	$I_F = 10 \text{ mA}$
		GREEN	245	610			
Edge Peak Emission Wavelength	λ_p	BRIGHT RED		697		nm	$I_F = 20 \text{ mA}$
		GREEN		565			
Spectral Line Half-Width	$\Delta\lambda$	BRIGHT RED		90		nm	$I_F = 20 \text{ mA}$
		GREEN		30			
Forward Voltage	V_F	BRIGHT RED		2.1	2.8	V	$I_F = 20 \text{ mA}$
		GREEN		2.1	2.8		
Reverse Current	I_R	BRIGHT RED			100	μA	$V_R = 5 \text{ V}$
		GREEN			100		
Luminous Intensity Matching Ratio	I_{vm}	All Model			2.1		$I_F = 10 \text{ mA}$

LED CLOCK &
FREQUENCY DISPLAYS

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

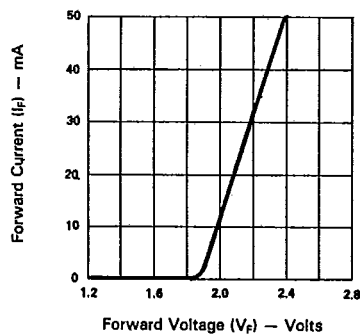


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

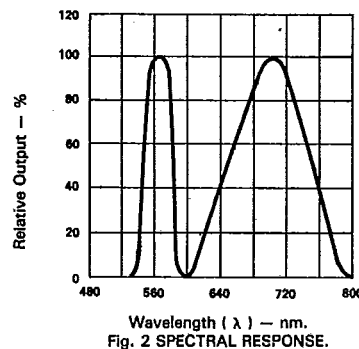


Fig. 2 SPECTRAL RESPONSE.

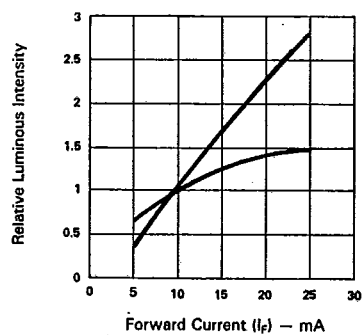


Fig. 3 RELATIVE, LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

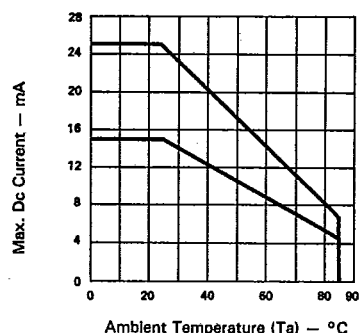


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

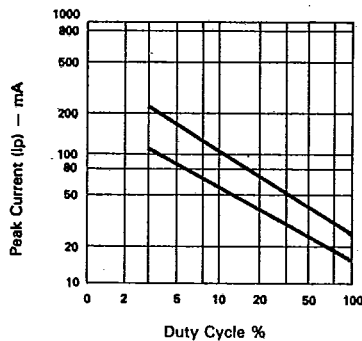
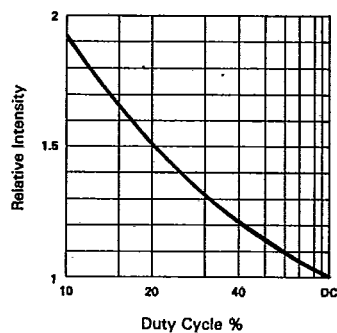


Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE. (REFRESH RATE - F = 1 KHz)

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