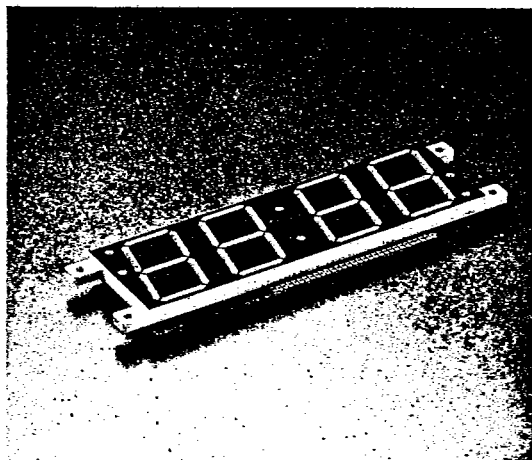


**LTC-18000 SERIES****1.8" FOUR DIGIT LED CLOCK FREQUENCY DISPLAY****FEATURES**

- 1.8 INCH (45.72mm) HEIGHT CHARACTER RED OR GREEN 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 SUFFIX P.

**DESCRIPTION**

The LTC-18000 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.

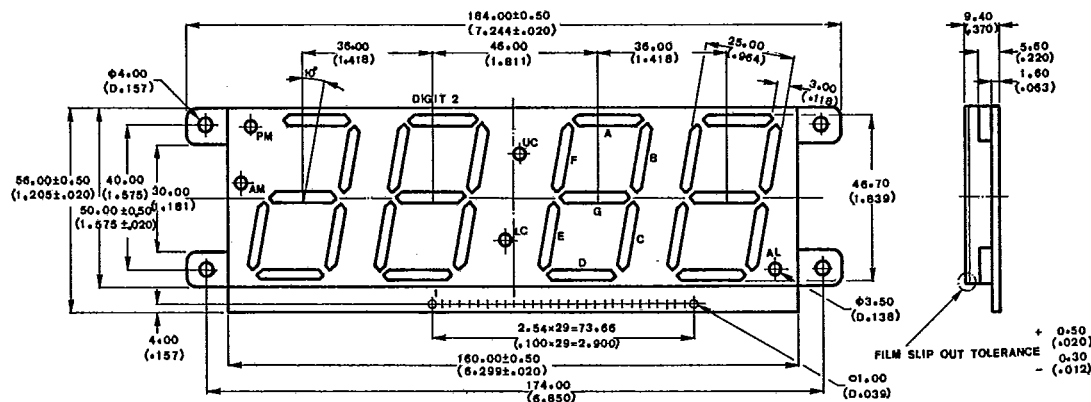
DEVICES

PART NO. LTC--	DESCRIPTION				PIN OUT			INTERNAL CIRCUIT DIAGRAM	PACKAGE DIMENSION	
	DRIVE		COLOR		SEG A.G.D. E.F. OF 1ST DIGIT	ALARM				AM PM
	FORM	CIRCUIT	BRIGHT RED	GREEN		UP	LOW			
18501A1P	C.C.	DPX	V		A.G.D.E.		V	V/V	A	A
18501A1G	C.C.	DPX		V	A.G.D.E.		V	V/V	A	A
18501A1P-2	C.C.	DPX	V		NO		V	V/V	A	A
18501A1G-2	C.C.	DPX		V	NO		V	V/V	A	A
18501A1P-4	C.C.	DPX	V		A.G.D.E.		V		A	A
18501A1G-4	C.C.	DPX		V	A.G.D.E.		V		A	A
1867TA1P-2	C.C.	D.D.	V		NO		V	/V	B	B
1867TA1G-2	C.C.	D.D.		V	NO		V	/V	B	B

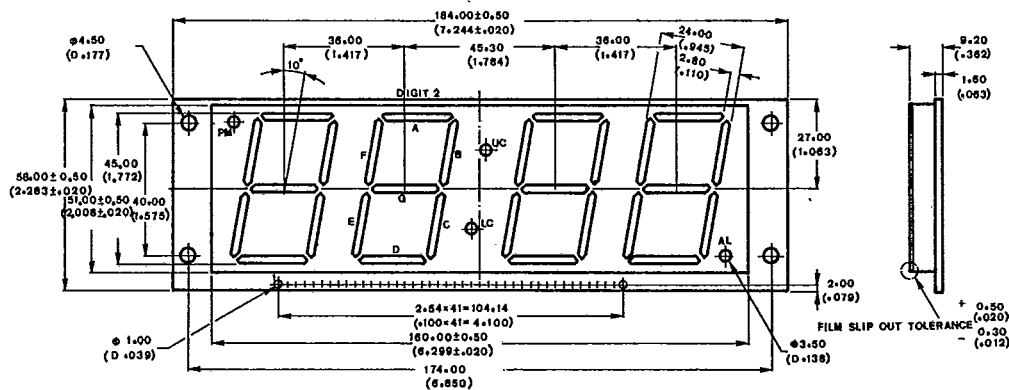
7-69 NOTES: 1. C.C.: common cathode 2. DPX: duplex D.D.: direct drive

PACKAGE DIMENSION

LTC-18501A1 x Series



LTC-1867TA1 x Series



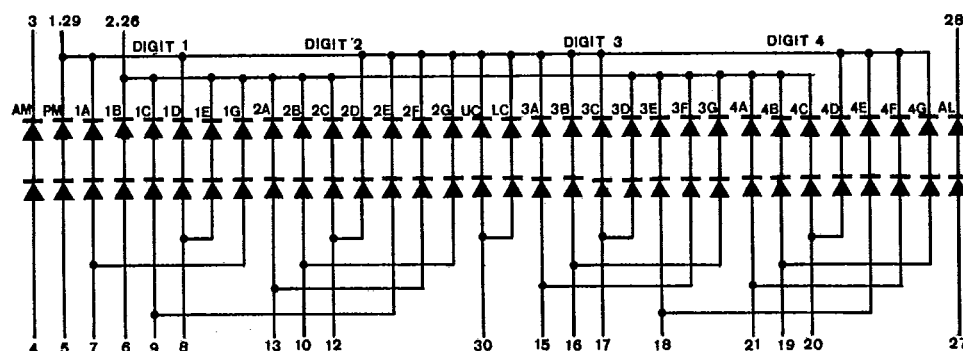
NOTE: All dimensions are in $\frac{\text{millimeters}}{(\text{inches})}$ tolerance is $\frac{0.25\text{mm}}{0.010''}$ unless otherwise noted.

LED CLOCK &
FREQUENCY DISPLAYS

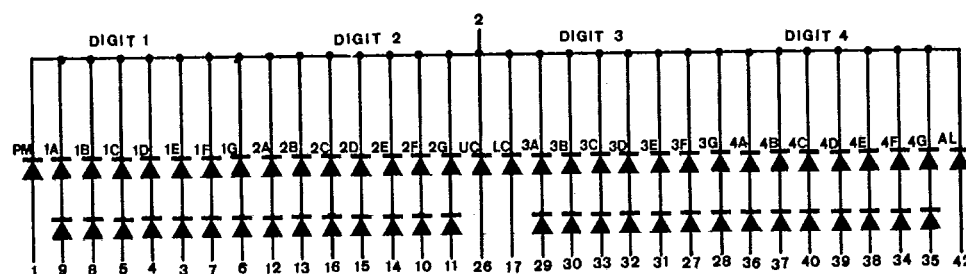
7-70
709

INTERNAL CIRCUIT DIAGRAM

A. LTC-18501A



B. LTC-1867T



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

PARAMETER	SYMBOL	MAXIMUM RATING	UNIT
Average Forward Current Per Segment/D.P. Direct Drive Current	I_{CF}	20	mA
Peak Forward Current Per Segment/D.P. (Duty 1/10 1 KHz)	I_{PF}	150	mA
Continuous Forward Current Duplex Circuit (Duty 1/2)	I_F/pulse	30	mA
Reverse Voltage (Segment of Decimal Point)	V_R	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	mW
Derating Linear From 25°C		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

From TE or TF

Methyl or Ethyl Alcohol

Dai-From Solvent S3 or S3-E

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Luminous Intensity	I_v	270	670		μcd	$I_F = 10 \text{ mA}$
Peak Emission Wavelength	λ_p		697		nm	$I_F = 20 \text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		90		nm	$I_F = 20 \text{ mA}$
Forward Voltage	V_F		2.1	2.8	V	$I_F = 20 \text{ mA}$
Reverse Current	I_R			100	μA	$V_R = 5\text{V}$
Luminous Intensity Matching Ratio	I_{vm}			2:1		$I_F = 10 \text{ mA}$

LED CLOCK &
FREQUENCY DISPLAYS

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711

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

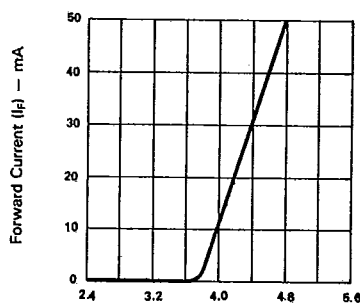


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

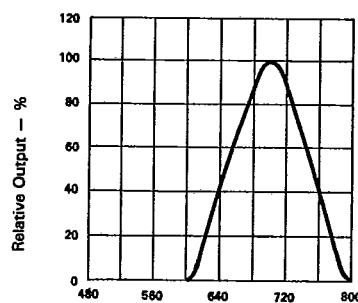


Fig. 2 SPECTRAL RESPONSE.

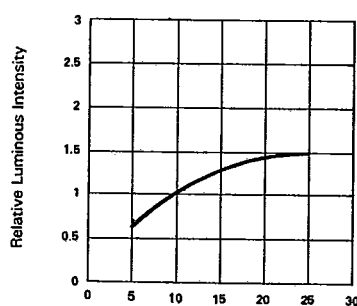
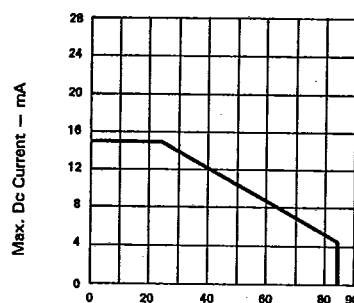
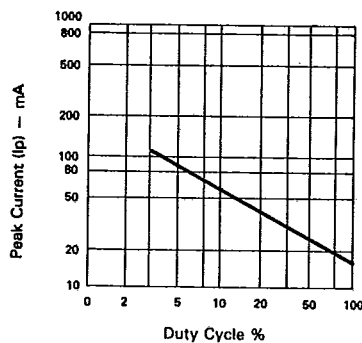


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG.
Vs AMBIENT TEMPERATURE.Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE. %
(REFRESH RATE — F = 1 KHz)