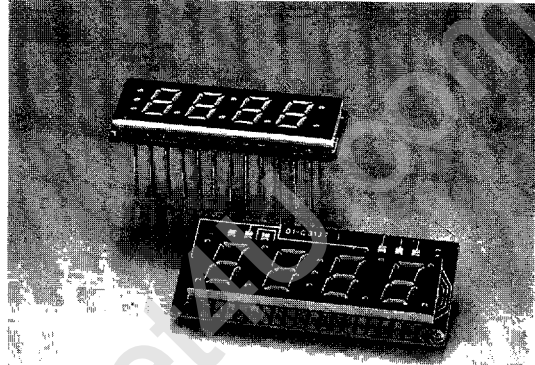


**LITEON****LTC-3000 SERIES****0.3" FOUR DIGIT LED CLOCK FREQUENCY DISPLAYS**

T-41-35

**FEATURES**

- 0.3 INCH (7.62 mm) 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 1/2 DUTY RATIO) FOR MULTIPLEX DRIVE.
- RED (GaAsP) 4 DIGIT LED COLOCK DISPLAY VERSION STANDARD [GREEN (GaP) DISPLAY SUFFIX G, BRIGHT RED (GaP) DISPLAY-SUFFIX P ARE AVAILABLE].

**DESCRIPTION**

The LTC-3000 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.

**1. CLOCK DISPLAY**

| PART NO.<br>LTC. | DESCRIPTION |         |               |       | PIN OUT                            |       |     | INTERNAL CIRCUIT DIAGRAM | PACKAGE DIMENSION | REMARK |                           |
|------------------|-------------|---------|---------------|-------|------------------------------------|-------|-----|--------------------------|-------------------|--------|---------------------------|
|                  | DRIVE       |         | COLOR         |       | SEG A.G.D.<br>E.F. OF 1ST<br>DIGIT | ALARM |     |                          |                   |        | AM<br>/ PM                |
|                  | FORM        | CIRCUIT | BRIGHT<br>RED | GREEN |                                    | UP    | LOW |                          |                   |        |                           |
| 3137A1P-12       | C.C.        | DPX     | V             |       | NO                                 |       | V   | V/V                      | A                 | A      |                           |
| 3137A1G-12       | C.C.        | DPX     |               | V     | NO                                 |       | V   | V/V                      | A                 | A      |                           |
| 3137A1P-24       | C.C.        | DPX     | V             |       | A.G.D.E                            |       | V   |                          | A                 | A      |                           |
| 3137A1G-24       | C.C.        | DPX     |               | V     | A.G.D.E                            |       | V   |                          | A                 | A      |                           |
| 3137A3P          | C.C.        | DPX     |               | V     | A.G.D.E                            |       | V   |                          | A                 | A      | BLACK FACE<br>WHITE SEGS. |
| 3702SP           | C.C.        | MPX     | V             |       | A.G.D.E.F.                         | V     | V   | V/V                      | B                 | B      |                           |
| 3702SG           | C.C.        | MPX     |               | V     | A.G.D.E.F.                         | V     | V   | V/V                      | B                 | B      |                           |
| 3708SP           | C.C.        | MPX     | V             |       | A.G.D.E.F.                         | V     |     | V/V                      | C                 | C      |                           |
| 3708SG           | C.C.        | MPX     |               | V     | A.G.D.E.F.                         | V     |     | V/V                      | C                 | C      |                           |
| 3808SP           | C.A.        | D.D.    | V             |       | NO                                 | V     | V   | V/V                      | D                 | D      |                           |
| 3808SG           | C.A.        | D.D.    |               | V     | NO                                 | V     | V   | V/V                      | D                 | D      |                           |

LED CLOCK &  
FREQUENCY DISPLAYS

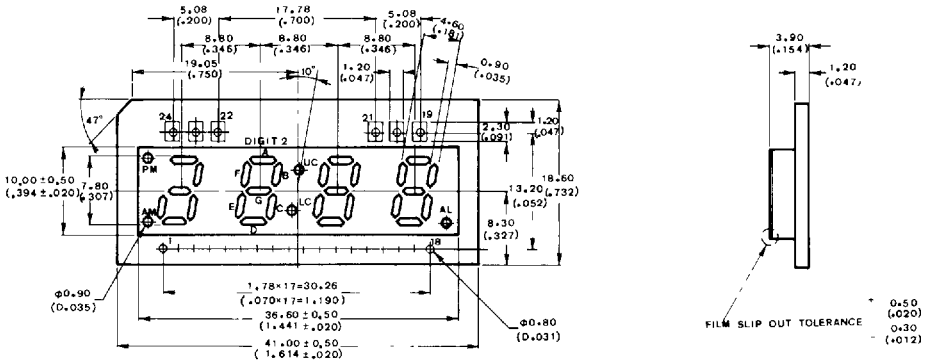
2. MULTI – FUNCTION DISPLAY (Customer design is acceptable)

| PART NO. LTC- | DESCRIPTION |         |            |       |        | INTERNAL CIRCUIT DIAGRAM | PACKAGE DIMENSION |              |
|---------------|-------------|---------|------------|-------|--------|--------------------------|-------------------|--------------|
|               | DRIVE       |         | COLOR      |       |        |                          |                   | DISPLAY FONT |
|               | FROM        | CIRCUIT | BRIGHT RED | GREEN | YELLOW |                          |                   |              |
| 3614 MSJ      | C.A.        | MPX.    | V          | V     | V      |                          | H                 |              |
| 3730PMA-1     | C.C.        | MPX.    | V          |       |        |                          | I                 |              |
| 3730GLY-1     | C.C.        | MPX.    |            | V     |        |                          | I                 |              |

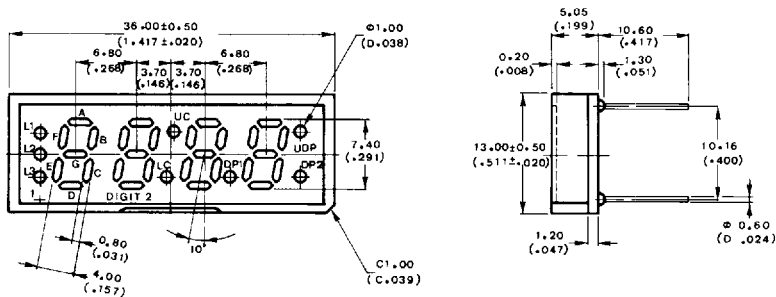
NOTES 1 C A common anode, C C common cathode  
 2 MPX multiplex, DPX duplex, D D direct drive

PACKAGE DIMENSIONS

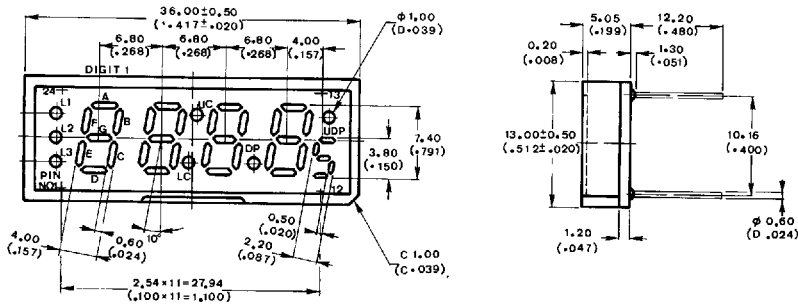
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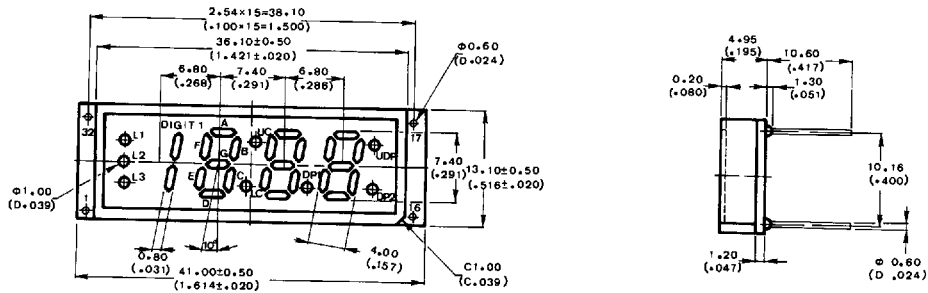
B. LTC-3702S x Series



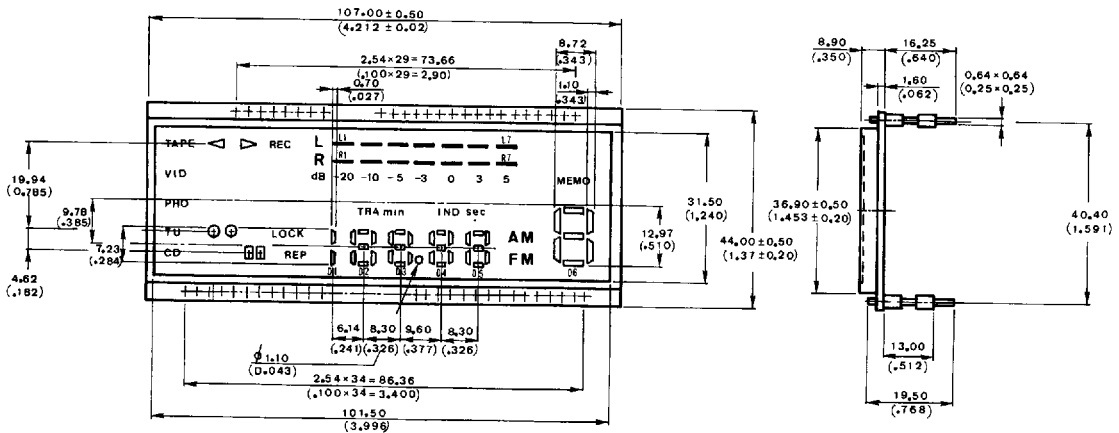
C. LTC-3708S x Series



D. LTC-3808S x Series



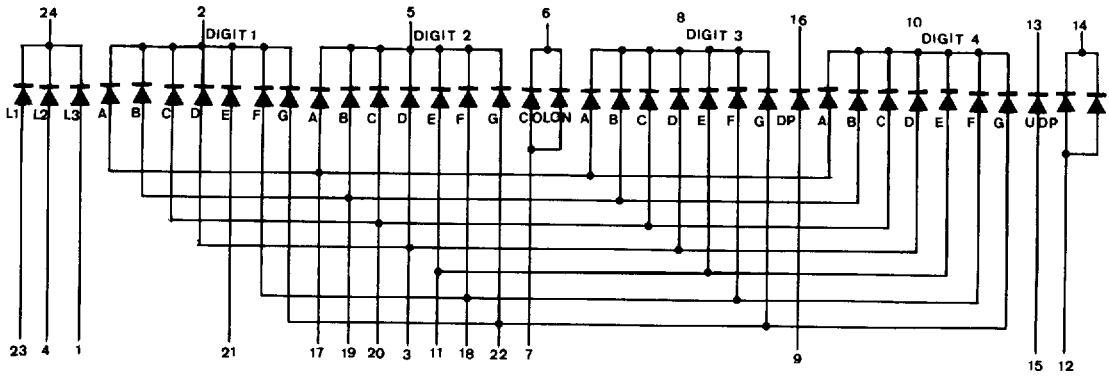
E. LTC-3614 MSJ



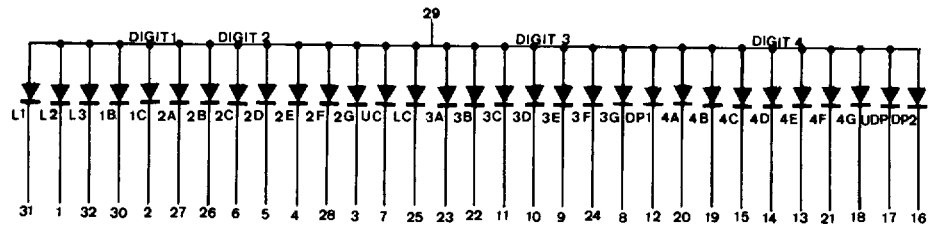
LED CLOCK & FREQUENCY DISPLAYS



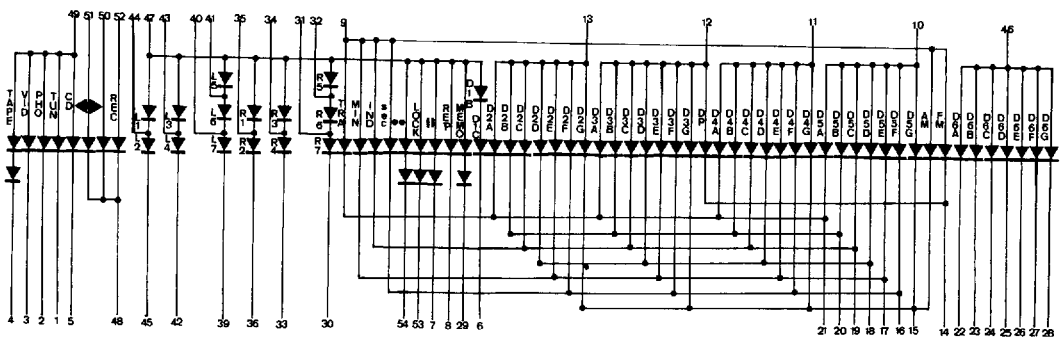
C. LTC-3708



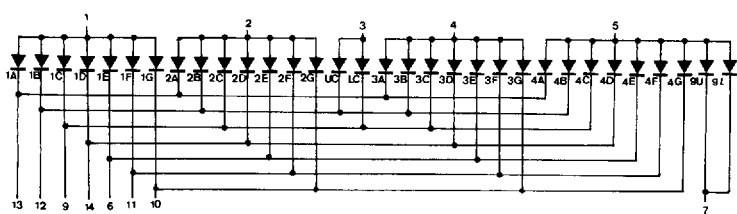
D. LTC-3808S x Series



E. LTC-3614 MSJ



F. LTC-3730 Series



LED CLOCK & FREQUENCY DISPLAYS

CONTINUOUS NEXT PAGE

**ABSOLUTE MAXIMUM RATINGS AT TA = 25°C**

| PARAMETER   | SYMBOL   | RED           | BRIGHT RED | GREEN | UNIT  |
|---|----------|---------------|------------|-------|-------|
| Average Forward Current Per Segment/D.P. Direct Drive Current                       | ICF      | 25            | 20         | 20    | mA    |
| Peak Forward Current Per Segment/D.P. (Duty 1/10 1 KHz)                             | IPF      | 200           | 150        | 150   | mA    |
| Continuous Forward Current Duplex Circuit (Duty 1/2)                                | IF/pulse | 30            | 30         | 30    | mA    |
| Reverse Voltage (Segment of Decimal Point)  | VR       | 5             | 5          | 5     | V     |
| Operating Temperature Range   | Topr     | -25°C to 60°C |            |       |       |
| Storage Temperature Range   | Tstg     | -25°C to 70°C |            |       |       |
| Derating Linear From 25°C   | PD       | 2.4           | 2.4        | 2.4   | W     |
| Derating Linear From 25°C   |          | 0.35          | 0.42       | 0.42  | mA/°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

Daiflon Solvent S3 or S3-E

**ELECTRICAL/OPTICAL CHARACTERISTICS AT TA = 25°C**

| PARAMETER                         | SYMBOL | DEVICES    | MIN. | TYP. | MAX. | UNIT | TEST CONDITION |
|-----------------------------------|--------|------------|------|------|------|------|----------------|
| Luminous Intensity                | IV     | RED        | 35   | 80   |      | μcd  | IF = 10 mA     |
|                                   |        | BRIGHT RED | 65   | 155  |      |      |                |
|                                   |        | GREEN      | 90   | 220  |      |      |                |
| Peak Emission Wavelength          | λp     | RED        | 630  | 655  | 680  | nm   | IF = 20 mA     |
|                                   |        | BRIGHT RED |      | 697  |      |      |                |
|                                   |        | GREEN      |      | 565  |      |      |                |
| Spectral Line Half-Width          | Δλ     | RED        |      | 24   |      | nm   | IF = 20 mA     |
|                                   |        | BRIGHT RED |      | 90   |      |      |                |
|                                   |        | GREEN      |      | 30   |      |      |                |
| Forward Voltage                   | VF     | RED        |      | 1.7  | 2.2  | V    | IF = 20 mA     |
|                                   |        | BRIGHT RED |      | 2.1  | 2.8  |      |                |
|                                   |        | GREEN      |      | 2.1  | 2.8  |      |                |
| Reverse Current                   | IR     | RED        |      |      | 100  | μA   | VR = 5V        |
|                                   |        | BRIGHT RED |      |      | 100  |      |                |
|                                   |        | GREEN      |      |      | 100  |      |                |
| Luminous Intensity Matching Ratio | Ivm    | All Model  |      |      | 2:1  |      | IF = 10 mA     |

LED CLOCK & FREQUENCY DISPLAYS

### TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

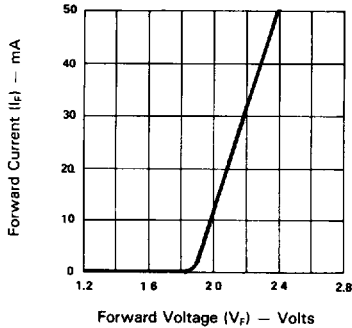


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE

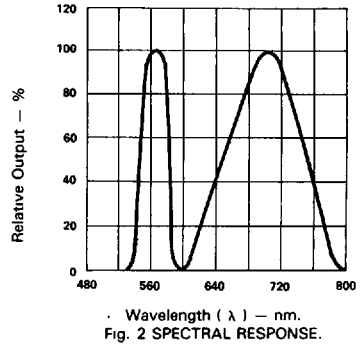


Fig. 2 SPECTRAL RESPONSE.

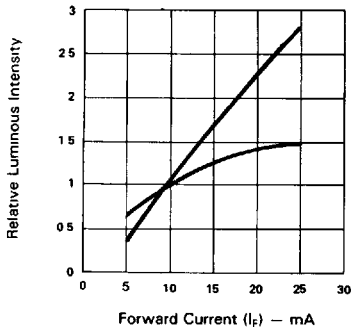


Fig. 3 RELATIVE, LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

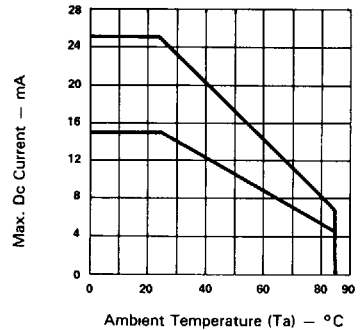


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE

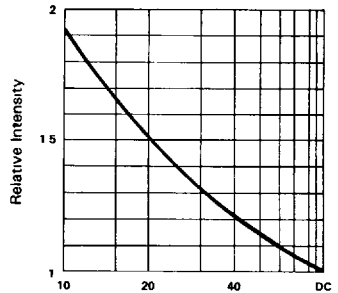
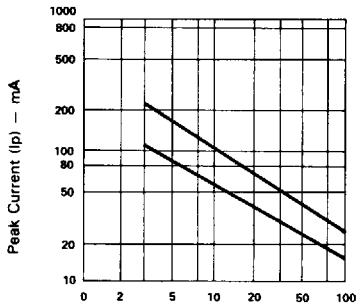


Fig. 6 LUMINOUS INTENSITY Vs DUTY CYCLE % (AVERAGE  $I_f = 10\text{mA PER SEG}$ )