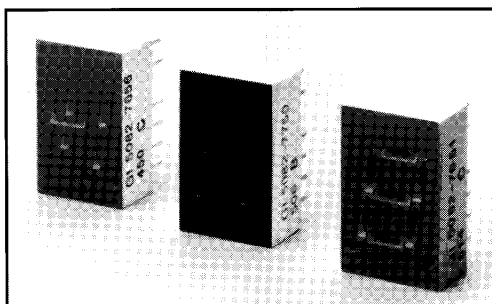




## 0.43-INCH SEVEN SEGMENT DISPLAYS

### HIGH EFFICIENCY RED 5082-7650 SERIES RED 5082-7700 SERIES



#### FEATURES

- Industry-standard 0.43-inch displays
- High Efficiency Red and standard Red models
- Left or right decimal versions
- Common anode or common cathode
- Solid state reliability — long operating life
- Impact-resistant plastic construction
- Standard 14 pin DIP configuration
- Categorized for Luminous Intensity
- Wide viewing angle...150°
- Directly compatible with integrated circuits

#### DESCRIPTION

The 5082-7650 and 5082-7700 Series are families of High Efficiency Red and Red seven segment LED displays with 0.43-inch digit height. For maximum ON/OFF contrast, 5082-7650 Series displays have Red face and Red segment color. 5082-7700 Series have Black face and Red segment color.

#### APPLICATIONS

- Instrumentation
- Point of sale terminals
- Appliances
- Digital clocks
- Industrial control equipment

#### MODEL NUMBERS

| PART NO.  | COLOR               | DESCRIPTION                                     |
|-----------|---------------------|-------------------------------------------------|
| 5082-7650 | High Efficiency Red | Common Anode; Left Hand Decimal                 |
| 5082-7651 | High Efficiency Red | Common Anode; Right Hand Decimal                |
| 5082-7653 | High Efficiency Red | Common Cathode; Right Hand Decimal              |
| 5082-7656 | High Efficiency Red | Universal Overflow $\pm 1$ ; Right Hand Decimal |
| 5082-7750 | Red                 | Common Anode; Left Hand Decimal                 |
| 5082-7751 | Red                 | Common Anode; Right Hand Decimal                |
| 5082-7756 | Red                 | Universal Overflow $\pm 1$ ; Right Hand Decimal |
| 5082-7760 | Red                 | Common Cathode; Right Hand Decimal              |

#### RECOMMENDED OPTICAL FILTER

##### 5082-7650 SERIES

Panelgraphic Scarlet 65  
Homalite 100-1670  
Panelgraphic Gray 10  
Homalite 100-126

##### 5082-7750 SERIES

Panelgraphic Red 60  
Homalite 100-1605

| <b>ELECTRO-OPTICAL CHARACTERISTICS</b><br>(Per Diode at 25°C Free Air Temperature Unless Otherwise Specified) |                       |      |              |       |                                  |                                                              |
|---------------------------------------------------------------------------------------------------------------|-----------------------|------|--------------|-------|----------------------------------|--------------------------------------------------------------|
| PARAMETER                                                                                                     | SYMBOL                | MIN. | TYP.         | MAX.  | UNITS                            | TEST CONDITIONS                                              |
| <b>5082-7650 SERIES</b>                                                                                       |                       |      |              |       |                                  |                                                              |
| Luminous Intensity                                                                                            | $I_L$                 | 340  | 840          |       | $\mu\text{cd}$                   | $I_F = 5 \text{ mA DC}$                                      |
| (Digit average, seven segments<br>Notes 1, 2)                                                                 |                       |      | 3500<br>1765 |       | $\mu\text{cd}$<br>$\mu\text{cd}$ | $I_F = 20 \text{ mA DC}$<br>$I_F = 60 \text{ mA pk, 1:6 DF}$ |
| Peak emission wavelength                                                                                      | $\lambda_p$           |      | 630          |       | nm                               |                                                              |
| Spectral line halfwidth                                                                                       | $\Delta\lambda_{1/2}$ |      | 40           |       | nm                               |                                                              |
| Forward voltage                                                                                               | $V_F$                 |      | 2.0          | 2.5   | V                                | $I_F = 20 \text{ mA DC}$                                     |
| Dynamic resistance                                                                                            | $R_d$                 |      | 26           |       | $\Omega$                         | $I_{FTH}, V_{FTH}$                                           |
| Capacitance                                                                                                   | C                     |      | 35           |       | pf                               | $V_F = 0$                                                    |
| Reverse current                                                                                               | $I_R$                 |      |              | 100   | $\mu\text{A}$                    | $V_R = 3.0 \text{ V}$                                        |
| Ratio $I_L$ (max. $I_L$ /min. $I_L$ )                                                                         | r                     |      |              | 2.0:1 |                                  | $I_F = 20 \text{ mA DC}$                                     |
| <b>5082-7750 SERIES</b>                                                                                       |                       |      |              |       |                                  |                                                              |
| Luminous Intensity                                                                                            | $I_L$                 | 320  | 980          |       | $\mu\text{cd}$                   | $I_F = 20 \text{ mA}$                                        |
| (Digit average, seven segments<br>Notes 1, 2)                                                                 |                       |      | 610          |       | $\mu\text{cd}$                   | $I_F = 100 \text{ mA Pk}$<br>1:10 DF                         |
| Peak emission wavelength                                                                                      | $\lambda_p$           |      | 650          |       | nm                               |                                                              |
| Spectral line halfwidth                                                                                       | $\Delta\lambda_{1/2}$ |      | 20           |       | nm                               |                                                              |
| Forward voltage                                                                                               | $V_F$                 |      | 1.6          | 2.0   | V                                | $I_F = 20 \text{ mA}$                                        |
| Dynamic resistance                                                                                            | $R_d$                 |      | 2.0          |       | $\Omega$                         | $I_{FTH}, V_{FTH}$                                           |
| Capacitance                                                                                                   | C                     |      | 35           |       | pf                               | $V_F = 0$                                                    |
| Reverse current                                                                                               | $I_R$                 |      |              | 100   | $\mu\text{A}$                    | $V_R = 5.0 \text{ V}$                                        |
| Ratio $I_L$ (max. $I_L$ /min. $I_L$ )                                                                         | r                     |      |              | 2.0:1 |                                  | $I_F = 20 \text{ mA}$                                        |

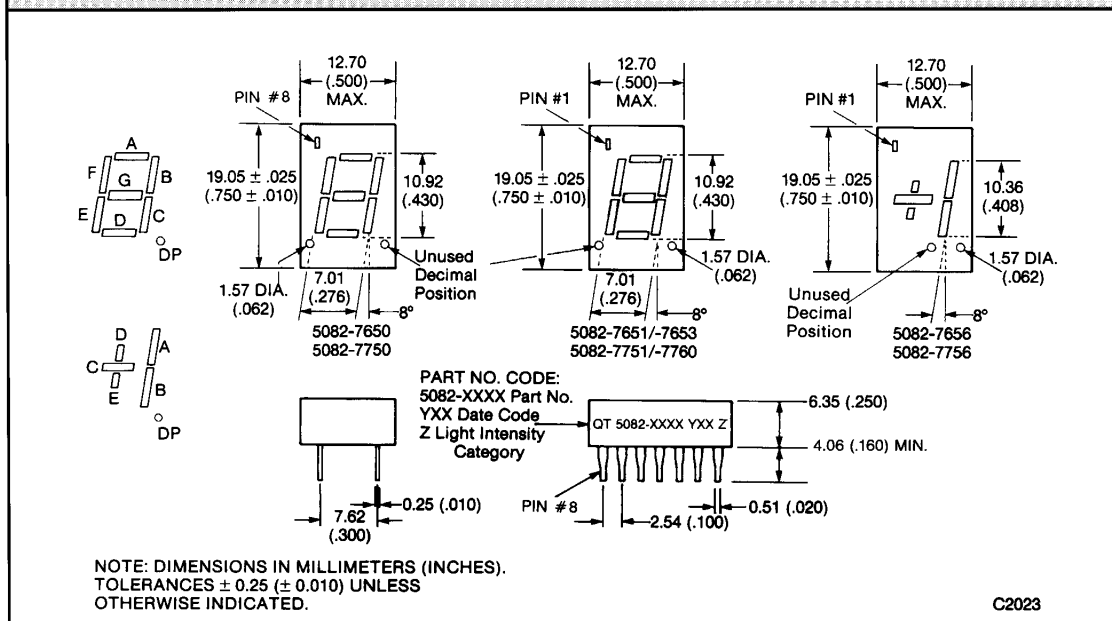
| <b>ABSOLUTE MAXIMUM RATINGS</b>              |                                     |           |                                     |            |
|----------------------------------------------|-------------------------------------|-----------|-------------------------------------|------------|
|                                              | <b>HIGH EFFICIENCY RED</b>          |           | <b>RED</b>                          |            |
|                                              | 5082-7650<br>5082-7651<br>5082-7653 | 5082-7656 | 5082-7750<br>5082-7751<br>5082-7760 | 5082-7756  |
| Power dissipation at 50°C ambient            | 840 mW                              | 630 mW    | 520 mW                              | 390 mW     |
| Derate linearly from 50°C                    | -16 mW/C°                           | -12 mW/C° | -6.9 mW/C°                          | -5.2 mW/C° |
| Storage and operating temperature            | -40°C to +85°C                      |           |                                     |            |
| Continuous forward current                   |                                     |           |                                     |            |
| Total                                        | 240 mA                              | 180 mA    | 200 mA                              | 150 mA     |
| Per segment or decimal point                 | 30 mA                               | 30 mA     | 25 mA                               | 25 mA      |
| Reverse voltage                              |                                     |           |                                     |            |
| Per segment or decimal point                 | 3 V                                 | 3 V       | 3 V                                 | 3 V        |
| Soldering time at 260°C (See Notes 4 and 5.) | 3 sec.                              | 3 sec.    | 3 sec.                              | 3 sec.     |

| <b>NOTES</b> |                                                                                                                                                                                                                                                               |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.           | The digit average Luminous Intensity is obtained by summing the Luminous Intensity of each segment and dividing by the total number of segments excluding decimal points. Intensity will not vary more than $\pm 33.3\%$ between all segments within a digit. |
| 2.           | All displays are categorized for Luminous Intensity. The Intensity category is marked on each part as a suffix letter to the part number.                                                                                                                     |
| 3.           | Intensity adjusted for smaller areas of the "+" and decimal points.                                                                                                                                                                                           |
| 4.           | Leads immersed to 1/16 inch from the body of the device. Maximum unit surface temperature is 140°C.                                                                                                                                                           |
| 5.           | For flux removal, use Freon TF, Freon TE, Isoproponal, or water up to their boiling points.                                                                                                                                                                   |

### TYPICAL THERMAL CHARACTERISTICS

|                                                       | 5082-765X  | 5082-775X  | SYMBOL                   | TEST CONDITIONS       |
|-------------------------------------------------------|------------|------------|--------------------------|-----------------------|
| Thermal resistance junction to ambient .....          | 280°C/W    | 280°C/W    | $\theta_{JA}$            |                       |
| Wavelength temperature coefficient (case temp.) ..... | 0.1 nm/°C  | 0.3 nm/°C  | $\Delta\lambda/\Delta T$ | $I_F = 20 \text{ mA}$ |
| Forward voltage temperature coefficient .....         | -2.2 mV/°C | -1.6 mV/°C | $\Delta V_F/\Delta T$    | $I_F = 2 \text{ mA}$  |

### PACKAGE DIMENSIONS

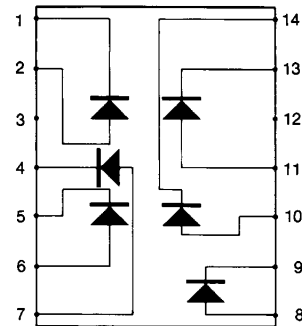
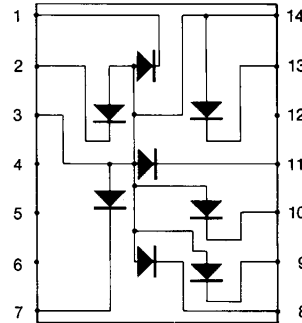
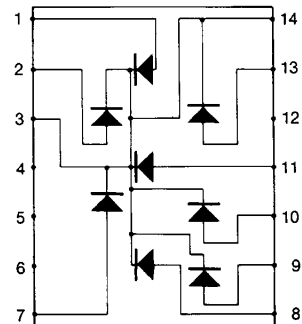
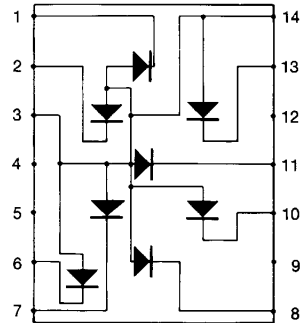


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### CONNECTIONS

| PIN NO. | ELECTRICAL CONNECTIONS |                 |                 |                 |
|---------|------------------------|-----------------|-----------------|-----------------|
|         | A                      | B               | C               | D               |
|         | 5082-7650/-7750        | 5082-7651/-7751 | 5082-7653/-7760 | 5082-7656/-7756 |
| 1       | Cathode A              | Cathode A       | Anode A         | Cathode D       |
| 2       | Cathode F              | Cathode F       | Anode F         | Anode D         |
| 3       | Common Anode           | Common Anode    | Common Cathode  | No Pin          |
| 4       | No Pin                 | No Pin          | No Pin          | Cathode C       |
| 5       | No Pin                 | No Pin          | No Pin          | Cathode E       |
| 6       | Cathode D.P.           | No Connection   | No Connection   | Anode E         |
| 7       | Cathode E              | Cathode E       | Anode E         | Anode C         |
| 8       | Cathode D              | Cathode D       | Anode D         | Anode D.P.      |
| 9       | No Connection          | Cathode D.P.    | Anode D.P.      | Cathode D.P.    |
| 10      | Cathode C              | Cathode C       | Anode C         | Cathode B       |
| 11      | Cathode G              | Cathode G       | Anode G         | Cathode A       |
| 12      | No Pin                 | No Pin          | No Pin          | No Pin          |
| 13      | Cathode B              | Cathode B       | Anode B         | Anode A         |
| 14      | Common Anode           | Common Anode    | Common Cathode  | Anode B         |

**ELECTRICAL SCHEMATIC**



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**TYPICAL CURVES**

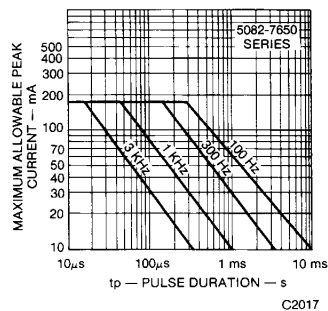


Fig. 1. Maximum Tolerable Peak Current vs. Pulse Duration

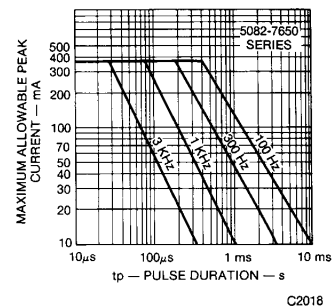


Fig. 2. Maximum Tolerable Peak Current vs. Pulse Duration

**TYPICAL CHARACTERISTIC CURVES (Cont'd)**

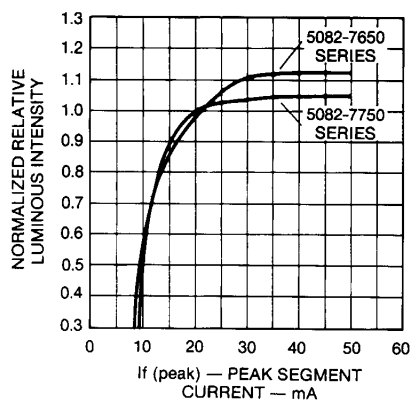


Fig. 3. Relative Efficiency (Average Luminous Intensity Per Unit Current) vs. Peak Current Per Segment

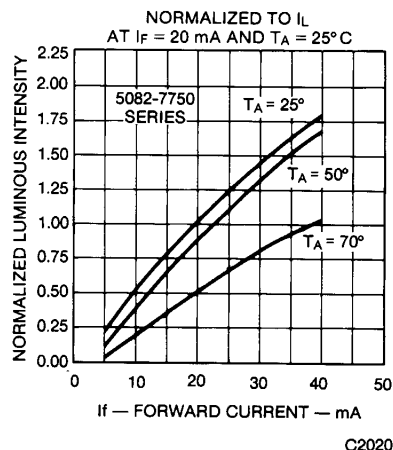


Fig. 4. Normalized Luminous Intensity vs. Forward Current Over Temperature

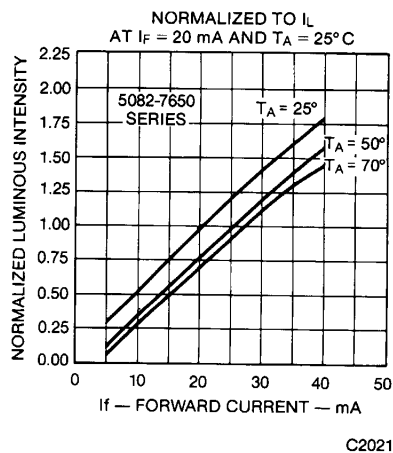


Fig. 5. Normalized Luminous Intensity vs. Forward Current Over Temperature

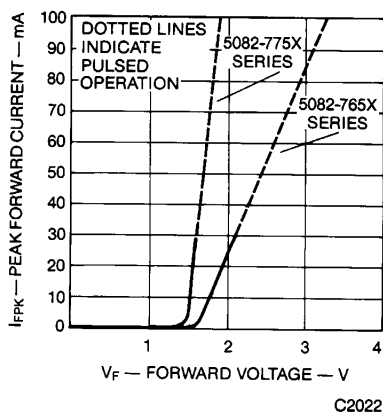


Fig. 6. Peak Forward Current vs. Forward Voltage



## 0.43-INCH SEVEN SEGMENT DISPLAYS

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