



# **LED Display**

## **Product Data Sheet**

### **LTC-5854BKF-04J**

Spec No.: DS30-2009-0076

Effective Date: 09/02/2009

Revision: -

**LITE-ON DCC**

**RELEASE**

**BNS-OD-FC001/A4**

**LED DISPLAY****LTC-5854BKF-04J**  
**DATASHEET**

| <u>Rev</u>                                     | <u>Description</u>                                  | <u>By</u>                              |
|------------------------------------------------|-----------------------------------------------------|----------------------------------------|
| 01                                             | ORIGINAL<br>(Refer to contour drawing Revision (-)) | <u>KITTISAK</u><br><u>June 16/2009</u> |
|                                                |                                                     |                                        |
|                                                |                                                     |                                        |
| (Above data for PD and Customer tracking only) |                                                     |                                        |
| -                                              | NPPR Received and Upload on OPNC                    | KITTISAK B.<br><u>June 30/2009</u>     |
|                                                |                                                     |                                        |
|                                                |                                                     |                                        |
|                                                |                                                     |                                        |

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## **FEATURES**

- \* 0.52 inch (13.2 mm) DIGIT HEIGHT.
- \* CONTINUOUS UNIFORM SEGMENTS.
- \* LOW POWER REQUIREMENT.
- \* EXCELLENT CHARACTERS APPEARANCE.
- \* HIGH BRIGHTNESS & HIGH CONTRAST.
- \* WIDE VIEWING ANGLE.
- \* SOLID STATE RELIABILITY.
- \* CATEGORIZED FOR LUMINOUS INTENSITY.
- \* **LEAD-FREE PACKAGE (ACCORDING TO ROHS).**

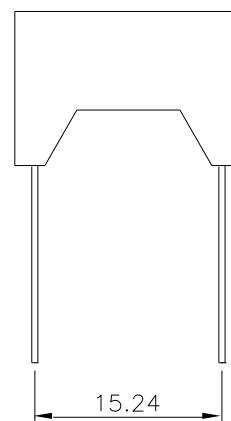
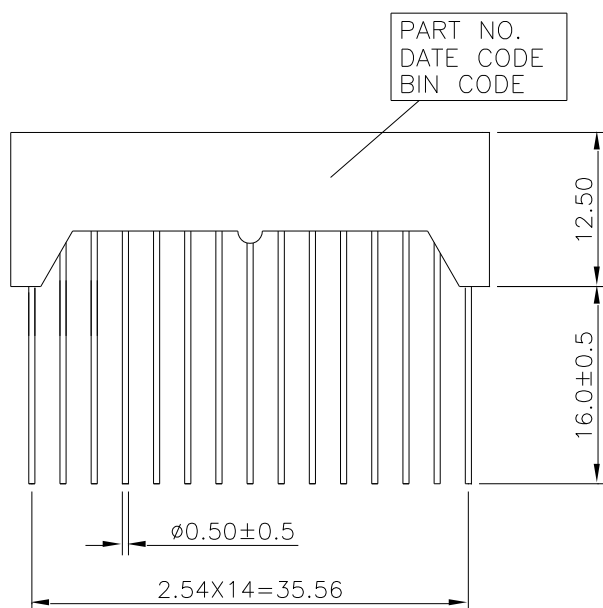
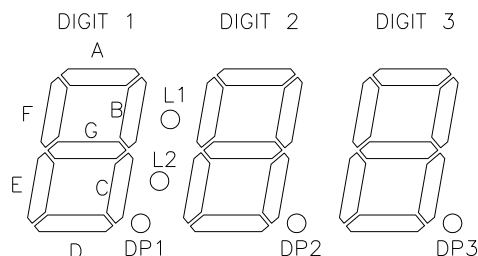
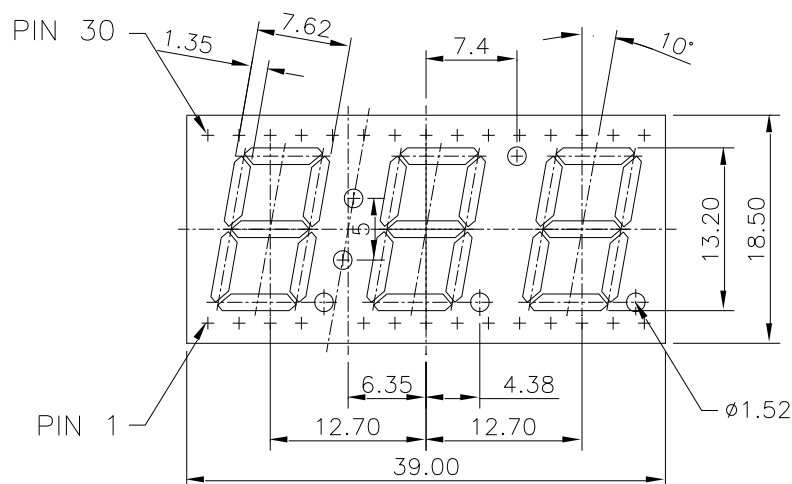
## **DESCRIPTION**

The LTC-5854BKF-04J is a 0.52inch (13.2mm) digit height LED display. This device uses AlInGaP Yellow Orange LED chips (AlInGaP epi on GaAs substrate). The display has a gray face and white segments.

## **DEVICE**

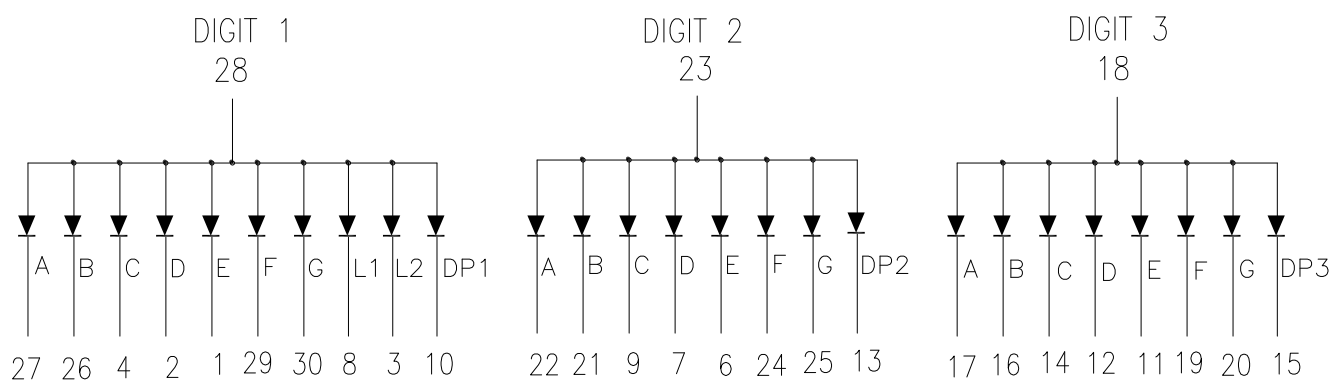
| <b>PART NO.</b>       | <b>DESCRIPTION</b> |
|-----------------------|--------------------|
| AlInGaP Yellow Orange | Common Anode       |
| LTC-5854BKF-04J       |                    |

## PACKAGE DIMENSIONS



- NOTES: 1. All dimensions are in millimeters. Tolerances are  $\pm 0.25$  mm (0.01") unless otherwise noted.  
 2. Pin tip's shift tolerance is  $\pm 0.4$  mm.  
 3. Foreign material on segment  $\leq 10$  mils  
 4. Ink contamination (surface)  $\leq 20$  mils  
 5. Bending  $\leq 1\%$  of reflector length  
 6. Bubble in segment  $\leq 10$  mils

## INTERNAL CIRCUIT DIAGRAM



**PIN CONNECTION**

| NO | CONNECTION            | NO | CONNECTION             |
|----|-----------------------|----|------------------------|
| 1  | CATHODE E (DIGIT 1)   | 16 | CATHODE B (DIGIT 3)    |
| 2  | CATHODE D (DIGIT 1)   | 17 | CATHODE A (DIGIT 3)    |
| 3  | CATHODE L2 (DIGIT 1)  | 18 | COMMON ANODE (DIGIT 3) |
| 4  | CATHODE C (DIGIT 1)   | 19 | CATHODE F (DIGIT 3)    |
| 5  | NO PIN                | 20 | CATHODE G (DIGIT 3)    |
| 6  | CATHODE E (DIGIT 2)   | 21 | CATHODE B (DIGIT 2)    |
| 7  | CATHODE D (DIGIT 2)   | 22 | CATHODE A (DIGIT 2)    |
| 8  | CATHODE L1 (DIGIT 1)  | 23 | COMMON ANODE (DIGIT 2) |
| 9  | CATHODE C (DIGIT 2)   | 24 | CATHODE F (DIGIT 2)    |
| 10 | CATHODE DP1 (DIGIT 1) | 25 | CATHODE G (DIGIT 2)    |
| 11 | CATHODE E (DIGIT 3)   | 26 | CATHODE B (DIGIT 1)    |
| 12 | CATHODE D (DIGIT 3)   | 27 | CATHODE A (DIGIT 1)    |
| 13 | CATHODE DP2 (DIGIT 2) | 28 | COMMON ANODE (DIGIT 1) |
| 14 | CATHODE C (DIGIT 3)   | 29 | CATHODE F (DIGIT 1)    |
| 15 | CATHODE DP3 (DIGIT 3) | 30 | CATHODE G (DIGIT 1)    |

**ABSOLUTE MAXIMUM RATING AT Ta=25°C**

| PARAMETER                                                                                                                                                                     | MAXIMUM RATING  | UNIT  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------|
| Power Dissipation Per Segment                                                                                                                                                 | 70              | mW    |
| Peak Forward Current Per Segment<br>(Frequency 1Khz, 10% duty cycle )                                                                                                         | 60              | mA    |
| Continuous Forward Current Per Segment                                                                                                                                        | 25              | mA    |
| Derating Linear From 25°C Per Segment                                                                                                                                         | 0.28            | mA/°C |
| Reverse Voltage Per Segment                                                                                                                                                   | 5               | V     |
| Operating Temperature Range                                                                                                                                                   | -35°C to +105°C |       |
| Storage Temperature Range                                                                                                                                                     | -35°C to +105°C |       |
| Soldering Conditions : 1/16 inch below seating plane for 3 seconds at 260 <sup>0</sup> C.,<br>or temperature of unit (during assembly) not over max. temperature rating above |                 |       |

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

| PARAMETER                                                 | SYMBOL            | MIN. | TYP. | MAX. | UNIT | TEST CONDITION       |
|-----------------------------------------------------------|-------------------|------|------|------|------|----------------------|
| Average Luminous Intensity                                | I <sub>v</sub>    | 1300 | 3500 |      | μcd  | I <sub>F</sub> =1mA  |
| Peak Emission Wavelength                                  | λ <sub>p</sub>    |      | 611  |      | nm   | I <sub>F</sub> =20mA |
| Spectral Line Half-Width                                  | Δλ                |      | 17   |      | nm   | I <sub>F</sub> =20mA |
| Dominant Wavelength                                       | λ <sub>d</sub>    |      | 605  |      | nm   | I <sub>F</sub> =20mA |
| Forward Voltage Per Segment                               | V <sub>F</sub>    |      | 2.05 | 2.6  | V    | I <sub>F</sub> =20mA |
| Reverse Current Per Segment                               | I <sub>R</sub>    |      |      | 100  | μA   | V <sub>R</sub> =5V   |
| Luminous Intensity Matching Ratio<br>(Similar Light Area) | I <sub>v</sub> -m |      |      | 2:1  |      | I <sub>F</sub> =1mA  |

Note: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commision Internationale De L'Eclairage) eye-response curve.

2. Cross talk specification  $\leq 2.5\%$

**BIN TABLE**

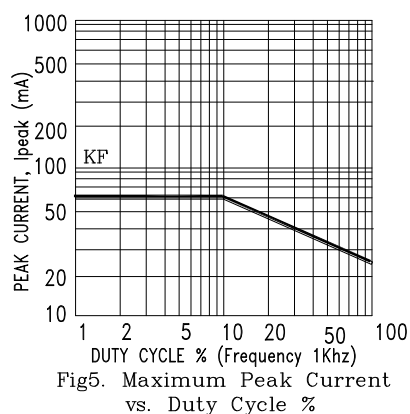
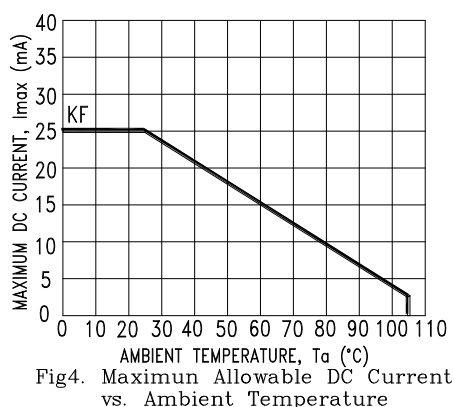
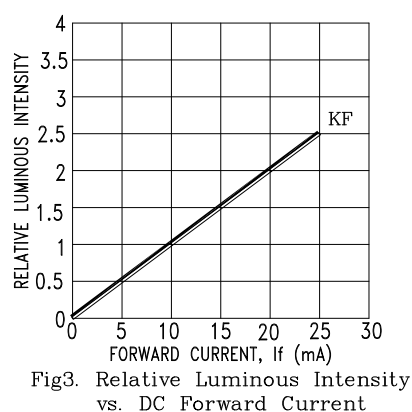
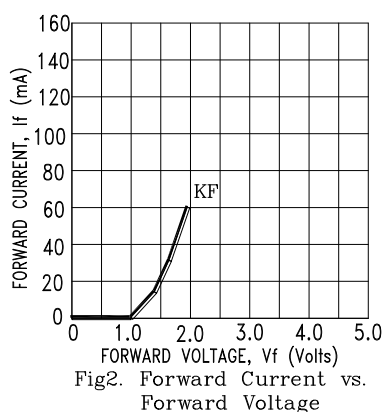
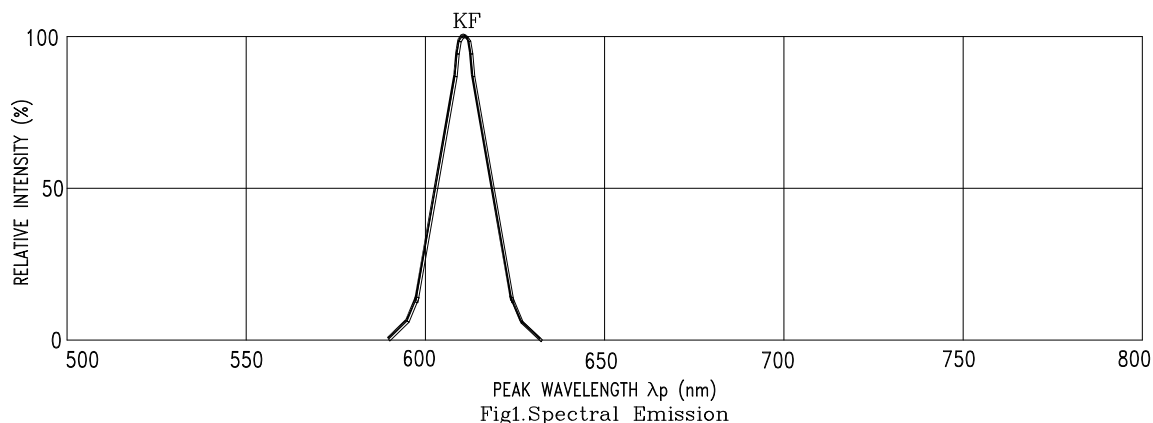
BIN TEBLE 2 FOR LUMINOUS INTENSITY

| BIN GRADE                     | J         | K         | L         | M         | N          |
|-------------------------------|-----------|-----------|-----------|-----------|------------|
| RANGE(μcd)I <sub>F</sub> =1mA | 1301-2100 | 2101-3400 | 3401-5400 | 5401-8600 | 8601-13700 |

The Luminous Intensity Tolerance  $\pm 15\%$ percentage

## TYPICAL ELECTRICAL / OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)



NOTE : KF=AlInGaP YELLOW ORANGE