

TA23-11EWA/GWA/YWA/SRWA  
 TC23-11EWA/GWA/YWA/SRWA  
 TBA23-11EGWA  
 TBC23-11EGWA  
 TBA23-12EGWA  
 TBC23-12EGWA

## Features

- 2.3 INCH MATRIX HEIGHT.
- DOT SIZE 5mm.
- LOW CURRENT OPERATION.
- HIGH CONTRAST AND LIGHT OUTPUT.
- COMPATIBLE WITH ASCII AND EBCDIC CODES.
- STACKABLE HORIZONTALLY.
- COLUMN CATHODE AND COLUMN ANODE AVAILABLE.
- EASY MOUNTING ON P.C. BOARDS OR SOCKETS.
- MULTICOLOR AVAILABLE.
- CATEGORIZED FOR LUMINOUS INTENSITY, YELLOW AND GREEN CATEGORIZED FOR COLOR.
- MECHANICALLY RUGGED.
- STANDARD : GRAY FACE, WHITE DOT.

## Description

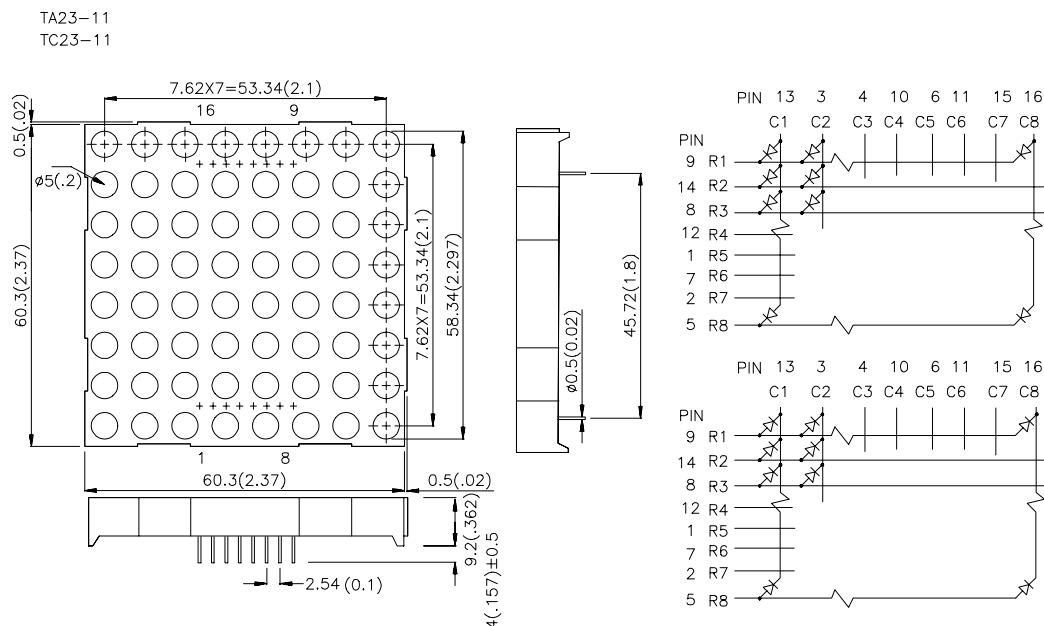
The High Efficiency Red source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Orange Light Emitting Diode.

The Green source color devices are made with Gallium Phosphide Green Light Emitting Diode.

The Yellow source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Yellow Light Emitting Diode.

The Super Bright Red source color devices are made with Gallium Aluminum Arsenide Red Light Emitting Diode.

## Package Dimensions & Internal Circuit Diagram

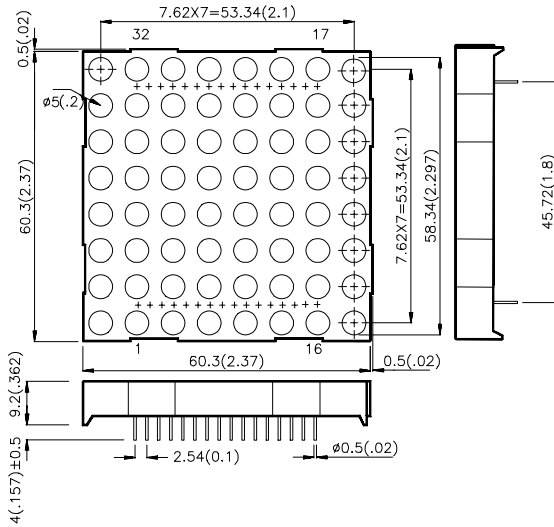


### Notes:

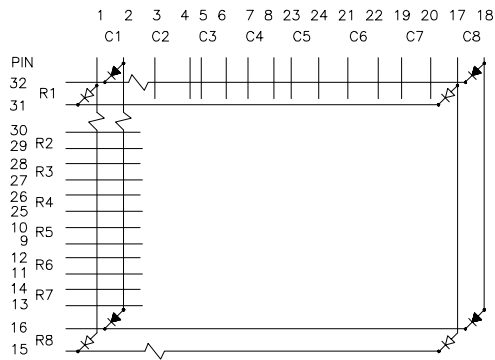
1. All dimensions are in millimeters (inches), Tolerance is  $\pm 0.25(0.01)$  unless otherwise noted.
2. Specifications are subject to change without notice.

## Package Dimensions & Internal Circuit Diagram

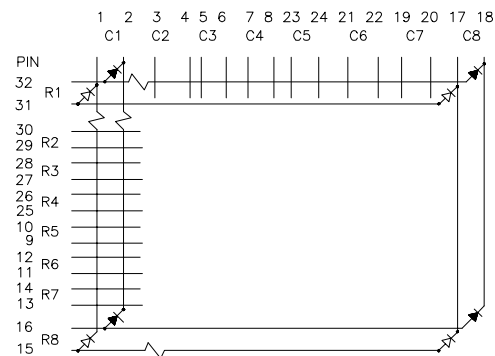
TBA23-11/TBC23-11



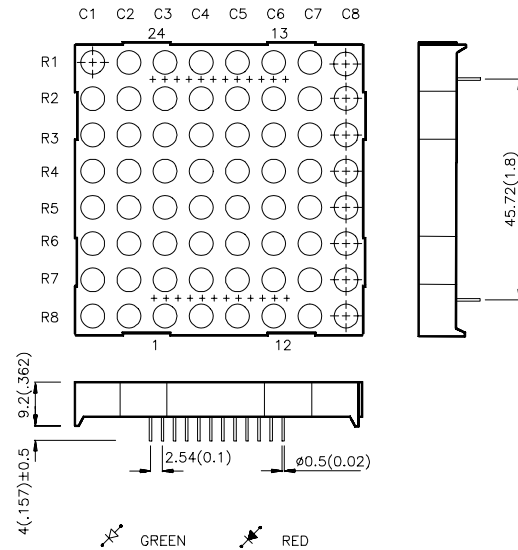
TBA23-11



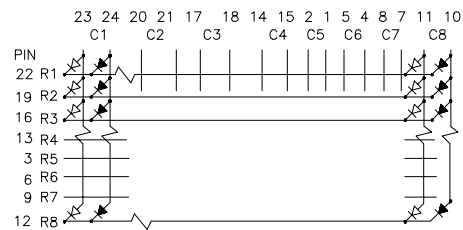
TBC23-11



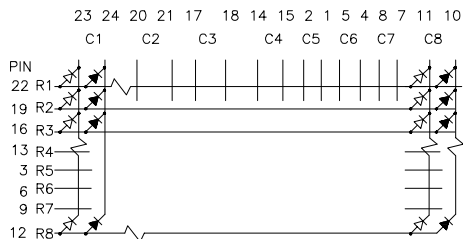
TBA23-12/TBC23-12



TBA23-12



TBC23-12



### Notes:

1. All dimensions are in millimeters (inches), Tolerance is  $\pm 0.25(0.01)$  unless otherwise noted.
2. Specifications are subject to change without notice.

## Selection Guide

| Part No.     | Dice                                           | Iv (ucd)<br>@ 10 mA |       | Description    |
|--------------|------------------------------------------------|---------------------|-------|----------------|
|              |                                                | Min.                | Typ.  |                |
| TA23-11EWA   | HIGH EFFICIENCY RED (GaAsP/GaP)                | 3000                | 8000  | Column Anode   |
| TC23-11EWA   |                                                |                     |       | Column Cathode |
| TA23-11GWA   | GREEN (GaP)                                    | 4700                | 10500 | Column Anode   |
| TC23-11GWA   |                                                |                     |       | Column Cathode |
| TA23-11YWA   | YELLOW (GaAsP/GaP)                             | 3000                | 8000  | Column Anode   |
| TC23-11YWA   |                                                |                     |       | Column Cathode |
| TA23-11SRWA  | SUPER BRIGHT RED (GaAlAs)                      | 18000               | 44000 | Column Anode   |
| TC23-11SRWA  |                                                |                     |       | Column Cathode |
| TBA23-11EGWA | HIGH EFFICIENCY RED (GaAsP/GaP)<br>GREEN (GaP) | 3000                | 8000  | Column Anode   |
| TBC23-11EGWA |                                                | 4700                | 10500 | Column Cathode |
| TBA23-12EGWA | HIGH EFFICIENCY RED (GaAsP/GaP)<br>GREEN (GaP) | 3000                | 8000  | Column Anode   |
| TBC23-12EGWA |                                                | 4700                | 10500 | Column Cathode |

## Electrical / Optical Characteristics at T<sub>A</sub>=25°C

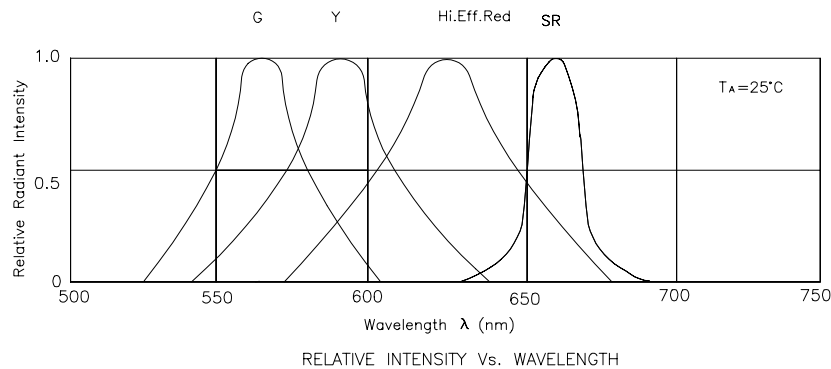
| Symbol                | Parameter               | Device                                                     | Typ.                      | Max.                     | Units | Test Conditions |
|-----------------------|-------------------------|------------------------------------------------------------|---------------------------|--------------------------|-------|-----------------|
| $\lambda_{peak}$      | Peak Wavelength         | High Efficiency Red<br>Green<br>Yellow<br>Super Bright Red | 627<br>565<br>590<br>660  |                          | nm    | IF=20mA         |
| $\lambda_D$           | Dominant Wavelength     | High Efficiency Red<br>Green<br>Yellow<br>Super Bright Red | 625<br>568<br>588<br>640  |                          | nm    | IF=20mA         |
| $\Delta\lambda_{1/2}$ | Spectral Line Halfwidth | High Efficiency Red<br>Green<br>Yellow<br>Super Bright Red | 45<br>30<br>35<br>20      |                          | nm    | IF=20mA         |
| C                     | Capacitance             | High Efficiency Red<br>Green<br>Yellow<br>Super Bright Red | 15<br>15<br>20<br>45      |                          | pF    | VF=0V;f=1MHz    |
| V <sub>F</sub>        | Forward Voltage         | High Efficiency Red<br>Green<br>Yellow<br>Super Bright Red | 2.0<br>2.2<br>2.1<br>1.85 | 2.5<br>2.5<br>2.5<br>2.5 | V     | IF=20mA         |
| I <sub>R</sub>        | Reverse Current         | All                                                        |                           | 10                       | uA    | VR = 5V         |

## Absolute Maximum Ratings at $T_A=25^{\circ}\text{C}$

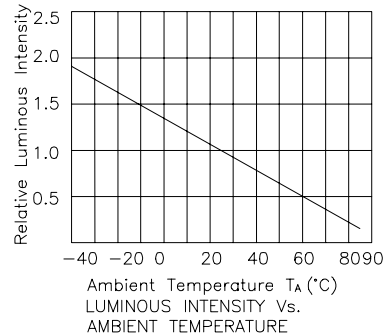
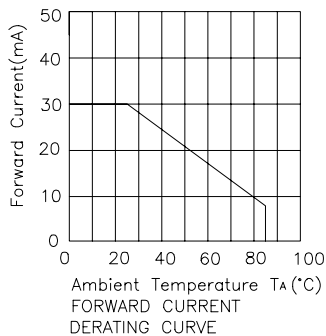
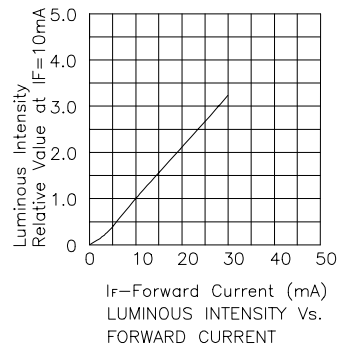
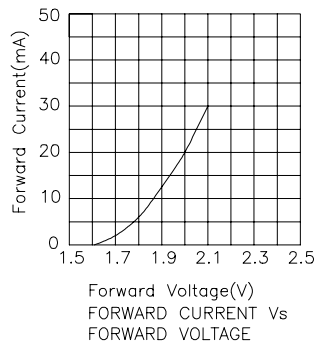
| Parameter                     | High Efficiency Red                            | Green | Yellow | Super Bright Red | Units |
|-------------------------------|------------------------------------------------|-------|--------|------------------|-------|
| Power dissipation             | 105                                            | 105   | 105    | 100              | mW    |
| DC Forward Current            | 30                                             | 25    | 30     | 30               | mA    |
| Peak Forward Current [1]      | 160                                            | 140   | 140    | 155              | mA    |
| Reverse Voltage               | 5                                              | 5     | 5      | 5                | V     |
| Operating/Storage Temperature | $-40^{\circ}\text{C}$ To $+85^{\circ}\text{C}$ |       |        |                  |       |
| Lead Solder Temperature [2]   | 260 $^{\circ}\text{C}$ For 5 Seconds           |       |        |                  |       |

Notes:

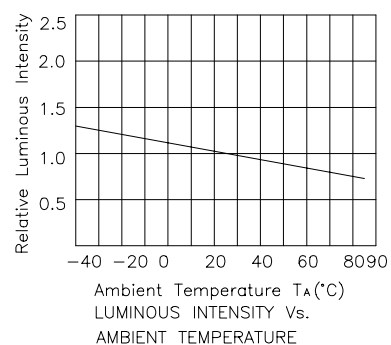
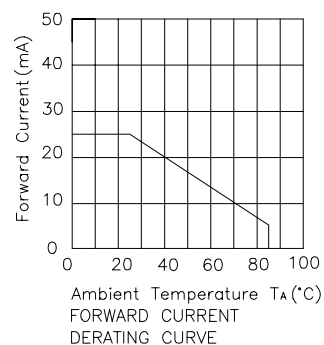
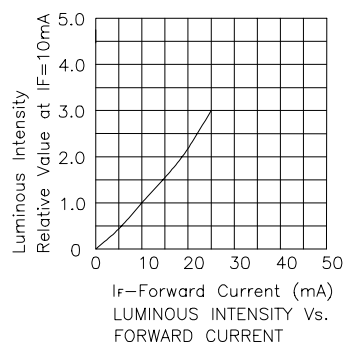
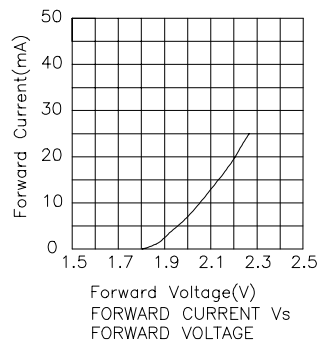
- 1/10 Duty Cycle, 0.1ms Pulse Width.
- 4mm below package base.



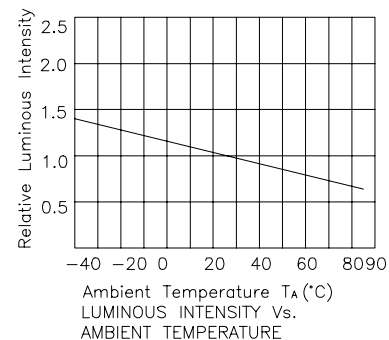
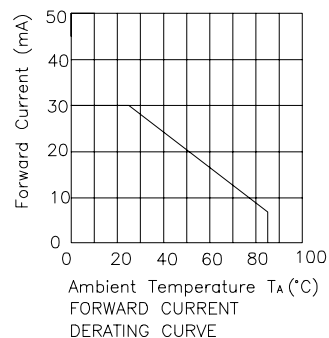
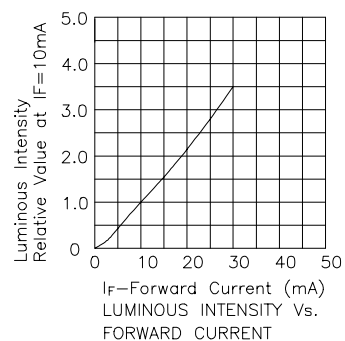
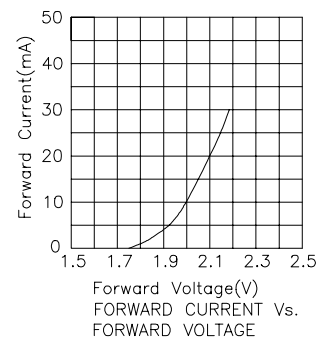
## High Efficiency Red



## Green



## Yellow



## Super Bright Red

