

TA23-11	TC23-11
TBA23-11	TBC23-11
TBA23-12	TBC23-12

### Features

- 2.3 INCH MATRIX HEIGHT.
- DOT SIZE 5mm.
- LOW CURRENT OPERATION.
- HIGH CONTRAST AND LIGHT OUTPUT.
- COMPATIBLE WITH USACII 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 Bright Red source color devices are made with Gallium Phosphide Red Light Emitting Diode.

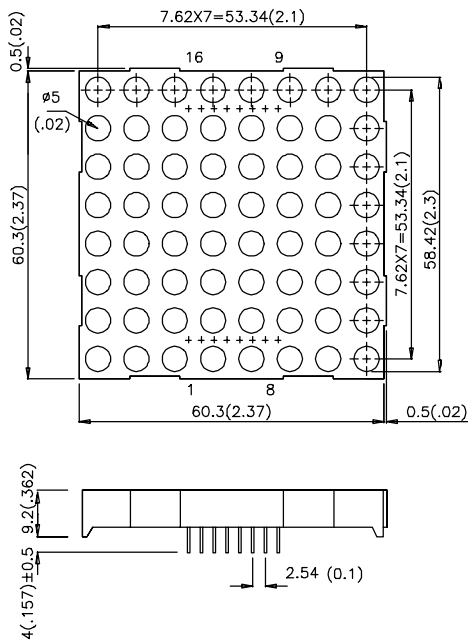
The High Efficiency Red source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Orange Light Emitting Diode.

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

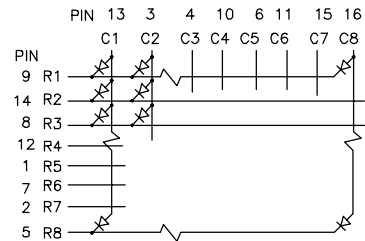
The Yellow source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Yellow Light Emitting Diode.

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

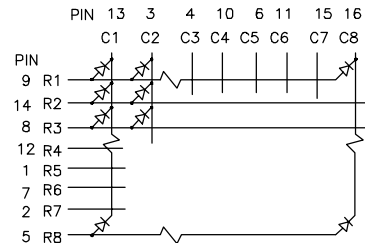
### Package Dimensions & Internal Circuit Diagram



TA23-11



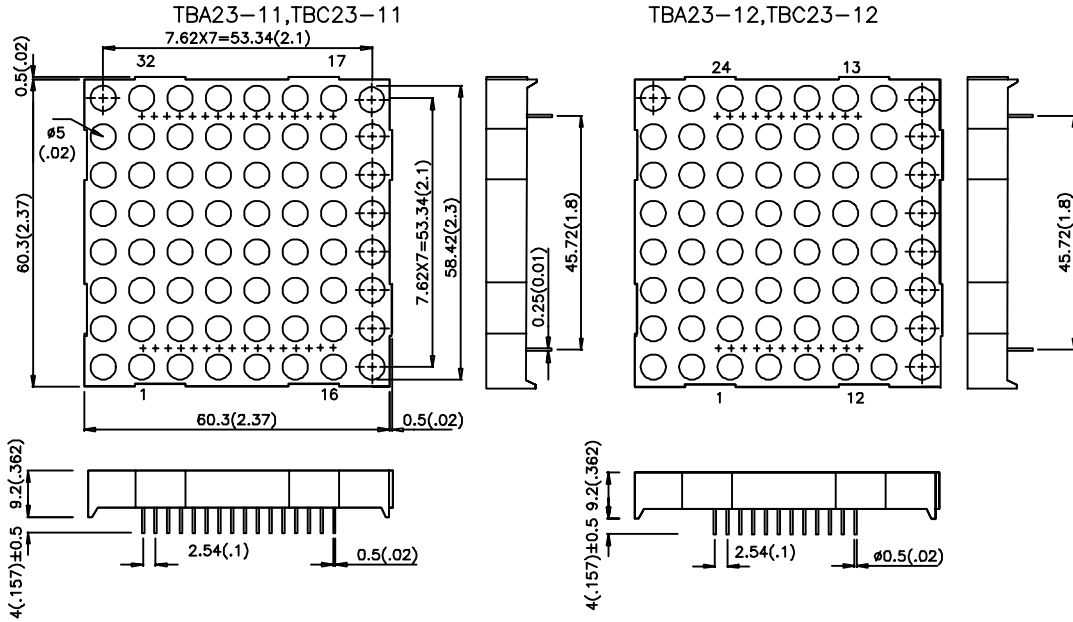
TC23-11



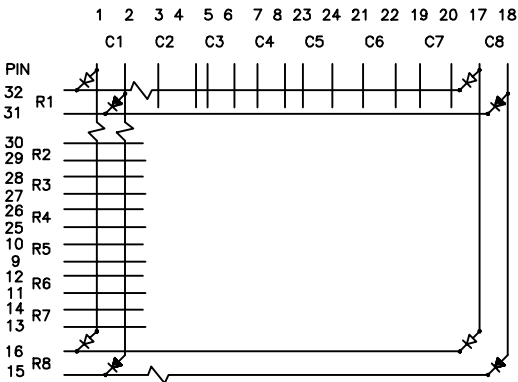
#### Notes:

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

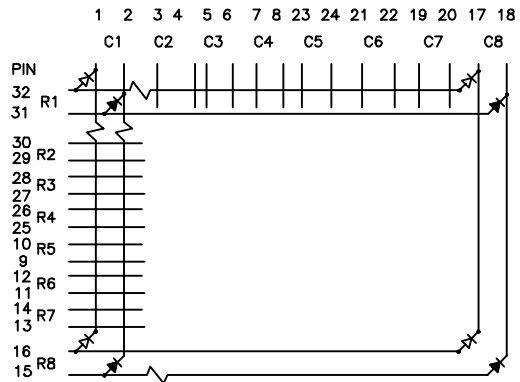
## Package Dimensions & Internal Circuit Diagram



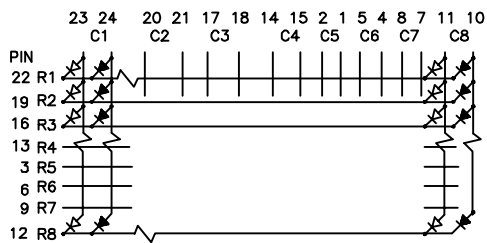
TBA23-11



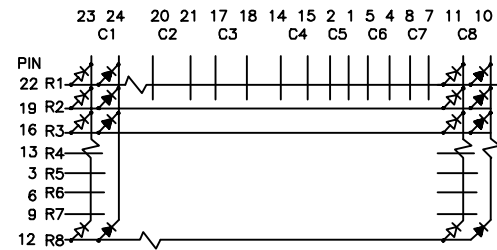
TBC23-11



TBA23-12



TBC23-12



✱ GREEN ✱ RED

## Selection Guide

Part No.	Dice	I <sub>v</sub> (uCd) @ 10 mA		Description
		Min.	Typ.	
TA23-11HWA	BRIGHT RED (GaP)	800	1900	Column Anode
TC23-11HWA				Column Cathode
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
TBA23-11HGWA	BRIGHT RED (GaP) GREEN(GaP)	800	1900	Column Anode
TBC23-11HGWA		4700	10500	Column Cathode
TBA23-11EGWA	HIGH EFFICIENCY RED (GaAsP/GaP) GREEN (GaP)	3000	8000	Column Anode
TBC23-11EGWA		4700	10500	Column Cathode
TBA23-12HGWA	BRIGHT RED (GaP) GREEN(GaP)	800	1900	Column Anode
TBC23-12HGWA		4700	10500	Column Cathode
TBA23-12EGWA	HIGH EFFICIENCY RED (GaAsP/GaP) GREEN (GaP)	3000	8000	Column Anode
TBC23-12EGWA		4700	10500	Column Cathode

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

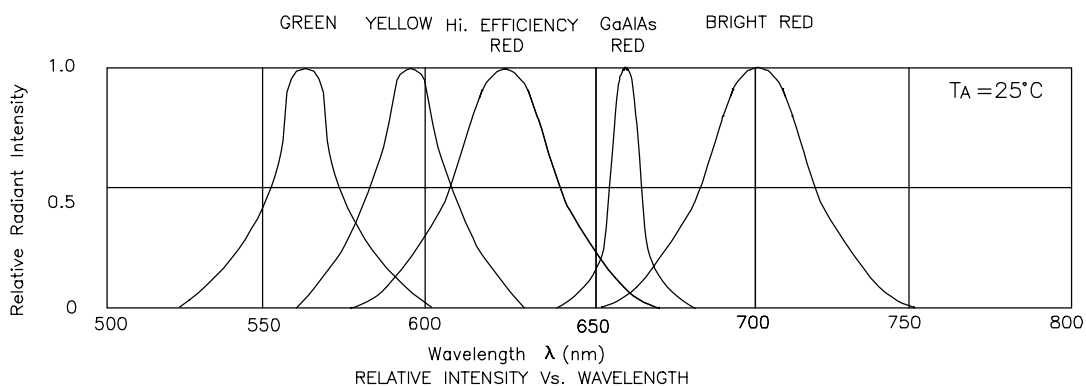
Symbol	Parameter	Device	Typ.	Max.	Units	Test Conditions
λ <sub>peak</sub>	Peak Wavelength	Bright Red High Efficiency Red Green Yellow Super Bright Red	700 625 565 590 660		nm	IF=20mA
Δλ <sub>1/2</sub>	Spectral Line Halfwidth	Bright Red High Efficiency Red Green Yellow Super Bright Red	45 45 30 35 20		nm	IF=20mA
C	Capacitance	Bright Red High Efficiency Red Green Yellow Super Bright Red	40 12 45 10 95		pF	VF=0V;f=1MHz
V <sub>F</sub>	Forward Voltage	Bright Red High Efficiency Red Green Yellow Super Bright Red	2.0 2.0 2.2 2.1 1.85	2.5 2.5 2.5 2.5 2.5	V	IF=20mA
I <sub>r</sub>	Reverse Current	All		10	μA	VR = 5V

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

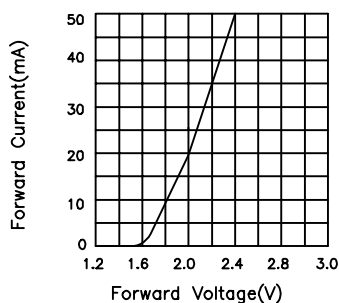
Parameter	Bright Red	High Efficiency Red	Green	Yellow	Super Bright Red	Units
Power dissipation	120	105	105	105	100	mW
DC Forward Current	25	30	25	30	30	mA
Peak Forward Current [1]	150	150	150	150	150	mA
Reverse Voltage	5	5	5	5	5	V
Operating/Storage Temperature	-40°C To +85°C					
Lead Soldering Temperature [2]	260°C For 5 Seconds					

### Notes:

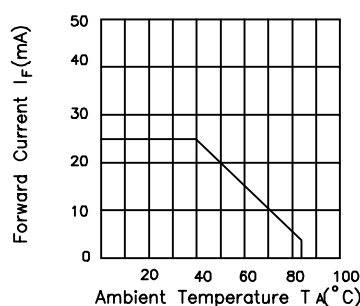
- 1/10 Duty Cycle, 0.1ms Pulse Width.
2. 4mm below package base.



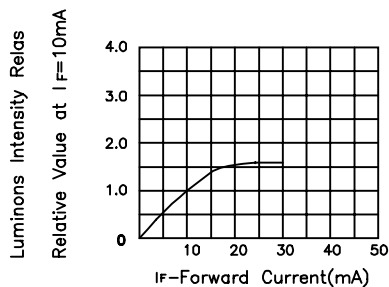
## Bright Red



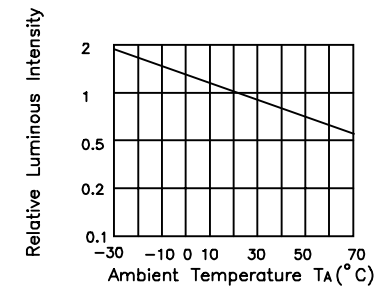
FORWARD CURRENT Vs. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE

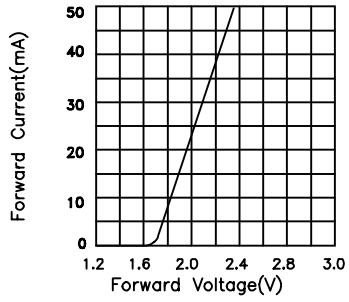


LUMINOUS INTENSITY Vs. FORWARD CURRENT

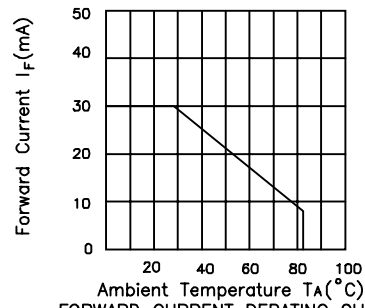


LUMINOUS INTENSITY Vs. AMBIENT TEMPERATURE

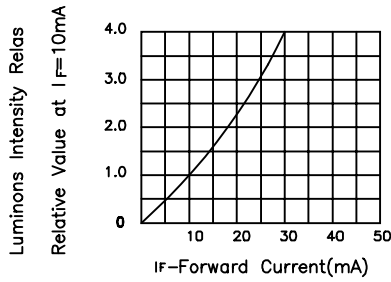
## High Efficiency Red



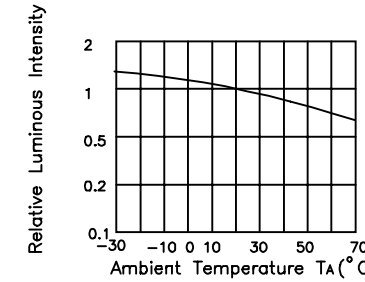
FORWARD CURRENT VS. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE

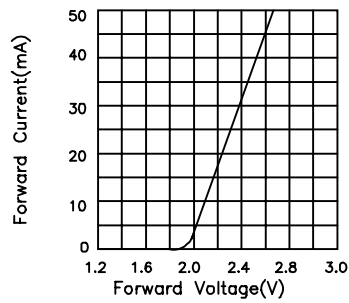


LUMINOUS INTENSITY VS. FORWARD CURRENT

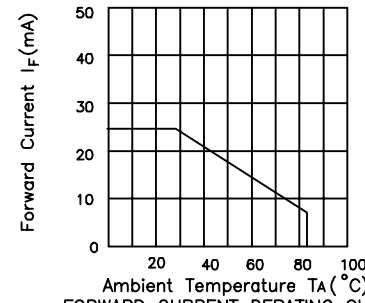


LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

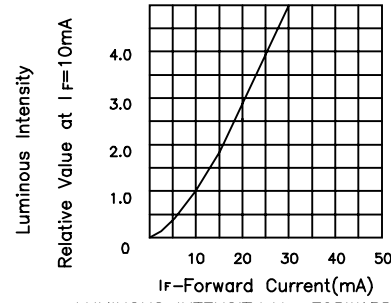
## Green



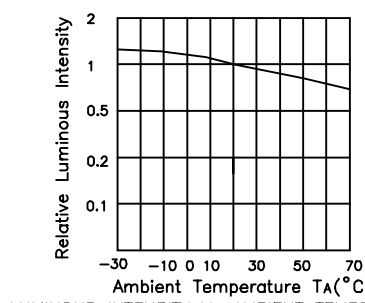
FORWARD CURRENT VS. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE

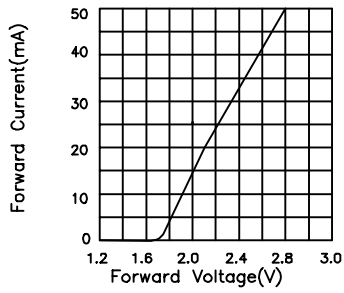


LUMINOUS INTENSITY VS. FORWARD CURRENT

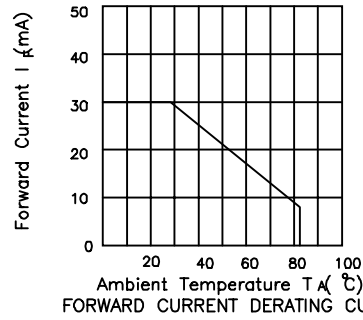


LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

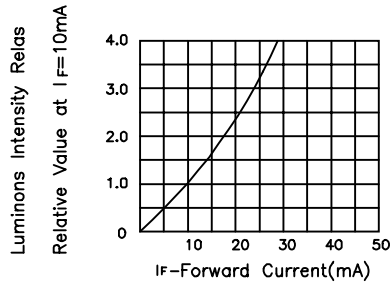
## Yellow



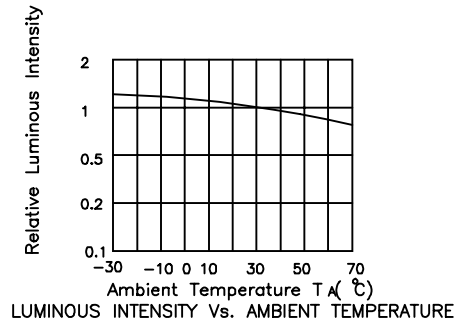
FORWARD CURRENT Vs. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE

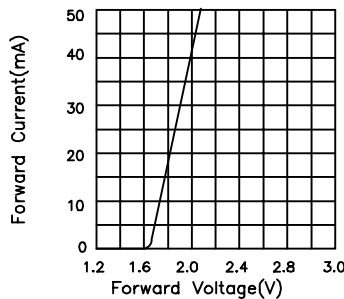


LUMINOUS INTENSITY Vs. FORWARD CURRENT

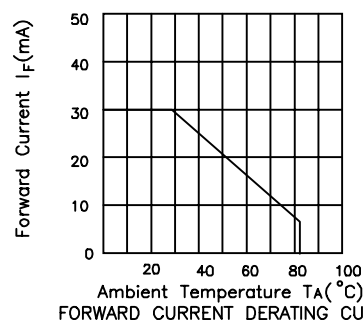


LUMINOUS INTENSITY Vs. AMBIENT TEMPERATURE

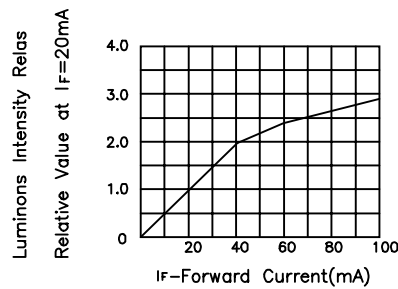
## Super Bright Red



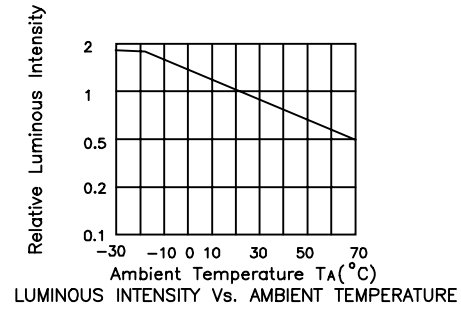
FORWARD CURRENT Vs. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE



LUMINOUS INTENSITY Vs. FORWARD CURRENT



LUMINOUS INTENSITY Vs. AMBIENT TEMPERATURE