

LED Displays

Order code	Manufacturer code	Description
57-0230	SA23-12HWA	2.24" LED DISPLAY ANODE RED
57-0232	SA23-12EWA	2.24" LED DISPLAY ANODE HE RED
57-0235	SC23-12HWA	2.24" LED DISPLAY CATHODE RED
57-0237	SC23-12EWA	2.24" DISPLAY CATHODE HE RED (RC)

LED Displays	Page 1 of 7
The enclosed information is believed to be correct, Information may change 'without notice' due to product improvement. Users should ensure that the product is suitable for their use. E. & O. E.	Revision A 04/07/2003

Kingbright®

57mm (2.3INCH) SINGLE DIGIT NUMERIC DISPLAY

SA23-11	SC23-11
SA23-12	SC23-12
SBA23-11	SBC23-11

Features

- LARGE SIZE.
- 2.3 INCH DIGIT HEIGHT.
- LOW CURRENT OPERATION.
- EXCELLENT CHARACTER APPEARANCE.
- HIGH LIGHT OUTPUT.
- EASY MOUNTING ON P.C. BOARDS OR SOCKETS.
- I.C. COMPATIBLE.
- MULTICOLOR AVAILABLE.
- CATEGORIZED FOR LUMINOUS INTENSITY, YELLOW AND GREEN CATEGORIZED FOR COLOR .
- MECHANICALLY RUGGED.
- STANDARD : GRAY FACE, WHITE SEGMENT.

Description

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

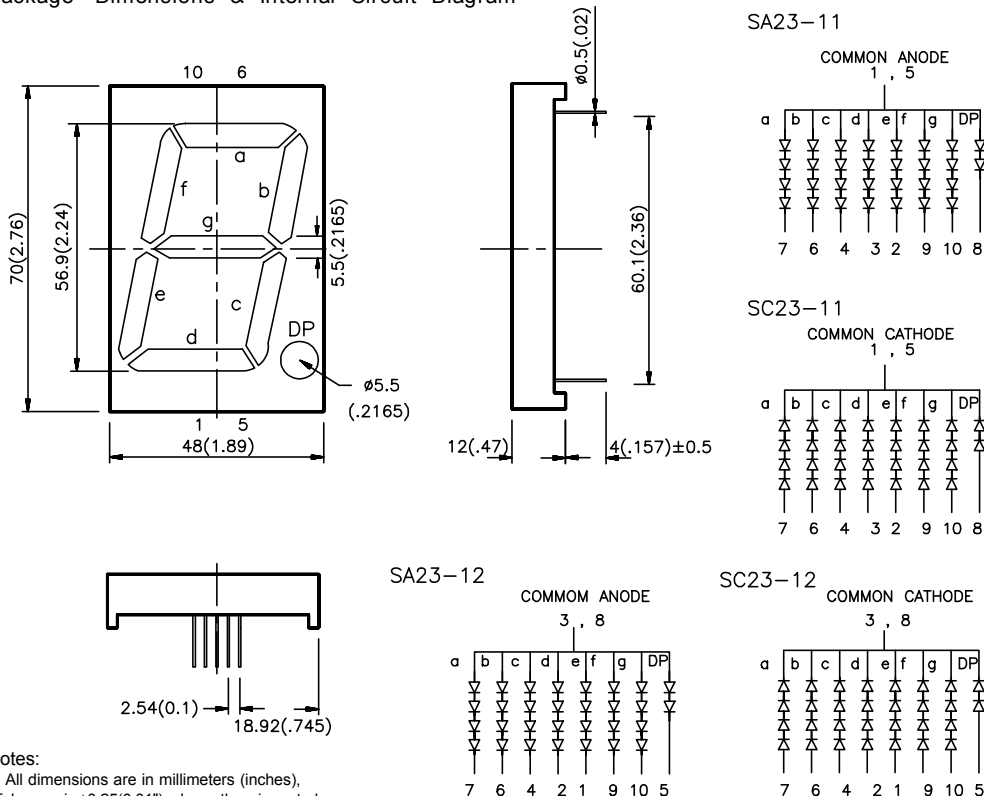
The Green source color devices are made with Gallium Phosphide Green Light Emitting Diode.

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

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

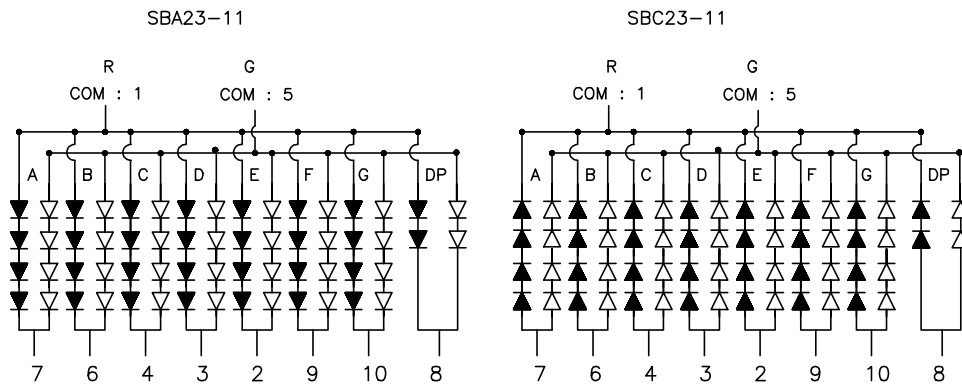
The Super Bright Red source color devices are made with Gallium Aluminum Arsenide Red Light Emitting Diode.

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 subjected to change without notice.

Internal Circuit Diagram



Selection Guide

Part No.	Dice	Iv (ucd) @ 10 mA		Description
		Min.	Max.	
SA23-11HWA SA23-12HWA	BRIGHT RED (GaP)	900	2200	Common Anode, Rt. Hand Decimal
SC23-11HWA SC23-12HWA				Common Cathode, Rt. Hand Decimal
SA23-11EWA SA23-12EWA	HIGH EFFICIENCY RED (GaAsP/GaP)	5600	14000	Common Anode, Rt. Hand Decimal
SC23-11EWA SC23-12EWA				Common Cathode, Rt. Hand Decimal
SA23-11GWA SA23-12GWA	GREEN (GaP)	3600	9000	Common Anode, Rt. Hand Decimal
SC23-11GWA SC23-12GWA				Common Cathode, Rt. Hand Decimal
SA23-11YWA SA23-12YWA	YELLOW (GaAsP/GaP)	3600	9000	Common Anode, Rt. Hand Decimal
SC23-11YWA SC23-12YWA				Common Cathode, Rt. Hand Decimal
SA23-11SRWA SA23-12SRWA	SUPER BRIGHT RED (GaAlAs)	14000	31000	Common Anode, Rt. Hand Decimal
SC23-11SRWA SC23-12SRWA				Common Cathode, Rt. Hand Decimal
SBA23-11EGWA	HIGH EFFICIENCY RED (GaAsP/GaP) GREEN (GaP)	5600	14000	Common Anode, Rt. Hand Decimal
SBC23-11EGWA		3600	9000	Common Cathode, Rt. Hand Decimal

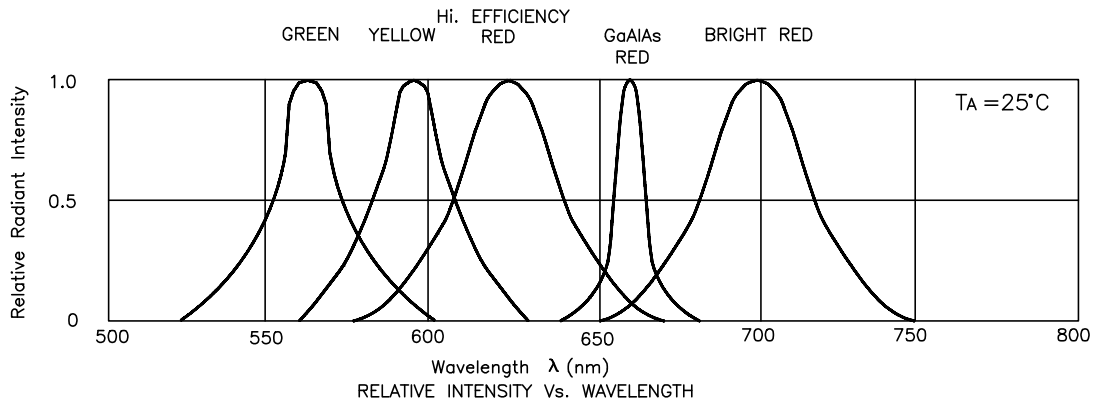
Electrical / Optical Characteristics at T_A=25°C

Symbol	Parameter	Device	Typ.	Max.	Units	Test Conditions
λ_{peak}	Peak Wavelength	Bright Red High Efficiency Red Green Yellow Super Bright Red	700 625 565 590 660		nm	IF=20mA
$\Delta\lambda_{1/2}$	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 _F	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 _R	Reverse Current	All	10		uA	VR = 5V

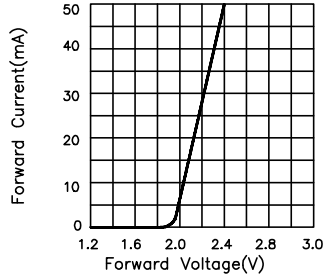
Absolute Maximum Ratings at T_A=25°C

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					

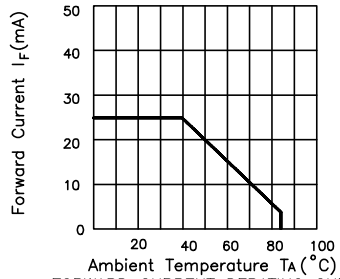
- Notes:
 1. 1/10 Duty Cycle, 0.1ms Pulse Width.
 2. 4mm below package base.



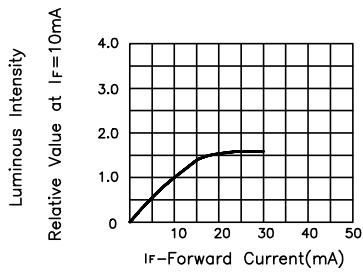
Bright Red



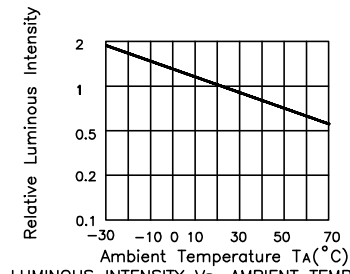
FORWARD CURRENT Vs. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE

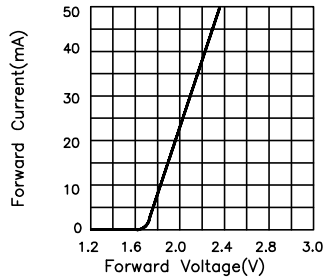


LUMINOUS INTENSITY Vs. FORWARD CURRENT

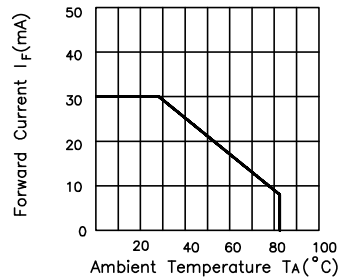


LUMINOUS INTENSITY Vs. AMBIENT TEMPERATURE

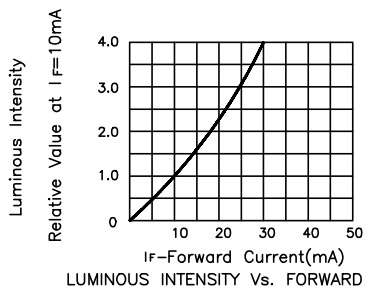
High Efficiency Red



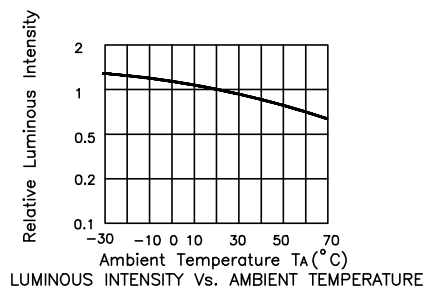
FORWARD CURRENT Vs. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE

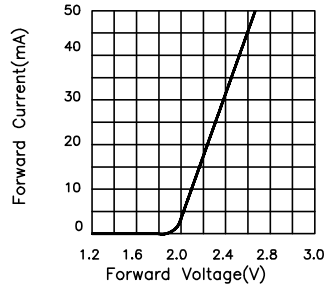


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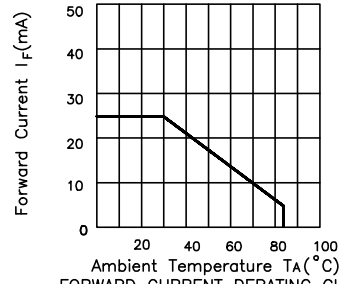


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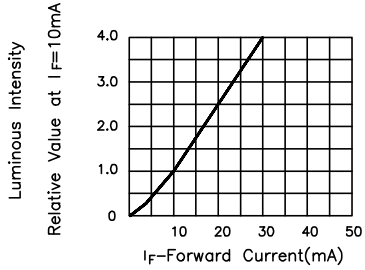
Green



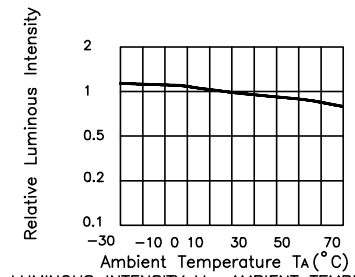
FORWARD CURRENT Vs. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE

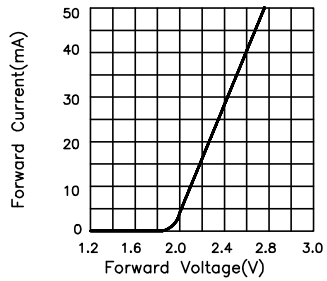


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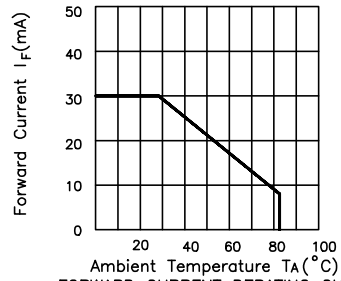


LUMINOUS INTENSITY Vs. AMBIENT TEMPERATURE

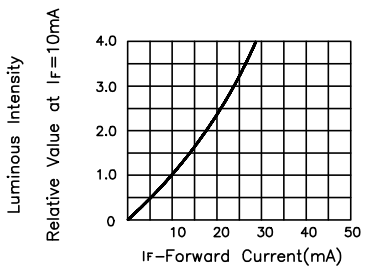
Yellow



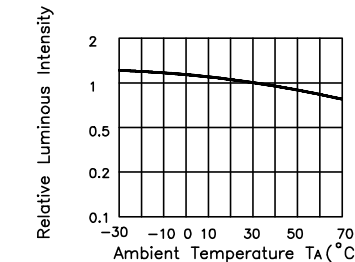
FORWARD CURRENT Vs. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE

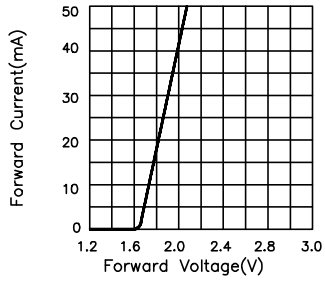


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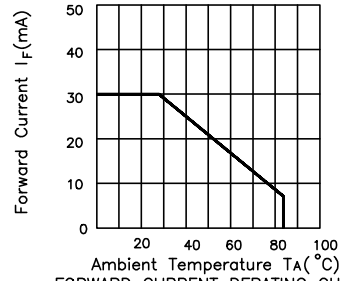


LUMINOUS INTENSITY Vs. AMBIENT TEMPERATURE

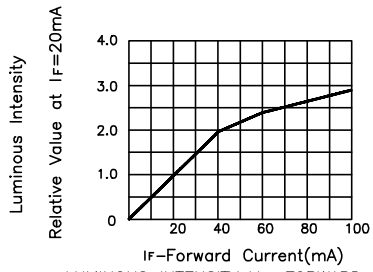
Super Bright Red



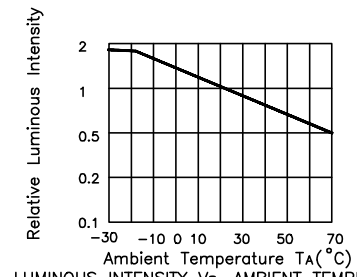
FORWARD CURRENT Vs. FORWARD VOLTAGE



FORWARD CURRENT DERATING CURVE



LUMINOUS INTENSITY Vs. FORWARD CURRENT



LUMINOUS INTENSITY Vs. AMBIENT TEMPERATURE