

## 2.2 Module afficheur 7 segments Kingbright

Projet : IUT5

Info : [DIV518]

Révision : 1 du 10 avril 2007

Révision : 2 de 19 juin 2007

Révision : 3 du 8 juillet 2007

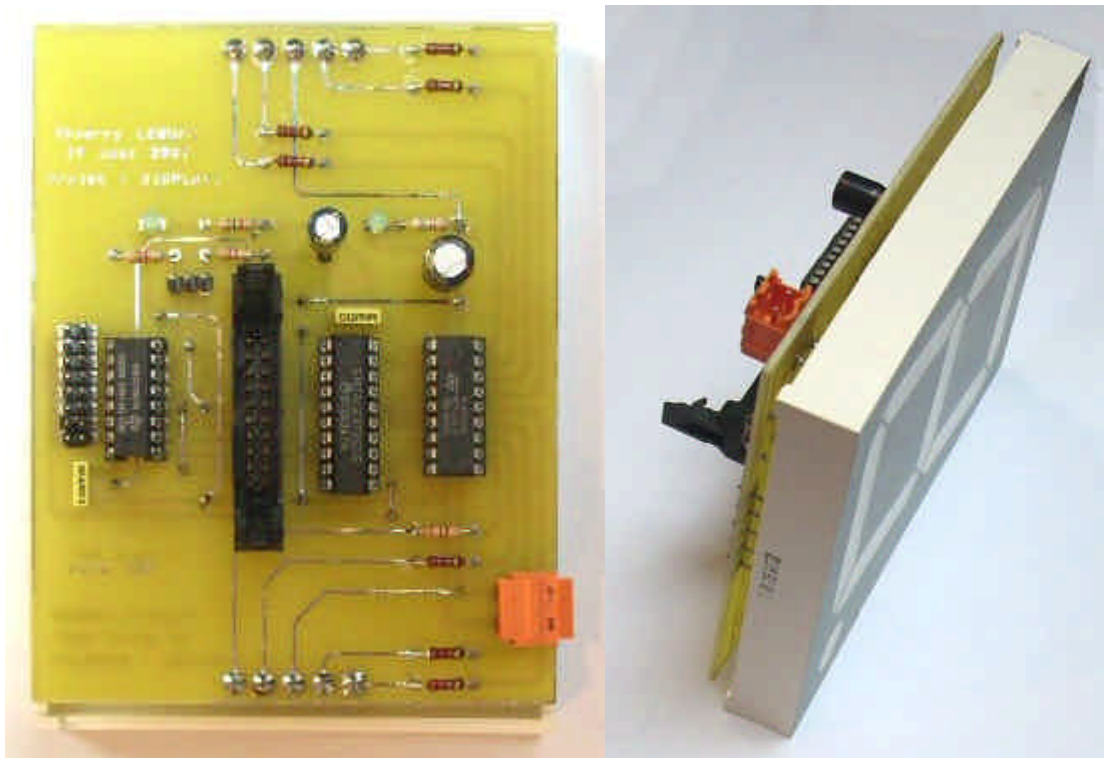


Figure 2.3. Vue de carte électronique (images-maquettes\display1-12 & -32.jpg).

### 2.2.1 Liste des documents

- Désignation des composants
- Prix du montage.
- Schéma électronique.
- Circuit imprimé coté cuivre.
- Circuit imprimé coté composants.
- Implantation des composants.
- Documentations des composants.

## 2.2.2 Désignation des composants

Tableau 2.1. Liste de composants (projets-iut5.xls / DISPLAY1).

N°	Quantité	Référence	Désignation	Empreinte
1	2	C1,C4	100nF	CK06
2	1	C2	220uF 6.3V	RADIAL08
3	1	C3	220uF 25V	RADIAL08
4	2	D1,D2	3mm 2mA	LED3
5	1	JP1	DATA	20SH100L
6	1	JP2	ADRESSE	16SH100
7	1	JP3	SELECT	03PL1
8	1	JP4	+15V	02PL2
9	7	R1,R2,R3,R4,R5,R6,R7	120	RC04
10	1	R8	250	RC04
11	2	R10,R9	4.7k	RC04
12	1	R11	1.5k	RC04
13	1	R12	6.8k	RC04
14	1	U2	ULN2803	18DIP300L
15	1	U3	SA40-19SRWA	SX40-19
16	1	U4	74LS238	16DIP300L
17	1	U5	74LS373	20DIP300

## 2.2.3 Calculs des résistances de limitations

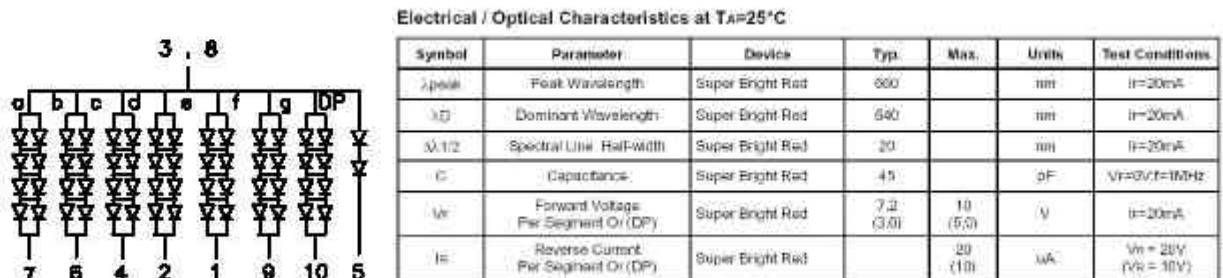


Figure 2.4. Extrait de la documentation de l'afficheur (images-maquettes\SA40-19SRWA-1&2.jpg)

Les segments disposent de 2 rangées de 4 LEDs : I<sub>F</sub> = 20 mA (< 60 mA) et V<sub>F</sub> = 7,2 V typ.

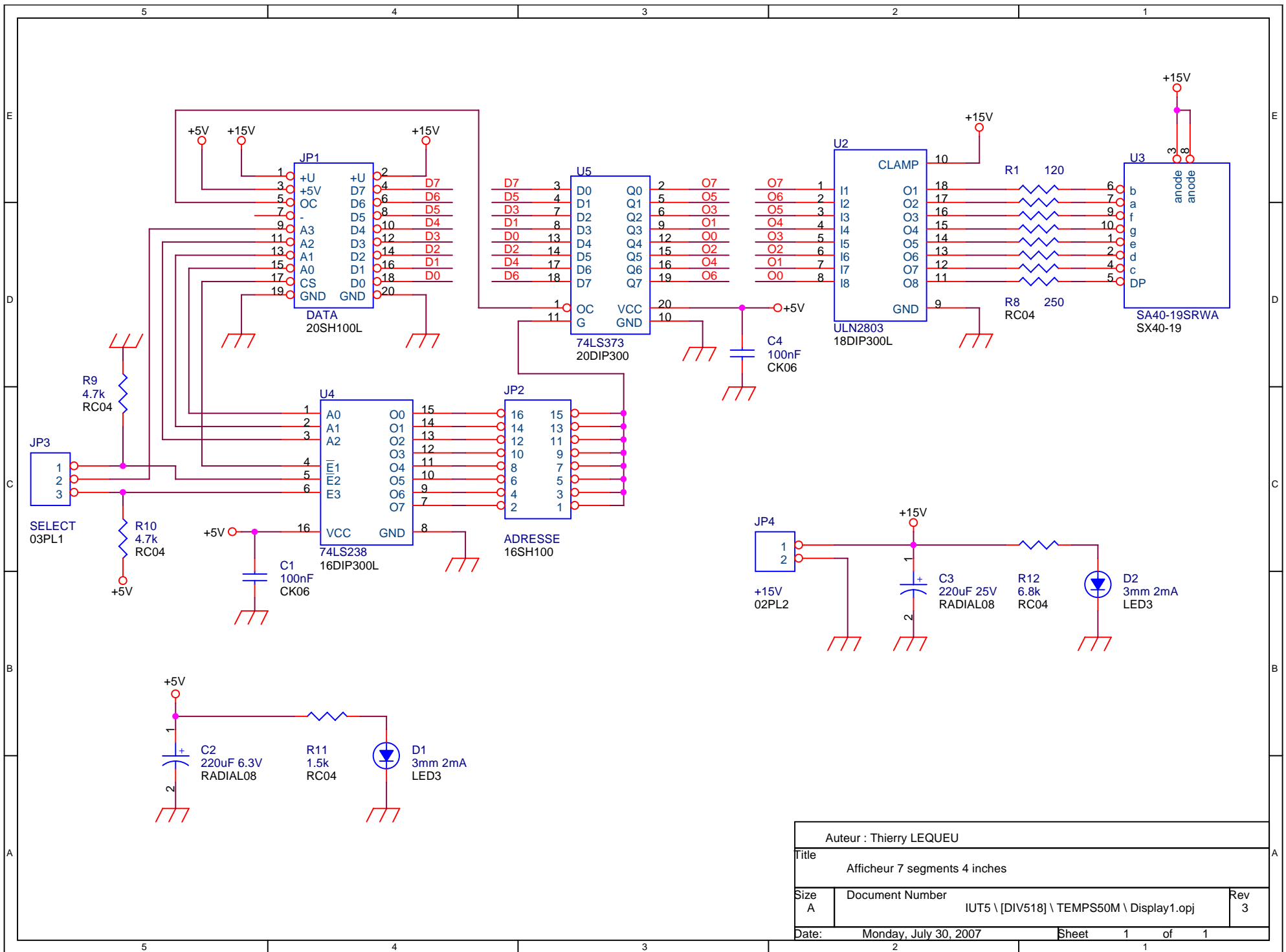
Le point dispose de 2 LEDs en série : I<sub>F</sub> = 10 mA (< 30 mA) et V<sub>F</sub> = 3,6 V typ.

A partir d'une alimentation de E = 15 V et en comptant V<sub>CESAT</sub> = 0,75 V (ULN2803), on obtient :

$$\left\{ \begin{array}{l} \text{Segment} \\ \text{Point} \end{array} \right. \quad \left\{ \begin{array}{l} R_s = \frac{E - V_{Fs} - V_{CESAT}}{I_{Fs}} = \frac{15 - 7,2 - 0,7}{0,020} = 355\Omega \Rightarrow R_s = 390\Omega \\ R_p = \frac{E - V_{Fp} - V_{CESAT}}{I_{Fp}} = \frac{15 - 3,6 - 0,7}{0,010} = 1070\Omega \Rightarrow R_p = 1k\Omega \end{array} \right. \quad (2.1)$$

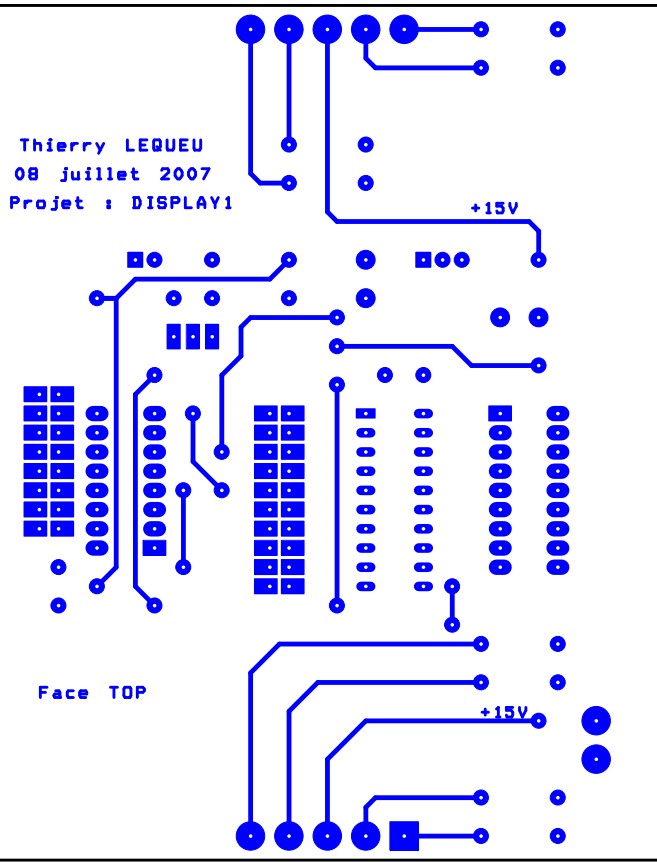
Avec les 7 segments allumés et le point, la consommation est de 7 x 20 mA + 10 mA = **150 mA**.

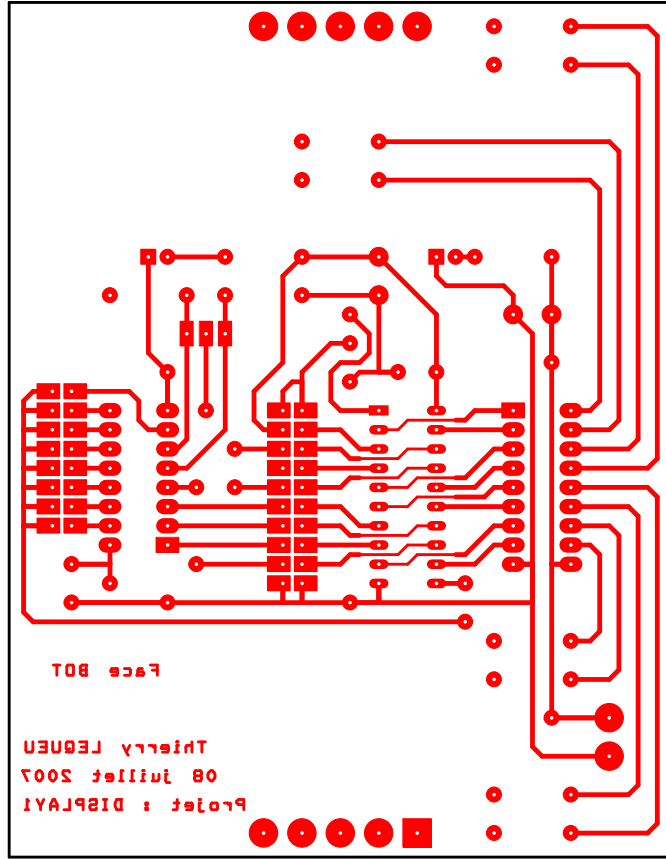
Les 4 afficheurs consommeront au total 4 x 150 mA = **600 mA**.

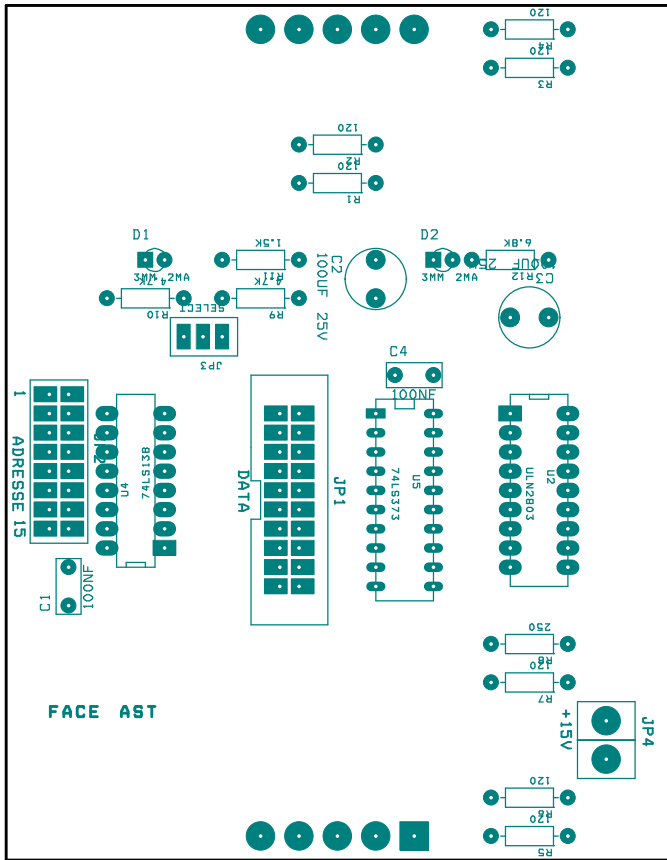


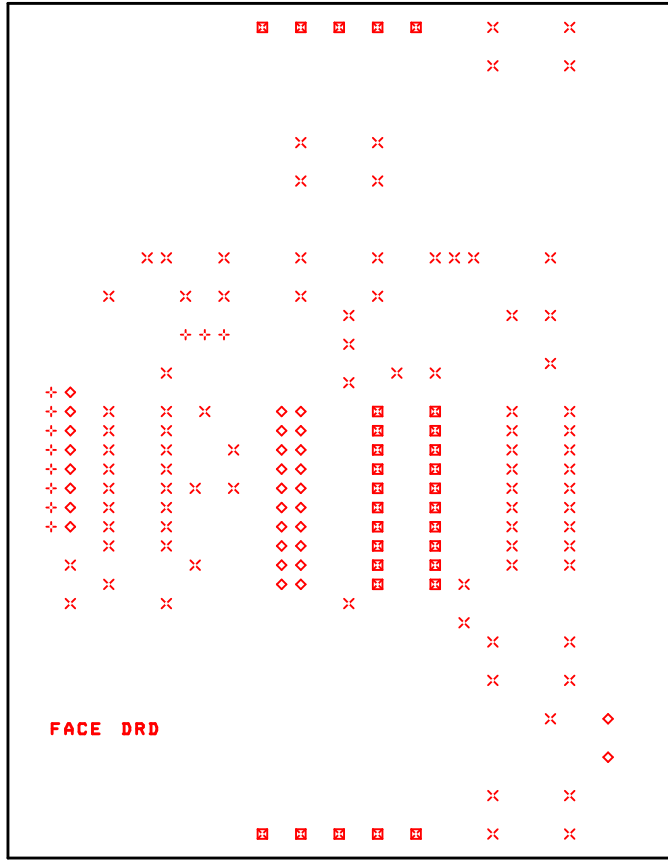
Auteur : Thierry LEQUEU		
Title Afficheur 7 segments 4 inches		
Size A	Document Number IUT5 \ [DIV518] \ TEMPS50M \ Display1.opj	Rev 3
Date: Monday, July 30, 2007	Sheet 1	of 1

Thierry LEQUEU  
08 juillet 2007  
Projet : DISPLAY1









DRILL CHART				
SYM	DIAM	TOL	QTY	NOTE
☒	0.024		20	
X	0.031		86	
+	0.039		11	
◇	0.039		30	
☒	0.047		10	
TOTAL			157	

P/N: SA40-19SRWA

SUPER BRIGHT RED

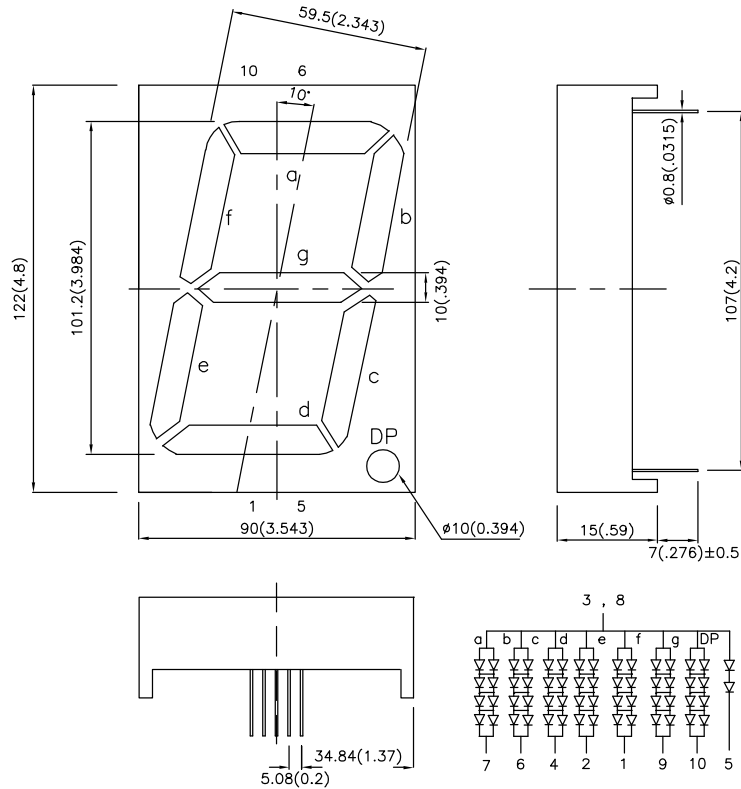
### Features

- LARGE SIZE.
- 4.0 INCH DIGIT HEIGHT.
- LOW CURRENT OPERATION.
- EXCELLENT CHARACTER APPEARANCE.
- HIGH LIGHT OUTPUT.
- EASY MOUNTING ON P.C. BOARDS OR SOCKETS.
- I.C. COMPATIBLE.
- MECHANICALLY RUGGED.
- STANDARD : GRAY FACE, WHITE SEGMENT.
- RoHS COMPLIANT.

### Description

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.



## Selection Guide

Part No.	Dice	Lens Type	Iv (ucd) @ 10mA		Description
			Min.	Typ.	
SA40-19SRWA	SUPER BRIGHT RED (GaAlAs)	WHITE DIFFUSED	26000	105000	Common Anode, Rt. Hand Decimal.

## Electrical / Optical Characteristics at TA=25°C

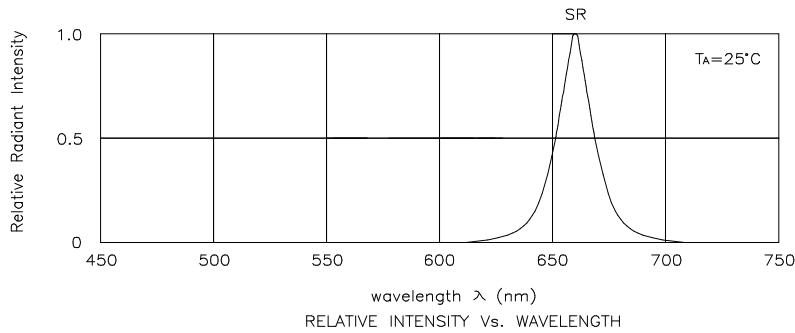
Symbol	Parameter	Device	Typ.	Max.	Units	Test Conditions
$\lambda_{peak}$	Peak Wavelength	Super Bright Red	660		nm	IF=20mA
$\lambda_D$	Dominant Wavelength	Super Bright Red	640		nm	IF=20mA
$\Delta\lambda_{1/2}$	Spectral Line Half-width	Super Bright Red	20		nm	IF=20mA
C	Capacitance	Super Bright Red	45		pF	VF=0V;f=1MHz
VF	Forward Voltage Per Segment Or (DP)	Super Bright Red	7.2 (3.6)	10 (5.0)	V	IF=20mA
IR	Reverse Current Per Segment Or (DP)	Super Bright Red		20 (10)	uA	VR = 20V (VR = 10V)

## Absolute Maximum Ratings at TA=25°C

Parameter	Super Bright Red	Units
Power dissipation Per Segment Or (DP)	600(150)	mW
DC Forward Current Per Segment Or (DP)	60(30)	mA
Peak Forward Current [1] Per Segment Or (DP)	310(155)	mA
Reverse Voltage Per Segment Or (DP)	20(10)	V
Operating/Storage Temperature	-40°C To +85°C	
Lead Solder Temperature [2]	260°C For 5 Seconds	

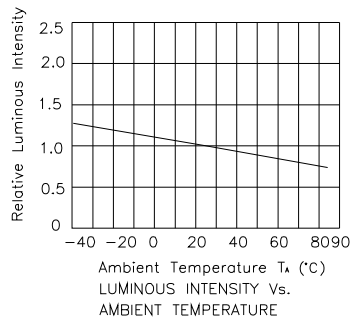
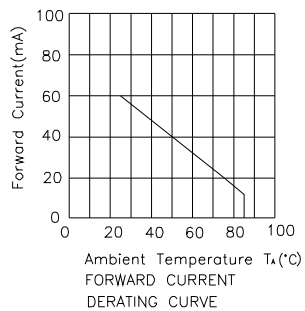
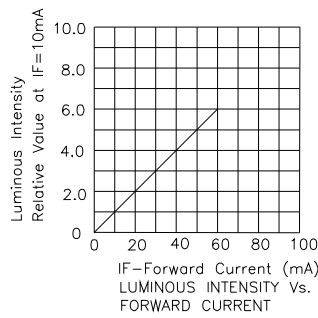
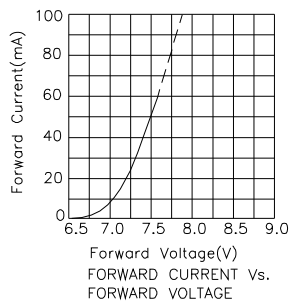
Notes:

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



## Super Bright Red

## SA40-19SRWA



### Remarks:

If special sorting is required (e.g. binning based on forward voltage, Luminous intensity/ luminous flux, or wavelength), the typical accuracy of the sorting process is as follows:

1. Wavelength: +/-1nm
2. Luminous intensity/ Luminous Flux: +/-15%
3. Forward Voltage: +/-0.1V

Note: Accuracy may depend on the sorting parameters.