

## LED NUMERIC DISPLAY, 1 DIGIT

BL-S50X-13

### Features:

- Ø 12.70 mm (0.5") Single digit Seven Segment LED display series
- Ø Low current operation.
- Ø Excellent character appearance.
- Ø Easy mounting on P.C. Boards or sockets.
- Ø I.C. Compatible.
- Ø ROHS Compliance.



### Super Bright

**Electrical-optical characteristics: (Ta=25°C)** (Test Condition: IF=20mA)

| Part No         |                 | Chip          |                 |                  | VF Unit:V |      | Iv TYP.(mcd) |
|-----------------|-----------------|---------------|-----------------|------------------|-----------|------|--------------|
| Common Cathode  | Common Anode    | Emitted Color | Material        | $\lambda_p$ (nm) | Typ       | Max  |              |
| BL-S50C-13S-XX  | BL-S50D-13S-XX  | Hi Red        | GaAlAs/GaAs,SH  | 660              | 1.85      | 2.20 | 15           |
| BL-S50C-13D-XX  | BL-S50D-13D-XX  | Super Red     | GaAlAs/GaAs,DH  | 660              | 1.85      | 2.20 | 23           |
| BL-S50C-13UR-XX | BL-S50D-13UR-XX | Ultra Red     | GaAlAs/GaAs,DDH | 660              | 1.85      | 2.20 | 30           |
| BL-S50C-13E-XX  | BL-S50D-13E-XX  | Orange        | GaAsP/GaP       | 635              | 2.10      | 2.50 | 22           |
| BL-S50C-13Y-XX  | BL-S50D-13Y-XX  | Yellow        | GaAsP/GaP       | 585              | 2.10      | 2.50 | 22           |
| BL-S50C-13G-XX  | BL-S50D-13G-XX  | Green         | GaP/GaP         | 570              | 2.20      | 2.50 | 22           |

### Ultra Bright

**Electrical-optical characteristics: (Ta=25°C)** (Test Condition: IF=20mA)

| Part No          |                  | Chip             |          |                  | VF Unit:V |      | Iv TYP.(mcd) |
|------------------|------------------|------------------|----------|------------------|-----------|------|--------------|
| Common Cathode   | Common Anode     | Emitted Color    | Material | $\lambda_p$ (nm) | Typ       | Max  |              |
| BL-S50C-13UHR-XX | BL-S50D-13UHR-XX | Ultra Red        | AlGaInP  | 645              | 2.10      | 2.50 | 30           |
| BL-S50C-13UE-XX  | BL-S50D-13UE-XX  | Ultra Orange     | AlGaInP  | 630              | 2.10      | 2.50 | 25           |
| BL-S50C-13YO-XX  | BL-S50D-13YO-XX  | Ultra Amber      | AlGaInP  | 619              | 2.10      | 2.50 | 25           |
| BL-S50C-13UY-XX  | BL-S50D-13UY-XX  | Ultra Yellow     | AlGaInP  | 590              | 2.10      | 2.50 | 25           |
| BL-S50C-13UG-XX  | BL-S50D-13UG-XX  | Ultra Green      | AlGaInP  | 574              | 2.20      | 2.50 | 25           |
| BL-S50C-13PG-XX  | BL-S50D-13PG-XX  | Ultra Pure Green | InGaN    | 525              | 3.80      | 4.50 | 30           |
| BL-S50C-13B-XX   | BL-S50D-13B-XX   | Ultra Blue       | InGaN    | 470              | 2.70      | 4.20 | 45           |
| BL-S50C-13W-XX   | BL-S50D-13W-XX   | Ultra White      | InGaN    | /                | 2.70      | 4.20 | 50           |

-XX: Surface / Lens color :

| Number            | 0           | 1              | 2            | 3              | 4               | 5 |
|-------------------|-------------|----------------|--------------|----------------|-----------------|---|
| Ref Surface Color | White       | Black          | Gray         | Red            | Green           |   |
| Epoxy Color       | Water clear | White diffused | Red Diffused | Green Diffused | Yellow Diffused |   |

**LED NUMERIC DISPLAY, 1 DIGIT**
BL-S50X-13
**Absolute maximum ratings (Ta=25°C)**

| Parameter  | S   | D   | UR  | E   | Y   | G   | Unit |
|--|---|-----|-----|-----|-----|-----|------|
| Forward Current $I_F$                              | 25  | 25  | 25  | 25  | 25  | 30  | mA   |
| Power Dissipation $P_d$                            | 60  | 60  | 60  | 60  | 60  | 65  | mW   |
| Reverse Voltage $V_R$                              | 5   | 5   | 5   | 5   | 5   | 5   | V    |
| Peak Forward Current $I_{PF}$<br>(Duty 1/10 @1KHZ) | 150   | 150 | 150 | 150 | 150 | 150 | mA   |
| Operation Temperature $T_{OPR}$                    | -40 to +80  |     |     |     |     |     | °C   |
| Storage Temperature $T_{STG}$                      | -40 to +85  |     |     |     |     |     | °C   |
| Lead Soldering Temperature<br>$T_{SOL}$            | Max.260±5°C for 3 sec Max.<br>(1.6mm from the base of the epoxy bulb) |     |     |     |     |     | °C   |

**Absolute maximum ratings (Ta=25°C)**

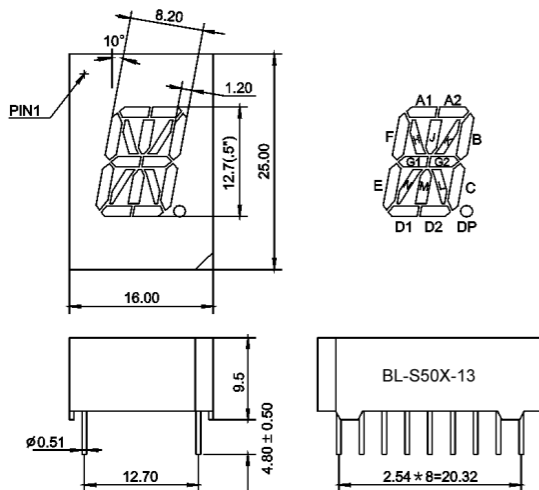
| Parameter  | UHR   | UE  | YO  | UY  | UG  | PG  | UB  | UW  | Unit |
|--|---|-----|-----|-----|-----|-----|-----|-----|------|
| Forward Current $I_F$                              | 30  | 30  | 30  | 30  | 30  | 30  | 30  | 30  | mA   |
| Power Dissipation $P_d$                            | 75  | 65  | 65  | 65  | 75  | 110 | 120 | 120 | mW   |
| Reverse Voltage $V_R$                              | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | V    |
| Peak Forward Current $I_{PF}$<br>(Duty 1/10 @1KHZ) | 150   | 150 | 150 | 150 | 150 | 150 | 100 | 100 | mA   |
| Operation Temperature $T_{OPR}$                    | -40 to +80  |     |     |     |     |     |     |     | °C   |
| Storage Temperature $T_{STG}$                      | -40 to +85  |     |     |     |     |     |     |     | °C   |
| Lead Soldering Temperature<br>$T_{SOL}$            | Max.260±5°C for 3 sec Max.<br>(1.6mm from the base of the epoxy bulb) |     |     |     |     |     |     |     | °C   |

# LED NUMERIC DISPLAY, 1 DIGIT

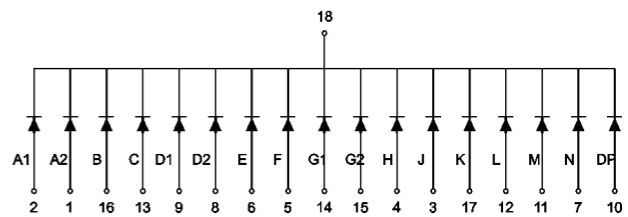
## BL-S50X-13

### Package configuration & Internal circuit diagram

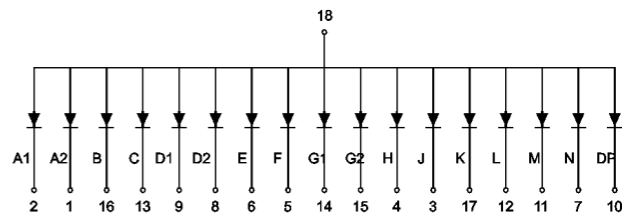
#### BL-S50X-13 Series



#### BL-S50C-13



#### BL-S50D-13



#### Notes:

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

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BL-S50X-13

## Typical electrical-optical characteristics curves:



- (1) - GaAsP/GaAs 655nm/Red
- (2) - GaP 570nm/Yellow Green
- (3) - GaAsP/GaP 585nm/Yellow
- (4) - GaAsP/GaP 635nm/Orange & Hi-Eff Red
- (5) - GaP 700nm/Bright Red
- (6) - GaAlAs/GaAs 660nm/Super Red
- (8) - GaAsP/GaP 610nm/Super Red
- (9) - GaAlAs 880nm
- (10) - GaAs/GaAs & GaAlAs/GaAs 940nm
- (A) - GaN/SiC 430nm/Blue
- (B) - InGaN/SiC 470nm/Blue
- (C) - InGaN/SiC 505nm/Ultra Green
- (D) - InGaAlSiC 525nm/Ultra Green



FORWARD VOLTAGE (Vf)  
FORWARD CURRENT VS.  
FORWARD VOLTAGE



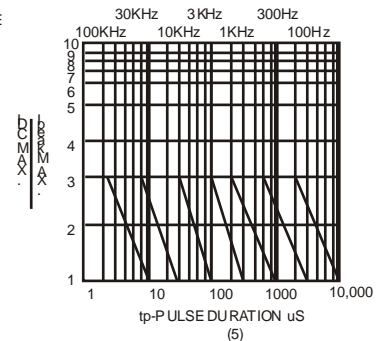
FORWARD CURRENT (mA)  
RELATIVE LUMINOUS  
INTENSITY VS. FORWARD  
CURRENT



AMBIENT TEMPERATURE Ta ( °C )  
FORWARD CURRENT VS. AMBIENT  
TEMPERATURE



AMBIENT TEMPERATURE Ta ( °C )



NOTE: 25 °C free air temperature unless otherwise specified

**LED NUMERIC DISPLAY, 1 DIGIT**

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Packing and weighting

