



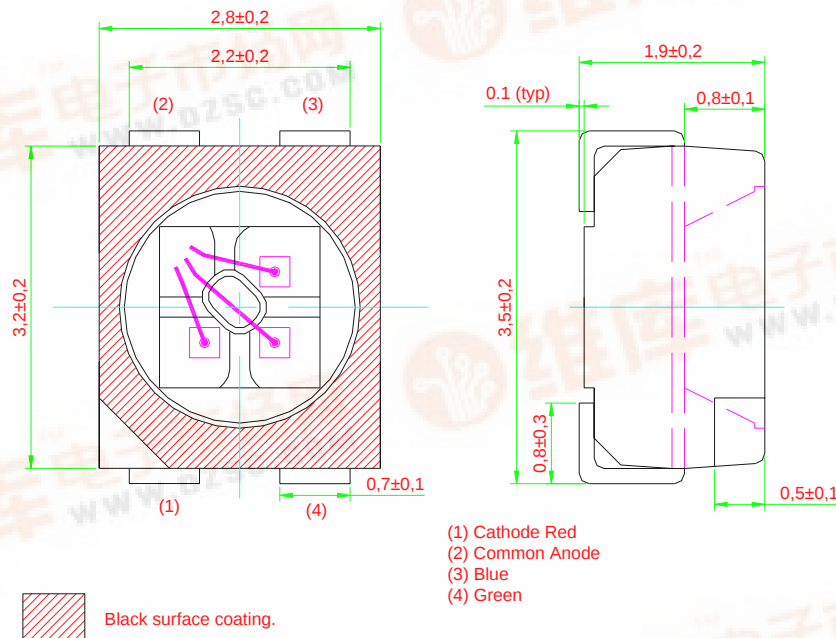
# AMERICAN BRIGHT OPTOELECTRONICS CORP.

Multi DOMILED BL-PM Series

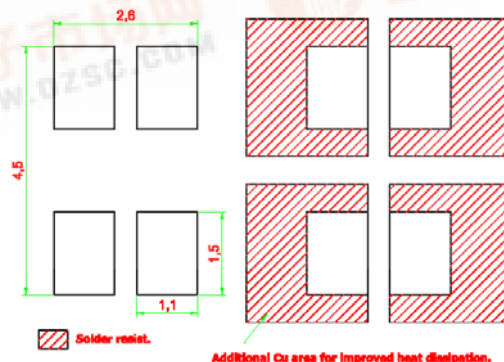
## ● Feature:

1. High brightness tri-color surface mount LED.
2. Capable for all video-standards.
3. The RGB-LED chips can be controlled individually.
4. 120° viewing angle.
5. Small package outline (LxWxH) of 2.8 x 3.2 x 1.9 mm.
6. Qualified according to JEDEC moisture sensitivity Level 2.
7. Compatible to both IR reflow soldering and TTW soldering.

## ● Package Dimension:



## Recommended Solder Pad





● Optical Characteristics:

| Part Number         | Wavelength<br>$\lambda_{\text{dom}}$ (nm) |               |        | Luminous Intensity<br>@ If = 20mA . Iv ( mcd ) |                        |                       |
|---------------------|-------------------------------------------|---------------|--------|------------------------------------------------|------------------------|-----------------------|
|                     | Chip 1                                    | Chip 2        | Chip 3 | Chip 1                                         | Chip 2                 | Chip 3                |
| <b>BL-PMRTB-SJB</b> |                                           |               |        | <b>112.5 ... 180.0</b>                         | <b>180.0 ... 450.0</b> | <b>45.0 ... 112.5</b> |
| • BIN R S P         |                                           |               |        | 112.5 ... 180.0                                | 180.0 ... 285.0        | 45.0 ... 71.5         |
| • BIN R S Q         |                                           |               |        | 112.5 ... 180.0                                | 180.0 ... 285.0        | 71.5 ... 112.5        |
| • BIN R T P         |                                           |               |        | 112.5 ... 180.0                                | 285.0 ... 450.0        | 45.0 ... 71.5         |
| • BIN R T Q         |                                           |               |        | 112.5 ... 180.0                                | 285.0 ... 450.0        | 71.5 ... 112.5        |
| <b>BL-PMRTB-CJB</b> |                                           |               |        | <b>112.5 ... 180.0</b>                         | <b>112.5 ... 285.0</b> | <b>45.0 ... 112.5</b> |
| • BIN R R P         | Red                                       | True<br>Green | Blue   | 112.5 ... 180.0                                | 112.5 ... 180.0        | 45.0 ... 71.5         |
| • BIN R R Q         |                                           |               |        | 112.5 ... 180.0                                | 112.5 ... 180.0        | 71.5 ... 112.5        |
| • BIN R S P         |                                           |               |        | 112.5 ... 180.0                                | 180.0 ... 285.0        | 45.0 ... 71.5         |
| • BIN R S Q         |                                           |               |        | 112.5 ... 180.0                                | 180.0 ... 285.0        | 71.5 ... 112.5        |
|                     | 625                                       | 525           | 470    |                                                |                        |                       |
| <b>BL-PMRTB-UJB</b> |                                           |               |        | <b>180.0 ... 285.0</b>                         | <b>285.0 ... 715.0</b> | <b>71.5 ... 180.0</b> |
| • BIN S T Q         |                                           |               |        | 180.0 ... 285.0                                | 285.0 ... 450.0        | 71.5 ... 112.5        |
| • BIN S T R         |                                           |               |        | 180.0 ... 285.0                                | 285.0 ... 450.0        | 112.5 ... 180.0       |
| • BIN S U Q         |                                           |               |        | 180.0 ... 285.0                                | 450.0 ... 715.0        | 71.5 ... 112.5        |
| • BIN S U R         |                                           |               |        | 180.0 ... 285.0                                | 450.0 ... 715.0        | 112.5 ... 180.0       |
| • BIN T T Q         |                                           |               |        | 285.0 ... 450.0                                | 285.0 ... 450.0        | 71.5 ... 112.5        |
| • BIN T T R         |                                           |               |        | 285.0 ... 450.0                                | 285.0 ... 450.0        | 112.5 ... 180.0       |
| • BIN T U Q         |                                           |               |        | 285.0 ... 450.0                                | 450.0 ... 715.0        | 71.5 ... 112.5        |
| • BIN T U R         |                                           |               |        | 285.0 ... 450.0                                | 450.0 ... 715.0        | 112.5 ... 180.0       |

Note:

1. Luminous intensity is measured with an accuracy of  $\pm 11\%$ .
2. Half group binning for luminous intensity is available as an option. Please refer to the following table for details.
3. Wavelength binning is available as an option. Please refer to the following table for details.
4. Special requirements such as  $V_f$  binning could be implemented upon customers' request. Binning scheme is as per the following table.

**● Absolute Maximum Ratings:**

| Parameter                                                                       | Maximum Value     |                           | Unit |
|---------------------------------------------------------------------------------|-------------------|---------------------------|------|
| DC forward current.                                                             | Red<br>30         | Green, Blue<br>20         | mA   |
| Peak pulse current.<br>( $t_p \leq 10 \mu s$ , Duty cycle = 0.005)              | Red<br>1000       | Green, Blue<br>200        | mA   |
| Reverse voltage.                                                                | Red<br>12         | Green, Blue<br>5          | V    |
| Power consumption.                                                              | Red<br>75         | Green, Blue<br>85         | V    |
| Thermal resistance junction/ambient, $R_{th JA}$<br>1chip on<br>3 chips on      | Red<br>480<br>770 | Green, Blue<br>530<br>820 | K/W  |
| Thermal resistance junction/solder point, $R_{th JS}$<br>1chip on<br>3 chips on | Red<br>260<br>420 | Green, Blue<br>290<br>470 | K/W  |
| LED junction temperature.                                                       | 125               |                           | °C   |
| Operating temperature.                                                          | -40 ... +100      |                           | °C   |
| Storage temperature.                                                            | -40 ... +100      |                           | °C   |

**● Electrical Characteristics ( $T_A = 25^\circ C$ ):**

| Color      | $V_f$ at $I_f=20mA$<br>(V) |      | $I_r$ at $V_r=12V$<br>( $\mu A$ ) |     | Temperature coefficient of $V_f$<br>( $I_f=20mA$ ; $-10^\circ C < T < 100^\circ C$ ) |
|------------|----------------------------|------|-----------------------------------|-----|--------------------------------------------------------------------------------------|
|            | Typ.                       | Max  | Typ.                              | Max | Typ. ( mV/K )                                                                        |
| Red        | 2.2                        | 2.45 | 0.01                              | 100 | -2.0                                                                                 |
| True Green | 3.7                        | 4.25 | 0.01                              | 10  | -3.6                                                                                 |
| Blue       | 3.7                        | 4.25 | 0.01                              | 10  | -3.1                                                                                 |

**● Optical Characteristics ( $T_A = 25^\circ C$ ):**

| Color      | Temperature coefficient ( $I_f=20mA$ ; $-10^\circ C < T < 100^\circ C$ , typ.) |                         | View Angle |
|------------|--------------------------------------------------------------------------------|-------------------------|------------|
|            | $\lambda_{peak}$ (nm/K)                                                        | $\lambda_{dom.}$ (nm/K) | (deg.)     |
| Red        | 0.15                                                                           | 0.05                    | 120        |
| True Green | 0.04                                                                           | 0.03                    |            |
| Blue       | 0.04                                                                           | 0.02                    |            |



- **Half Group For Luminous Intensity:**

If half grouping is required for luminous intensity, only one half group is allowed for each chip within a reel.

| Groupings | Min. (mcd) | Max. (mcd) |
|-----------|------------|------------|
| N1        | 28.5       | 35.5       |
| N2        | 35.5       | 45.0       |
| P1        | 45.0       | 56.0       |
| P2        | 56.0       | 71.5       |
| Q1        | 71.5       | 90.0       |
| Q2        | 90.0       | 112.5      |
| R1        | 112.5      | 140.0      |
| R2        | 140.0      | 180.0      |

| Groupings | Min. (mcd) | Max. (mcd) |
|-----------|------------|------------|
| S1        | 180.0      | 224.0      |
| S2        | 224.0      | 285.0      |
| T1        | 285.0      | 355.0      |
| T2        | 355.0      | 450.0      |
| U1        | 450.0      | 560.0      |
| U2        | 560.0      | 715.0      |

- **Wavelength Grouping:**

If wavelength binning is required, only one wavelength group is allowed for each chip within a reel.

| Color      | Group | Wavelength distribution (nm) |
|------------|-------|------------------------------|
| Red        | Full  | 620 – 630                    |
| True Green | Full  | 520 - 536                    |
|            | W     | 520 - 524                    |
|            | X     | 524 - 528                    |
|            | Y     | 528 – 532                    |
|            | Z     | 532 - 536                    |
| Blue       | Full  | 464 - 480                    |
|            | W     | 464 - 468                    |
|            | X     | 468 - 472                    |
|            | Y     | 472 - 476                    |
|            | Z     | 476 – 480                    |

Wavelength is measured with an accuracy of  $\pm 1$  nm.

- **Vf Binning:**

| Vf Bin @ 20mA | Red, AlInGaP (V) | Blue & True Green, InGaN (V) |
|---------------|------------------|------------------------------|
| 00            | 1.25 ... 1.55    | 3.05 ... 3.35                |
| 01            | 1.55 ... 1.85    | 3.35 ... 3.65                |
| 02            | 1.85 ... 2.15    | 3.65 ... 3.95                |
| 03            | 2.15 ... 2.45    | 3.95 ... 4.25                |

Forward voltage, Vf is measured with an accuracy of  $\pm 0.1$  V.



### ● Typical electro-optical characteristics curves:

Fig.1 Relative luminous intensity vs. forward current.

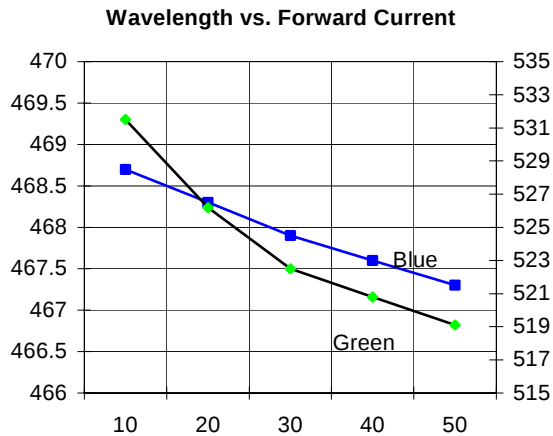


Fig. 2 Wavelength vs. forward current.

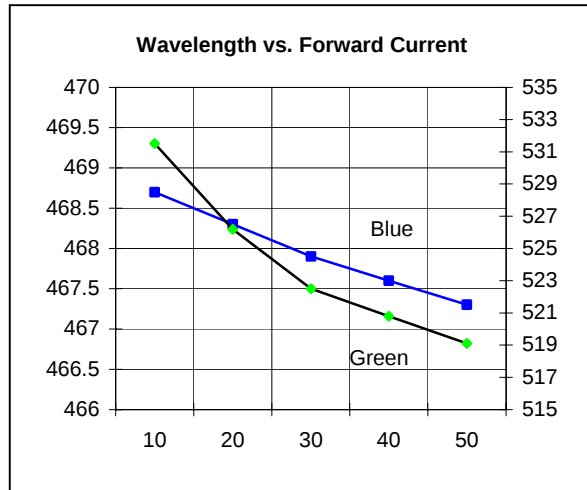


Fig. 3. Wavelength Distribution.

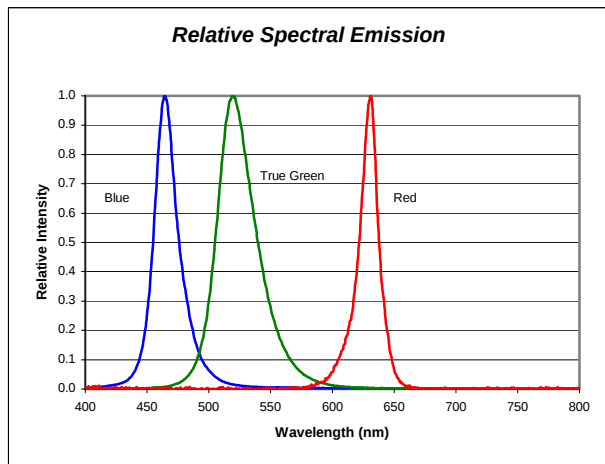


Fig. 4. Forward current vs. forward voltage.

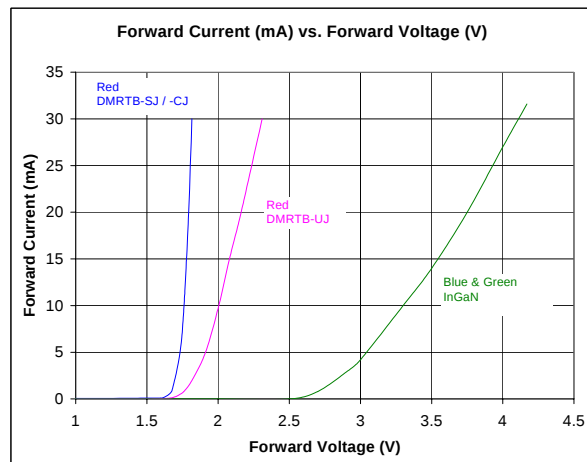
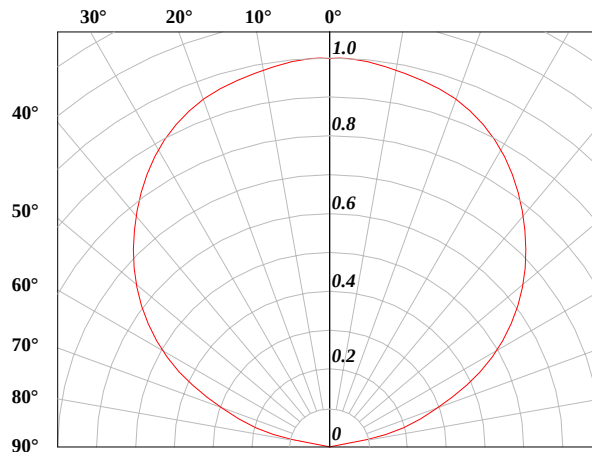


Fig 5. Radiation pattern.





# AMERICAN BRIGHT OPTOELECTRONICS CORP.

## Multi DOMILED BL-PM Series

Fig 6. Maximum forward current vs. temperature (1 chip on)

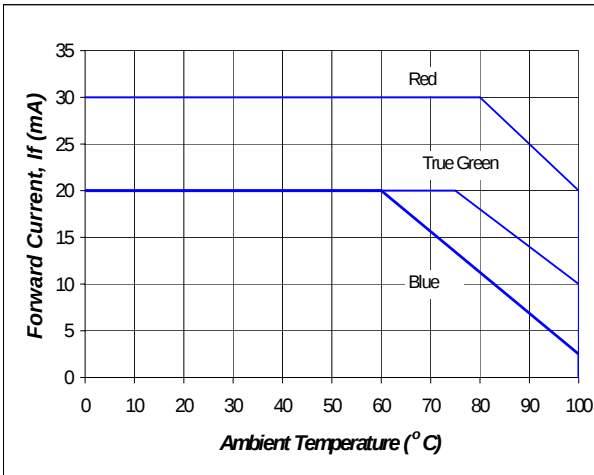


Fig 7. Maximum forward current vs. temperature (3 chips on)

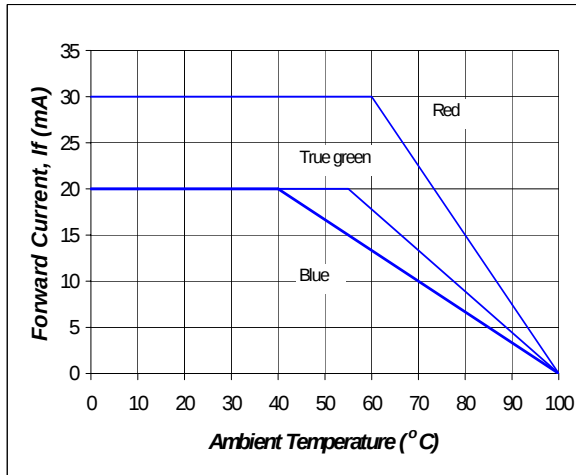


Fig 8. Maximum forward current vs. temperature (1 chip on)

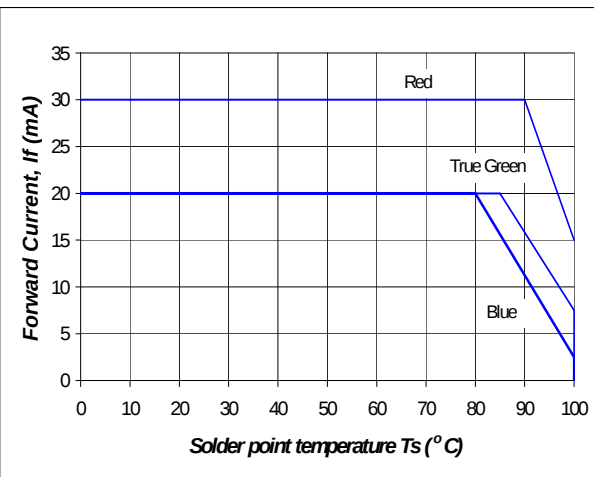


Fig 9. Maximum forward current vs. temperature (3 chips on)

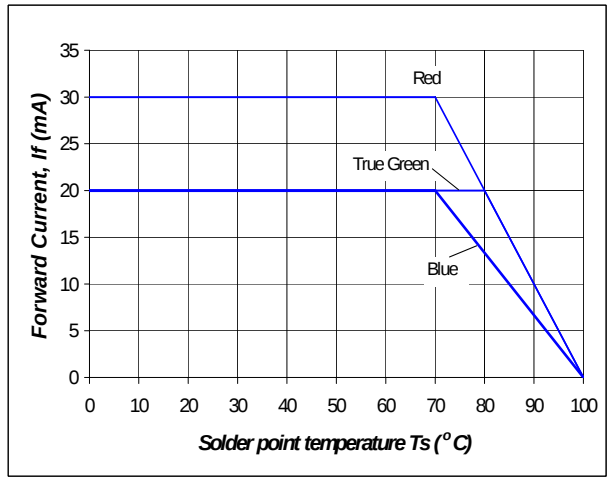


Fig 10. Recommended IR-reflow Soldering Profile

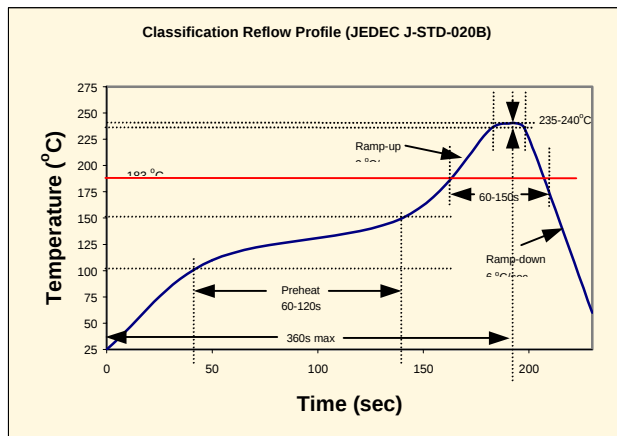
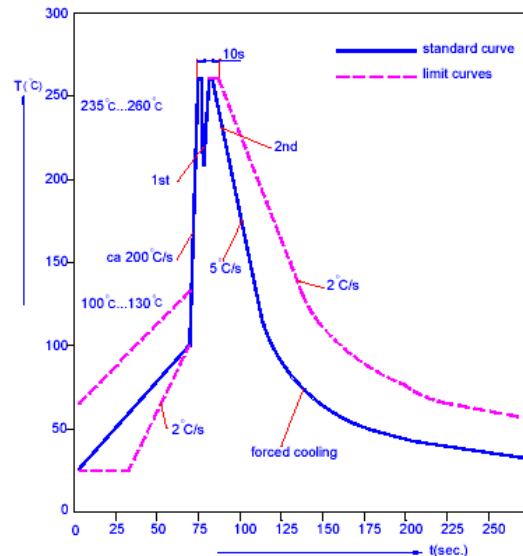


Fig 11. Recommended TTW Soldering Profile



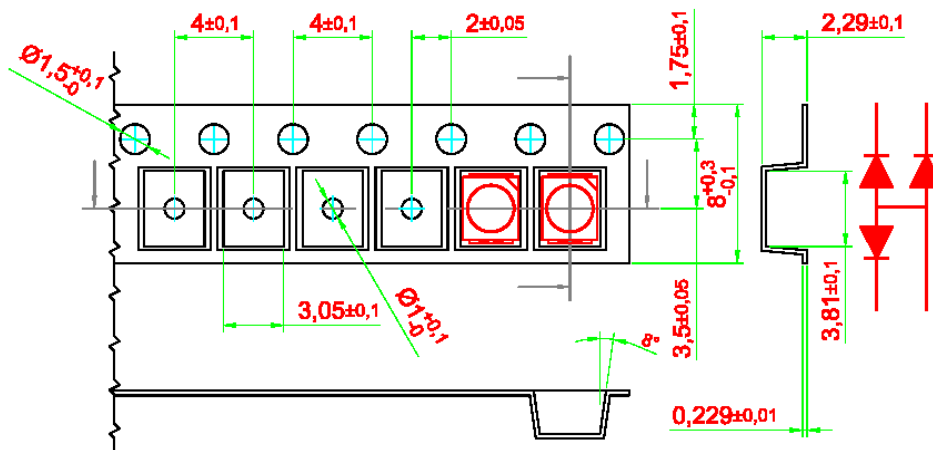


# AMERICAN BRIGHT OPTOELECTRONICS CORP.

Multi DOMILED BL-PM Series

## ● Taping And Orientation:

Reels with quantity of 500, 750, 1000, 1250, 1500, 1750, 2000 units. Reel diameter is 180 mm.



200 mm min. for  $\phi 180$  reel.

200 mm min. for  $\phi 330$  reel.

480 mm min. for  $\phi 180$  reel.

960 mm min. for  $\phi 330$  reel.

