

**SMD LED LAMP**
**BL-LS3020A0S1**
**Features:**

- 3.0mmx2.0mm SMD, 1.3mm THICKNESS PLCC2 package
- Mono-color type, Ultra brightness
- Compatible with automatic placement equipment
- WIDE VIEWING ANGLE.
- IDEAL FOR BACKLIGHT AND INDICATOR.
- PACKAGE: 3KPCS/REEL
- RoHs Compliance


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

| Part Number      | Chip             |          |                     | Lens Type   | Forward Voltage(VF)<br>Unit:V |      | Luminous Intensity (lv)<br>Unit:mcd |      | Viewing Angle 2θ1/2 (deg) |
|------------------|------------------|----------|---------------------|-------------|-------------------------------|------|-------------------------------------|------|---------------------------|
|                  | Emitted Color    | Material | λ <sub>P</sub> (nm) |             | Typ                           | Max  | Min.                                | Typ. |                           |
|                  |                  |          |                     |             |                               |      |                                     |      |                           |
| BL-LS3020A0S1UEC | Ultra Red        | AlGaAs   | 630                 | Water Clear | 2.10                          | 2.50 | 250                                 | 320  | 120                       |
| BL-LS3020A0S1UYO | Ultra Amber      | AlGaInP  | 610                 |             | 2.10                          | 2.60 | 500                                 | 600  |                           |
| BL-LS3020A0S1UYC | Ultra Yellow     | AlGaInP  | 593                 |             | 2.10                          | 2.60 | 500                                 | 600  |                           |
| BL-LS3020A0S1UGC | Ultra Green      | AlGaInP  | 575                 |             | 2.20                          | 2.70 | 70                                  | 80   |                           |
| BL-LS3020A0S1PGC | Ultra Pure Green | InGaN    | 525                 |             | 3.10                          | 3.80 | 1300                                | 1500 |                           |
| BL-LS3020A0S1UBC | Ultra Blue       | InGaN    | 470                 |             | 3.10                          | 3.80 | 450                                 | 500  |                           |
| BL-LS3020A0S1UWC | Ultra White      | InGaN    | /                   |             | 3.10                          | 3.80 | 1900                                | 2100 |                           |

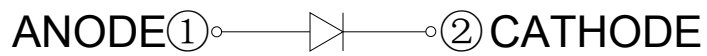
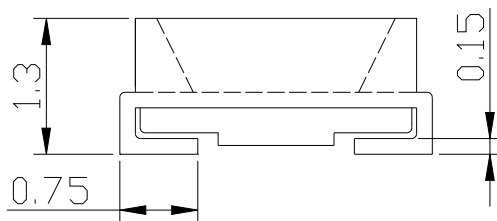
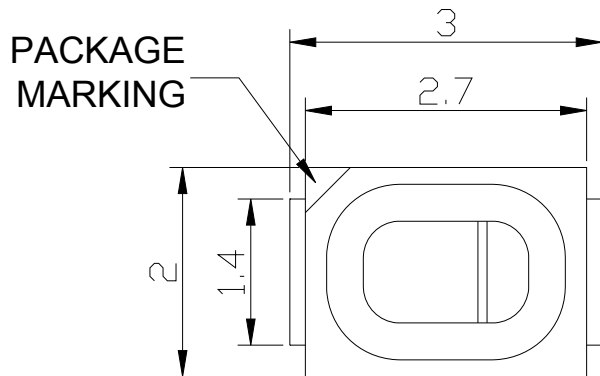
**Absolute maximum ratings (Ta=25°C)**

| Parameter   | UE  | UYO | UY  | UG  | PG  | UB  | UW  | Unit |
|---|---|-----|-----|-----|-----|-----|-----|------|
| Forward Current I <sub>F</sub>                            | 30  | 30  | 30  | 30  | 30  | 30  | 30  | mA   |
| Power Dissipation P <sub>d</sub>                          | 78  | 78  | 78  | 78  | 78  | 78  | 78  | mW   |
| Reverse Voltage V <sub>R</sub>                            | 5   | 5   | 5   | 5   | 5   | 5   | 5   | V    |
| Peak Forward Current I <sub>PF</sub><br>(Duty 1/10 @1KHZ) | 100   | 100 | 100 | 100 | 100 | 100 | 100 | mA   |
| Operation Temperature T <sub>OPR</sub>                    | -30 to +80  |     |     |     |     |     |     | °C   |
| Storage Temperature T <sub>STG</sub>                      | -40 to +85  |     |     |     |     |     |     | °C   |
| Lead Soldering Temperature<br>T <sub>SOL</sub>            | Max.260±5°C for 3 sec Max.<br>(1.6mm from the base of the epoxy bulb) |     |     |     |     |     |     | °C   |

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■ **Package configuration & Internal circuit diagram**



**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.

**SMD LED LAMP**

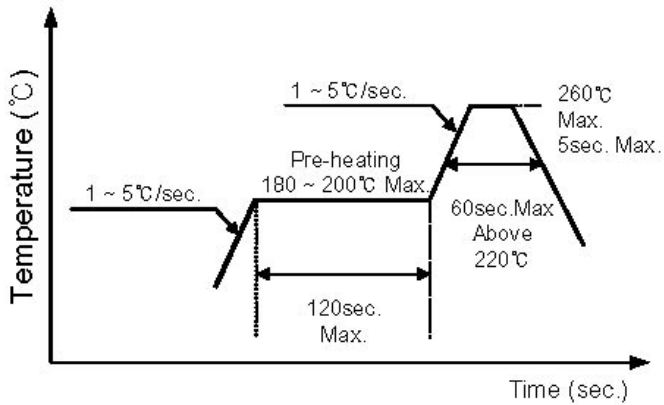
**BL-LS3020A0S1**

■ **Tape Specifications**

**Smt Reflow Soldering Instructions**

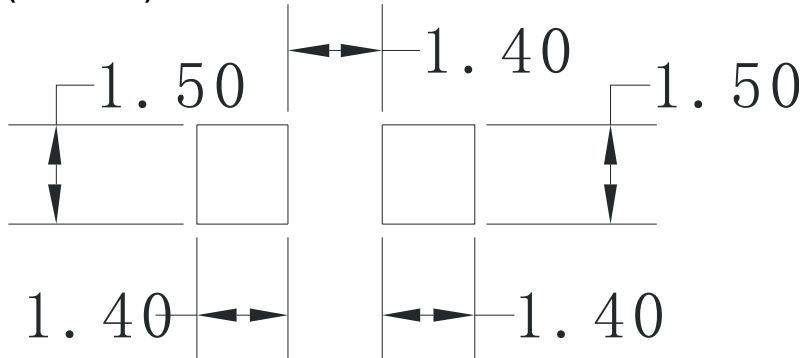
Number of reflow process shall be less than 2 times and cooling process to normal temperature is required between first and second soldering process

■ **Lead-free Solder**



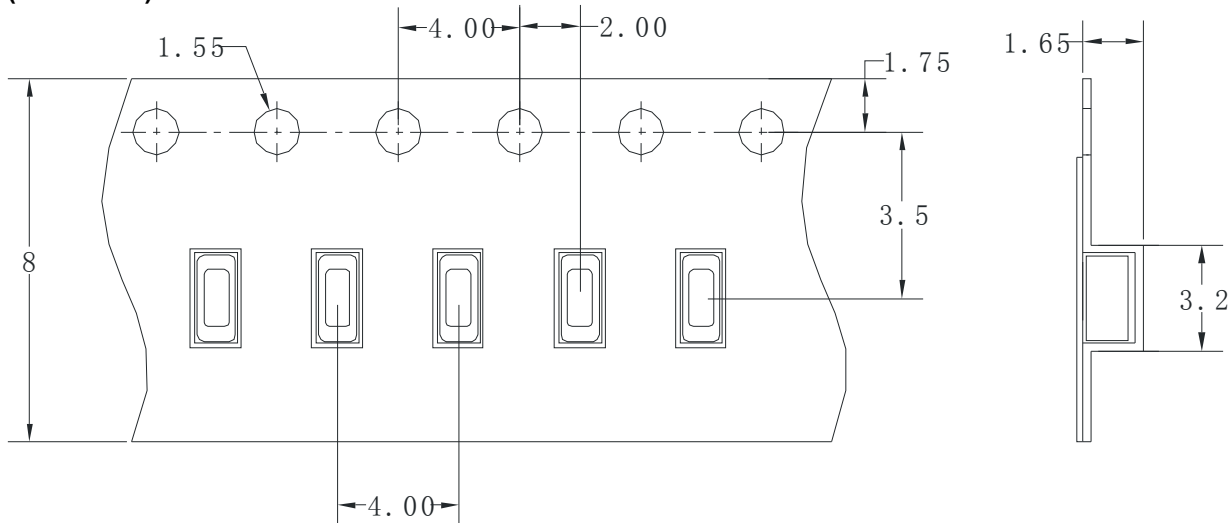
**Recommended Soldering Pattern**

(Units:mm)



**Tape Specifications**

(Units:mm)



**SMD LED LAMP**
**BL-LS3020A0S1**
**SELECTION CODE FOR SUPER BRIGHT LEDS**

| Group | brightness(MCD) |      | Group | brightness(MCD) |      |
|-------|-----------------|------|-------|-----------------|------|
|       | min             | max  |       | min             | max  |
| F     | 120             | 170  | P     | 1300            | 1700 |
| G     | 170             | 230  | Q     | 1700            | 2200 |
| H     | 230             | 300  | R     | 2200            | 3000 |
| J     | 300             | 400  | S     | 3000            | 4000 |
| K     | 400             | 550  |       |                 |      |
| L     | 550             | 750  |       |                 |      |
| M     | 750             | 1000 |       |                 |      |
| N     | 1000            | 1300 |       |                 |      |

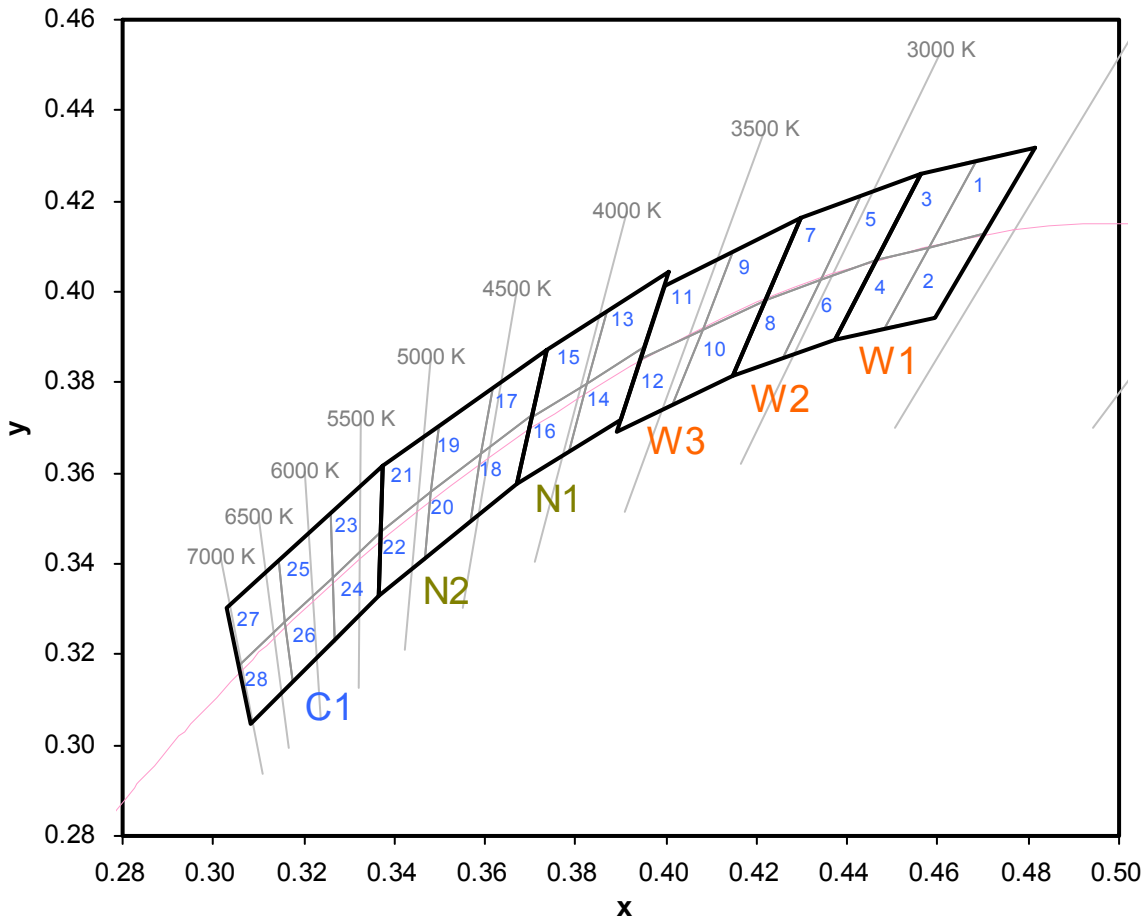
**forward voltage Ranks**

| Group | Voltage (V) |     | Group | Voltage (V) |     |
|-------|-------------|-----|-------|-------------|-----|
|       | min         | max |       | min         | max |
| A     | 1.7         | 1.9 | K     | 3.6         | 3.8 |
| B     | 1.9         | 2.1 | L     | 3.8         | 4   |
| C     | 2.1         | 2.3 | M     | 4           | 4.2 |
| D     | 2.3         | 2.5 | N     | 4.2         | 4.4 |
| E     | 2.5         | 2.8 | P     | 4.4         | 4.6 |
| F     | 2.8         | 3   | Q     | 4.6         | 4.8 |
| G     | 3           | 3.2 | R     | 4.8         | 5   |
| H     | 3.2         | 3.4 | S     | 5           | 5.2 |
| J     | 3.4         | 3.6 | T     | 5.2         | 5.4 |

**SMD LED LAMP**

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**Color Temperature Bin**



| CODE | x      | y      |
|------|--------|--------|
| W1   | 0.4373 | 0.3893 |
|      | 0.4562 | 0.4260 |
|      | 0.4813 | 0.4319 |
|      | 0.4593 | 0.3944 |
|      |        |        |
|      | X      | Y      |
| W2   | 0.4147 | 0.3814 |
|      | 0.4299 | 0.4165 |
|      | 0.4562 | 0.4260 |
|      | 0.4373 | 0.3893 |
|      |        |        |
|      | X      | Y      |
| W3   | 0.3889 | 0.3690 |
|      | 0.3996 | 0.4015 |
|      | 0.4299 | 0.4165 |
|      | 0.4147 | 0.3814 |

| CODE | X      | Y      |
|------|--------|--------|
| N1   | 0.3670 | 0.3578 |
|      | 0.3736 | 0.3874 |
|      | 0.4006 | 0.4044 |
|      | 0.3898 | 0.3716 |
|      |        |        |
|      | X      | Y      |
| N2   | 0.3481 | 0.3557 |
|      | 0.3376 | 0.3616 |
|      | 0.3592 | 0.3641 |
|      | 0.3670 | 0.3578 |
|      |        |        |
|      | X      | Y      |
| C1   | 0.3160 | 0.3274 |
|      | 0.3028 | 0.3304 |
|      | 0.3265 | 0.3371 |
|      | 0.3364 | 0.3328 |

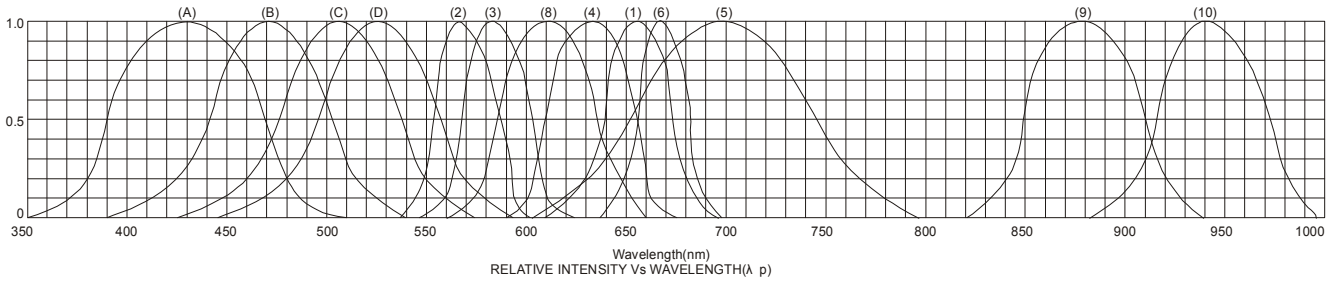
**SMD LED LAMP**
**BL-LS3020A0S1**

| CODE | x      | y      | CODE | x      | y      | CODE | x      | y      | CODE | x      | y      |
|------|--------|--------|------|--------|--------|------|--------|--------|------|--------|--------|
| 1    | 0.4582 | 0.4099 | 8    | 0.4147 | 0.3814 | 15   | 0.3702 | 0.3722 | 22   | 0.3481 | 0.3557 |
|      | 0.4687 | 0.4289 |      | 0.4221 | 0.3984 |      | 0.3736 | 0.3874 |      | 0.3370 | 0.3472 |
|      | 0.4813 | 0.4319 |      | 0.4342 | 0.4028 |      | 0.3869 | 0.3958 |      | 0.3364 | 0.3328 |
|      | 0.4700 | 0.4126 |      | 0.4259 | 0.3853 |      | 0.3825 | 0.3798 |      | 0.3466 | 0.3411 |
| 2    | 0.4483 | 0.3919 | 9    | 0.4080 | 0.3916 | 16   | 0.3670 | 0.3578 | 23   | 0.3376 | 0.3616 |
|      | 0.4582 | 0.4099 |      | 0.4146 | 0.4089 |      | 0.3702 | 0.3722 |      | 0.3260 | 0.3512 |
|      | 0.4700 | 0.4126 |      | 0.4299 | 0.4165 |      | 0.3825 | 0.3798 |      | 0.3265 | 0.3371 |
|      | 0.4593 | 0.3944 |      | 0.4221 | 0.3984 |      | 0.3783 | 0.3646 |      | 0.3370 | 0.3472 |
| 3    | 0.4465 | 0.4071 | 10   | 0.4017 | 0.3751 | 17   | 0.3736 | 0.3874 | 24   | 0.3370 | 0.3472 |
|      | 0.4562 | 0.4260 |      | 0.4080 | 0.3916 |      | 0.3616 | 0.3788 |      | 0.3265 | 0.3371 |
|      | 0.4687 | 0.4289 |      | 0.4221 | 0.3984 |      | 0.3592 | 0.3641 |      | 0.3270 | 0.3230 |
|      | 0.4582 | 0.4099 |      | 0.4147 | 0.3814 |      | 0.3703 | 0.3726 |      | 0.3364 | 0.3328 |
| 4    | 0.4373 | 0.3893 | 11   | 0.3941 | 0.3848 | 18   | 0.3703 | 0.3726 | 25   | 0.3260 | 0.3512 |
|      | 0.4465 | 0.4071 |      | 0.3996 | 0.4015 |      | 0.3592 | 0.3641 |      | 0.3144 | 0.3408 |
|      | 0.4582 | 0.4099 |      | 0.4146 | 0.4089 |      | 0.3568 | 0.3495 |      | 0.3160 | 0.3274 |
|      | 0.4483 | 0.3919 |      | 0.4080 | 0.3916 |      | 0.3670 | 0.3578 |      | 0.3265 | 0.3371 |
| 5    | 0.4342 | 0.4028 | 12   | 0.3889 | 0.3690 | 19   | 0.3616 | 0.3788 | 26   | 0.3265 | 0.3371 |
|      | 0.4430 | 0.4212 |      | 0.3941 | 0.3848 |      | 0.3496 | 0.3702 |      | 0.3160 | 0.3274 |
|      | 0.4562 | 0.4260 |      | 0.4080 | 0.3916 |      | 0.3481 | 0.3557 |      | 0.3175 | 0.3139 |
|      | 0.4465 | 0.4071 |      | 0.4017 | 0.3751 |      | 0.3592 | 0.3641 |      | 0.3270 | 0.3230 |
| 6    | 0.4259 | 0.3853 | 13   | 0.3825 | 0.3798 | 20   | 0.3592 | 0.3641 | 27   | 0.3144 | 0.3408 |
|      | 0.4342 | 0.4028 |      | 0.3869 | 0.3958 |      | 0.3481 | 0.3557 |      | 0.3028 | 0.3304 |
|      | 0.4465 | 0.4071 |      | 0.4006 | 0.4044 |      | 0.3466 | 0.3411 |      | 0.3055 | 0.3177 |
|      | 0.4373 | 0.3893 |      | 0.3950 | 0.3875 |      | 0.3568 | 0.3495 |      | 0.3160 | 0.3274 |
| 7    | 0.4221 | 0.3984 | 14   | 0.3783 | 0.3646 | 21   | 0.3496 | 0.3702 | 28   | 0.3160 | 0.3274 |
|      | 0.4299 | 0.4165 |      | 0.3825 | 0.3798 |      | 0.3376 | 0.3616 |      | 0.3055 | 0.3177 |
|      | 0.4430 | 0.4212 |      | 0.3950 | 0.3875 |      | 0.3370 | 0.3472 |      | 0.3081 | 0.3049 |
|      | 0.4342 | 0.4028 |      | 0.3898 | 0.3716 |      | 0.3481 | 0.3557 |      | 0.3175 | 0.3139 |

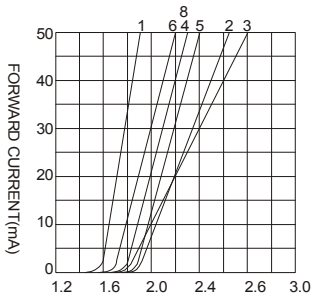
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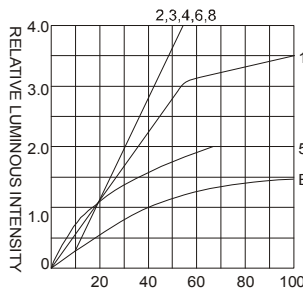
■ **Typical electrical-optical characteristics curves:**



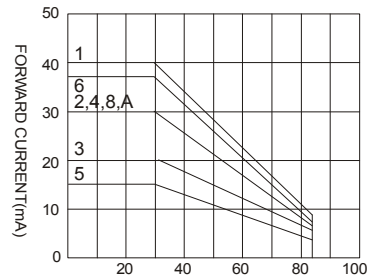
- (1) - GaAsP/GaAs 655nm/Red
- (2) - GaP 570nm/Yellow Green
- (3) - GaAsP/GaP 585nm/Yellow
- (4) - GaAsP/GaP 635nm/Orange & Hi-Eff Red
- (5) - GaP 700nm/Bright Red
- (6) - GaAlAs/GaAs 660nm/Super Red
- (8) - GaAsP/GaP 610nm/Super Red
- (9) - GaAlAs 880nm
- (10) - GaAs/GaAs & GaAlAs/GaAs 940nm
- (A) -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



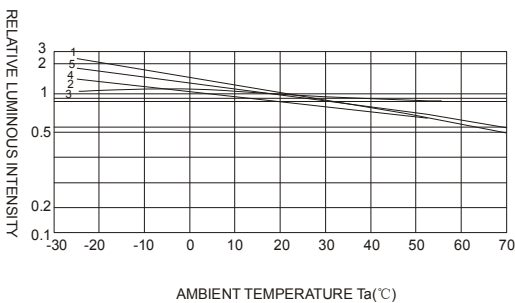
FORWARD VOLTAGE (Vf)  
FORWARD CURRENT VS.  
FORWARD VOLTAGE



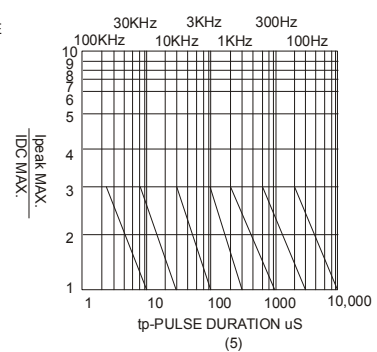
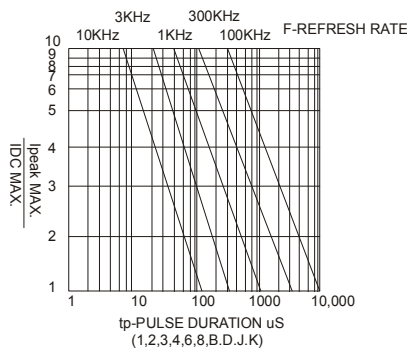
FORWARD CURRENT (mA)  
RELATIVE LUMINOUS  
INTENSITY VS. FORWARD  
CURRENT



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



AMBIENT TEMPERATURE Ta(°C)



NOTE: 25°C free air temperature unless otherwise specified

**SMD LED LAMP**

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■ **Packing and weighting**

