

# 1-Watt SMD 6x6mm

## With Dome Lens

### OVSPxBCR44 Series

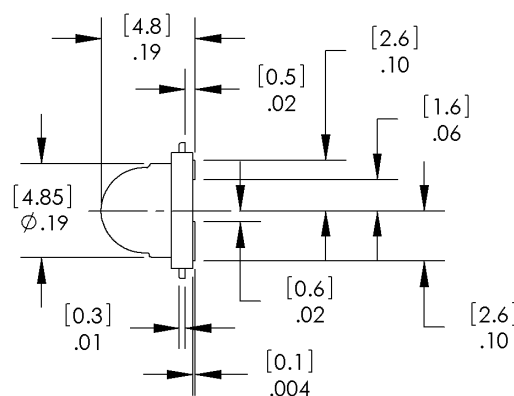
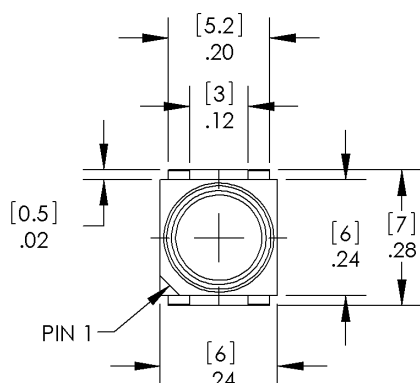
- Robust energy-efficient design with long operating life
- Low thermal resistance
- Medium beam angle
- High luminous intensity



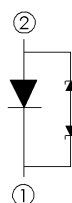
### Applications

- Automotive interior lighting
- Architectural indoor and outdoor lighting
- Electronic signs and signals

| Part Number | Beam Angle | Emitted Color | Typ. Dominant Wavelength (nm) | Typ. Luminous Intensity (mcd) | Lens Color |
|-------------|------------|---------------|-------------------------------|-------------------------------|------------|
| OVSPBBCR44  | 45°        | Blue          | 460                           | 18,000                        | Clear      |
| OVSPGBCR44  | 40°        | Green         | 528                           | 67,500                        |            |
| OVSPRBCR44  | 40°        | Red           | 625                           | 56,000                        |            |
| OVSPW1BCR44 | 70°        | White         | N/A                           | 54,000                        |            |
| OVSPYBCR44  | 40°        | Yellow        | 591                           | 45,000                        |            |



DIMENSIONS ARE IN INCHES [MM]  
GENERAL TOLERANCES ±.008 [0.20]



Blue

|         |       |
|---------|-------|
| Pin 1   | Pin 2 |
| Cathode | Anode |

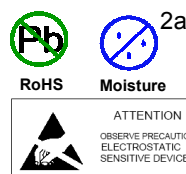


Green, Red, Yellow

|       |         |
|-------|---------|
| Pin 1 | Pin 2   |
| Anode | Cathode |



White



**DO NOT LOOK DIRECTLY AT LED WITH UNSHIELDED EYES OR DAMAGE TO RETINA MAY OCCUR.**

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## OVSPxBCR44 Series



### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

|                                                                   |                    |                               |
|-------------------------------------------------------------------|--------------------|-------------------------------|
| Storage Temperature Range                                         |                    | -40 ~ +100 °C                 |
| Operating Temperature Range                                       |                    | -40 ~ +100 °C                 |
| Reverse Voltage                                                   | Blue, White        | Not designed for reverse bias |
|                                                                   | Green              | 5 V                           |
|                                                                   | Red, Yellow        | 12V                           |
| Continuous Forward Current                                        | Blue, Green, White | 350 mA                        |
|                                                                   | Red, Yellow        | 400 mA                        |
| Peak Forward Current (10% Duty Cycle, 1 kHz)                      | Blue, Green        | 1000 mA                       |
|                                                                   | Red, Yellow, White | 500 mA                        |
| Power Dissipation                                                 |                    | 1200 mW                       |
| LED Junction Temperature                                          | Blue, Green        | 120°C                         |
|                                                                   | Red, Yellow, White | 125°C                         |
| Electrostatic Discharge Classification (JEDEC-JESD22-A114F)       |                    | Class 2                       |
| Moisture Sensitivity Level (IPC/JEDEC J-STD-020C)                 |                    | 2a / 672 Hrs                  |
| Lead Soldering Temperature (3 mm from the base of the epoxy bulb) |                    | 260° C / 5 seconds            |

### Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| SYMBOL          | PARAMETER           | COLOR       | MIN    | TYP    | MAX    | UNITS | CONDITIONS            |
|-----------------|---------------------|-------------|--------|--------|--------|-------|-----------------------|
| $I_V$           | Luminous Intensity  | Blue        | 11,250 | 18,000 | 22,400 | mcd   | $I_F = 350\text{ mA}$ |
|                 |                     | Green       | 45,000 | 67,500 | 90,000 |       |                       |
|                 |                     | Red         | 35,500 | 56,000 | 71,500 |       | $I_F = 400\text{ mA}$ |
|                 |                     | Yellow      | 35,500 | 45,000 | 56,000 |       |                       |
| $V_F$           | Forward Voltage     | Blue, Green | 3.0    | 3.6    | 4.0    | V     | $I_F = 350\text{ mA}$ |
|                 |                     | Red, Yellow | 2.2    | 2.5    | 2.8    |       | $I_F = 400\text{ mA}$ |
| $\lambda_D$     | Dominant Wavelength | Blue        | 455    | 460    | 465    | nm    | $I_F = 350\text{ mA}$ |
|                 |                     | Green       | 520    | 528    | 535    |       |                       |
|                 |                     | Red         | 620    | 625    | 630    |       | $I_F = 400\text{ mA}$ |
|                 |                     | Yellow      | 585    | 591    | 597    |       |                       |
| $2\Theta_{1/2}$ | 50% Power Angle     | Blue        | ----   | 45     | ----   | deg   |                       |
|                 |                     | Green       |        | 40     |        |       |                       |
|                 |                     | Red         |        | 40     |        |       |                       |
|                 |                     | Yellow      |        | 40     |        |       |                       |

### Electrical Characteristics—White ( $I_F = 350\text{ mA}$ , $T_J = 25^\circ\text{C}$ )

| SYMBOL          | PARAMETER          | MIN    | TYP    | MAX    | UNITS |
|-----------------|--------------------|--------|--------|--------|-------|
| $V_F$           | Forward Voltage    | 3.0    | 3.5    | 4.0    | V     |
| $\Phi$          | Luminous Flux      | ----   | 62     | ----   | lm    |
| $I_V$           | Luminous Intensity | 45,000 | 56,000 | 71,500 | mcd   |
| $2\Theta_{1/2}$ | 50% Power Angle    | ----   | 70     | ----   | deg   |

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# 1-Watt SMD 6x6mm Dome Lens

## OVSPxBCR44 Series



### Standard Bins

LEDs are sorted to the luminous intensity ( $I_v$ ) and dominant wavelength (nm) codes listed below. Each reel consists of a single intensity code and a single color code. Orders are filled utilizing all of the intensity codes and color codes listed in the following tables. Optek will not accept orders for single intensity codes or single color codes.

#### Luminous Intensity ( $I_v$ ) @ 400mA

| Red: OVSPRBCR44    |           |           |
|--------------------|-----------|-----------|
| Code               | Min (mcd) | Max (mcd) |
| AH                 | 35,500    | 45,000    |
| AJ                 | 45,000    | 56,000    |
| AK                 | 56,000    | 71,500    |
|                    |           |           |
| Yellow: OVSPYBCR44 |           |           |
| Code               | Min (mcd) | Max (mcd) |
| AH                 | 35,500    | 45,000    |
| AJ                 | 45,000    | 56,000    |
| AK                 | 56,000    | 71,500    |

#### Luminous Intensity ( $I_v$ ) @ 350mA

| Blue: OVSPBBCR44  |           |           |
|-------------------|-----------|-----------|
| Code              | Min (mcd) | Max (mcd) |
| AC                | 11,250    | 14,000    |
| AD                | 14,000    | 18,000    |
| AE                | 18,000    | 22,400    |
|                   |           |           |
| Green: OVSPGBCR44 |           |           |
| Code              | Min (mcd) | Max (mcd) |
| AJ                | 45,000    | 56,000    |
| AK                | 56,000    | 71,500    |
| AL                | 71,500    | 90,000    |

#### Dominant Wavelength (nm)

| Red: OVSPRBCR44    |              |
|--------------------|--------------|
| Full               | 620 - 630 nm |
|                    |              |
| Yellow: OVSPYBCR44 |              |
| A                  | 585 - 588 nm |
| B                  | 588 - 591 nm |
| C                  | 591 - 594 nm |
| D                  | 594 - 597 nm |

| Blue: OVSPBBCR44  |              |
|-------------------|--------------|
| A                 | 455 - 460 nm |
| B                 | 460 - 465 nm |
|                   |              |
| Green: OVSPGBCR44 |              |
| AO                | 520 - 525 nm |
| A                 | 525 - 530 nm |
| B                 | 530 - 535 nm |

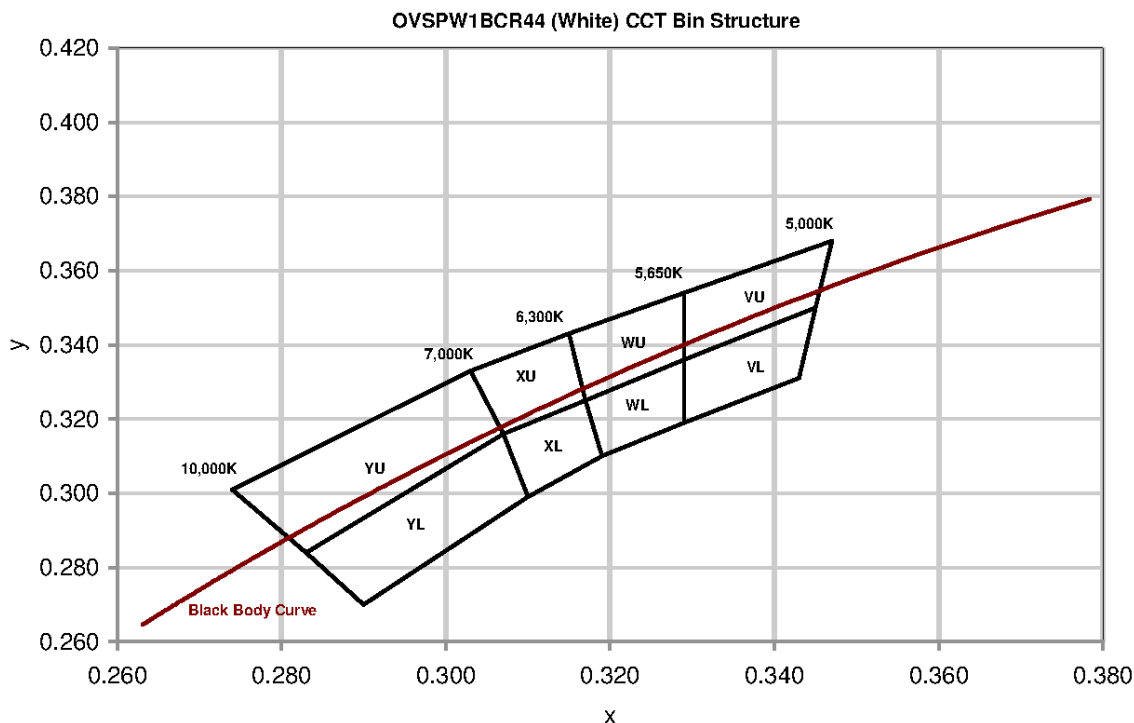
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# 1-Watt SMD 6x6mm Dome Lens

## OVSPxBCR44 Series

### Standard Bins

LEDs are sorted to the luminous intensity ( $I_v$ ) and CCT codes listed below. Each reel consists of a single intensity code and a single CCT code. Orders are filled utilizing all of the intensity codes and CCT codes listed in the following tables. Optek will not accept orders for single intensity codes or single CCT codes.



### Chromaticity Coordinates (x, y)

| Rank | YU    |       |       |       | YL    |       |       |       |
|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Cx   | 0.274 | 0.283 | 0.307 | 0.303 | 0.283 | 0.290 | 0.310 | 0.307 |
| Cy   | 0.301 | 0.284 | 0.316 | 0.333 | 0.284 | 0.270 | 0.299 | 0.316 |
| Rank | XU    |       |       |       | XL    |       |       |       |
| Cx   | 0.303 | 0.307 | 0.317 | 0.315 | 0.307 | 0.310 | 0.319 | 0.317 |
| Cy   | 0.333 | 0.316 | 0.325 | 0.343 | 0.316 | 0.299 | 0.310 | 0.325 |
| Rank | WU    |       |       |       | WL    |       |       |       |
| Cx   | 0.315 | 0.317 | 0.329 | 0.329 | 0.317 | 0.319 | 0.329 | 0.329 |
| Cy   | 0.343 | 0.325 | 0.336 | 0.354 | 0.325 | 0.310 | 0.319 | 0.336 |
| Rank | VU    |       |       |       | VL    |       |       |       |
| Cx   | 0.329 | 0.329 | 0.345 | 0.347 | 0.329 | 0.329 | 0.343 | 0.345 |
| Cy   | 0.354 | 0.336 | 0.350 | 0.368 | 0.336 | 0.319 | 0.331 | 0.350 |

| $I_v$ | Luminous Intensity |           |
|-------|--------------------|-----------|
| Bin   | Min (mcd)          | Max (mcd) |
| AJ    | 45,000             | 56,000    |
| AK    | 56,000             | 71,500    |

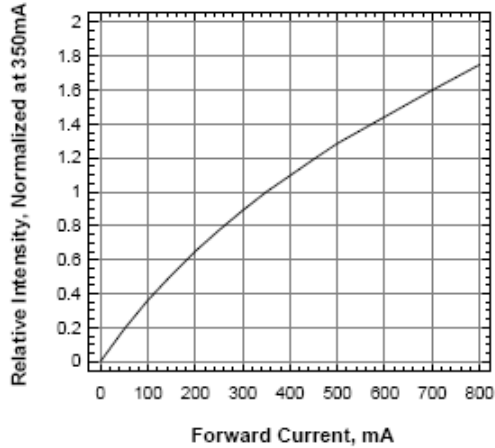
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# 1-Watt SMD 6x6mm Dome Lens

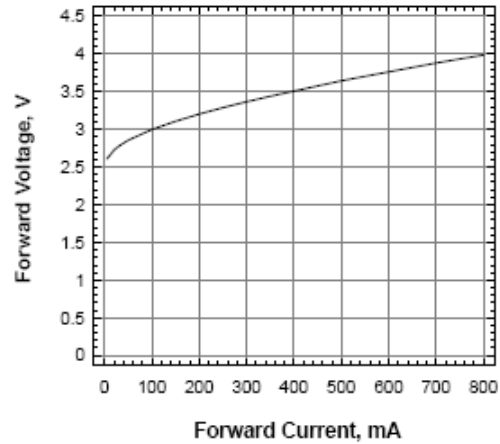
## OVSPxBCR44 Series

### Typical Electro-Optical Characteristics Curves - White

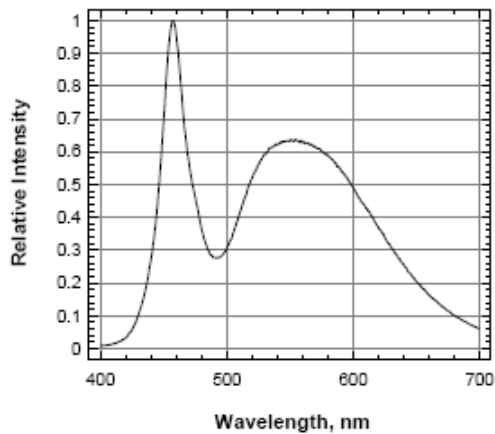
Relative Luminous Intensity Vs Forward Current



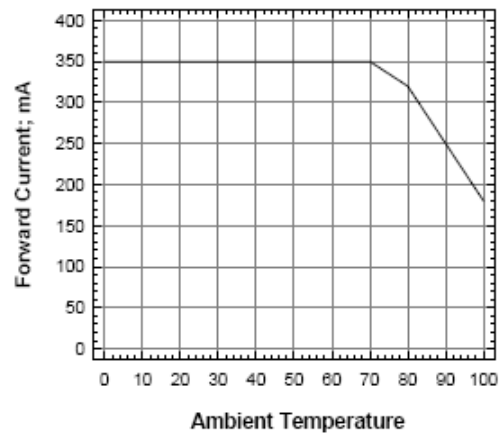
Forward Voltage Vs Forward Current



Relative Intensity Vs Wavelength



Forward Current Vs Ambient Temperature ( $R_{ja}=40$  K/W)

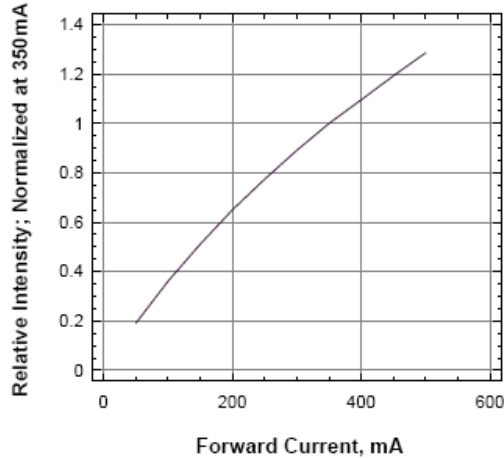


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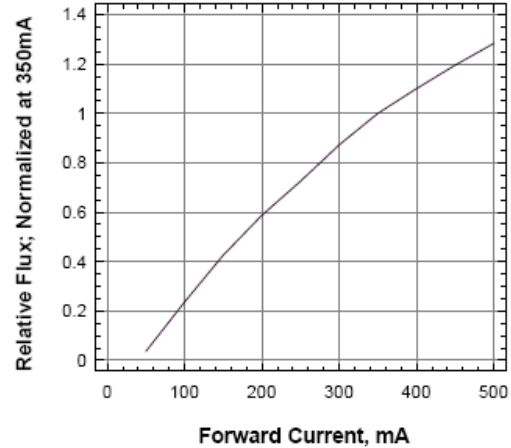
# 1-Watt SMD 6x6mm Dome Lens OVSPxBCR44 Series

## Typical Electro-Optical Characteristics Curves - Blue

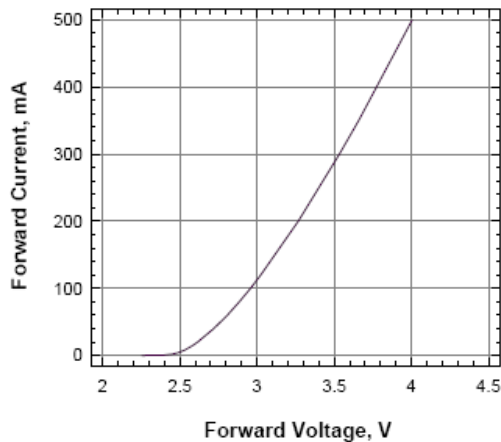
Relative Intensity Vs Forward Current



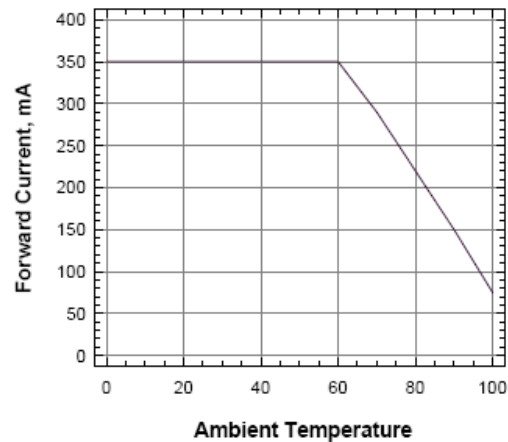
Relative Flux Vs Forward Current



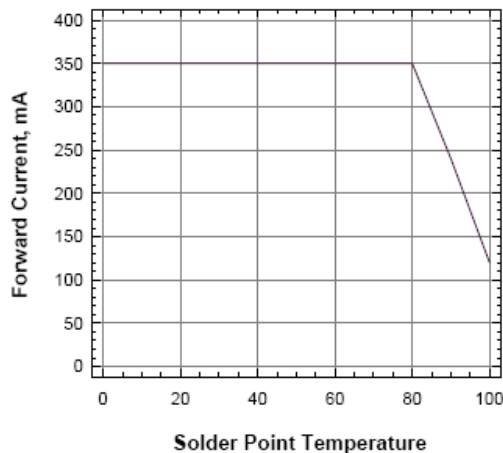
Forward Current Vs Forward Voltage



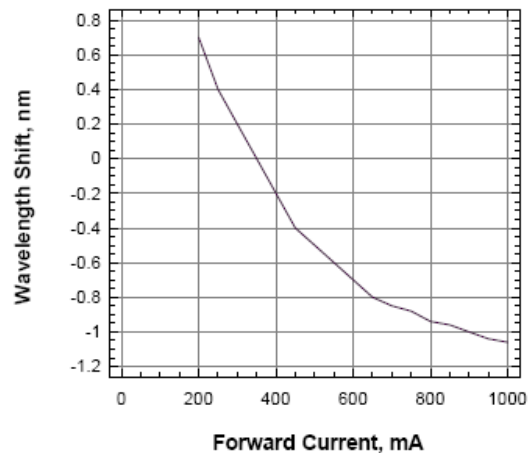
Forward Current Vs Ambient Temperature (R<sub>ja</sub>=40K/W)



Forward Current Vs Solder Point Temperature



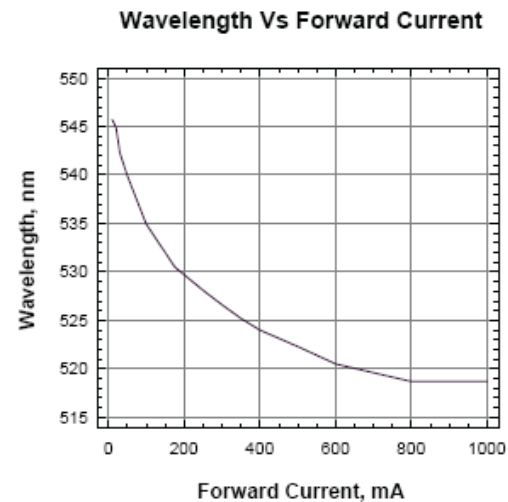
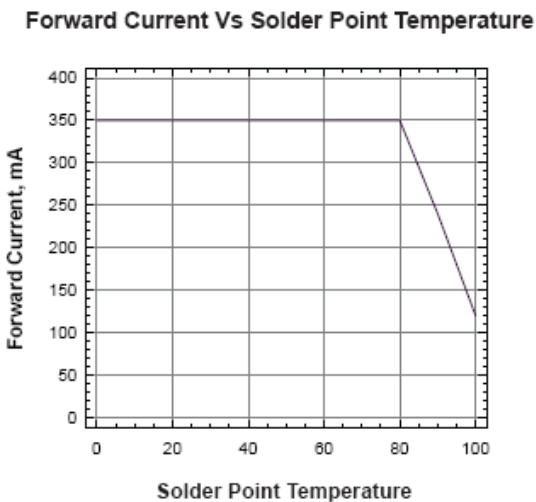
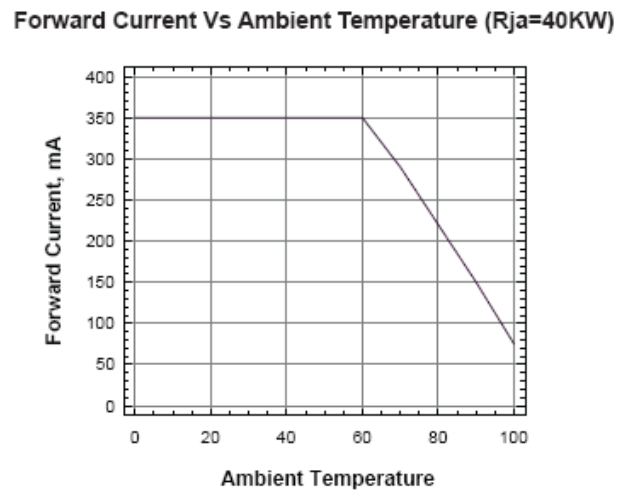
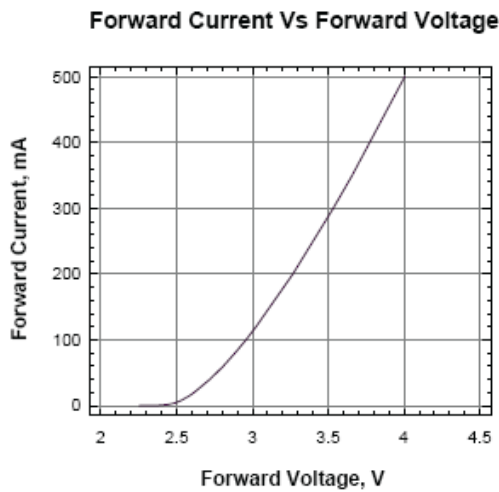
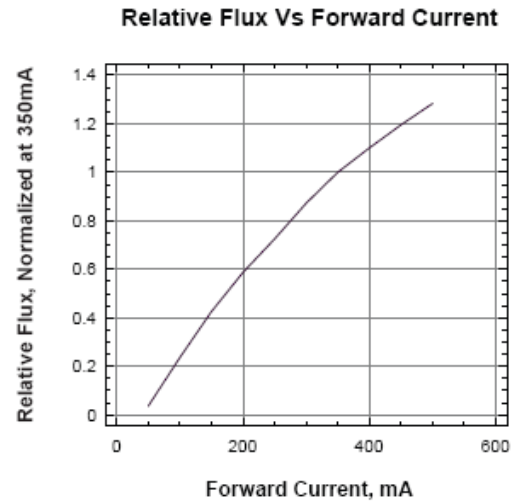
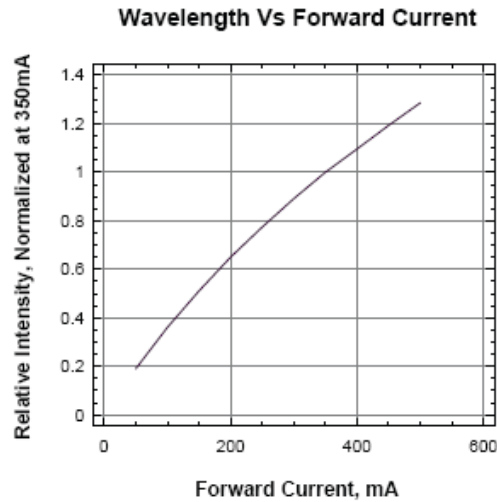
Dominant Wavelength Shift Vs Forward Current



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# 1-Watt SMD 6x6mm Dome Lens OVSPxBCR44 Series

## Typical Electro-Optical Characteristics Curves - Green

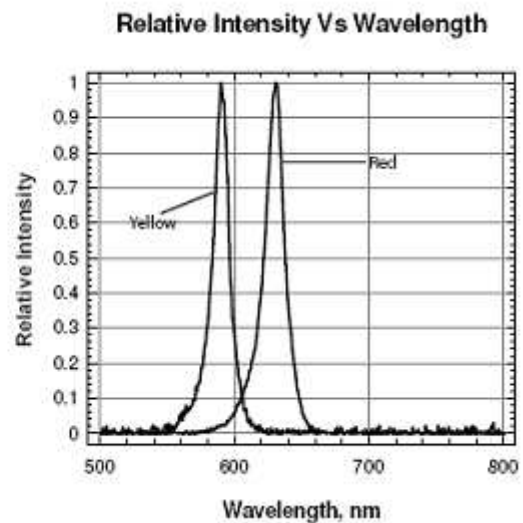
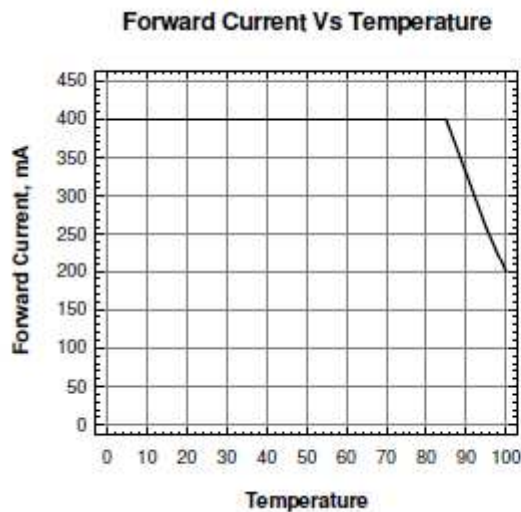
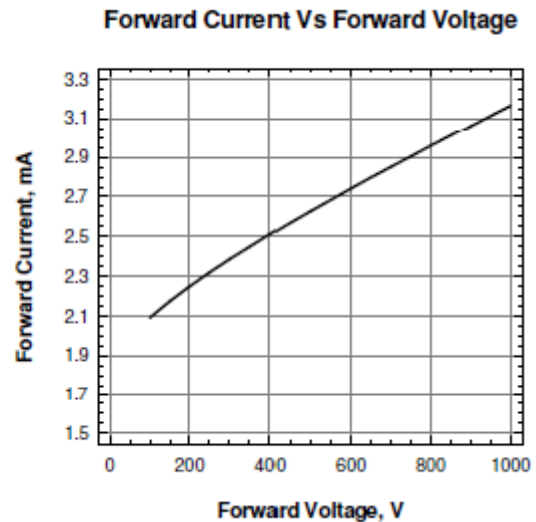
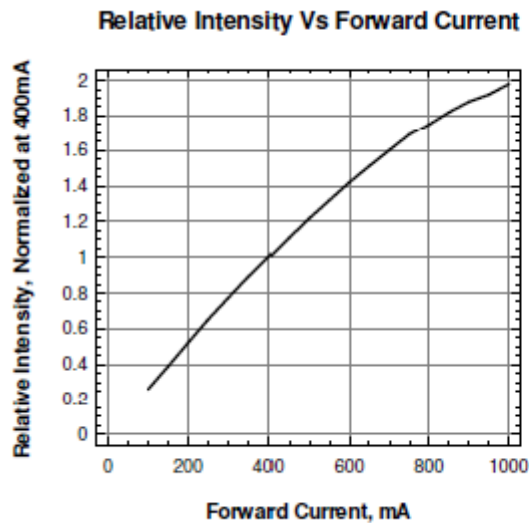


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# 1-Watt SMD 6x6mm Dome Lens

## OVSPxBCR44 Series

### Typical Electro-Optical Characteristics Curves - Red & Yellow

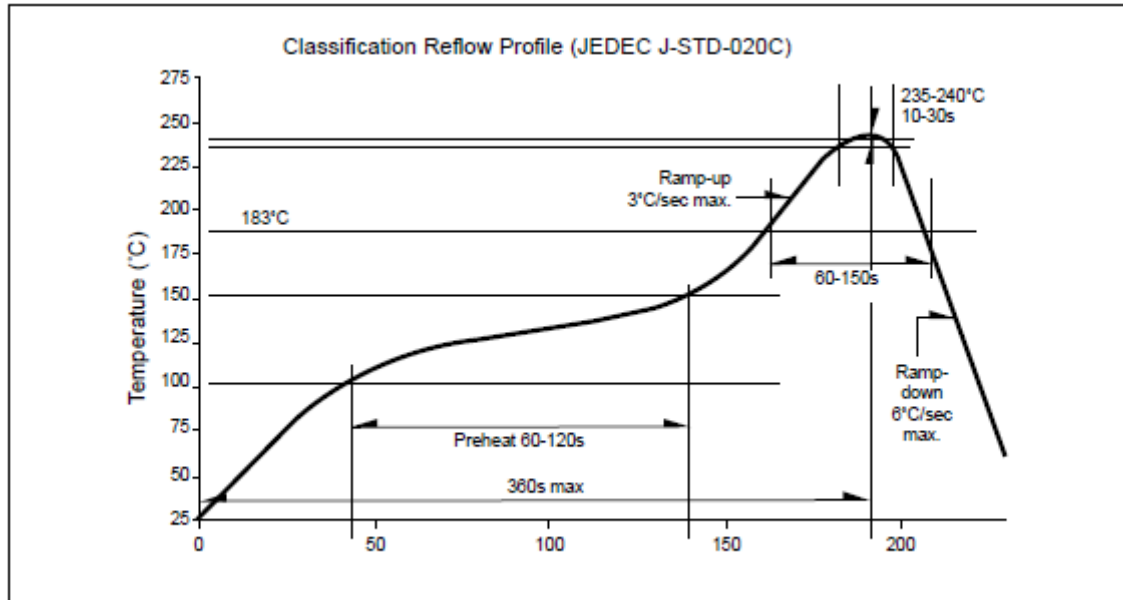


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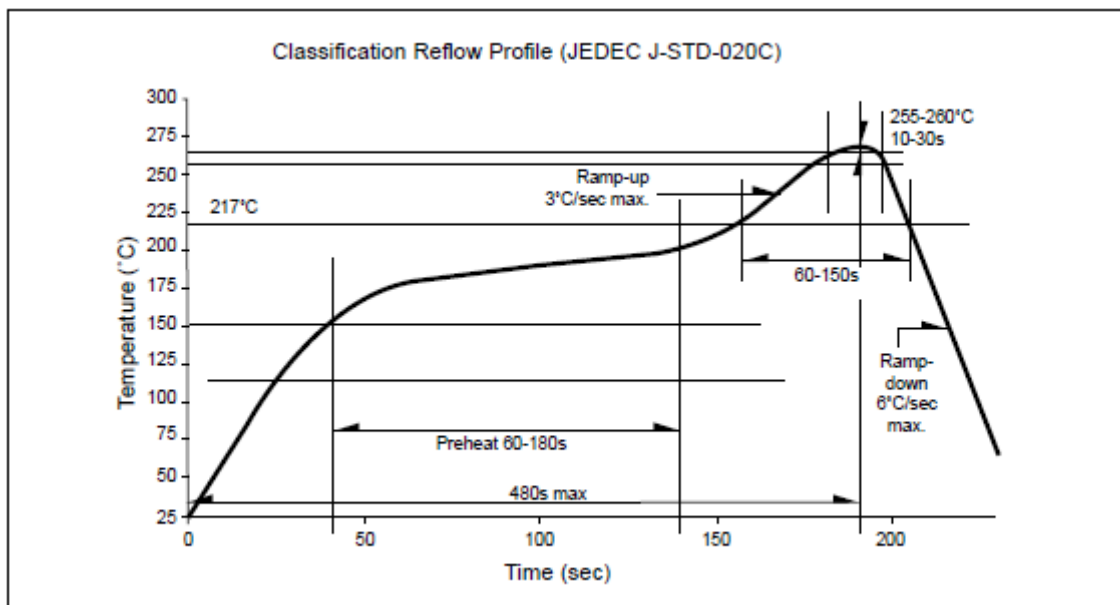
# 1-Watt SMD 6x6mm Dome Lens

## OVSPxBCR44 Series

### Recommended SN-Pb IR-Reflow Soldering Profile



### Recommended PB-free Soldering Profile



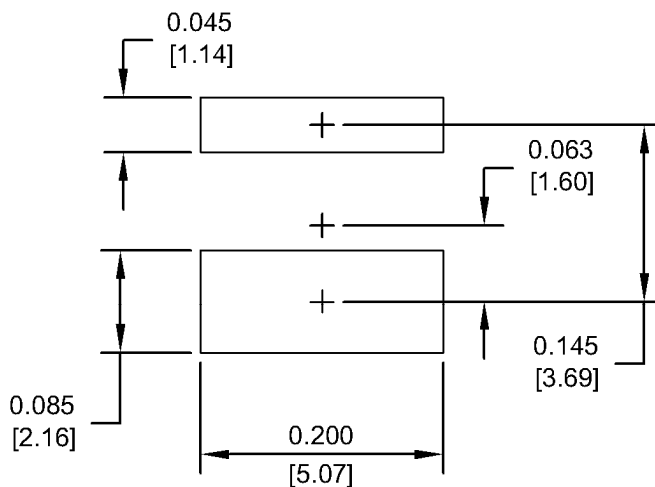
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# 1-Watt SMD 6x6mm Dome Lens

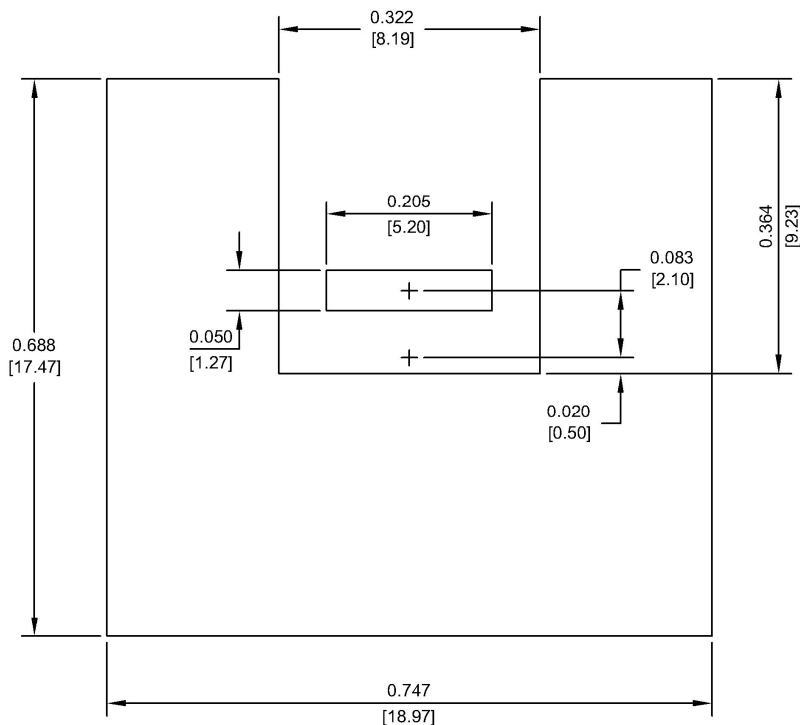
## OVSPxBCR44 Series

### Solder Pad Design

Metal core circuit board (MCPCB) is highly recommended for high density applications.



### Solder Paste Pattern



### Copper Pattern

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**TT electronics**  
**OPTEK Technology**

Technical drawing of a 6-spoke wheel with dimensions in inches [mm].

Overall Diameter:  $[329 \pm 1]$   
 $\phi 13.0 \pm .039$

Spoke Width:  $[13.1^{+0.5}_{-0.2}]$   
 $\phi .516^{+.020}_{-.008}$

Spoke Thickness:  $[18.4]$   
 $.724$   
 (MAX. MEASURE AT HUB)

Hub Diameter:  $[100 \pm .05]$   
 $\phi 3.937 \pm .002$

Hub Thickness:  $[16.4^{+2}_0]$   
 $.646^{+.079}_{-.000}$

LABEL AREA

DIMENSIONS ARE IN INCHES [MM]

Technical drawing of a component with dimensions in inches [mm]. The drawing includes a main view, a side view, and a detail view of a hole. Dimensions are given in inches with millimeter equivalents in brackets.

Dimensions (Inches [mm]):

- [1.5]  $\phi .059$
- [1.75]  $\phi .069$
- [16]  $.630$
- [2]  $.079$
- [12]  $.473$
- [4]  $.157$
- [7.5]  $.295$
- [6.35]  $.250$
- [1.5]  $\phi .059$
- [5.08]  $.200$
- [7.35]  $.289$
- [0.343]  $.014$

Other labels: PIN 1, B

DIMENSIONS ARE IN INCHES [MM]  
TOLERANCES ARE  $\pm .004$  [.101] UNLESS OTHERWISE SPECIFIED

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