

# Cree XLamp LEDs Horticulture Applications



# Cree Delivers Industry-Leading Horticulture Performance

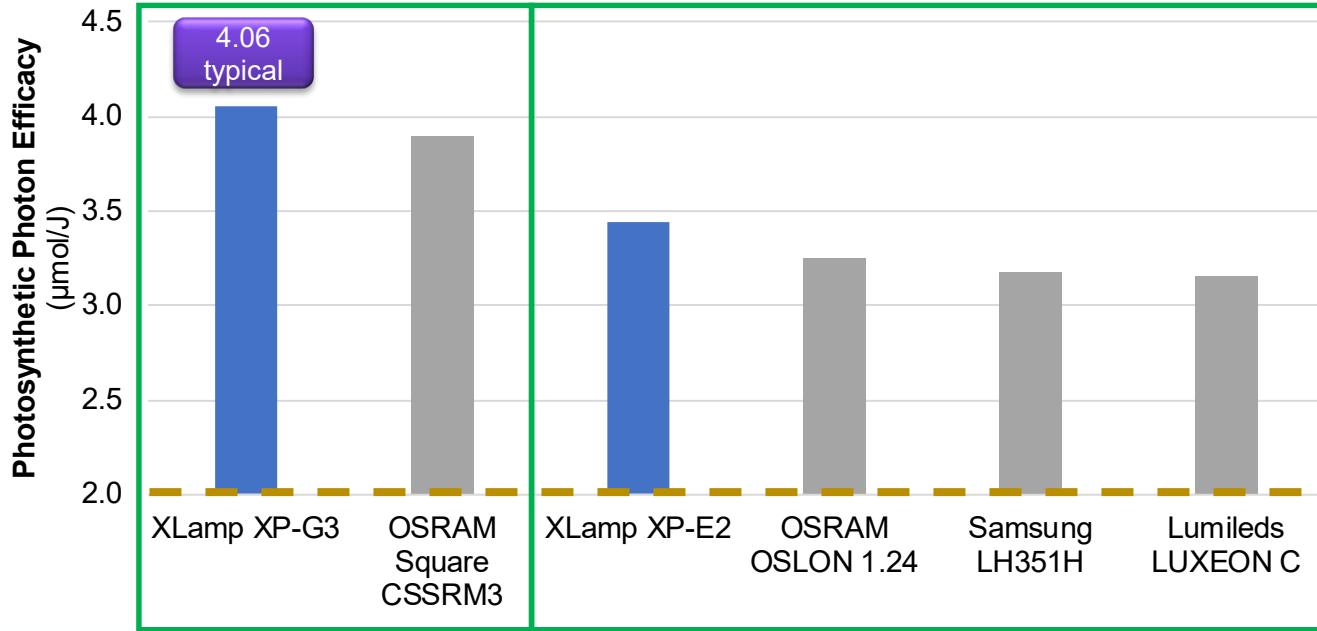


- Broad portfolio of mid-power & high-power LEDs for all applications
- Industry-leading performance at all horticulture wavelengths
- Streamlined portfolio of LED footprints enables easy system designs & upgrades

# Cree Horticulture LED Portfolio

LED Series	White		Color			Advantages
	4000K/70CRI	4000K/90CRI	450 nm	660 nm	730 nm	
<b>XLamp LEDs</b>	 XP-G3 S Line	 XP-G3 Standard	 XP-G3 Royal Blue	 XP-G3 Photo Red		<ul style="list-style-type: none"> <li>• Industry's highest output &amp; efficiency</li> <li>• Huge ecosystem of PCB &amp; optics available</li> <li>• Ceramic high-power LED optical control &amp; reliability</li> </ul>
	 XT-E High Efficacy	 XT-E High Efficacy	 XT-E Royal Blue	 XP-E2 Photo Red	 XP-E2 Far Red	
<b>J Series LEDs</b>	 JR5050	 JR5050				<ul style="list-style-type: none"> <li>• Cost-effective LEDs for white lighting</li> <li>• High PPF/W to enable DLC full-spectrum applications</li> <li>• 3-step color kits ensure spectral consistency across luminaires</li> </ul>
	 JB5630 High Efficacy	 JB5630 High Efficacy				

# Cree Leads the Industry in Photo Red Efficiency



- Industry's highest Photo Red efficiency
- First LED to deliver double the efficiency of HPS

Efficiency of 1000 W HPS

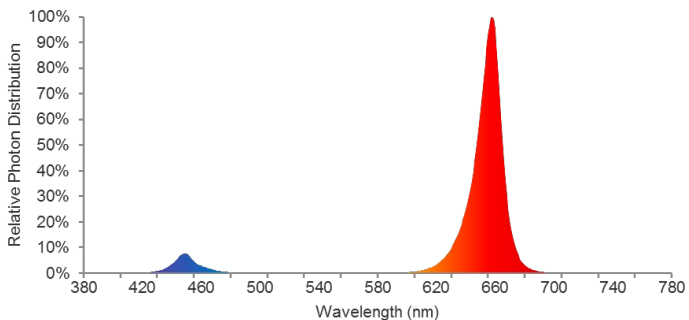
Typical flux @ 350 mA, T<sub>j</sub> = 25°C

# Cree Enables Incredible PPF/W System Performance

## Horticulture Reference Design (Blue + Red) Linear



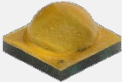
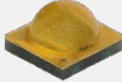
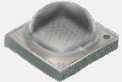
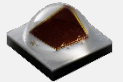
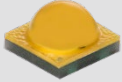
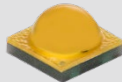
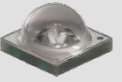
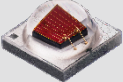
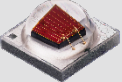
LEDs (Count)	(104) XLamp XP-G3 Photo Red (4) XLamp XP-G3 Royal Blue		
Output Mode	<b>Low</b>	<b>Medium</b>	<b>High</b>
PPF ( $\mu\text{mol} / \text{s}$ )	153	281	386
PPF/W ( $\mu\text{mol} / \text{J}$ ) *	<b>3.78</b>	<b>3.71</b>	<b>3.25</b>
Power	40 W	76 W	119 W



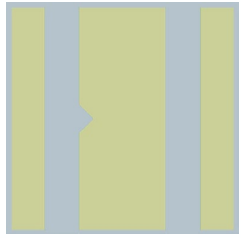
Reference Design Partners:



# Common High-Power LED Footprint

LED Series	White		Color		
	4000K/70CRI	4000K/90CRI	450 nm	660 nm	730 nm
XLamp LEDs	 XP-G3 S Line	 XP-G3 Standard	 XP-G3 Royal Blue	 XP-G3 Photo Red	
	 XT-E High Efficacy	 XT-E High Efficacy	 XT-E Royal Blue	 XP-E2 Photo Red	 XP-E2 Far Red

Same footprint



3.45 X 3.45 mm

- Ease of adoption and upgrades
- Flexibility in the spectrum blend at the system level
- High reliability ceramic package



