

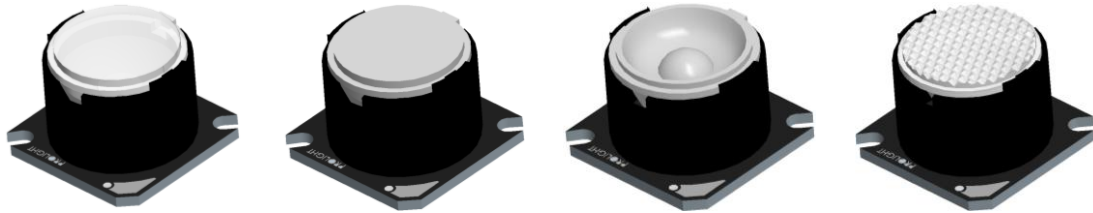


ProLight Opto Technology Corporation

ProLight STAR/O with PG1C-1LxE

Technical Datasheet

Version: 1.2



Features

- High Flux per LED
- Various colors
- Good color uniformity
- More energy efficient than incandescent and most halogen lamps
- Low Voltage DC operated
- Instant light (less than 100ns)
- No UV
- Superior ESD protection

Typical Applications

- Reading lights (car, bus, aircraft)
- Portable (flashlight, bicycle)
- Uplighters/Downlighters
- Decorative/Entertainment
- Bollards/Security/Garden
- Cove/Undershelf/Task
- Indoor/Outdoor Commercial and Residential Architectural
- Automotive Ext (Stop-Tail-Turn, CHMSL, Mirror Side Repeat)

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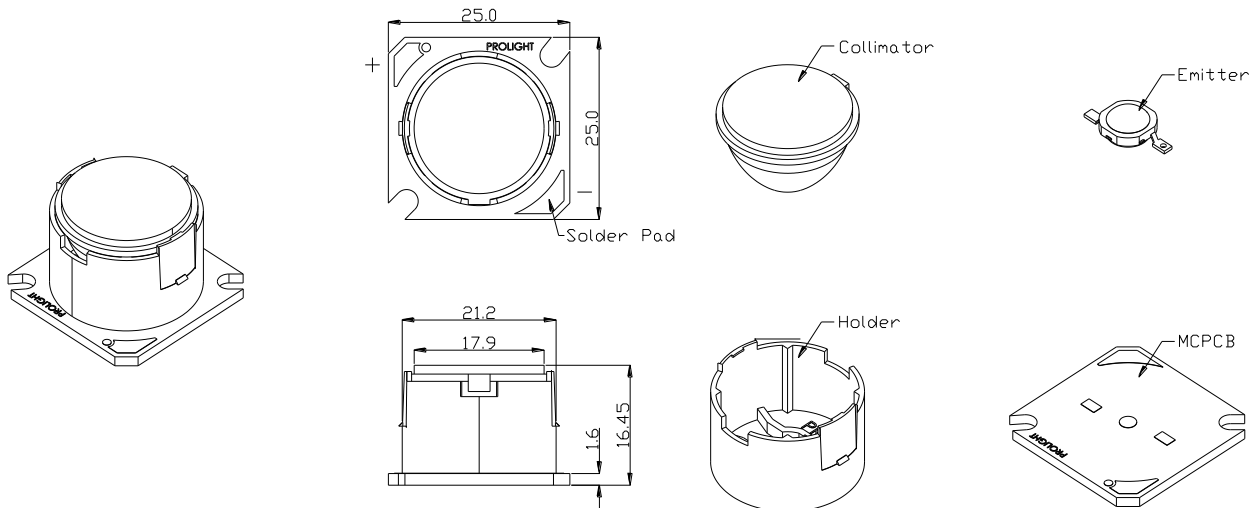
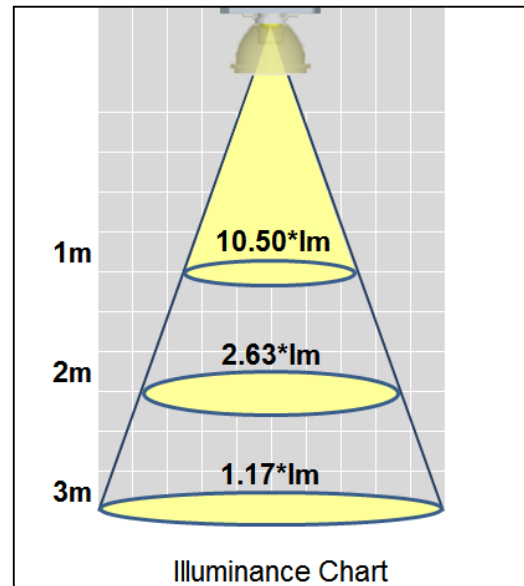
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Part Number List

Part Number	Description	LED module	MCPCB	Collimator P/N	Holder P/N
PG1C-1LxC	PG1C-1LxE Star/O 15°	PG1C-1LxE	Square Type	PG1N-NX15	PG1N-SO02
PG1C-1LxG	PG1C-1LxE Star/O 25°		Square Type	PG1N-NX23	PG1N-SO02
PG1C-1LxH	PG1C-1LxE Star/O 35°		Square Type	PG1C-NX36	PG1N-SO01
PG1C-1LxD	PG1C-1LxE Star/O 45°		Square Type	PG1N-NX43	PG1N-SO02

Mechanical Dimensions and Illuminance Chart

Part Number : PG1C-1LxC



Notes:

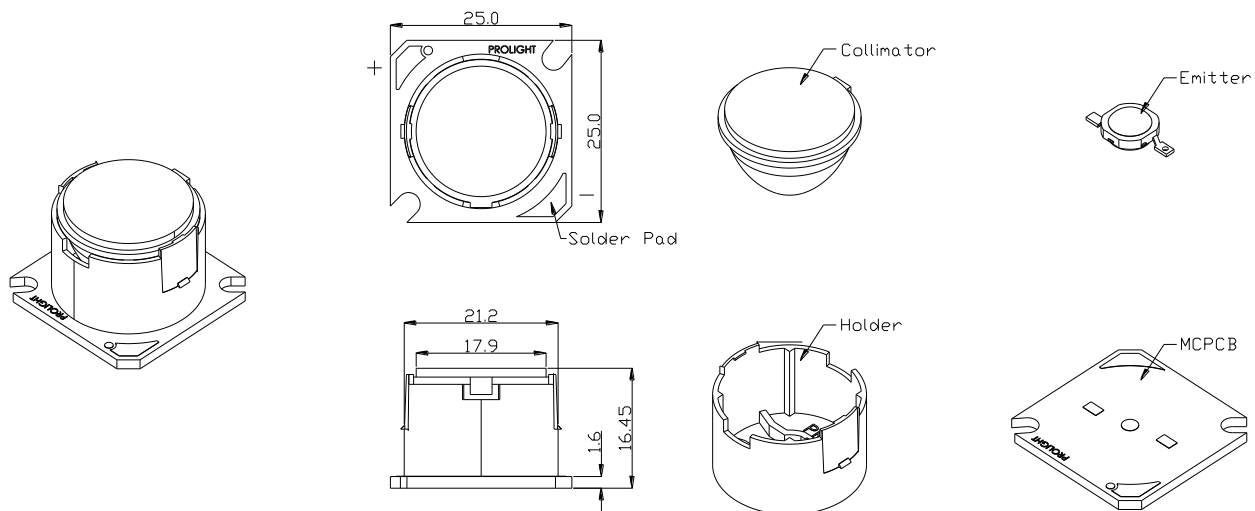
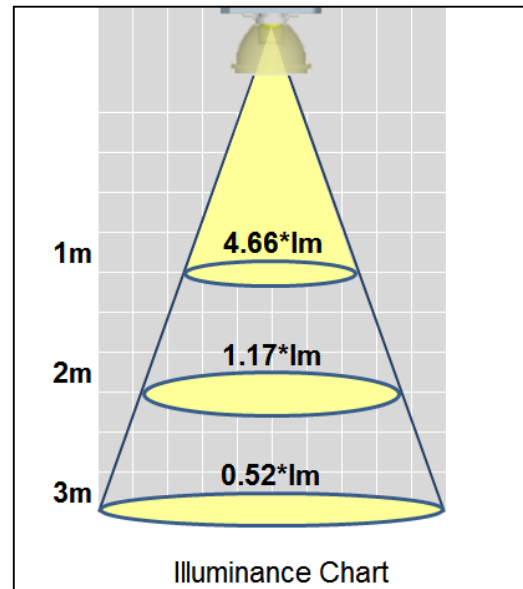
1. Slots in aluminum-core PCB for M3 or #4 mounting screw.
2. Electrical interconnection pads labeled on the aluminum-core PCB with "+" and "-" to denote positive and negative, respectively. All positive pads are interconnected, as are all negative pads, allowing for flexibility in array interconnection.
3. Drawing not to scale.
4. All dimensions are in millimeters.

*The appearance and specifications of the product may be modified for improvement without notice.

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Mechanical Dimensions and Illuminance Chart

Part Number : PG1C-1LxG



Notes:

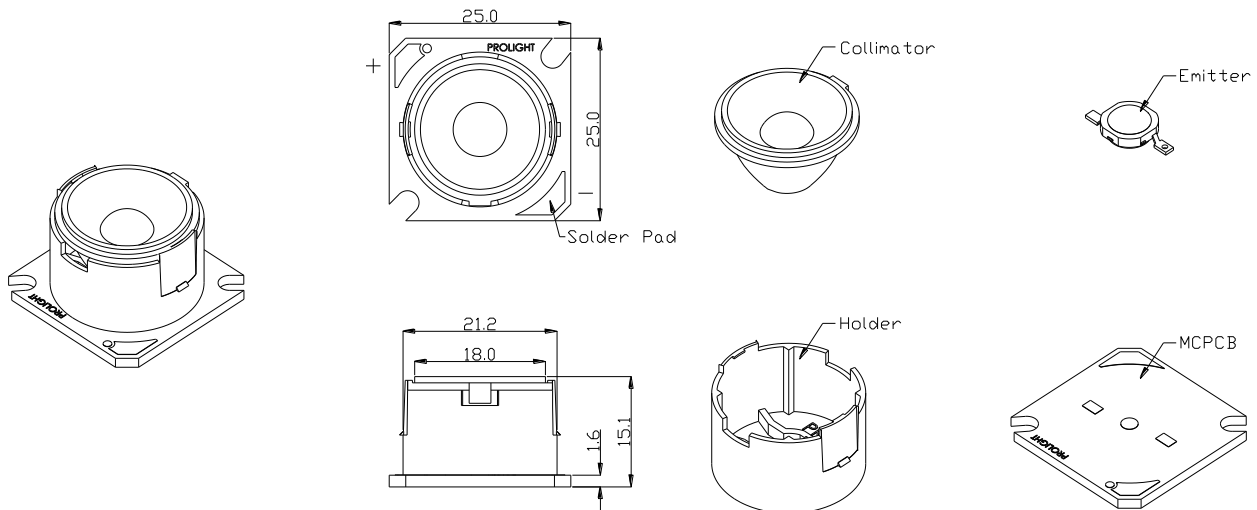
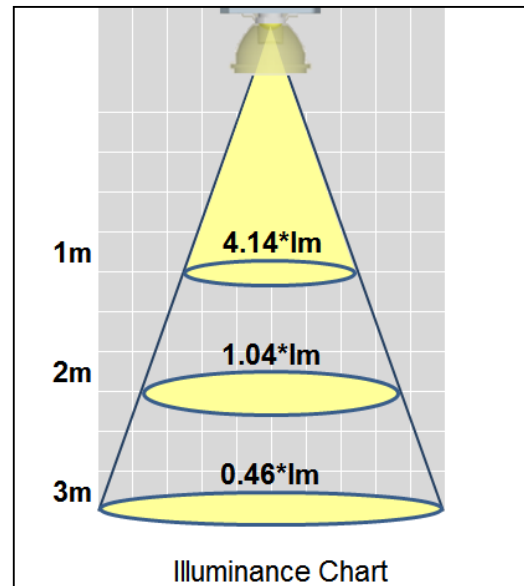
1. Slots in aluminum-core PCB for M3 or #4 mounting screw.
2. Electrical interconnection pads labeled on the aluminum-core PCB with "+" and "-" to denote positive and negative, respectively. All positive pads are interconnected, as are all negative pads, allowing for flexibility in array interconnection.
3. Drawing not to scale.
4. All dimensions are in millimeters.

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Mechanical Dimensions and Illuminance Chart

Part Number : PG1C-1LxH



Notes:

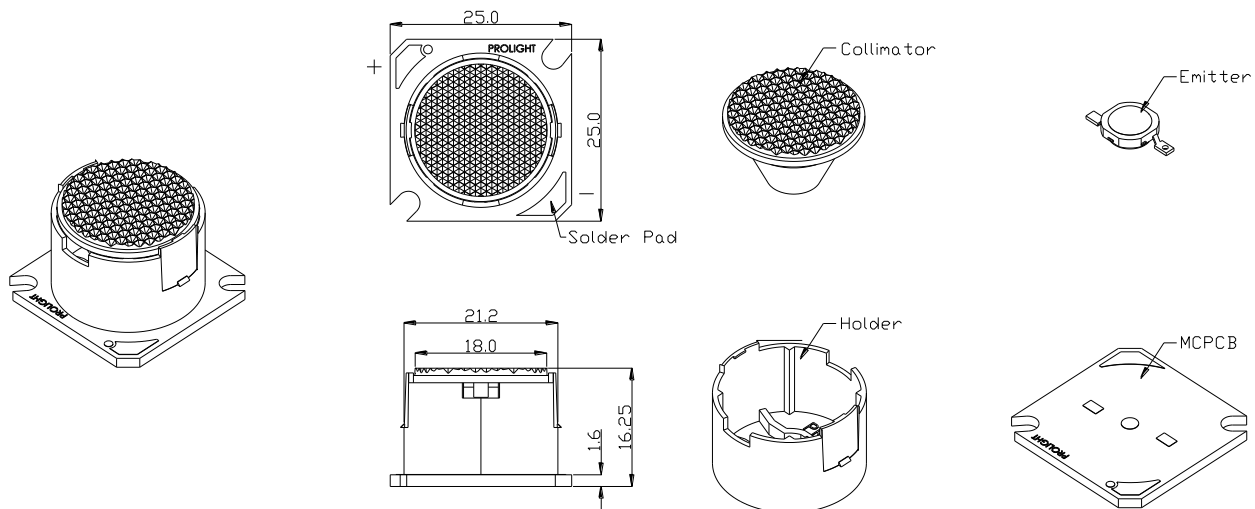
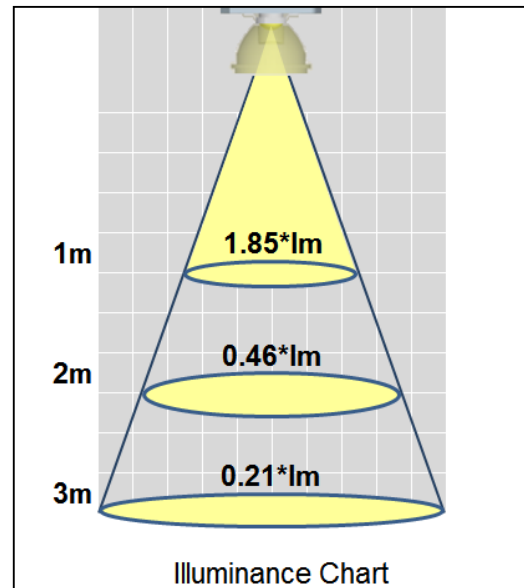
1. Slots in aluminum-core PCB for M3 or #4 mounting screw.
2. Electrical interconnection pads labeled on the aluminum-core PCB with "+" and "-" to denote positive and negative, respectively. All positive pads are interconnected, as are all negative pads, allowing for flexibility in array interconnection.
3. Drawing not to scale.
4. All dimensions are in millimeters.

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Mechanical Dimensions and Illuminance Chart

Part Number : PG1C-1LxD



Notes:

1. Slots in aluminum-core PCB for M3 or #4 mounting screw.
2. Electrical interconnection pads labeled on the aluminum-core PCB with "+" and "-" to denote positive and negative, respectively. All positive pads are interconnected, as are all negative pads, allowing for flexibility in array interconnection.
3. Drawing not to scale.
4. All dimensions are in millimeters.

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Flux Characteristics of LED at 350mA, T_J = 25°C

Radiation Pattern	Color	Part Number Module	Lumious Flux or Power	
			Minimum	Typical
Lambertian	White	PG1C-1LWx	76.6	87
	Warm White	PG1C-1LVx	67.2	81
	Red	PG1C-1LRx	30.6	45
	Amber	PG1C-1LAx	30.6	47
	Green	PG1C-1LGx	58.9	66
	Blue	PG1C-1LBx	10.7	18

- ProLight maintains a tolerance of $\pm 10\%$ on flux and power measurements.
- Please do not drive at rated current more than 1 second without proper heat sink.

Electrical Characteristics of Module at 350mA, T_J = 25°C

Color	Forward Voltage V _F (V)			Thermal Resistance Junction to Board (°C/ W)
	Min.	Typ.	Max.	
White	2.85	3.5	4.1	15
Warm White	2.85	3.5	4.1	15
Red	1.75	2.2	3.0	15
Amber	1.75	2.2	3.0	15
Green	2.85	3.5	4.1	15
Blue	2.85	3.5	4.1	15

Optical Characteristics of Module at 350mA, T_J = 25°C

Color	Dominant Wavelength λ_D , or Color Temperature CCT			PG1C-1LxC			PG1C-1LxG			PG1C-1LxH			PG1C-1LxD		
	Min.	Typ.	Max.	VA	BA	X	VA	BA	X	VA	BA	X	VA	BA	X
White	4100 K	5500 K	10000 K	15	10	38	20	15	17	30	20	15	40	25	6
Warm White	2700 K	3300 K	4100 K	15	10	38	20	15	17	30	20	15	40	25	6
Red	613.5 nm	623 nm	631 nm	15	10	55	20	15	22	30	20	17	40	25	6
Amber	587 nm	592 nm	597 nm	15	10	55	20	15	22	30	20	17	40	25	6
Green	515 nm	525 nm	535 nm	15	10	55	20	15	22	30	20	17	40	25	6
Blue	455 nm	465 nm	475 nm	15	10	55	20	15	22	30	20	17	40	25	6

- ProLight maintains a tolerance of $\pm 1\text{nm}$ for dominant wavelength measurements.
- ProLight maintains a tolerance of $\pm 5\%$ for CCT measurements.

Absolute Maximum Ratings

Parameter	White/Warm White/ Red/Amber/Green/Blue
DC Forward Current (mA)	350
Peak Pulsed Forward Current (mA)	500
Average Forward Current (mA)	350
ESD Sensitivity (HBM per MIL-STD-883E Method 3015.7)	±4000V (Class III)
LED Junction Temperature (°C)	120
Aluminum-core PCB Temperature (°C)	75
Storage & Operating Temperature (°C)	-40 to +75

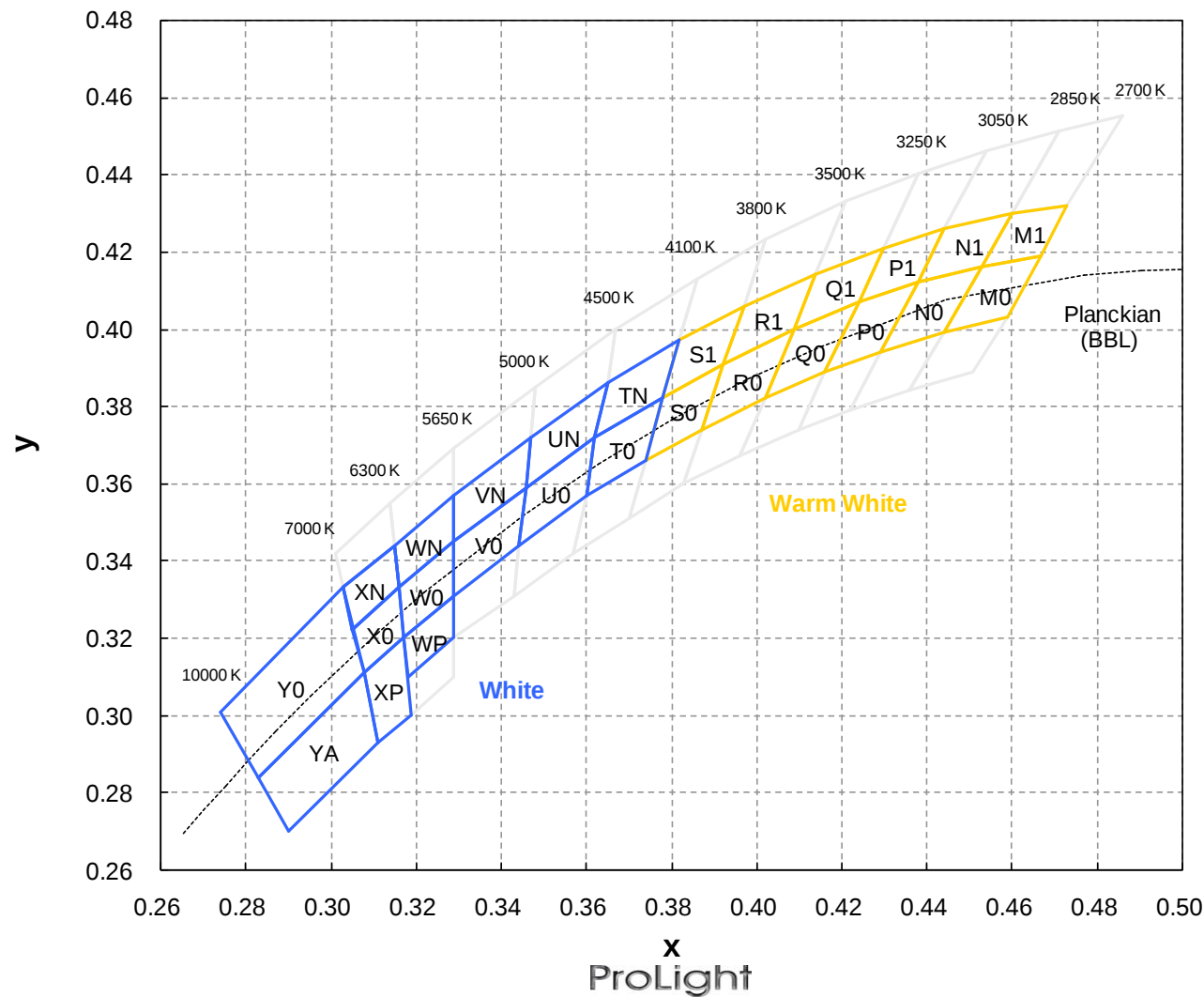
Photometric Luminous Flux Bin Structure

Color	Bin Code	Minimum Photometric Flux (lm)	Maximum Photometric Flux (lm)	Available Color Bins
White	T2	76.6	87.4	All
	U1	87.4	99.6	Yx, Xx, Wx, Vx, Ux ^[1]
Warm White	T1	67.2	76.6	All
	T2	76.6	87.4	All
	U1	87.4	99.6	Sx, Rx ^[1]
Red	Q	30.6	39.8	All
	R	39.8	51.7	All
	S1	51.7	58.9	^[1]
Amber	Q	30.6	39.8	All
	R	39.8	51.7	All
	S1	51.7	58.9	^[1]
Green	S2	58.9	67.2	All
	T1	67.2	76.6	All
	T2	76.6	87.4	^[1]
Blue	L	10.7	13.9	A, 1 ^[1]
	M	13.9	18.1	A, 1, 2 ^[1]
	N	18.1	23.5	2 ^[1]

- ProLight maintains a tolerance of ± 10% on flux and power measurements.
- The flux bin of the product may be modified for improvement without notice.
- ^[1] The rest of color bins are not 100% ready for order currently. Please ask for quote and order possibility.

Color Bin

White and Warm White Binning Structure Graphical Representation



Color Bins

White Bin Structure

Bin Code	x	y	Typ. CCT (K)	Bin Code	x	y	Typ. CCT (K)
T0	0.378	0.382	4300	WN	0.329	0.345	5970
	0.374	0.366			0.316	0.333	
	0.360	0.357			0.315	0.344	
	0.362	0.372			0.329	0.357	
TN	0.382	0.397	4300	WP	0.329	0.331	5970
	0.378	0.382			0.329	0.320	
	0.362	0.372			0.318	0.310	
	0.365	0.386			0.317	0.320	
U0	0.362	0.372	4750	X0	0.308	0.311	6650
	0.360	0.357			0.305	0.322	
	0.344	0.344			0.316	0.333	
	0.346	0.359			0.317	0.320	
UN	0.365	0.386	4750	XN	0.305	0.322	6650
	0.362	0.372			0.303	0.333	
	0.346	0.359			0.315	0.344	
	0.347	0.372			0.316	0.333	
V0	0.329	0.331	5320	XP	0.308	0.311	6650
	0.329	0.345			0.317	0.320	
	0.346	0.359			0.319	0.300	
	0.344	0.344			0.311	0.293	
VN	0.329	0.345	5320	Y0	0.308	0.311	8000
	0.329	0.357			0.283	0.284	
	0.347	0.372			0.274	0.301	
	0.346	0.359			0.303	0.333	
W0	0.329	0.345	5970	YA	0.308	0.311	8000
	0.329	0.331			0.311	0.293	
	0.317	0.320			0.290	0.270	
	0.316	0.333			0.283	0.284	

- Tolerance on each color bin (x , y) is ± 0.01

Note: Although several bins are outlined, product availability in a particular bin varies by production run and by product performance. Not all bins are available in all colors.

Color Bins

Warm White Bin Structure

Bin Code	x	y	Typ. CCT (K)	Bin Code	x	y	Typ. CCT (K)
M0	0.453	0.416	2770	Q0	0.409	0.400	3370
	0.444	0.399			0.402	0.382	
	0.459	0.403			0.416	0.389	
	0.467	0.419			0.424	0.407	
M1	0.460	0.430	2770	Q1	0.414	0.414	3370
	0.453	0.416			0.409	0.400	
	0.467	0.419			0.424	0.407	
	0.473	0.432			0.430	0.421	
N0	0.438	0.412	2950	R0	0.392	0.391	3650
	0.429	0.394			0.387	0.374	
	0.444	0.399			0.402	0.382	
	0.453	0.416			0.409	0.400	
N1	0.444	0.426	2950	R1	0.414	0.414	3650
	0.438	0.412			0.409	0.400	
	0.453	0.416			0.392	0.391	
	0.460	0.430			0.397	0.406	
P0	0.424	0.407	3150	S0	0.392	0.391	3950
	0.416	0.389			0.387	0.374	
	0.429	0.394			0.374	0.366	
	0.438	0.412			0.378	0.382	
P1	0.430	0.421	3150	S1	0.397	0.406	3950
	0.424	0.407			0.392	0.391	
	0.438	0.412			0.378	0.382	
	0.444	0.426			0.382	0.397	

- Tolerance on each color bin (x , y) is ± 0.01

Note: Although several bins are outlined, product availability in a particular bin varies by production run and by product performance. Not all bins are available in all colors.

Dominant Wavelength Bin Structure

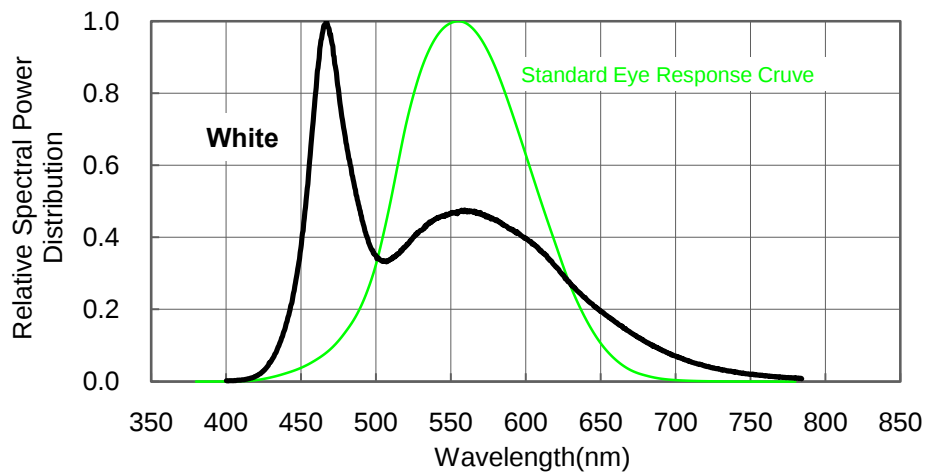
Color	Bin Code	Minimum Dominant Wavelength (nm)	Maximum Dominant Wavelength (nm)
Red	2	613.5	620.5
	4	620.5	631.0
Amber	2	587.0	589.5
	4	589.5	592.0
	6	592.0	594.5
	7	594.5	597.0
Green	A	515	520
	1	520	525
	2	525	530
	3	530	535
Blue	A	455	460
	1	460	465
	2	465	470
	3	470	475

- ProLight maintains a tolerance of $\pm 1\text{nm}$ for dominant wavelength measurements.

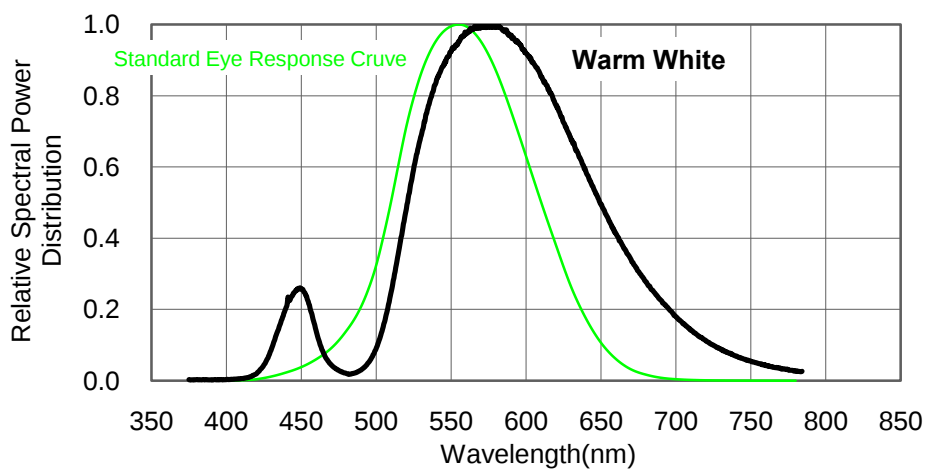
Note: Although several bins are outlined, product availability in a particular bin varies by production run and by product performance. Not all bins are available in all colors.

Color Spectrum, $T_J = 25^{\circ}\text{C}$

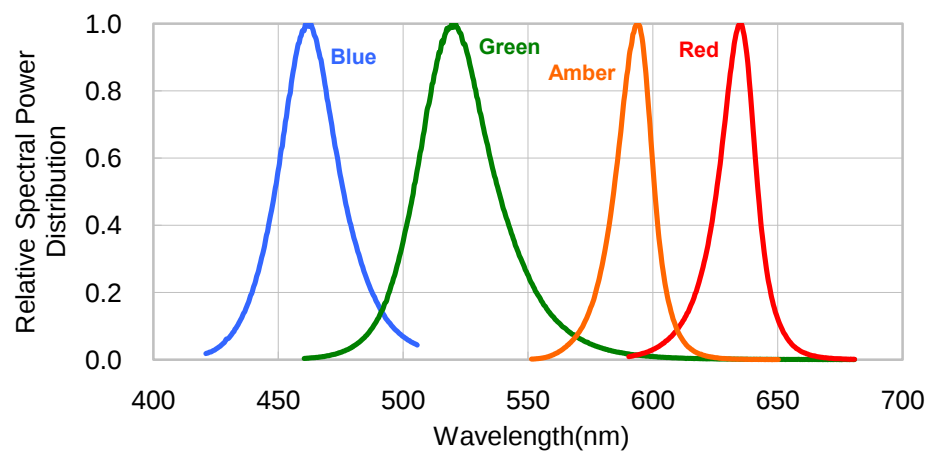
1. White



2. Warm White



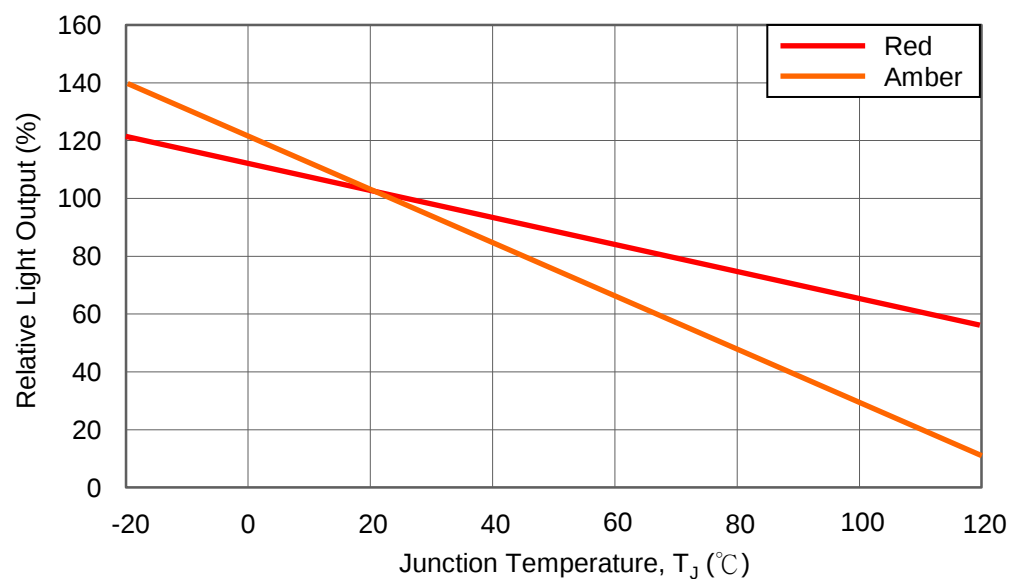
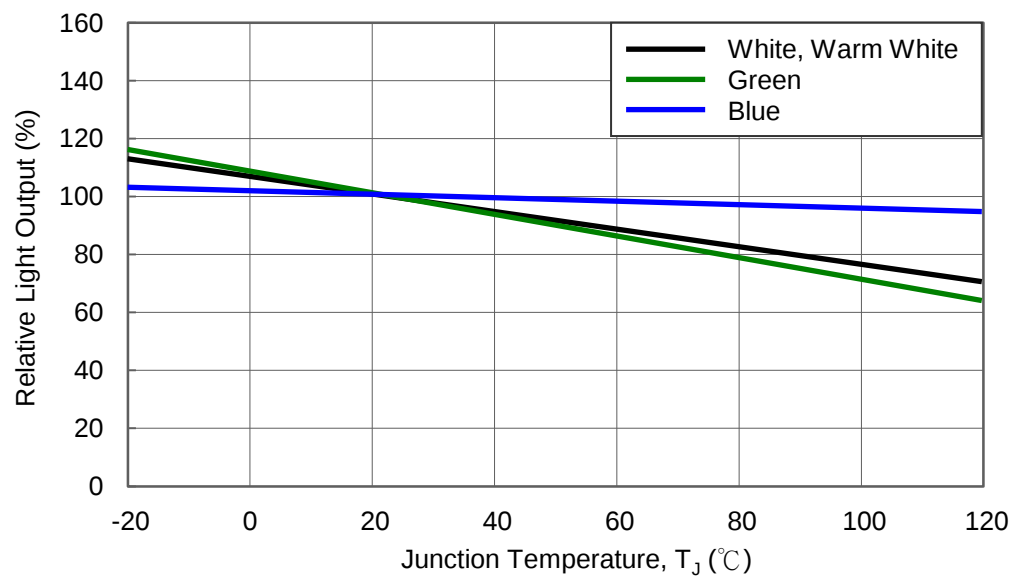
3. Blue 、 Green 、 Amber 、 Red



ProLight

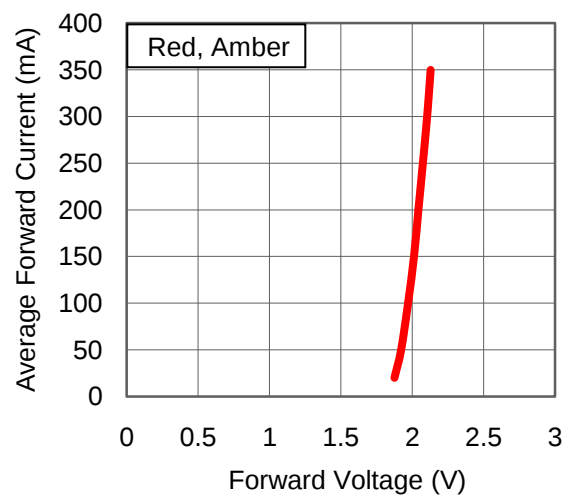
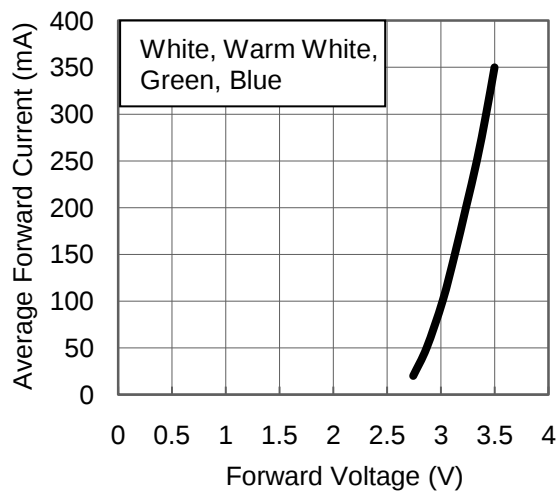
Light Output Characteristics

Relative Light Output vs. Junction Temperature at 350mA

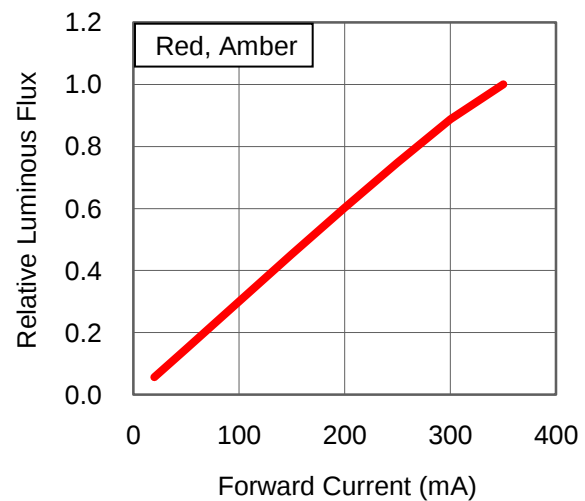
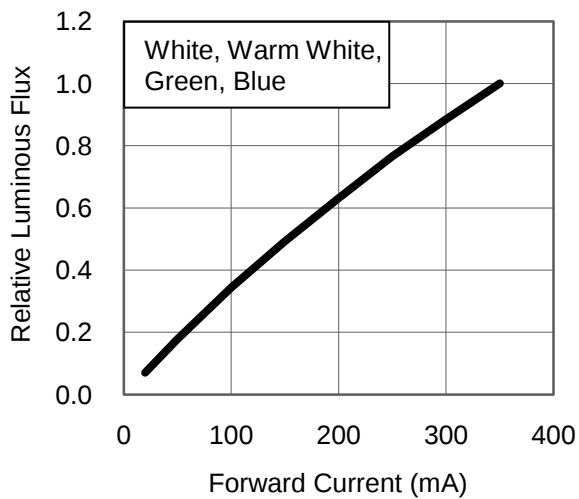


Forward Current Characteristics, $T_J = 25^\circ\text{C}$

1. Forward Voltage vs. Forward Current

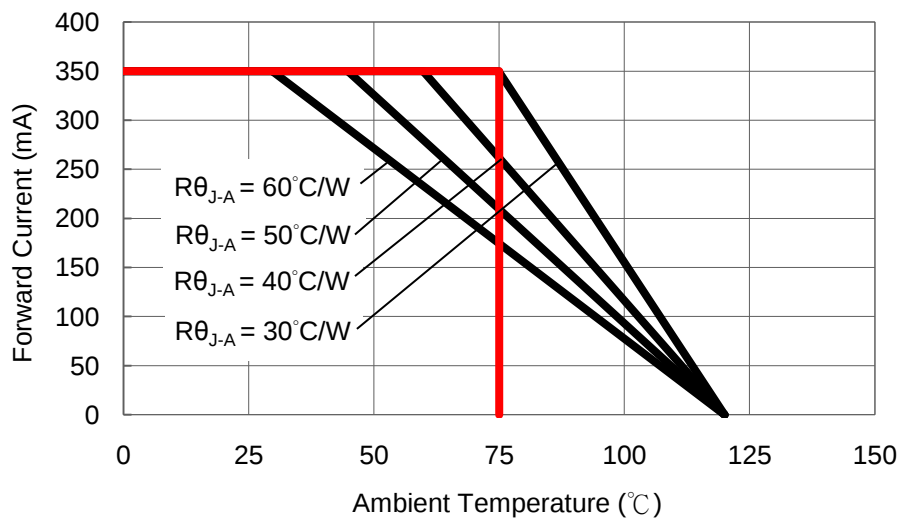


2. Forward Current vs. Normalized Relative Luminous Flux

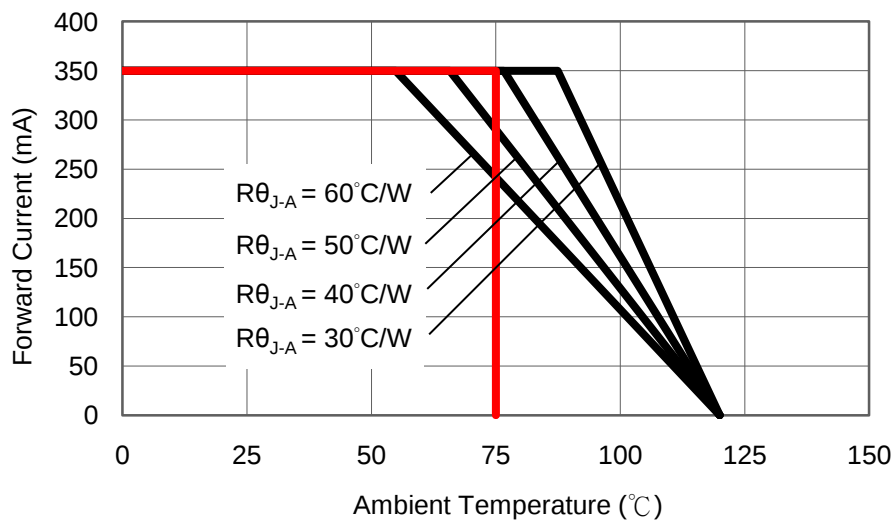


Ambient Temperature vs. Maximum Forward Current

1. White, Warm White, Green, Blue ($T_{JMAX} = 120^{\circ}\text{C}$, $T_{Ambient} = 75^{\circ}\text{C}$)



2. Red, Amber ($T_{JMAX} = 120^{\circ}\text{C}$, $T_{Ambient} = 75^{\circ}\text{C}$)



Typical Representative Spatial Radiation Pattern

Spot Radiation Pattern

