DATASHEET

Intematix ChromaLit™ XT

Remote Phosphor Light Source

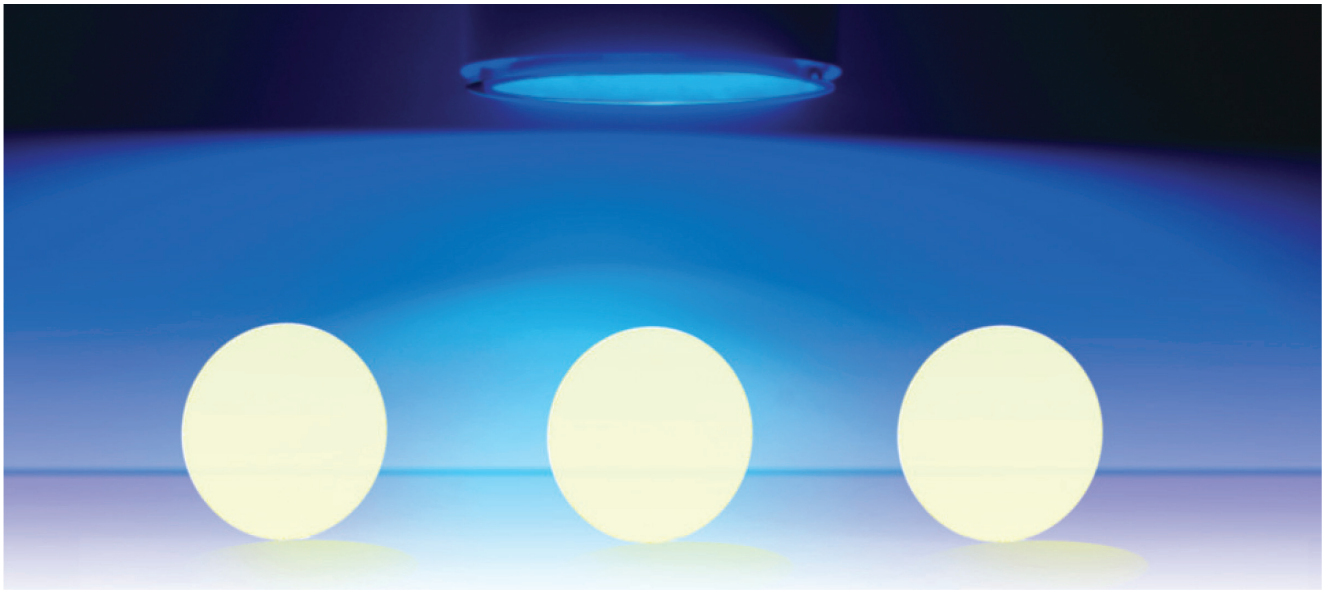
ChromaLit XT offers powerful elegance for brilliant lighting design. Power comes from a very high operating temperature and efficiency enabling thousands of lumens from a small light emitting area, ideal for down lights and other lighting modules. Elegance is a result of ChromaLit XT's neutral off-state color making it the first choice for attractive light fixture design. With reliability second to none, ChromaLit XT offers a new range of long life applciations in both indoor and outdoor lighting.

Product Features

- Diffuse and uniform emission pattern
- 3 SDCM color consistency
- Ip to 30% higher system efficacy compared to white LED solutions
- CCT options ranging from 2700K to 5600K with a CRI range of 70 to 98
- Omni-directional light distribution
- Substrate material - glass

Application & Benefits

- Enables new design options for functional lighting applications
- Glare free non-pixelated lighting
- Uniform consistent lighting
- Increased energy savings and lower total cost of ownership
- Supports broad market requirements for high quality lighting with improved inventory management
- Meets V0 flammability requirement and UV resistant



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Product Nomenclature

ChromaLit XT products are identified by the following product nomenclature:

Product order code

CL-ABC-DEFG-HI

Where:

A - Designates the first digit of CRI

8 = 80 CRI minimum

BC - Designates the first two digits of CCT

30 = 3000K, 40 = 4000K, etc.

DEFG - Designates dimensions

R75 = 75mm Round

HI - Designates product family (XT)

Example:

CL-827-R75-XT represents ChromaLit 80CRI, 2700K CCT, 75mm Round, XT product family

Minor Product Change Policy

The rigorous qualification testing of ChromaLit products ensures product performance. Slight cosmetic changes which do not affect the form fit or function of the product may occur as Intematix continues product optimization.

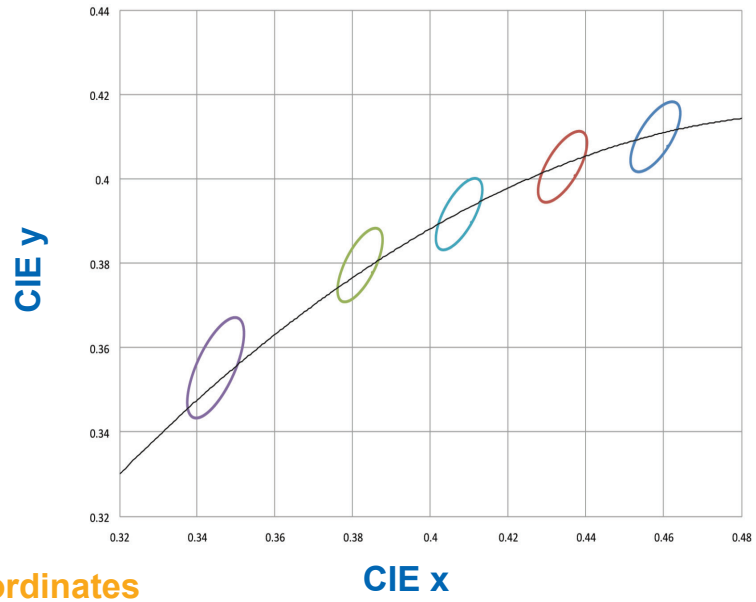
Optical and Performance Characteristics[1]

Color Designation	CCT[2] (K)	Color Consistency[3] MacAdam Ellipses	Min CRI[4]	Minimum Conversion Efficacy[5] (Lm/W_{rad}) at 25°C	Typical Conversion Efficacy[5] (Lm/W_{rad}) at 25°C
CL-827	2700	3-step	80	180	190
CL-927	2700	3-step	90	150	160
CL-830	3000	3-step	80	187	197
CL-930	3000	3-step	90	155	165
CL-835	3500	3-step	80	195	205
CL-840	4000	3-step	80	205	215
CL-750	5000	4-step	70	222	232

Notes

1. Performance based on reference design. Please refer to application note for details on reference design. Intematix maintains a tolerance of ±7% of luminous flux and radiant watt measurements. Intematix maintains a tolerance of 0.5 MacAdam Ellipses on color consistency measurements.
2. **Correlated Color Temperature**
3. **Color Consistency** is dependent on the AVERAGE dominant wavelength of blue LED source. ChromaLit maintains color consistency within a 3-step MacAdam Ellipse given a uniform blue LED source with a constant average wavelength. 2.5nm (±1.25nm) of average blue LED wavelength variation will provide 4-step MacAdam Ellipses of color consistency. Values are approximate, please refer to bin diagram on the following page for exact bin definition.
4. **Minimum Color Rendering Index** rating is based on reference design using blue LEDs with average dominant wavelength of 455nm.
5. **Conversion Efficacy** is the luminous flux (white light) output per radiant watt of blue light input to ChromaLit. W_{rad} is the radiometric power measured in watts. Conversion efficacy is rated based on reference operation and dominant blue LED wavelength of 455nm (peak wavelength of 450nm).

Color Binning Diagram



ChromaLit Bin Coordinates

CCT (K)	x	y
2700	0.4578	0.4101
3000	0.4338	0.4030
3500	0.4073	0.3917
4000	0.3818	0.3797
5000	0.3447	0.3553

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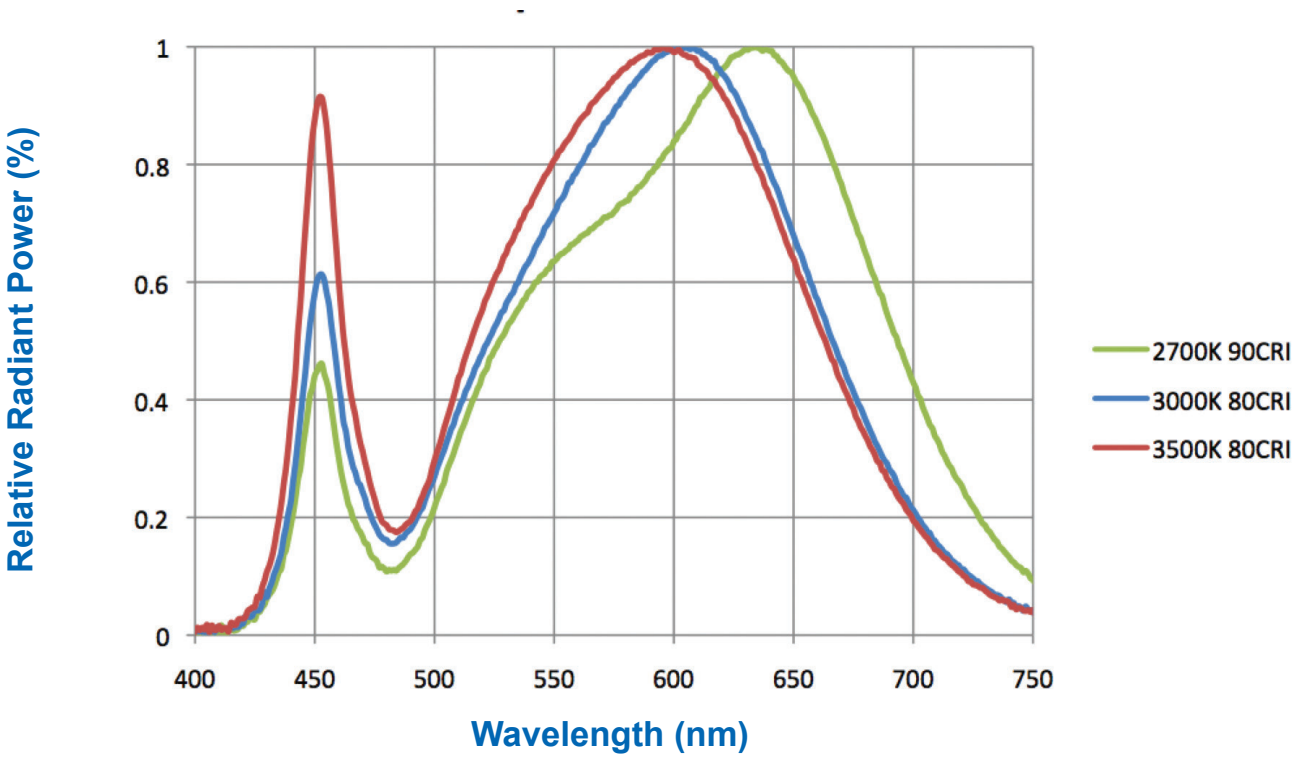
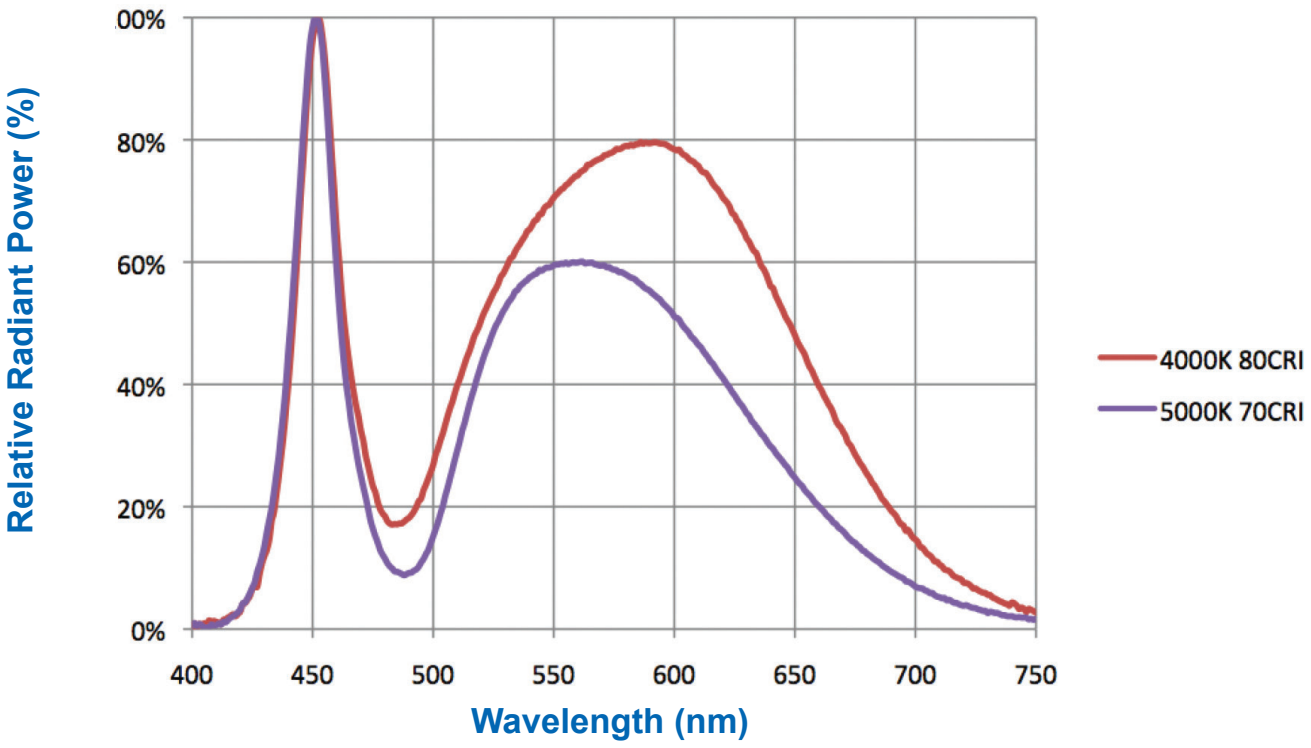
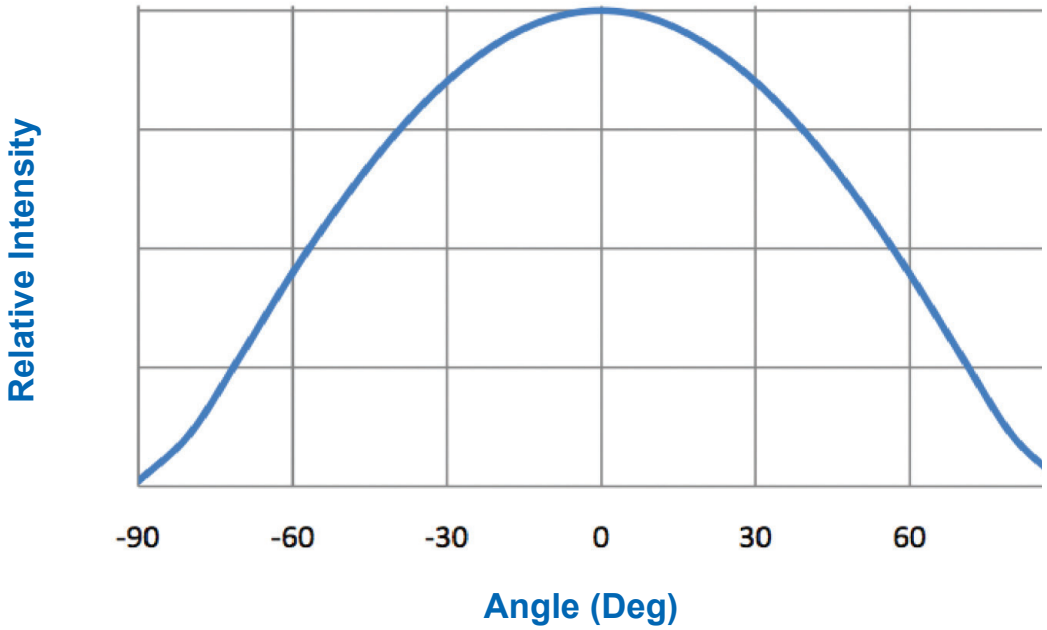
Relative Spectral Power Distribution





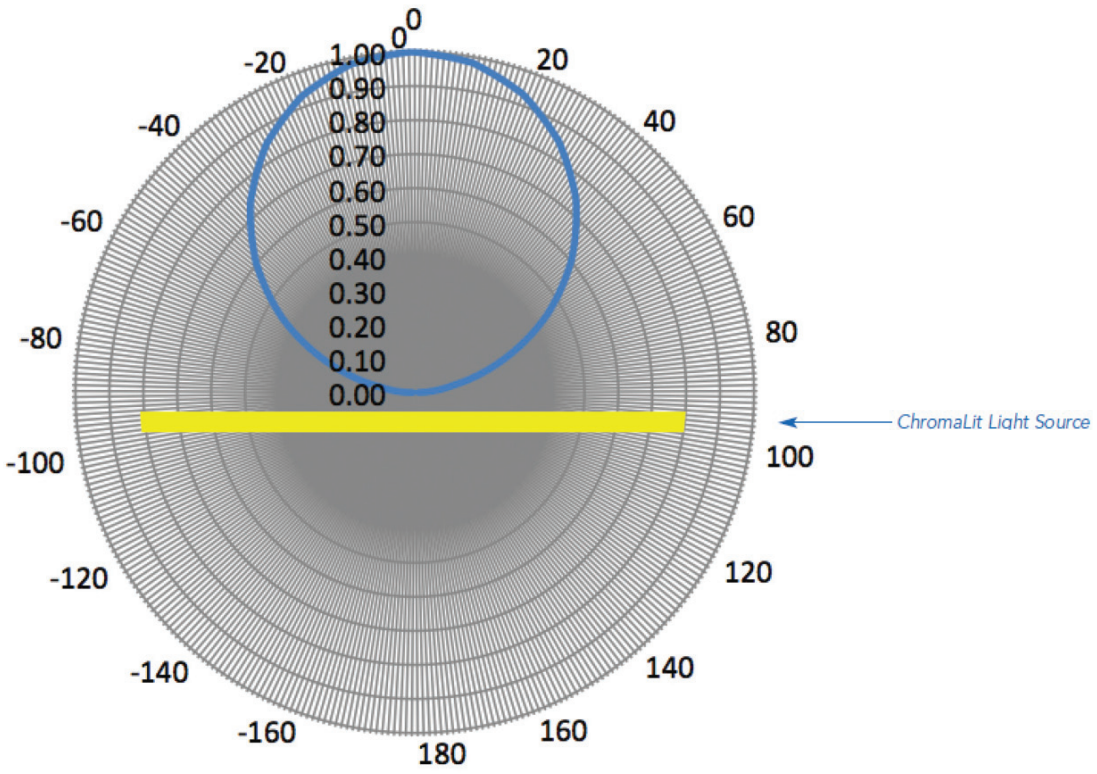
Intensity Distribution

Luminous Intensity Distribution Diagram[1]



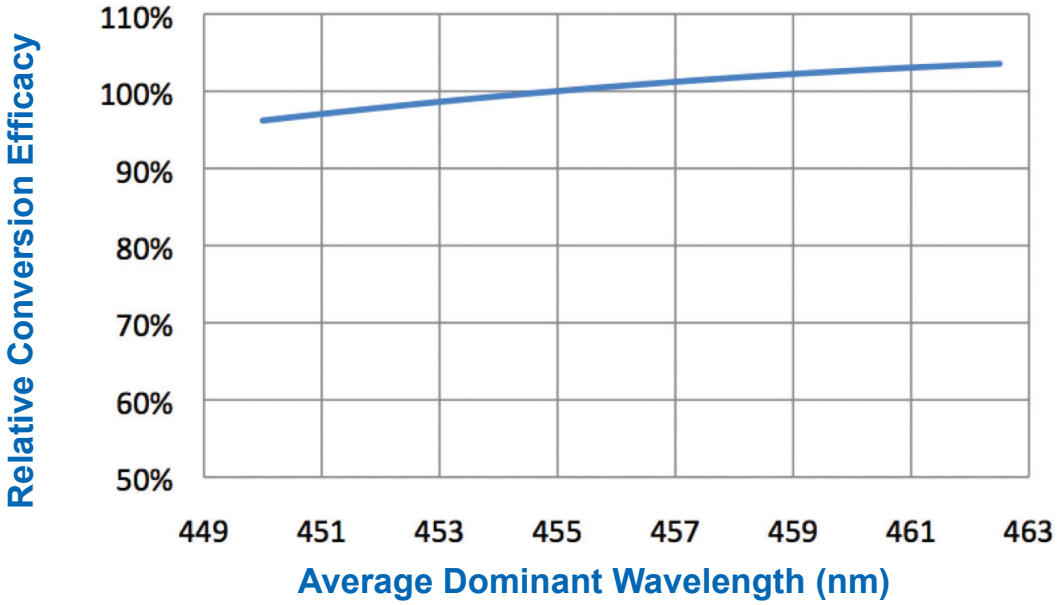
[1] Intensity distribution pattern is characterized using CL-830-LR-XT products and reference design.

Luminous Intensity Polar Distribution Diagram



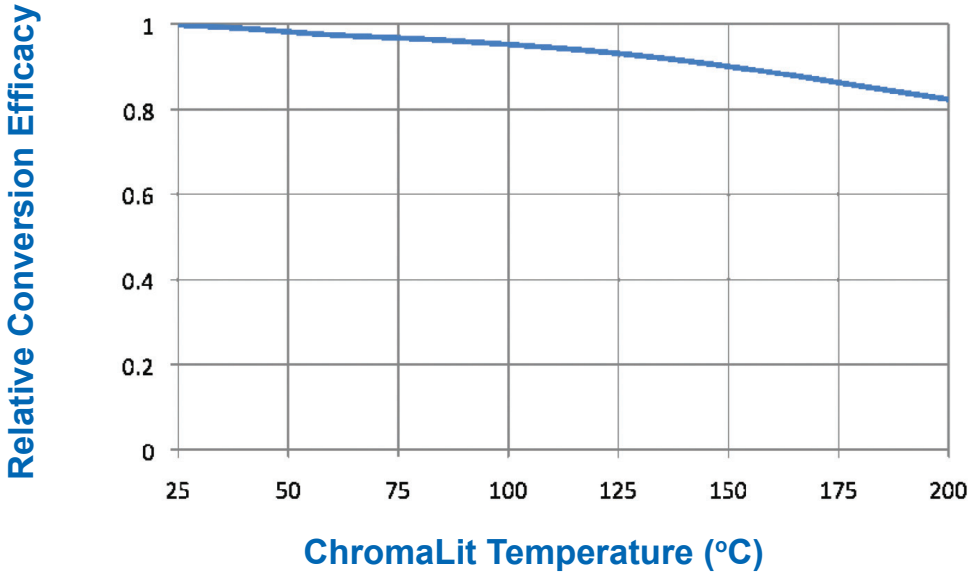
Performance Characteristics over Wavelength

Relative Conversion Efficacy over Wavelength[1]



[1] Relative conversion efficacy does not reflect performance of blue LED over dominant wavelength.

Performance Characteristics over Temperature



Relative CIE Chromaticity Shift over Wavelength

	Average Dominant Wavelength				
	450nm	452.2nm	455nm	457.5nm	460nm
Δ CIE X Coordinate	-0.003	-0.002	0	0.001	0.001
Δ CIE Y Coordinate	-0.014	-0.007	0	0.005	0.008

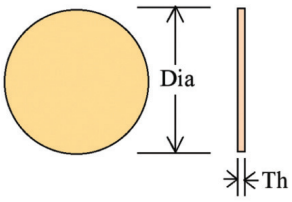
Absolute Maximum and Minimum Ratings

Description	Maximum Values
Maximum operating temperature (Tmax[1])	180°C
Minimum operating temperature	-40°C
Max storage temperature	180°C
Minimum storage temperature	-40°C
Response time to full light output	<10µs

[1] Tmax is the maximum temperature measured on the inner surface of ChromaLit.
Please consult application guide for additional information on measurement location.

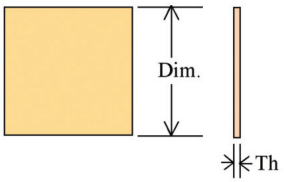
Mechanical Characteristics for ChromaLit XT

ChromaLit Round*



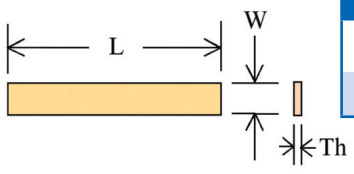
Dimension Designation	Dimensions LxW (mm)[1]	Dimensions LxW (in.)	Example Application	Typical Lumen Output (lm)[2]
R23	22.5	0.9	Spot Flood Down Light Area Lighting	500
R34	34.0	1.3		1100
R45	45.0	1.8		2000
R62	61.5	2.4		3700
R75	75.0	3.0		5500
R100	100.0	3.9		10000

ChromaLit Square*



Dimension Designation	Dimensions LxW (mm)[1]	Dimensions LxW (in.)	Example Application	Typical Lumen Output (lm)[2]
S65	65.0 x 65.0	2.6 x 2.6	Down Light Area Lighting	5300
S95	95.0 x 95.0	3.7 x 3.7		11300

ChromaLit Linear*



Dimension Designation	Dimensions LxW (mm)[1]	Dimensions LxW (in.)	Example Application	Typical Lumen Output (lm)[2]
L152	152.5 x 22.5	6.0 x 0.9	Task/Linear Panel Lighting	5000
L225	305.0 x 22.5	12.0 x 0.9		10000

Notes

* Product performance based on reference design. Product specifications subject to change.
1. Typical dimension tolerances for length, width, and diameter are ±0.7mm. Phosphor dimension and mechanical dimension are equivalent.
2. Typical lumen output is a recommended range based on typical application for a 3000K CCT, 80 CRI lighting system operating below maximum temperature specification. On a relative basis, lower CCTs/higher CRIs operate at lower lumen output and higher CCTs/lower CRIs may have higher lumen output. Max temperature and thus system lumens may vary widely depending on thermal management used.

Additional Mechanical Characteristics

Material Properties

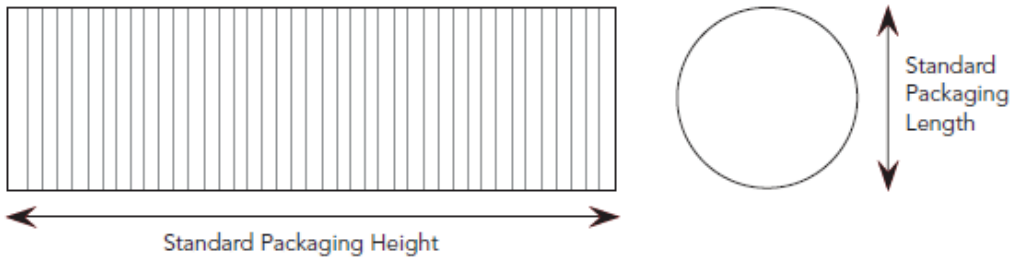
Description	Properties
Thickness	2.4mm ±0.2mm
Substrate	Glass (Low Iron Soda Lime)
Orientation	Glossy side out, Matte side facing LED
Coefficient of Thermal Expansion	$9.3x10^{-6}/^{o}C$

Packaging Specifications

Product will be shrink-wrapped accoding to the following specifications. Product will be separated by non-abrasive material.

Dimension Designation	Standard Packaging Increment (EA)	Standard Packaging Length (mm)	Standard Packaging Height (MM)
R23	50	23	125
R34	50	34	125
R45	50	45	125
R62	50	32	125
R75	20	75	50
R100	20	100	50
S65	20	65	50
S95	20	95	50
L152	10	152	25

Packaging Illustration



Notes
Drawing not to scale

Reliability and Environmental Ratings

Description	Typical Values
Temperature/Humidity (non-condensing)	60°C at 90%
Flammability	V0
RoHS	RoHS Compliant

Handling Considerations

As a dirty or damaged phosphor layer could result in alteration in product performance, ChromaLit light sources should be handled similarly to most optical components. It is best to handle the parts at the edges and prevent mechanical abrasion. If adhesives are used, they must be kept off of the entrance or exit apertures of ChromaLit, since they could greatly impact performance. If parts require cleaning, use a lint free tissue, isopropanol (IPA), or mild detergent. Dry using compressed air.

Contact your Intematix representative for additional information on ChromaLit XT Reference Designs.

About Intematix

Intematix develops essential phosphor materials to drive the LED lighting revolution. The company's comprehensive range of products and solutions can be used to build foundations for the world's LED lighting products and systems including general lighting, displays, automotive and many others. A broad selection of products and innovative delivery systems accelerate time-to-market, improve light quality and efficacy and reduce costs. For more information, please visit www.intematix.com.

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