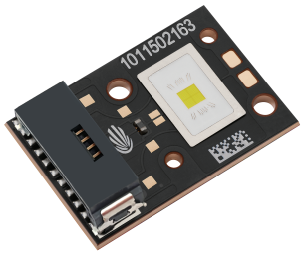
CFT-50X-CG-M

Converted Green Medical LED



Features

- Monolithic electrically isolated Converted Green Medical LED with 5 mm^2 emitting area for optimal coupling into 2-4 mm diameter fiber bundles
- Typical peak wavelength emission of 550 nm
- Comprehensive product line spanning the entire visible range in the same package platform
- High drive current operation: up to 10 A under CW conditions and 12.5 A under pulse conditions
- Windowless package improves coupling-efficiency into fiber optics
- Excellent peak wavelength stability with current and temperature across the spectrum
- Compatible with high voltage / low current operation

RoHS REACH

Applications

- Fiber-coupled Illumination
- Life-science/ Biomedical
- Fluorescence microscopy
- Machine Vision
- Industrial Lighting
- Light engines

Table of Contents

Ordering Information

Ordering Part Numbers[1]

Color	Radiometric flux		Wavelength Bins	Ordering Part Number
	Minimum Flux Bin	Minimum Power		
Converted Green Medical	L	10.25 W	567C	CFT-50X-CG-L42-M-L100

Part Number Nomenclature

CFT **50X** **CG** **L42** **<Bin kit>**

Product Family	Chip Area	Color	Package Configuration	Bin Kit
CFT: Copper-core PCB, no encapsulation	**50X**: 5.0 mm^2	**CG**: Converted Green	**L42**: Internal package code	Refer to ordering part numbers in this document

Notes:

1. Flux Bin listed is minimum bin shipped, higher bins may be included at Luminus' discretion.

Binning Structure

Radiometric Flux Bins[1,2]

Flux Bin[3]	Binning @ 7.5 A, T_c= 25°C[4]	
	Minimum Power (W)	Maximum Power (W)
L	10.25	11
M	11	12
N	12	13
P	13	14

Center Wavelength Bins[2]

Wavelength Bin[3]	Binning @ 7.5 A, T_c= 25°C[4]	
	Minimum Wavelength (nm)	Maximum Wavelength (nm)
567C	567	573

Notes:

1. Luminus maintains a +/- 6% tolerance on flux measurements.
2. Products are production tested then sorted and packed by bin.
3. Individual bins are not orderable. Please refer to the Product Ordering information page for a list of orderable bin kits.
4. Product test condition: 7.5 A, 20 ms single pulse, 25°C case temperature.

Characteristics[1,2,3]

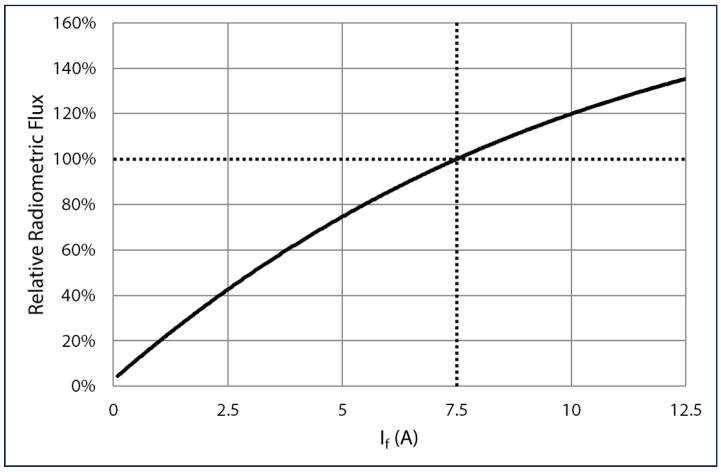
Optical and Electrical Characteristics		Symbol	Value	Unit
Emitting Area		A_E	4.95	mm^2
Emitting Area Dimension			2.225 x 2.225	mm x mm
Test Peak Drive Current		I_f	7.5	A
Peak Luminous Flux[4,5,6]		Φ_V	5400	lm
Peak Radiometric Flux[4,5,6]		Φ_E	11.5	W
Forward Voltage	Minimum	$V_{f\ min}$	6.4	V
	Typical	$V_{f\ typ}$	7.2	
	Maximum	$V_{f\ max}$	8.0	
Center Wavelength[4]		λ_c	570	nm
Peak Wavelength[4]		λ_p	550	nm
FWHM- Spectral bandwidth at 50% of Φ_V		$\Delta\lambda_{1/2}$	103	nm
Chromaticity Coordinates[7]		CIE x	0.441	
		CIE y	0.538	
Thermal Characteristics				
Real Thermal Resistance (Junction to Case)[8]		$R_{th\ JC\ real}$	0.85	°C/W
Electrical Thermal Resistance at WPE = 22% (Junction to Case)[8,9]		$R_{th\ JC\ elec}$	0.66	°C/W
Electrical Thermal Resistance at WPE = 22% (Junction to Thermistor)[8,9]		$R_{th\ JR\ elec}$	0.78	°C/W
Thermal Coefficient of Photometric Flux			-0.3	%/°C
Thermal Coefficient of Radiometric Flux			-0.3	%/°C
Forward Voltage Temperature Coefficient			-4.5	mV/°C

Notes:

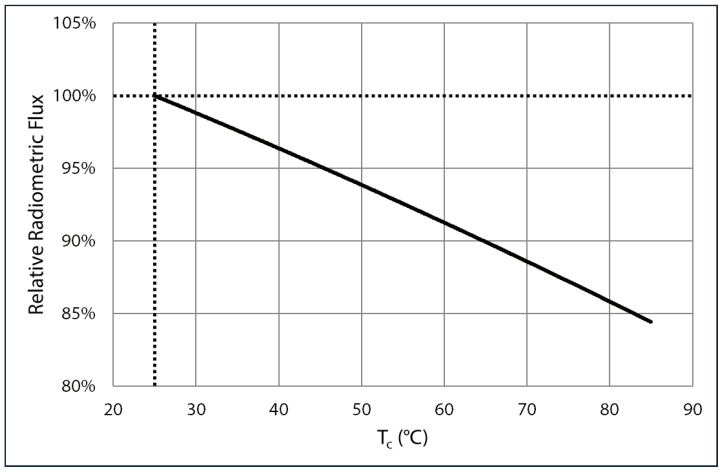
1. All ratings are based on operation with a constant case temperature T_c =25°C.
2. CFT-50X-CG-M device can be driven at currents ranging from 100 mA to 12.5 A and at duty cycles ranging from 1% to 100%. Drive current and duty cycle should be adjusted as necessary to maintain the junction temperature desired to meet application lifetime requirements.
3. Tested at Current of 7.5 A, 20 ms single pulse.
4. Unless otherwise noted, values listed are typical. Devices are production tested and specified at 7.5 A.
5. Total flux from emitting area at listed peak wavelength. Reported performance is included to show trends for a selected power level. For specific minimum and maximum values, use bin tables. For product roadmap and future performance of devices, contact Luminus.
6. Caution must be taken not to stare at the light emitted from these LEDs. Under special circumstances, the high intensity could damage the eye.
7. In CIE 1931 chromaticity diagram coordinates, normalized to X+Y+Z=1.
8. Measurements are in accordance with JEDEC 51-14.
9. $R_{th\ JR}$ is measured on a water-cooled stage with e-graf as the thermal interface material. $R_{th\ JR}$ is system-dependent. For instructions on how to calculate $R_{th\ JR}$ for your specific system, please refer to application brief https://download.luminus.com/datasheets/Luminus-White-Paper-Thermal-Mgmt_Thermistors.pdf

Relative Radiometric Flux-Single Pulse Mode

Forward current: φ_v/φ_v(7.5 A) Single Pulse 20 ms, T_c = 25°C

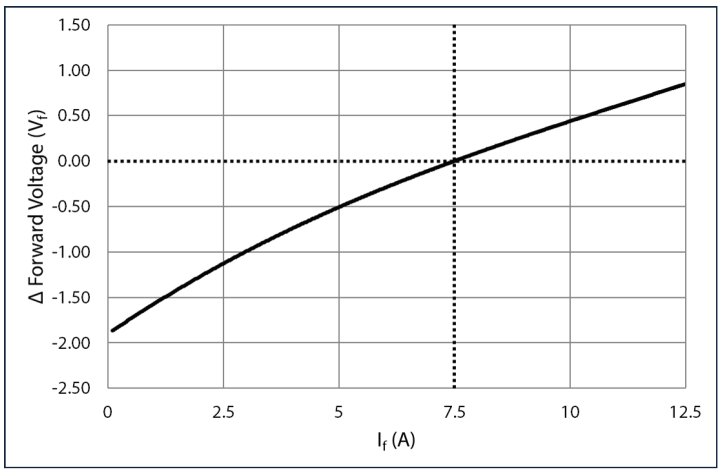


Temperature: φ_v/φ_v(25°C) Single Pulse 20 ms, I_f = 7.5 A

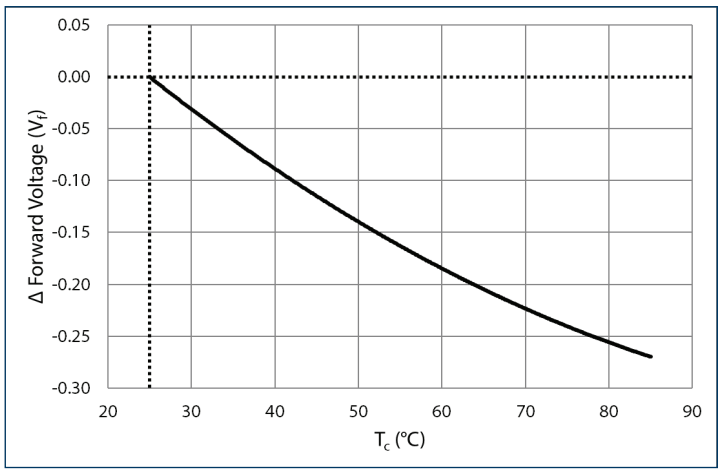


Forward Voltage-Single Pulse Mode

Forward current: $\Delta V_f = V_f(I_f) - V_f$(7.5 A) Single Pulse 20 ms, T_c = 25°C

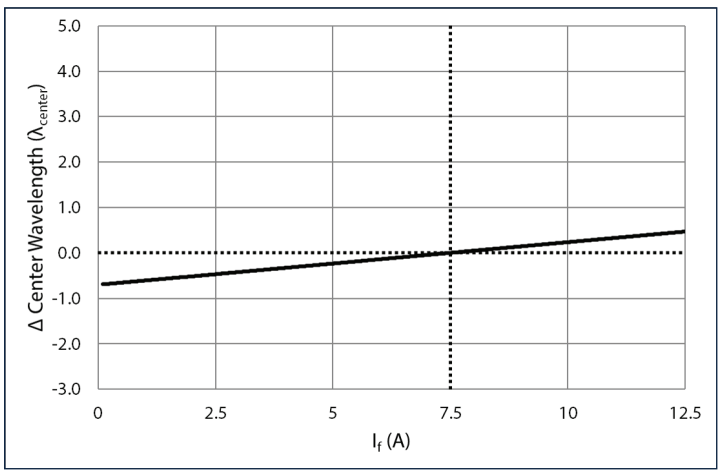


Temperature: $\Delta V_f = V(T_c) - V$(25°C) Single Pulse 20 ms, I_f = 7.5 A

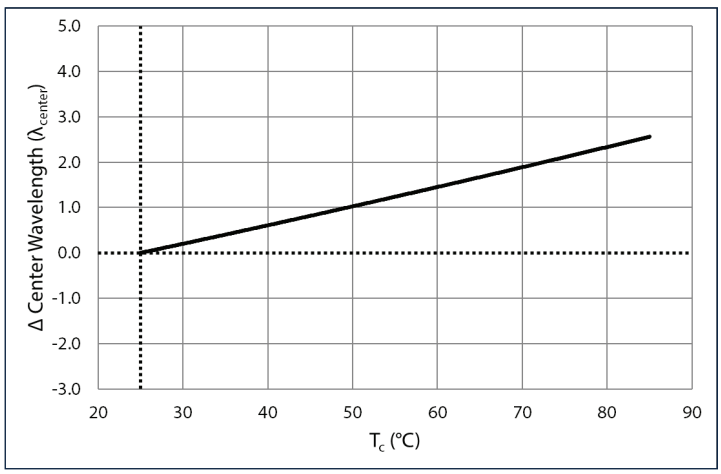


Center Wavelength Shift-Single Pulse Mode

Forward current: $\Delta\lambda_c = \lambda_c(I_f) - \lambda_c$(7.5 A) Single Pulse 20 ms, T_c = 25°C

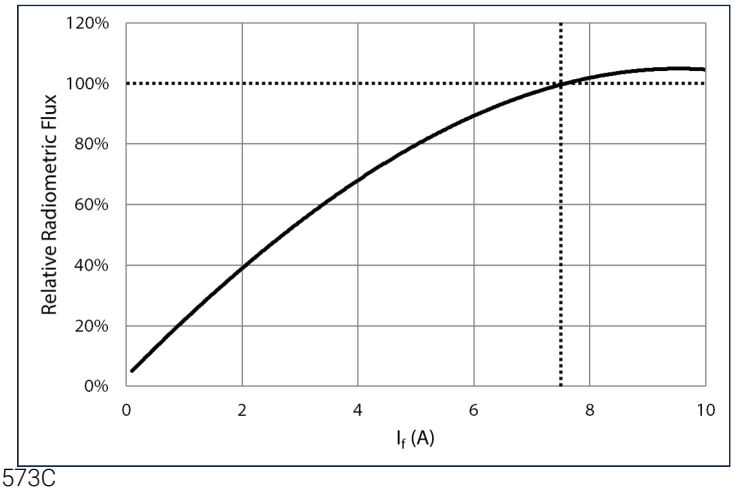


Temperature: $\Delta\lambda_c = \lambda_c(T_c) - \lambda_c$(25°C) Single Pulse 20 ms, I_f = 7.5 A

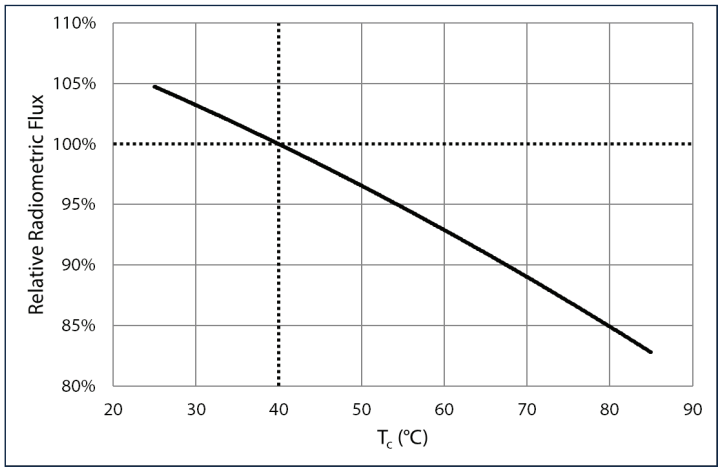


Relative Radiometric Flux-CW Mode

Forward current: φ_v/φ_v(7.5 A) CW, T_c = 40°C



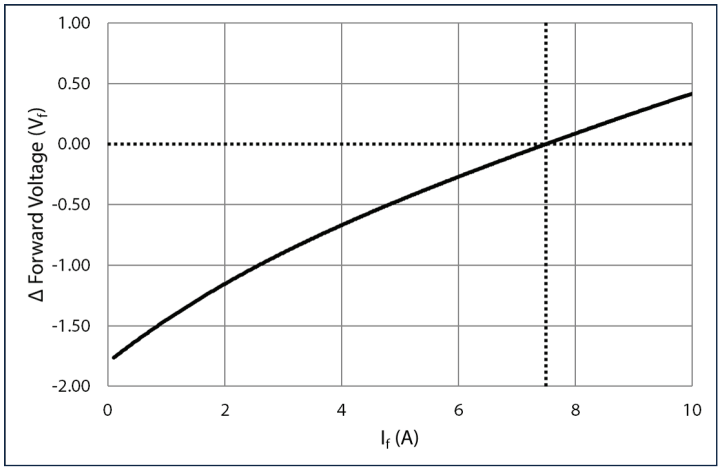
Temperature: φ_v/φ_v(40°C) CW, I_f = 7.5 A



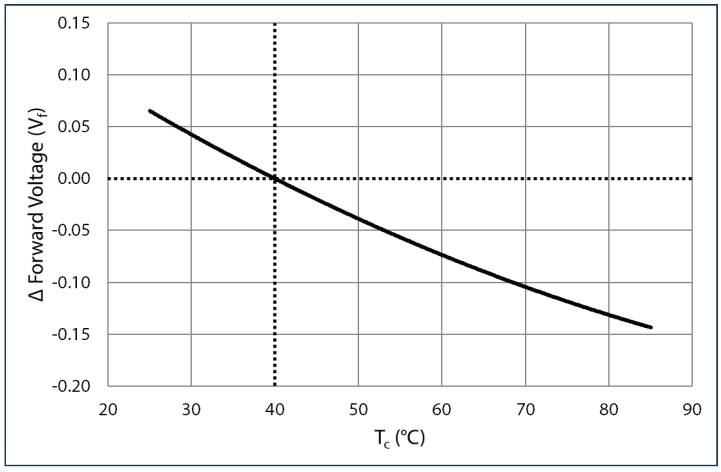
573C

Forward Voltage-CW Mode

Forward current: $\Delta V_f = V_f(I_f) - V_f$(7.5 A) CW, T_c = 40°C

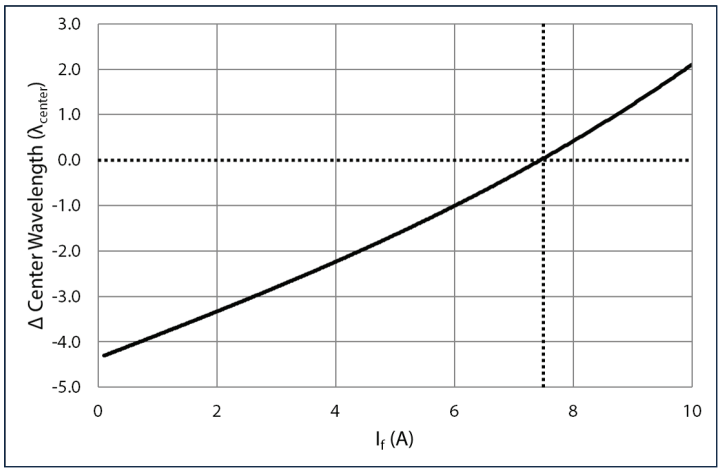


Temperature: $\Delta V_f = V(T_c)$ - V(40°C) CW, I_f = 7.5 A

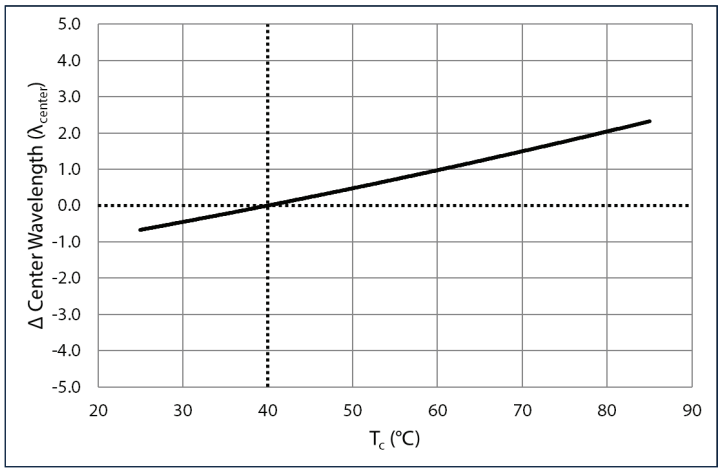


Center Wavelength Shift-CW Mode

Forward current: $\Delta\lambda_c = \lambda_c(I_f) - \lambda_c$(7.5 A) CW, T_c = 40°C



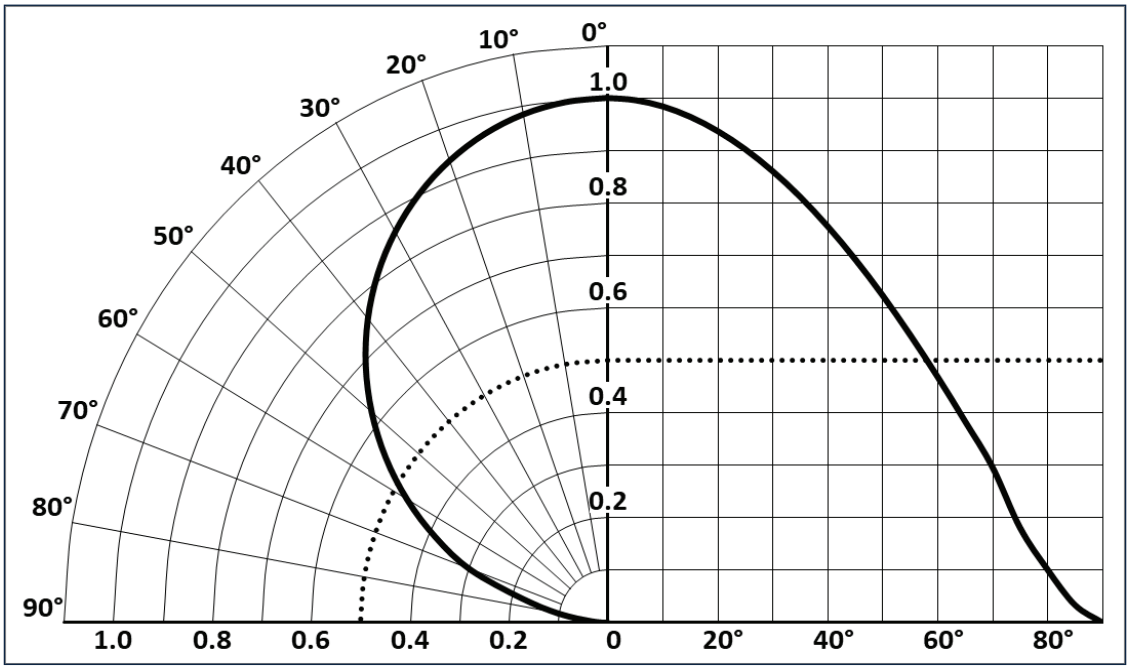
Temperature: $\Delta\lambda_c = \lambda_c(T_c) - \lambda_c$(40°C) CW, I_f = 7.5 A



Angular Distribution and Typical Spectrum

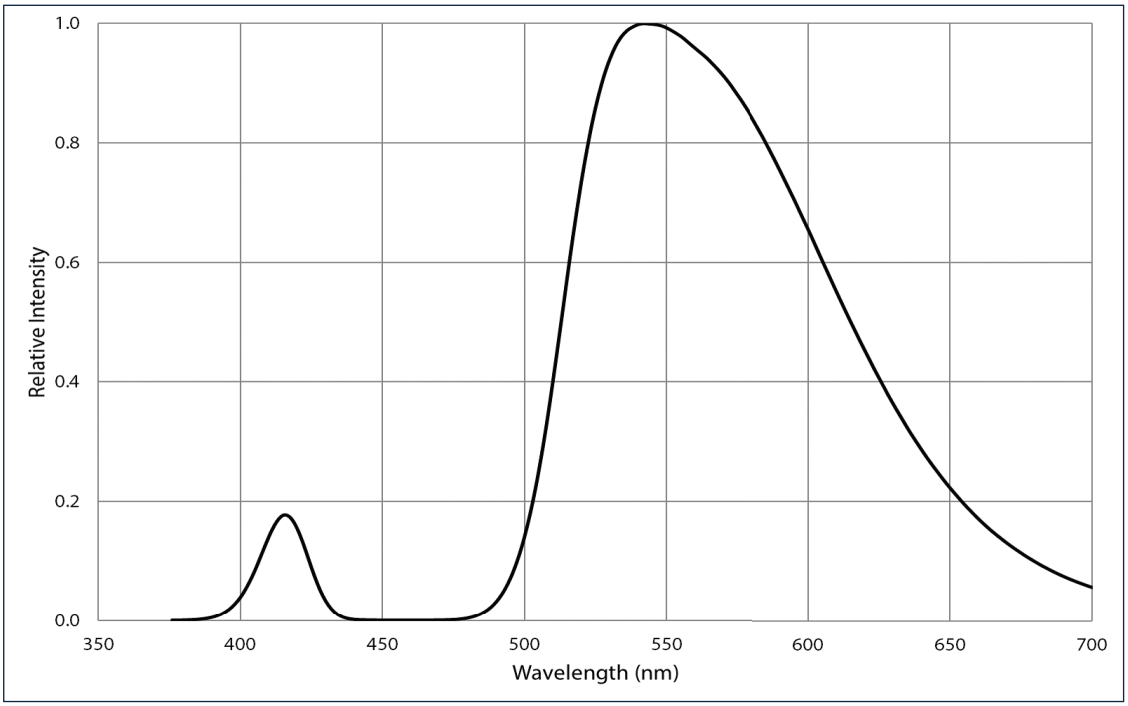
Angular Intensity Distribution

$I_{ref} = f(\Phi)$; $T_c = 25°C$



Typical Spectrum

$\Phi_{ref} = f(\lambda)$; $I_f = 7.5$ A; $T_c = 25°C$



Absolute Maximum Ratings

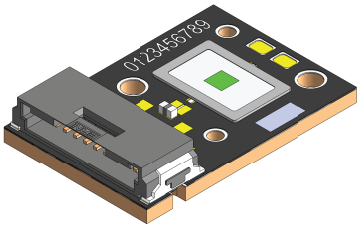
Parameter		Symbol	Values	Unit
Minimum Forward Current (Pulsed)[1]	Minimum	$I_{f\ pulse\ min}$	0.1	A
Maximum Forward Current (Pulsed)[2] (duty cycle < 50%)	Maximum	$I_{f\ pulse\ max}$	12.5	
Minimum Forward Current (CW)[1]	Minimum	$I_{f\ CW\ min}$	0.1	
Maximum Forward Current (CW)[2]	Maximum	$I_{f\ CW\ max}$	10	
Forward Surge Current (Pulsed)[2] (Frequency >240Hz, duty cycle <10%, t=1 ms)		$I_{surge\ max}$	15	A
Storage Temperature		$T_{stg\ max}$	100	°C
Junction Temperature[2]		$T_{j\ max}$	150	°C

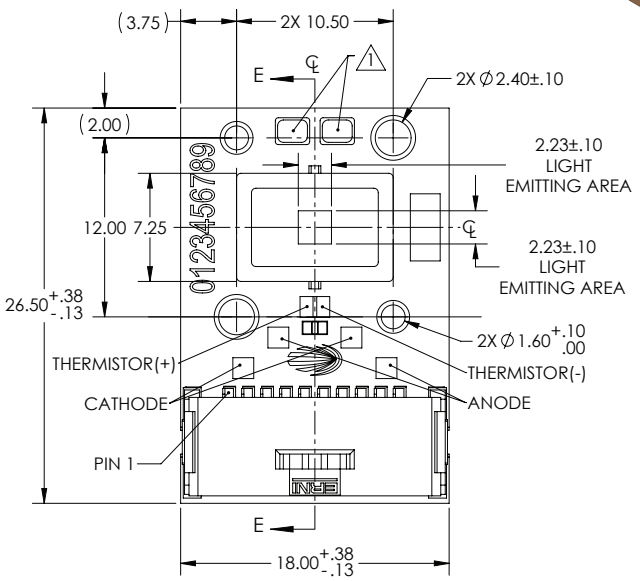
Notes:

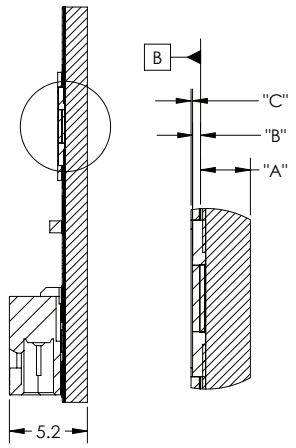
1. For reference only.
2. CFT-50X-CG-M LED is designed for operation at current up to 10 A under CW conditions, 12.5 A under pulse conditions and temperature as specified above. Product lifetime data is specified at recommended forward drive currents. Sustained operation at or beyond absolute maximum currents or temperatures will result in a reduction of device lifetime compared to recommended conditions.

Mechanical Dimensions

DIMENSIONS IN MILLIMETERS



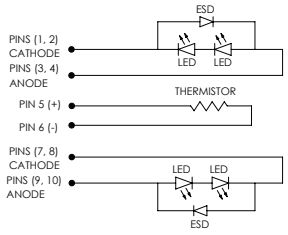




SECTION E-E

NOTES:
1. TEST PADS ARE ELECTRICALLY CONNECTED TO THE BOARD COPPER BASE.

PIN NO(S).	ASSIGNMENT
1,2	CATHODE (-)
3,4	ANODE (+)
5	THERMISTOR (+)
6	THERMISTOR (-)
7,8	CATHODE (-)
9,10	ANODE (+)



PINS 1, 2, 7, 8 (CATHODE) AND 3, 4, 9, 10 (ANODE) MUST BE POWERED SIMULTANEOUSLY

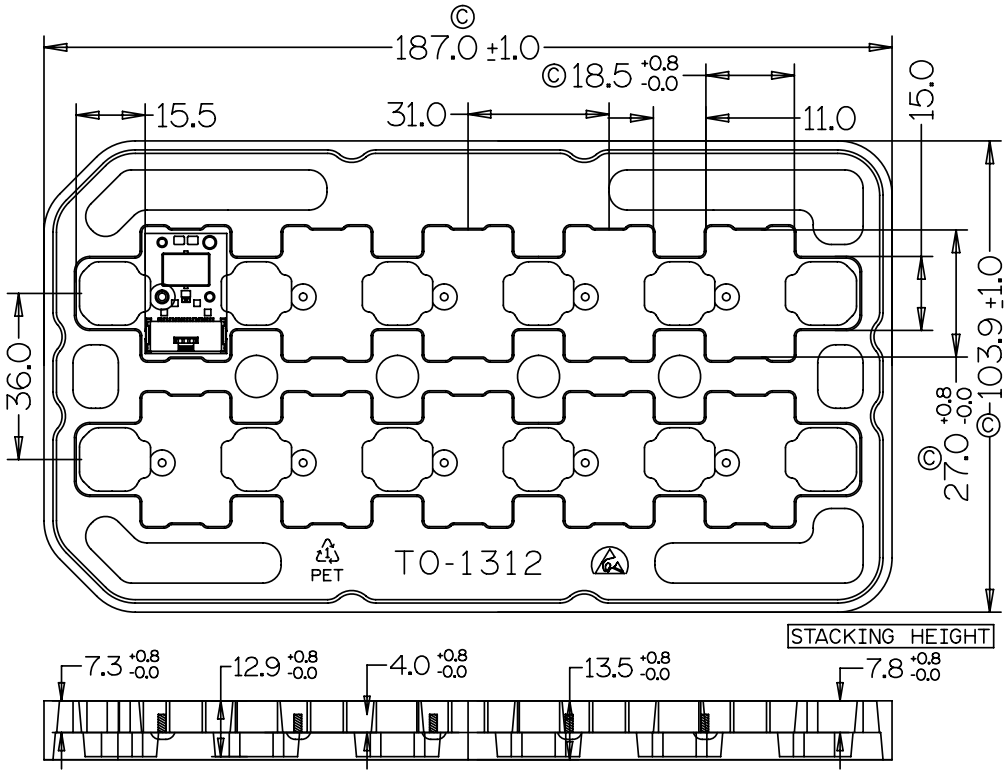
LED CIRCUIT DIAGRAM

DEVICE CONFIG. CFT-50X	DIMENSIONS					
	"A"		"B"		"C"	
CG-D	1.67	±.10	.17	±.03	.15	±.13
CG-M			.26	±.03	.06	
"A" - TOP OF METAL SUBSTRATE (DATUM B) TO BACK OF COREBOARD						
"B" - TOP OF METAL SUBSTRATE (DATUM B) TO TOP OF LIGHT EMITTING AREA						
"C" - TOP OF LIGHT EMITTING AREA TO TOP OF FRAME						

DWG-003251 REV02

- For detailed drawing please refer to DWG-003251 document.
- The CFT-50X-CG-M copper PCB is electrically neutral.
- Mating connector P/N: TE Connectivity (ERNI) 484084-E
- Check NEC standards for ampacity of the power cable being used.
- Recommended wire: MIL-W-16878/6 Type ET or equivalent
- Minimum requirements, manufacturer:
  - Gauge: AWG 22, Type: 7-strand plated copper or solid copper core
  - Maximum Outer Diameter (OD): 1.27 mm
  - Insulation material: PTFE or ETFE required for high-temperature and high-current rating

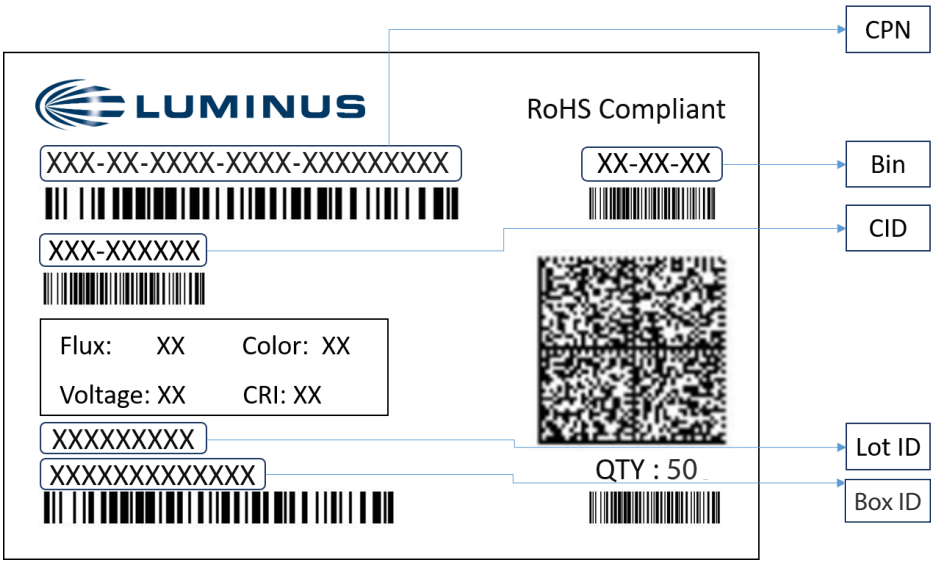
Shipping Tray Outline



Notes:

1. The maximum draft is 5 degrees unless otherwise stated.
2. All radii are to be 1.25 mm unless otherwise stated.
3. The surface resistivity is 10E6 ~ 10E9 Ohm/sq unless otherwise stated.
4. All cells are identical.
5. All dimensions are in millimeters (mm).
6. All numbers with © symbol designate a manufacturing inspection point.
7. All numbers without © symbol are for reference purposes only.
8. The material used is RoHS compliant.

Shipping Label



Label Fields:

- CPN: Luminus ordering part number
- CID: Customer's part number
- QTY: Quantity of parts per reel
- Flux: Bin as defined on page 3
- Voltage: NA
- Color: Bin as defined on page 3
- CRI: NA
- Lot ID & Reel ID: For Luminus internal use

Packing Configuration:

- 10 devices per tray, with a maximum stack of 5 trays per pack
- Each pack is placed in an anti-static moisture barrier bag
- Partial pack or tray may be shipped
- The shipping label is placed on top of each pack

Notes

Environmental Compliance

Luminus complies with RoHS and REACH. Luminus is committed to selling environmentally friendly and sustainable products. We do not use harmful or hazardous substances in our composites and products. Luminus will not intentionally add the following restricted materials to our products: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), or polybrominated diphenyl ethers (PBDE).

Static Electricity

1. The products are sensitive to static electricity, and care should be taken when handling them.
2. Static electricity or surge voltage will damage the LEDs. It is recommended to wear anti-electrostatic gloves or wristband when handling the LEDs.
3. All devices, equipment and machinery must be properly grounded. It is recommended that measures be taken against surge voltage to the equipment that mounts the LEDs.

Reference: APN-002815 Electrical Stress Damage to LEDs and How to Prevent It

Storage

Please follow J-STD-033D guidance on safe storage and bake treatment.

Eye Safety

According to the test specification risk group IEC 62471: 2006-Worst case under 10 A, this product complies to Risk group 2 (RG2) Moderate risk.

Do not stare at operating lamp, may be harmful to the eyes.

For more information, please refer to: https://luminusdevices.zendesk.com/hc/en-us/articles/10532958752397.

Revision History

Rev	Date	Description of Change
01	11/25/2024	Initial release.
02	03/18/2025	Updated Wavelength bins from 567C and 573C to 567C only.
03	01/13/2026	Updated the mechanical drawing and the template.