CBM-50X-UV
Ultraviolet
Chip On Board LEDs

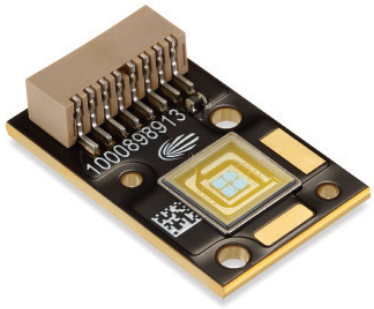

Table of Contents

Features:

- Mosaic Array UV LED chipset with 5.2 mm^2 emitting area, 1:1 aspect ratio
- Latest chip technology enables ultra-high power density operation up to 4 A/mm^2
- Available in wide range of UVA wavelengths: 365 nm - 410 nm
- High thermal conductivity isolated copper coreboard package
- Low-profile window for efficient coupling into small-etendue systems
- Environmentally friendly: REACH, RoHS and Halogen compliant

Applications:

- 3D Printing and Additive Manufacturing
- Machine Vision
- Fiber-coupled illumination
- Medical and Scientific Instrumentation

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Ordering Information

Ordering Part Numbers

Wavelength Range	Radiometric Flux		Wavelength Bins	Ordering Part Number[1,2]
	Min. Flux Bin	Min. Flux (W)		
365-375	DC	4.7	365, 370	CBM-50X-UV-Y31-DC365-22
380-390	FA	6.0	380, 385	CBM-50X-UV-Y31-FA380-22
400-410	FA	6.0	400, 405	CBM-50X-UV-Y31-FA400-22

Part Number Nomenclature

CBM — 50X — UV — Y31 — FFWWW-2#

Product Family	Chip Area	Color	Package Configuration	Bin Kit
CBM: Copper-core PCB, Mosiac Array	50X: 5.0 mm^2	UV: Ultraviolet	Y31: 26.5 mm x 16 mm See Mechanical Drawing section	See ordering part numbers table below for complete bin definition

Note 1: A Bin Kit represents a group of flux and wavelength bins that are shippable for a given ordering part number. Individual bins are not always orderable, contact Luminus for special requests.

Note 2: Flux Bin listed is minimum bin shipped, higher bins may be included at Luminus' discretion.

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Binning Structure

CBM-50X-UV LEDs are specified for flux and peak wavelength at a drive current of 2.0 A with a 20 ms pulse at 25°C and placed into one of the following Power Bins and Wavelength Bins.

Flux Bins

Color	Flux Bin (FF)	Binning @ 2A, 20ms pulse, T_c= 25°C[3]	
		Minimum Flux (W)	Maximum Flux (W)
UV	DC	4.7	5.0
	EA	5.0	5.5
	EB	5.5	6.0
	FA	6.0	6.5
	FB	6.5	7.0
	GA	7.0	7.5
	GB	7.5	8.0
	HA	8.0	8.5

Peak Wavelength Bins

Color	Wavelength Bin (WWW)	Binning @ 2A, 20ms pulse, T_c= 25°C[3]	
		Minimum Wavelength (nm)	Maximum Wavelength (nm)
UV	365	365	370
	370	370	375
	380	380	385
	385	385	390
	400	400	405
	405	405	410

Note 1: Luminus maintains a +/- 6% tolerance on flux measurements.

Note 2: Products are production tested then sorted and packed by bin.

Note 3: Ratings are based on operation at a constant temperature of T_c = 25 °C.

Note 4: Luminus maintains a +/- 1nm tolerance on wavelength measurements.

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Typical Device Performance (T_c = 25°C)

General Characteristics		Symbol	Value			Unit
Emitting Area[3]		A_e	5.2			mm^2
Emitting Area Dimensions[3]			2.29 x 2.29			mm x mm
Characteristics at Recommended Test Drive Current , I_F [1]						
Peak Wavelength Range		λ	365-375	380-390	400-410	nm
Peak Wavelength[1]	typ	λ_p	369	385	405	nm
Test Peak Drive Current	typ	I_F	2.0	2.0	2.0	A
Radiometric Flux[1,2]	typ	Φ_{typ}	4.8	6.4	6.2	W
FWHM at 50% of Φv[1]	typ	$\Delta\lambda_{1/2}$	15	15	15	nm
Forward Voltage	min	$V_{F\,min}$	6.5	6.3	6.4	V
	typ	V_F	7.5	7.2	7.4	V
	max	$V_{F\,max}$	8.3	8.1	8.2	V

Note 1: Unless otherwise noted, values listed are typical. Devices are tested and specified at 2.0 A with a 20 ms pulse at 25°C .

Note 2: Typical radiometric flux is for reference only. Minimum flux values are guaranteed based on the bin kit ordered. For product roadmap and future performance of devices, contact Luminus.

Note 3: Emitting Area, Emitting Area Dimensions are for reference only and subject to change without notice.

Absolute Maximum Ratings

	Symbol	Value	Unit
Absolute Minimum Current (CW or Pulsed) [1]	I_{min}	0.4	A
Absolute Maximum Current (CW) [2]	I_{max}	365nm: 6.0 385 & 405nm: 8.0	A
Absolute Maximum Surge Current [2] (Frequency > 240 Hz, duty cycle =10%, t=1ms)	I_s	365nm: 9.0 385 & 405nm: 12.0	A
Absolute Maximum Junction Temperature [2]	T_{jmax}	125	°C
Storage Temperature Range	T_s	-40/+100	°C

Note 1: Special design considerations must be observed for operation under 1.0 A. Please contact Luminus for further information.

Note 2: CBM-50X-UV LEDs are designed for operation to an absolute maximum current as specified above. Product lifetime data is specified at or below maximum drive current. Sustained operation beyond absolute maximum currents will result in a reduction of device life time . Actual device life-times will also depend on junction temperature and operation beyond maximum junction temperature is not recommended. Contact Luminus for lifetime derating curves and for further information. In pulsed operation, rise time from 10-90% of forward current should be longer than 0.5 µ-seconds.

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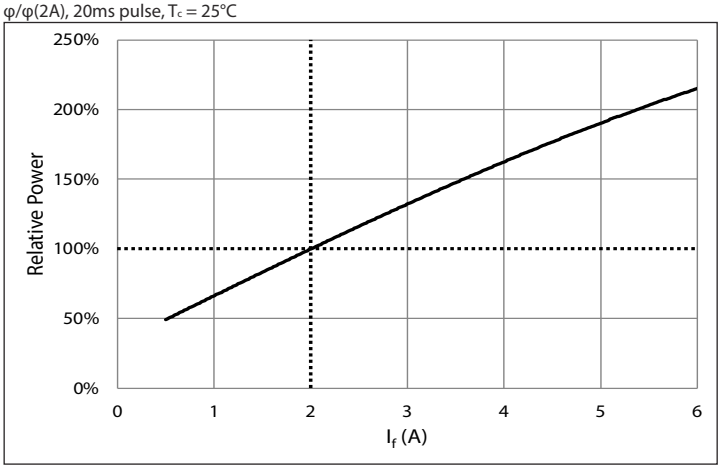
Optical & Electrical Characteristics -365nm

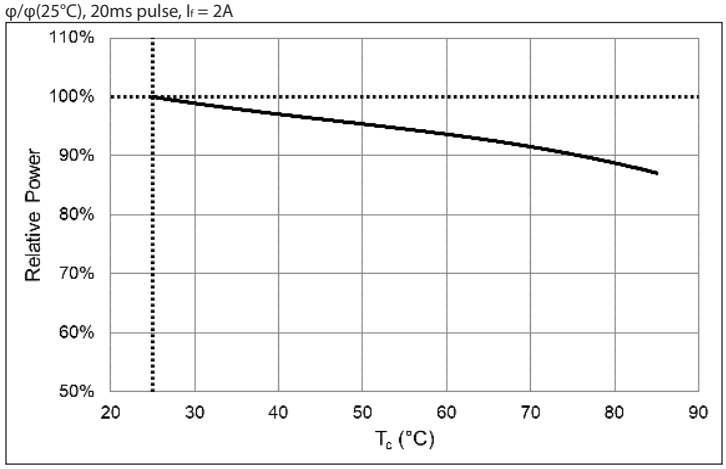
Relative Power vs. Forward Current

φ/φ(2A), 20ms pulse, T_c = 25°C



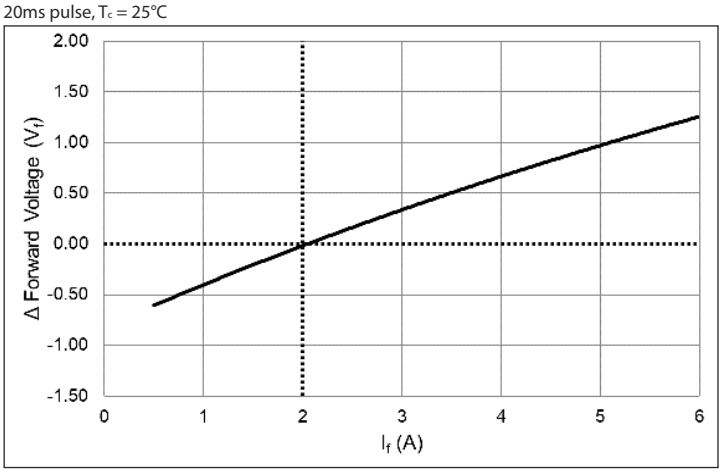
Relative Power vs. Temperature

φ/φ(25°C), 20ms pulse, I_f = 2A



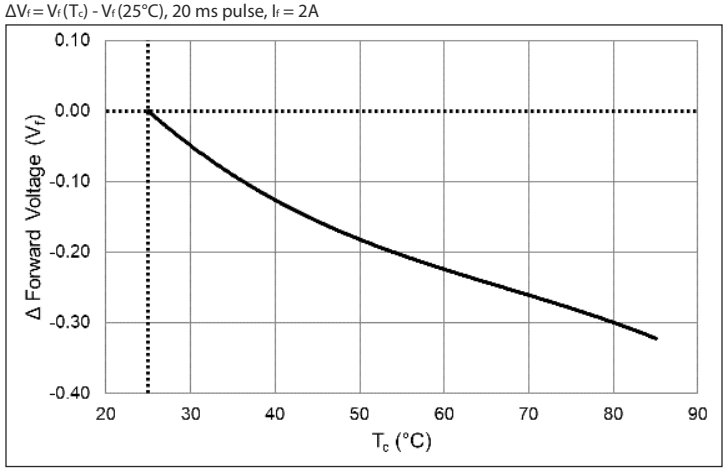
Forward Voltage Shift vs. Forward Current

20ms pulse, T_c = 25°C



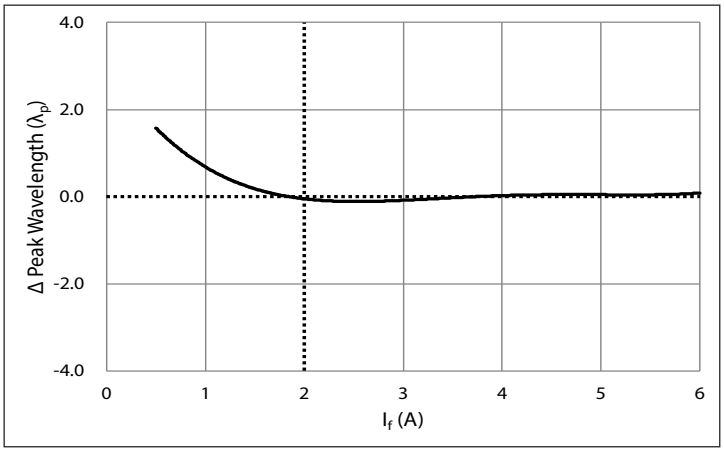
Forward Voltage Shift vs. Temperature

$\Delta V_f = V_f(T_c) - V_f(25°C)$, 20 ms pulse, I_f = 2A



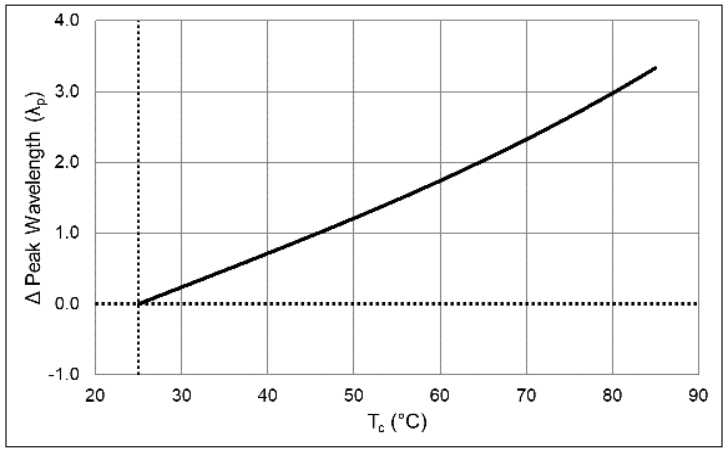
Peak Wavelength Shift vs. Forward Current

$\Delta\lambda_p = \lambda_p(I_F) - \lambda_p(2A)$, 20ms pulse, T_c = 25°C



Peak Wavelength Shift vs. Temperature

$\Delta\lambda_p = \lambda_p(T_c) - \lambda_p(25°C)$, 20ms pulse, I_f = 2A



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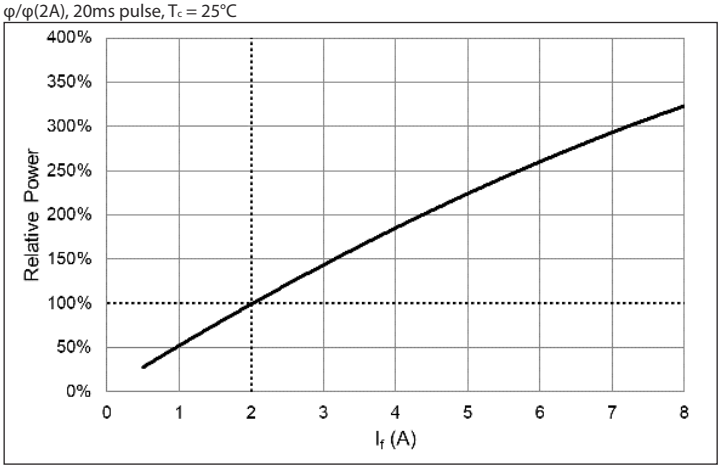
Optical & Electrical Characteristics -385nm

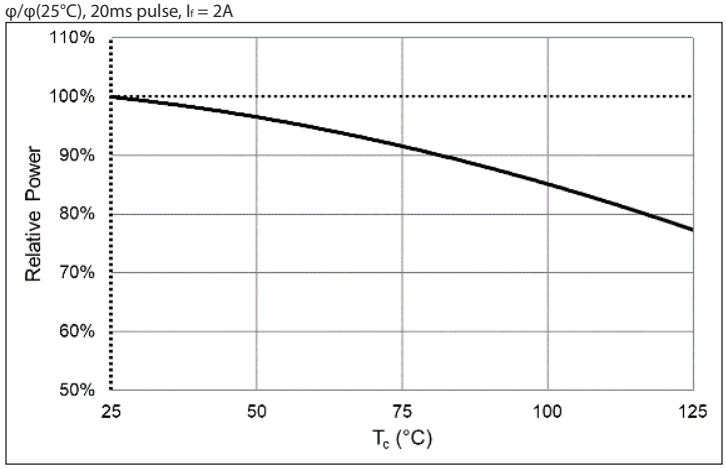
Relative Power vs. Forward Current

φ/φ(2A), 20ms pulse, T_c = 25°C



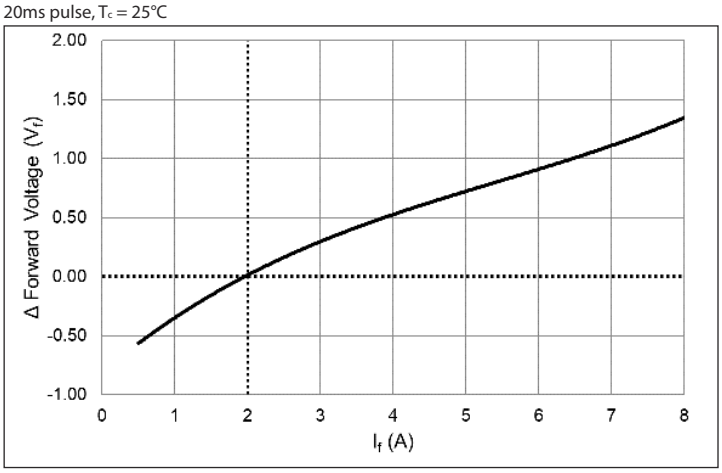
Relative Power vs. Temperature

φ/φ(25°C), 20ms pulse, I_f = 2A



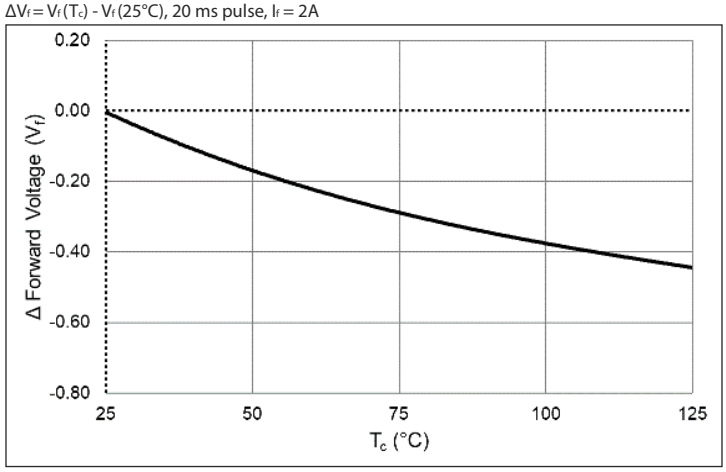
Forward Voltage Shift vs. Forward Current

20ms pulse, T_c = 25°C



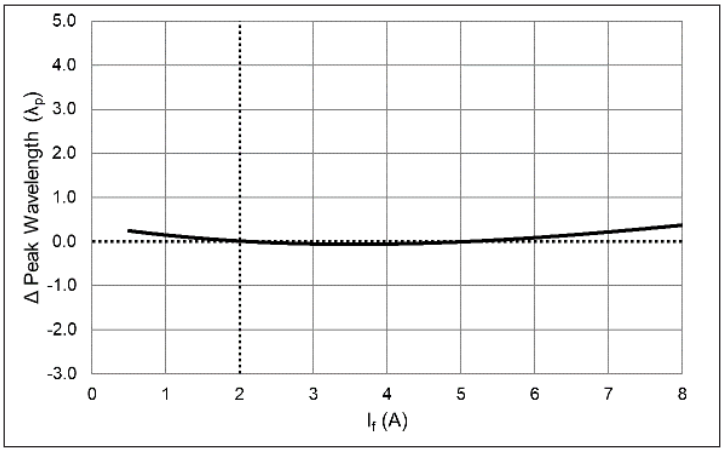
Forward Voltage Shift vs. Temperature

$\Delta V_f = V_f(T_c) - V_f(25°C)$, 20 ms pulse, I_f = 2A



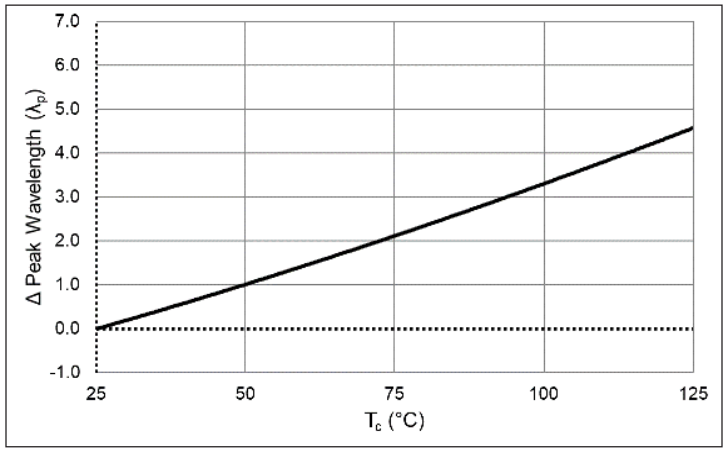
Peak Wavelength Shift vs. Forward Current

$\Delta\lambda_p = \lambda_p(I_F) - \lambda_p(2A)$, 20ms pulse, T_c = 25°C



Peak Wavelength Shift vs. Temperature

$\Delta\lambda_p = \lambda_p(T_c) - \lambda_p(25°C)$, 20ms pulse, I_f = 2A



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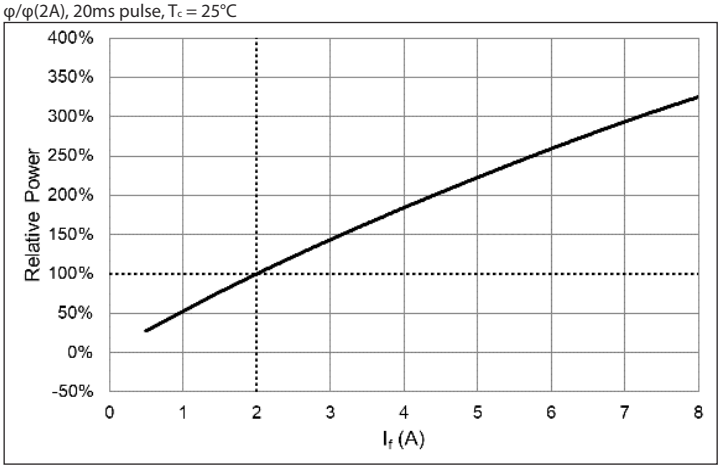
Optical & Electrical Characteristics- 405nm

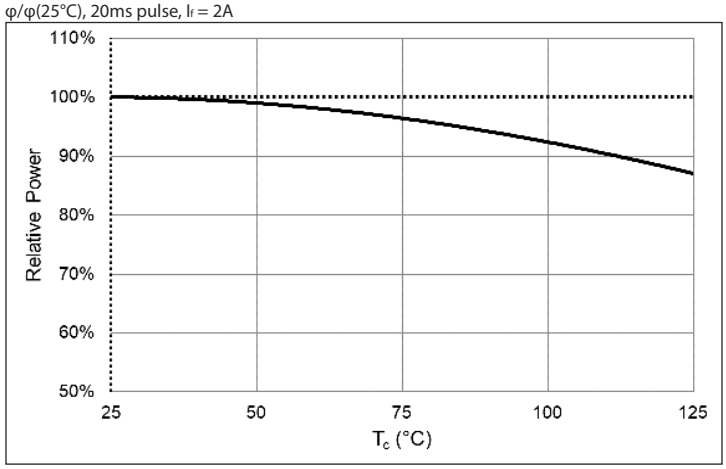
Relative Power vs. Forward Current

φ/φ(2A), 20ms pulse, T_c = 25°C



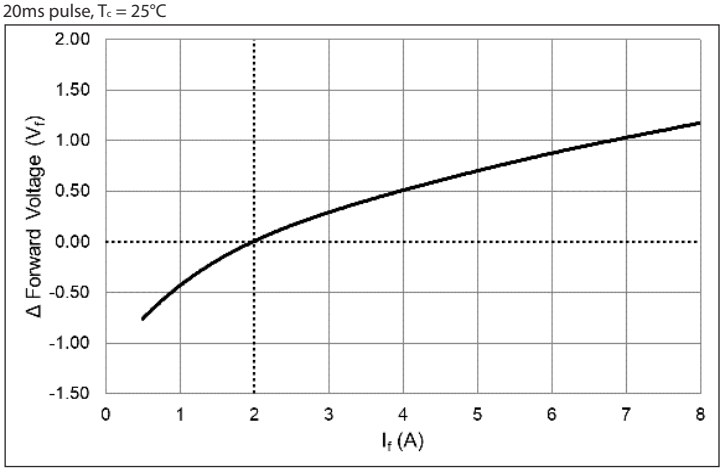
Relative Power vs. Temperature

φ/φ(25°C), 20ms pulse, I_f = 2A



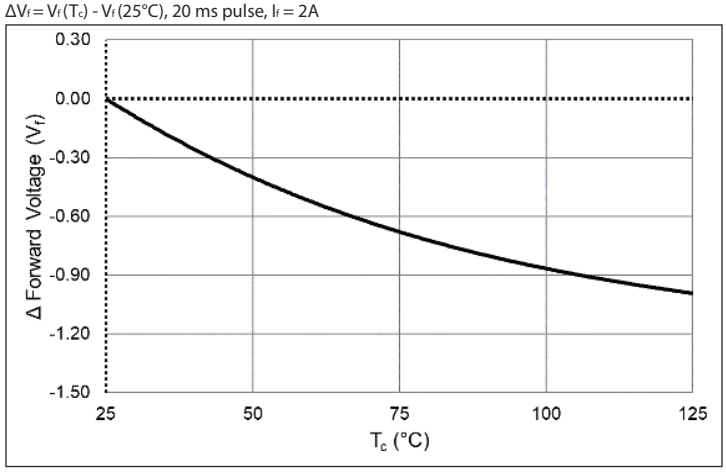
Forward Voltage Shift vs. Forward Current

20ms pulse, T_c = 25°C



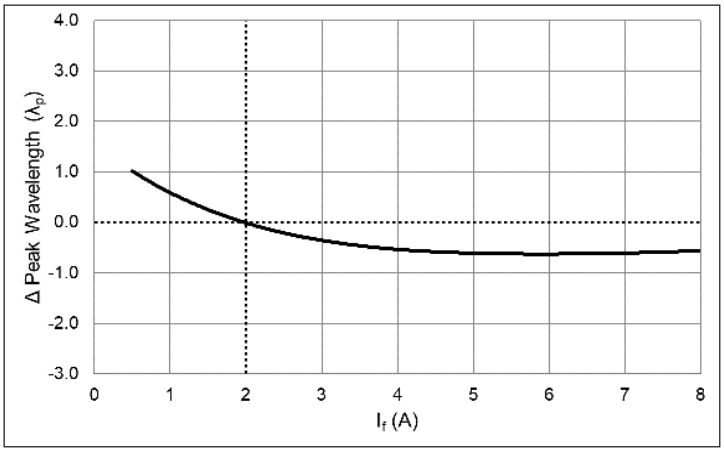
Forward Voltage Shift vs. Temperature

$\Delta V_f = V_f(T_c) - V_f(25°C)$, 20 ms pulse, I_f = 2A



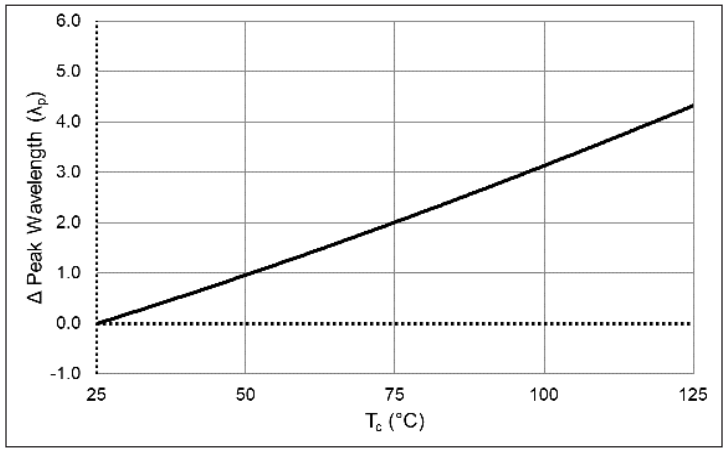
Peak Wavelength Shift vs. Forward Current

$\Delta\lambda_p = \lambda_p(I_F) - \lambda_p(2A)$, 20ms pulse, T_c = 25°C



Peak Wavelength Shift vs. Temperature

$\Delta\lambda_p = \lambda_p(T_c) - \lambda_p(25°C)$, 20ms pulse, I_f = 2A



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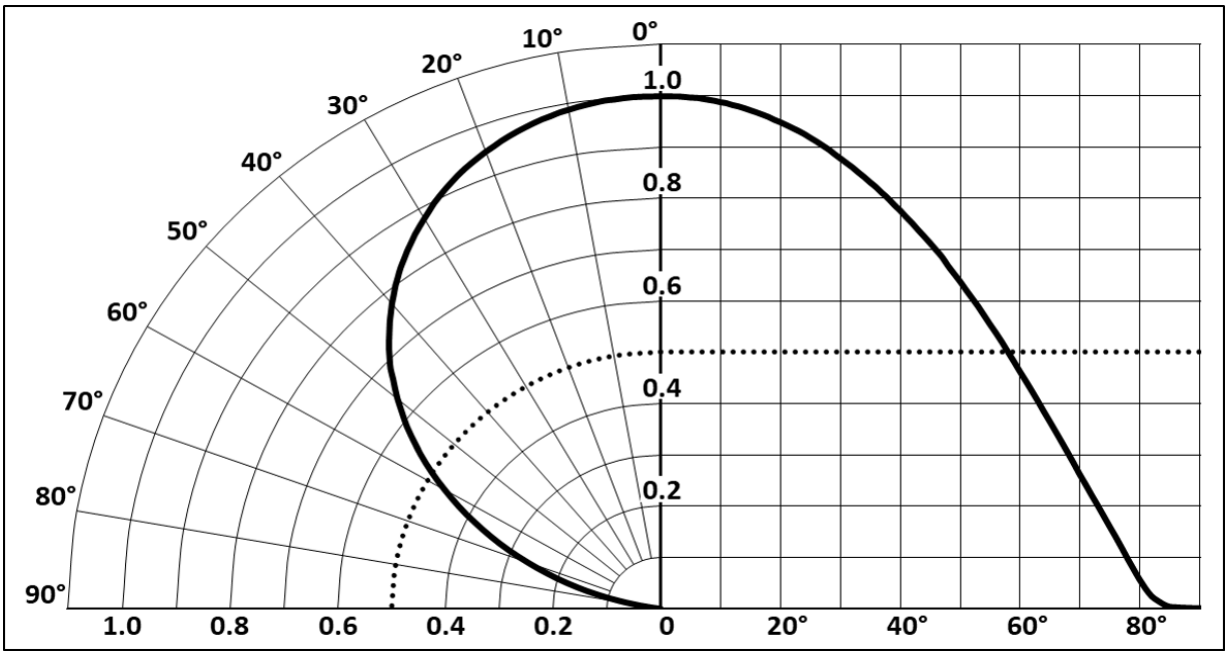
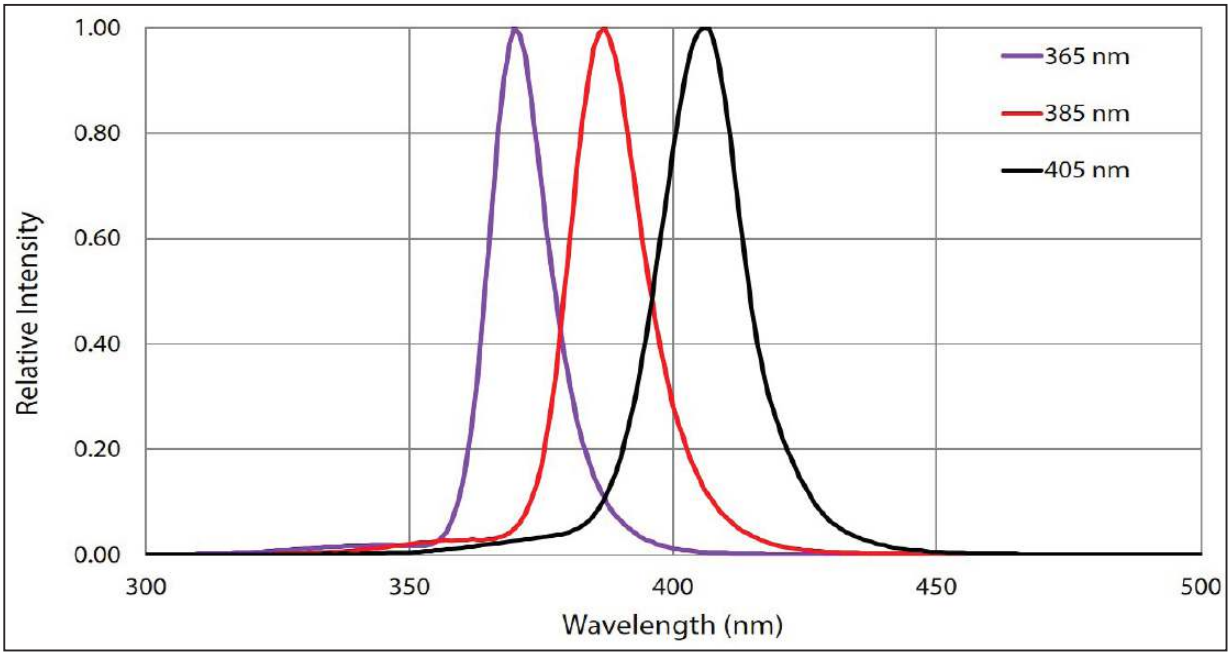
Typical Angular Intensity Distribution[1]

$\Phi_{ref} = f(\lambda)$; $I_f = 2A$; $T_c = 25°C$



Typical Spectrum[2]

$I_{ref} = f(\Phi)$; $T_c = 25°C$



Note 1: Contact Luminus for ray trace files.

Note 2 : Typical spectrum at 2.0 A drive current.

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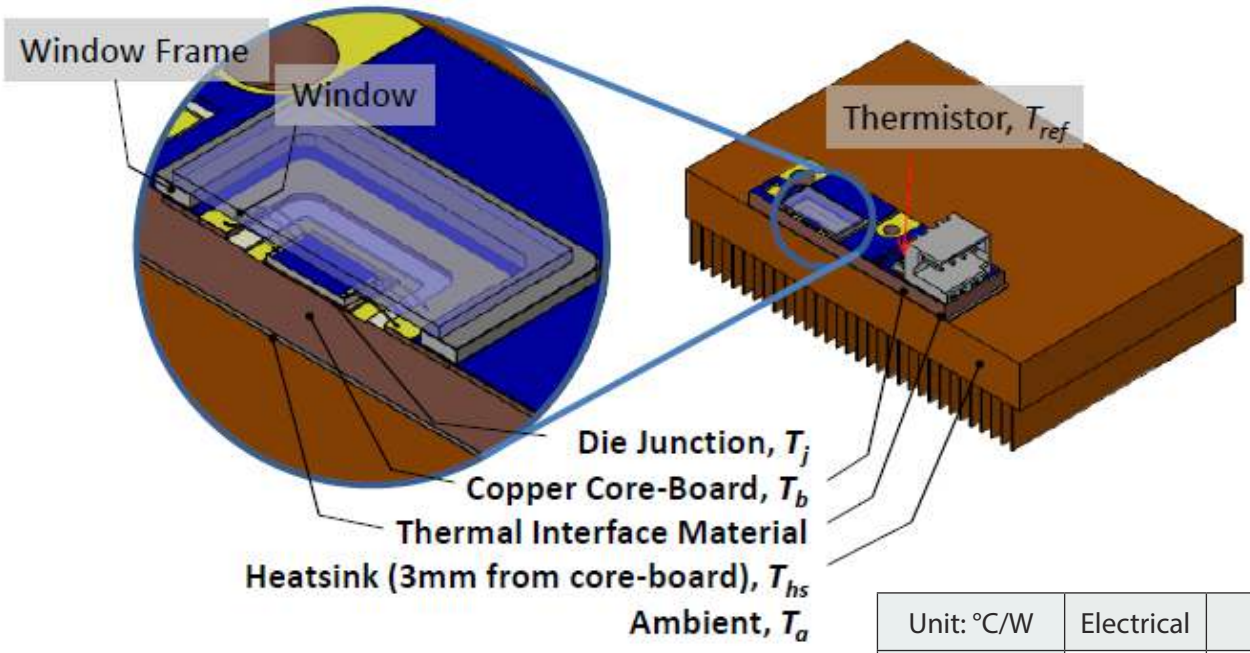
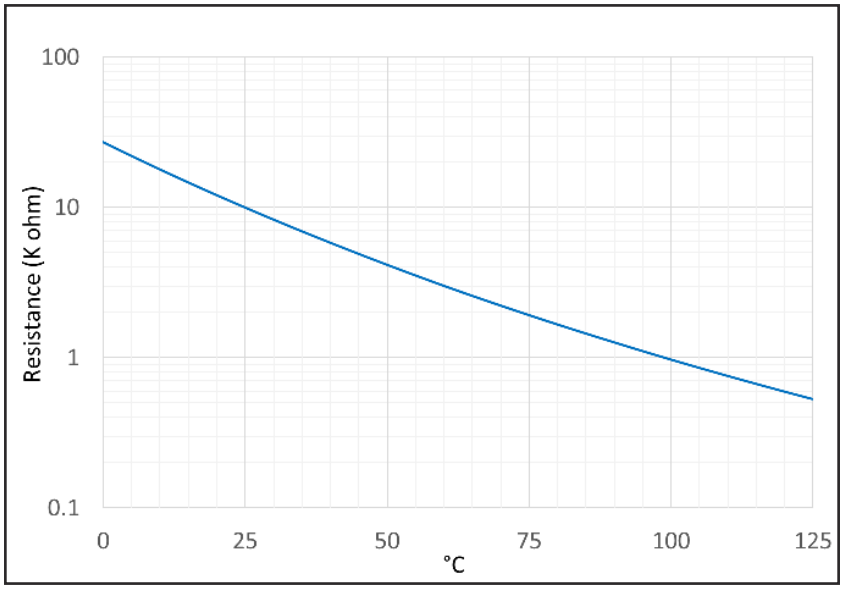
Thermal Resistance



Unit: °C/W	Electrical	Real
$R_{\theta j\text{-}b}$	0.45	0.63
$R_{\theta j\text{-}ref}$	0.68	0.95

Thermistor Information



For more about calculating thermistor temperature, please see https://luminusdevices.zendesk.com/hc/en-us/articles/4412023747341-How-do-I-determine-the-temperature-from-Luminus-on-board-Thermistor-

Important note: The CBM-50X-UV copper PCB is electrically isolated and not active.

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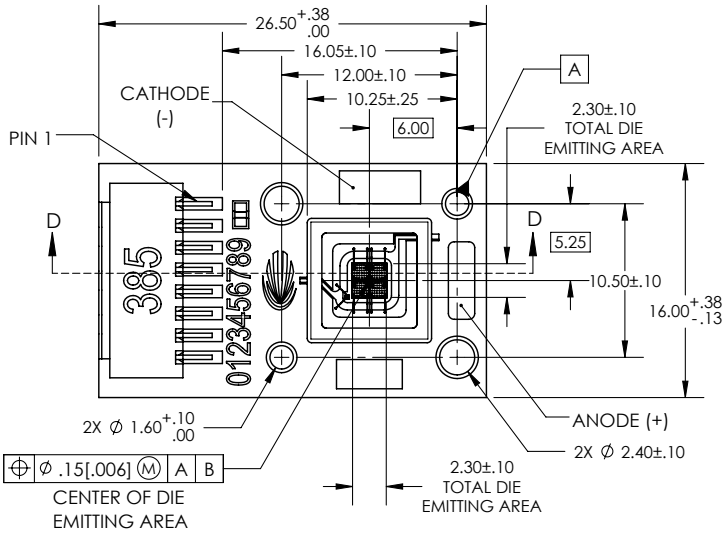
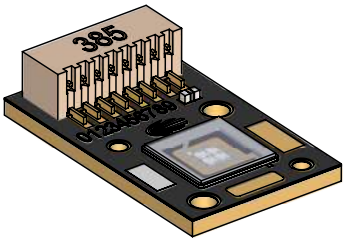
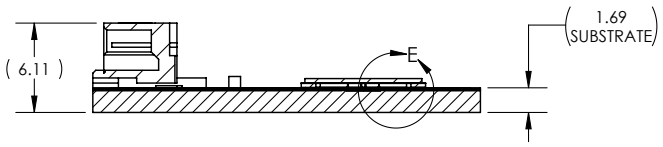
Mechanical Dimensions

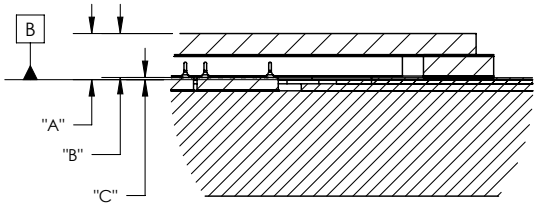
DIMENSIONS IN MILLIMETERS







SECTION D-D



DETAIL E

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

DIMENSION NAME	DESCRIPTION	NOMINAL DIMENSION	TOLERANCE
"A"	TOP OF METAL SUBSTRATE TO TOP OF WINDOW	.66	±.11
"B"	TOP OF EMITTING AREA TO TOP OF WINDOW	.63	±.13
"C"	TOP OF METAL SUBSTRATE TO TOP OF EMITTING AREA	.03	±.02

DWG-003121 REVC

Recommended connector harness:
Tarng Yu HTQ001002-210609-01
Check NEC standards for ampacity of the power cable being used

Note1: The coreboards and windows of LEDs may have minor cosmetic differences, for e.g. slightly different hues, because of different supply sources. These differences are only cosmetic and do not affect form, fit or function of the LED

Note2: Back of the coreboard is electrically neutral

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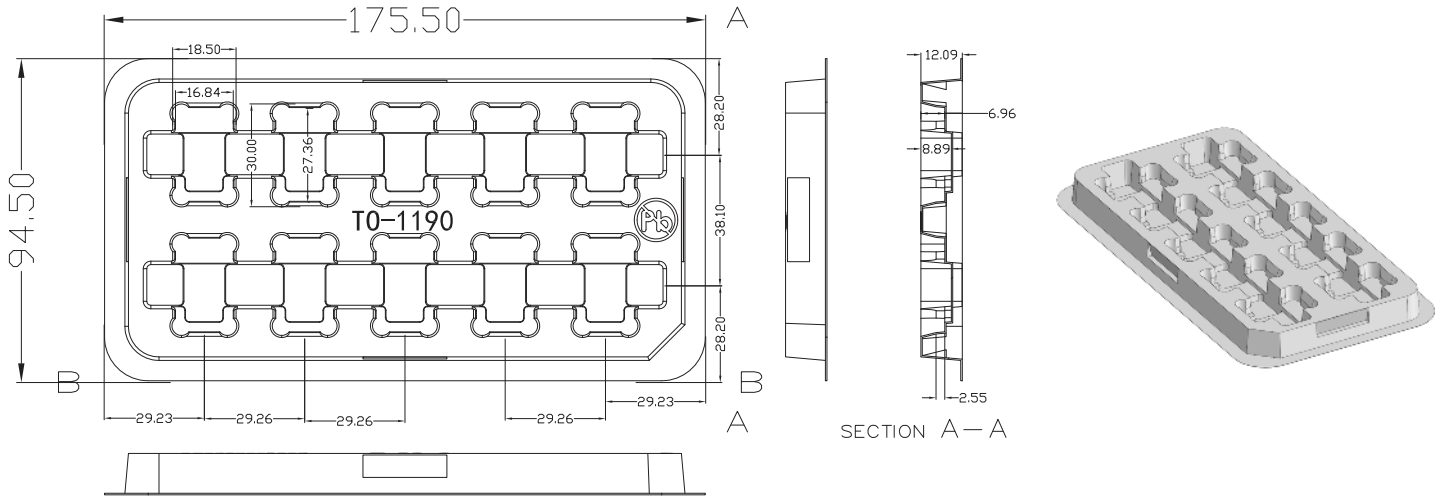
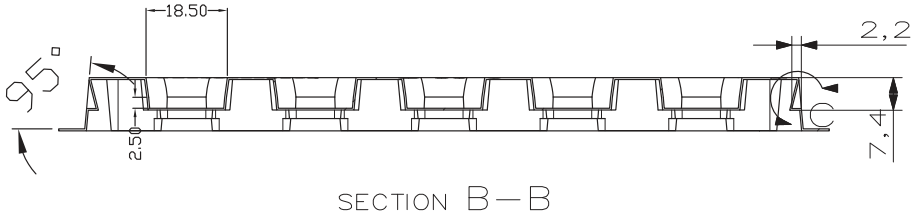
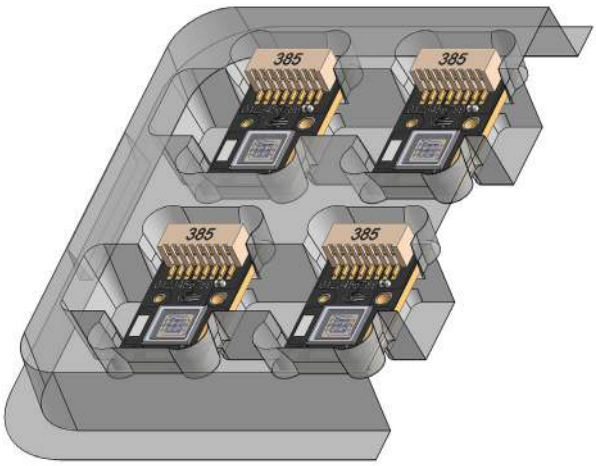
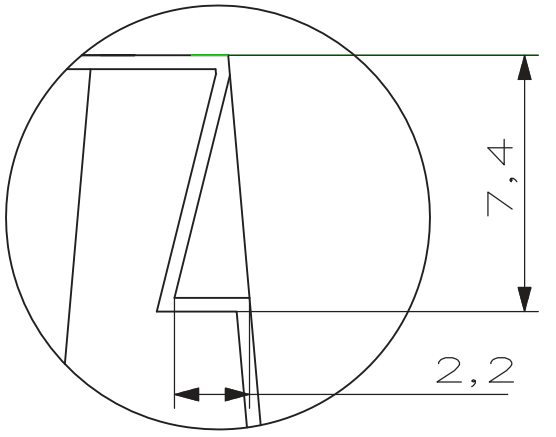
Shipping Tray Outline









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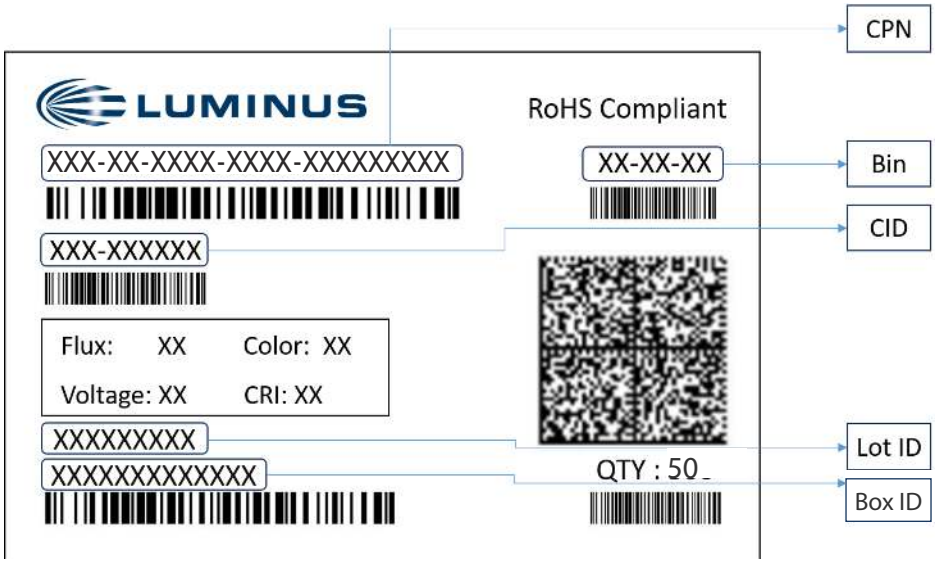
Shipping Label



Label Fields:

- CPN: Luminus ordering part number
- CID: Customer's part number
- QTY: Quantity of devices in pack
- Flux: Bin as defined on page 3
- Voltage: NA
- Color: Bin as defined on page 3
- CRI: NA

Packing Configuration:

- Maximum stack of 5 trays per pack with 10 devices per tray
- Partial pack or tray may be shipped
- Each pack is enclosed in anti-static bag
- Shipping label is placed on top of each pack

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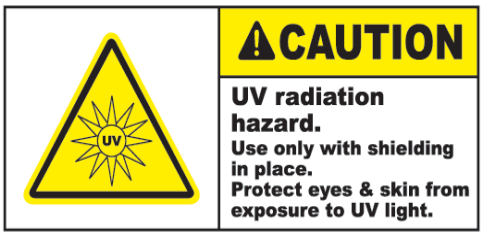
Revision History

Rev	Date	Description of Change
01	02/18/2022	Initial Release
02	05/25/2022	Add shipping information
03	08/05/2022	Update characteristic graphs and Rth
04	1/20/2023	Added flux bins



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