

Luminus LED™

PT-120-TE

*Thermally Enhanced
LED Projection Chipset*



Table of Contents

Technology Overview 2

Understanding Luminus Test Specifications..... 2

Ordering Information 3

Blue DWL Bin Definition 4

Flux /Power Bin Definition 5

Optical & Electrical Characteristics 6-7

Blue Flux Bin Ranges by Wavelength 8

Characterization Curves 9

Spectrum and Angular Intensity Distribution..... 10

Thermal Resistance 11

Mechanical Dimensions ... 12-13

Shipping Tray Outline 14

Packing and Shipping Specifications 15

History of Changes 16

Features:

- Matched RGB Chipset with 12 mm² emitting area designed for projection applications
- 16:9 aspect ratio matched with micro-display and screen aspect ratio
- Ultra low thermal resistance package enables high performance applications [operation up to 36 A (3 A/mm²)]
- Wide color gamut: Red 623 nm, Red-Amber 613 nm, Green 525 nm, Blue 460 nm typical dominant wavelength
- Single emitting area per color allows for collection with single lens for simplified optics
- High precision LED placement on copper core PCB for easier thermal management and optical integration
- Environmentally friendly: RoHS and REACH compliant

Applications

- Data front projectors and professional Rear-Projection Displays with 16:9 aspect ratio
- Optimized for Micro-Display diagonal sizes ranging from 0.65" to 0.95" with 16:9 aspect ratio
- Suitable for DLP™ (0.65" XGA, 0.95" 1080p), LCoS, HTPS and 3LCD microdisplays

Technology Overview

Luminus Devices' Projection Technology (PT) is an innovative solid-state light source created to replace arc lamps in projection systems, enabling a new category of lamp-free projectors. Enabled by Luminus technology, our chipsets represent a major breakthrough in brightness that delivers all the benefits of solid state light sources in projections applications, including wide color gamut for vivid colors, exceeds NTSC, Environmentally friendly technology (Mercury-free), instant start and re-start with no more wait time, high reliability; no more lamp replacement, and electronic control of color points and light intensity on a frame by frame basis. Luminus products benefit from numerous innovations in the domain of packaging, thermal management and optical coupling that allow designers to achieve efficient light engine designs and deliver high screen brightness.

Packaging Technology

Thermal management is critical in high power LED applications. With a thermal resistance from junction to case of 0.4°C/W , Luminus PT-120 LEDs can be driven at higher current densities while maintaining a low junction temperature, thereby resulting in brighter solutions and longer lifetimes.

Reliability

For high power operation, Luminus LEDs™ are one of the most reliable light sources in the world today. Luminus LEDs have passed a rigorous suite of environmental and mechanical stress tests, including mechanical shock, vibration, temperature cycling and humidity, and have been fully qualified for use in extreme high power and high current applications. With very low failure rates and median lifetimes that typically exceed 60,000 hours, Luminus LEDs are ready for even the most demanding applications. (Please refer to Luminus' Reliability application note for more information.)

Environmental Benefits

Luminus LEDs help reduce power consumption and the amount of hazardous waste entering the environment. All Luminus LED products manufactured by Luminus are RoHS and REACH compliant and free of hazardous materials, including lead and mercury.

Understanding Luminus LED Test Specifications

Every Luminus LED is extensively tested at full current to ensure that it meets the high quality standards expected from Luminus' products.

Testing of Luminus LEDs

Luminus core board products are typically measured in such a way that the characteristics reported agree with how the devices will actually perform when incorporated into a system. This measurement is accomplished by mounting the devices on a 40°C heat sink and allowing the device to reach thermal equilibrium while fully powered. Only after the device reaches equilibrium are the measurements taken. This method of measurement ensures that Luminus LEDs perform in the field just as they are specified.

Expected flux values in real world operation can be extrapolated based on the information contained within this product data sheet.

Ordering Information

| Ordering Part Number ¹ | Color | Min Flux Bin ² | Description |
|-----------------------------------|-----------|---------------------------|--|
| PT-120-R-L11-MPD ³ | Red | 5C | Red LED, consisting of a 12 mm ² LED chip , thermistor and connector mounted on a copper-core PCB. |
| PT-120-R-L11-MPE ³ | | 5D | |
| PT-120-R-L11-MPF ³ | | 5E | |
| PT-120-RA-L11-MPE ³ | Red Amber | 5D | Red-Amber LED, consisting of a 12 mm ² LED chip, thermistor and connector mounted on a copper-core PCB. |
| PT-120-RA-L11-MPF ³ | | 5E | |
| PT-120-RA-L11-MPG ³ | | 5F | |
| PT-120-RA-L11-MPH ³ | | 5G | |
| PT-120-RAX-L15-MPH | RAX | 5H | Red-Amber LED, consisting of a 12 mm ² LED chip, thermistor and connector mounted on a copper-core PCB. (Common cathode configuration ; reverse polarity pin out) |
| PT-120-RAX-L15-MPJ | | 5J | |
| PT-120-RAX-L15-MPK | | 5K | |
| PT-120-RAX-L15-MPL | | 5L | |
| PT-120-G-L11-MPK | Green | 5J | Green LED, consisting of a 12 mm ² LED chip, thermistor and connector mounted on a copper-core PCB. |
| PT-120-G-L11-MPL | | 5K | |
| PT-120-G-L11-MPM | | 5L | |
| PT-120-G-L11-MPN | | 5M | |
| PT-120-B-L11-EPDnnn | Blue | 5F | Blue LED, consisting of a 12 mm ² LED chip, thermistor and connector mounted on a copper-core PCB (nnn=DW bin - refer to table below for definition). |
| PT-120-B-L11-EPEnnn | | 5G | |
| PT-120-B-L11-EPFnnn | | 5H | |
| PT-120-B-L11-EPGnnn | | 5J | |

Note 1: Ordering part numbers represent bin kits (group of bins that are shippable for a given ordering part number)

Note 2: See Bin Kit and Flux bin definitions on page 4.

Note 3: Not recommended for new designs.

PT-120 Blue Dominant Wavelength Bin Definition

| Blue Dominant Wavelength Bin Designator ¹ nnn | Blue Dominant Wavelength Bins | | |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| | WY (450 nm - 454 nm) | WX (454 nm - 462 nm) | WZ (462 nm - 468 nm) |
| None | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 101 | | <input checked="" type="checkbox"/> | |
| 102 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 103 | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Note 1: See page 3 for examples of ordering part numbers for PT-120 Blue on Ordering Part Number Nomenclature section.

Ordering Part Number Nomenclature

PT — mm — XXXX — L11 — XYZ

| Product Family | Chip Area | Color | Package Configuration | Bin Kit ¹ |
|---------------------|-------------------------|---|---|-----------------------------------|
| PT: Copper-core PCB | 120: 12 mm ² | R= Red (623nm, typ) ² RA= Red-Amber(613nm, typ) ² RAX=Red-Amb(613nm,typ) G= Green B= Blue | L11: 28 mm x 26.75 mm L15: 28 mm x 26.75 mm (reverse polarity) See Mechanical Drawing section | See page 4 for bin kit definition |

Note 1: A Bin Kit represents a group of individual flux or power bins that are shippable for a given ordering part number. Individual flux bins are not orderable.

EXAMPLES: PT-120-G-L11-MPK is comprised of Green Flux Bins 5J, 5K, 5L, 5M, 5N, 5P
 PT-120-B-L11-EPD is comprised of Blue Flux Bins 5F, 5G, 5H, 5J, 5K and DWL bins WY, WX, WZ (DWL range 450nm-468nm)
 PT-120-B-L11-EPD101 is comprised of Blue Flux Bins 5F, 5G, 5H, 5J, 5K and DWL bins WX only (DWL range 454nm-462nm)

Note 2: **Product is END-OF-LIFE. Contact Luminus for more information.**

PT-120 Bin Kit¹ and Flux Bin^{2,3,4} Definitions

Note: Please refer to ordering part number table on page 3 for Bin Kit availability.

| | | | | | | | | | |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--|
| Red Flux Bins ⁶ | Bin 5C | Bin 5D | Bin 5E | Bin 5F | Bin 5G | Bin 5H | Bin 5J | | |
| Red Bin Flux Range ⁴ (lm) | 1490-1630 | 1630-1760 | 1760-1900 | 1900-2025 | 2025-2150 | 2150-2300 | 2300-2450 | | |
| PT-120-R-L11-MPD ⁶ | ☑ | ☑ | ☑ | ☑ | ☑ | | | | |
| PT-120-R-L11-MPE ⁶ | | ☑ | ☑ | ☑ | ☑ | ☑ | | | |
| PT-120-R-L11-MPF ⁶ | | | ☑ | ☑ | ☑ | ☑ | ☑ | | |
| Red -Amber Flux Bins ⁶ | Bin 5D | Bin 5E | Bin 5F | Bin 5G | Bin 5H | Bin 5J | Bin 5K | Bin 5L | |
| Red -Amber (RA) Bin Flux Range ⁴ (lm) | 1630-1760 | 1760-1900 | 1900-2025 | 2025-2150 | 2150-2300 | 2300-2450 | 2450-2625 | 2625-2800 | |
| PT-120-RA-L11-MPE ⁶ | ☑ | ☑ | ☑ | ☑ | ☑ | | | | |
| PT-120-RA-L11-MPF ⁶ | | ☑ | ☑ | ☑ | ☑ | ☑ | | | |
| PT-120-RA-L11-MPG ⁶ | | | ☑ | ☑ | ☑ | ☑ | ☑ | | |
| PT-120-RA-L11-MPH ⁶ | | | | ☑ | ☑ | ☑ | ☑ | ☑ | |
| RAX Flux Bins | Bin 5H | Bin 5J | Bin 5K | Bin 5L | Bin 5M | Bin 5N | Bin 5P | Bin 5Q | |
| RAX Bin Flux Range ⁴ (lm) | 2150-2300 | 2300-2450 | 2450-2625 | 2625-2800 | 2800-3000 | 3000-3200 | 3200-3400 | 3400-3600 | |
| PT-120-RAX-L15-MPH | ☑ | ☑ | ☑ | ☑ | ☑ | | | | |
| PT-120-RAX-L15-MPJ | | ☑ | ☑ | ☑ | ☑ | ☑ | | | |
| PT-120-RAX-L15-MPK | | | ☑ | ☑ | ☑ | ☑ | ☑ | | |
| PT-120-RAX-L15-MPL | | | | ☑ | ☑ | ☑ | ☑ | ☑ | |
| Green Flux Bins | Bin 5J | Bin 5K | Bin 5L | 5M | 5N | 5P | 5Q | | |
| Green Bin Flux Range ⁴ (lm) | 4200-4400 | 4400-4650 | 4650-4900 | 4900-5200 | 5200-5500 | 5500-5825 | 5825-6200 | | |
| PT-120-G-L11-MPK | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | | | |
| PT-120-G-L11-MPL | | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | | |
| PT-120-G-L11-MPM | | | ☑ | ☑ | ☑ | ☑ | ☑ | | |
| PT-120-G-L11-MPN | | | | ☑ | ☑ | ☑ | ☑ | | |
| Blue Power Bins | Bin 5F | Bin 5G | Bin 5H | Bin 5J | Bin 5K | Bin 5L | 5M | 5N | |
| Blue Bin Flux Range ⁵ (lm) | 750-815 | 815-880 | 880-940 | 940-1000 | 1000-1070 | 1070-1145 | 1145-1220 | 1220-1300 | |
| PT-120-B-L11-EPDnnn | ☑ | ☑ | ☑ | ☑ | ☑ | | | | |
| PT-120-B-L11-EPEnnn | | ☑ | ☑ | ☑ | ☑ | ☑ | | | |
| PT-120-B-L11-EPFnnn | | | ☑ | ☑ | ☑ | ☑ | ☑ | | |

Note 1: Bin Kits are defined by a group of flux or power bins. Only one flux bin will be shipped in each individual pack. A shipment will contain packs of different allowed flux bins for a particular ordering part number. In order to ensure availability, individual Flux or Power bins are not orderable.

Note 2: PT-120 LEDs are tested for luminous flux at 30 A at 25% duty cycle for Red, and Blue, and at 50% duty cycle for Green Devices. Devices are sorted and packed by flux bin. Not all flux bins are currently populated.

Note 3: Luminus maintains a test measurement accuracy for LED flux and power of +/- 6%.

Note 4: Red and Green Flux bin limits apply across entire dominant wavelength range. Dominant wavelength range for Red and Green devices are specified on the Optical & Electrical Characteristics section.

Note 5: Blue Flux bin limits are defined at dominant wavelength, 462 nm.

Note 6: **Product is End-of-Life. Contact Luminus for more information.**

Optical & Electrical Characteristics

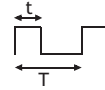
| General Characteristics | | Symbol | Red ⁸ | Red -Amber ⁸ | RAX | Green | Blue | Unit |
|---|-----|-------------------|------------------|-------------------------|-----------|-----------|-----------|-----------------|
| Emitting Area | | | 11.96 | 11.96 | 11.96 | 11.96 | 11.96 | mm ² |
| Emitting Area Dimensions | | | 4.6 x 2.6 | 4.6 x 2.6 | 4.6 x 2.6 | 4.6 x 2.6 | 4.6 x 2.6 | mm x mm |
| Characteristics at Recommended Test Drive Current , I _F ^{1,2} | | | | | | | | |
| Reference Duty Cycle ³ | | | 25 | 25 | 25 | 50 | 25 | % |
| Test Peak Drive Current ^{1,2,4} | typ | I _F | 30 | 30 | 30 | 30 | 30 | A |
| Peak Luminous Flux ^{1,2,5} | typ | Φ _v | 1625 | 2100 | 3000 | 5200 | 1000 | lm |
| Peak Radiometric Flux ^{1,2} | typ | Φ _r | 9.2 | 8.3 | 9.4 | 10.6 | 21 | W |
| Dominant Wavelength | min | λ _{dmin} | 619 | 609 | 609 | 516 | 450 | nm |
| | typ | λ _d | 623 | 613 | 613 | 525 | 460 | nm |
| | max | λ _{dmax} | 630 | 620 | 620 | 540 | 468 | nm |
| FWHM- Spectral bandwidth at 50% of Φ _v | typ | | 19 | 19 | 19 | 34 | 20 | nm |
| Chromaticity Coordinates ^{6,7} | typ | x | 0.698 | 0.675 | 0.675 | 0.167 | 0.147 | |
| | typ | y | 0.302 | 0.325 | 0.325 | 0.704 | 0.033 | |
| Forward Voltage | min | V _{Fmin} | 2.2 | 2.2 | 2.3 | 3.5 | 3.2 | V |
| | typ | V _F | 2.6 | 2.6 | 3.1 | 5.2 | 3.9 | V |
| | max | V _{Fmax} | 3.2 | 3.2 | 3.7 | 5.9 | 5.2 | V |
| Device Thermal Characteristics | | | | | | | | |
| Thermal Coefficient of Photometric Flux | typ | | -1 | -1 | -1 | -0.2 | -0 | % / °C |
| Thermal Coefficient of Radiometric Flux | typ | | -0.7 | -0.7 | 0.7 | -0.2 | -0.2 | % / °C |
| Forward Voltage Temperature Coefficient | typ | | -1.6 | -1.6 | -2 | -2 | -3 | mV / °C |
| Characteristics at Reference Continuous Drive Current I _F (continuous wave) ¹ | | | | | | | | |
| Reference Drive Current | typ | I _F | 18 | 18 | 18 | 18 | 18 | A |
| Luminous Flux | typ | Φ _v | 910 | 1175 | 1485 | 3640 | 720 | lm |
| Radiometric Flux | typ | Φ _r | 5.2 | 4.6 | 5.3 | 7.0 | 14 | W |
| Dominant Wavelength | typ | λ _d | 624 | 612 | 612 | 528 | 461 | nm |
| FWHM -Spectral bandwidth at 50% of Φ _v | typ | | 18 | 18 | 18 | 36 | 21 | nm |
| Chromaticity Coordinates ^{6,7} | typ | x | 0.700 | 0.677 | 0.677 | 0.177 | 0.144 | nm |
| | typ | y | 0.300 | 0.322 | 0.322 | 0.713 | 0.034 | nm |
| Forward Voltage | typ | V _F | 2.3 | 2.3 | 2.7 | 4.7 | 3.4 | V |

For Notes, see following page

Optical & Electrical Characteristics *(continued)*

Note 1: All ratings are based on testing conditions with a constant heat sink temperature $T_{hs} = 40^{\circ}\text{C}$. See Thermal Resistance section for T_{hs} definition.

Note 2: Parameters rated at test duty cycle and Pulsed operation frequency $f > 240\text{ Hz}$; $DC = \frac{t}{T}$



Note 3: Duty Cycle used to specify device ratings under Pulsed operation. Luminus LED devices can operate at duty cycles ranging from 1% to 100%. At higher duty cycles, drive current should be adjusted to maintain the junction temperature at desired levels to meet the application lifetime requirements.

Note 4: In pulsed operation, rise time from 10 to 90% of forward current should be larger than 0.5 microseconds

Note 5: For Blue devices, total flux from emitting area at typical dominant wavelength. Refer to page 7 for brightness specifications at other wavelength

Note 6: CIE 1931 chromaticity diagram coordinates, normalized to $X+Y+Z=1$

Note 7: For reference only

Note 8: **Product is END-OF-LIFE. Contact Luminus for more information.**

Absolute Maximum Ratings

| | Symbol | Red ⁵ | Red - Amber ⁵ | RAX | Green | Blue | Unit |
|--|------------|------------------|--------------------------|------------|------------|------------|--------------------|
| Absolute Minimum Current (CW or Pulsed) ¹ | | 200 | 200 | 200 | 200 | 200 | mA |
| Absolute Maximum Current (CW) ² | | 27 | 27 | 27 | 27 | 27 | A |
| Absolute Maximum Current (Pulsed) ^{2,3} (Frequency > 240 Hz, duty cycle < 70%) | | 36 | 36 | 36 | 36 | 36 | A |
| Absolute Maximum Surge Current ^{2,3} (Frequency > 240 Hz, duty cycle = 10%, t=1ms) | | 42 | 42 | 42 | 42 | 42 | A |
| Maximum Operating Junction Temperature ⁴ | | 100 | 100 | 100 | 140 | 130 | $^{\circ}\text{C}$ |
| Absolute Maximum Junction Temperature ⁴ | T_{jmax} | 125 | 125 | 125 | 170 | 170 | $^{\circ}\text{C}$ |
| Storage Temperature Range | | -40 / +100 | -40 / +100 | -40 / +100 | -40 / +100 | -40 / +100 | $^{\circ}\text{C}$ |

Note 1: Product performance and lifetime data is specified at recommended forward drive currents. Sustained operation at or near absolute minimum currents may result in a reduction of device performance and device lifetime compared to recommended forward drive currents.

Note 2: Maximum forward drive current conditions for continuous operation are 27 A, CW (2.2 A/mm²), and 36A, $f > 240\text{ Hz}$, duty cycle < 70% (3.0 A/mm²). Sustained operation above maximum currents is not recommended and will result in a reduction of device lifetime compared to specified maximum forward drive currents. Device lifetimes will depend on junction temperature. (See Reliability Application Note, APN-001444 for product lifetimes as function of junction temperature.) Please refer to lifetime de-rating curves (available from Luminus) for further information.

Note 3: In pulsed operation, rise time from 10 to 90% of forward current should be larger than 0.5 microseconds.

Note 4: Sustained operation at Absolute Maximum Operating Junction Temperature (T_{jmax}) will result in reduced device life time.

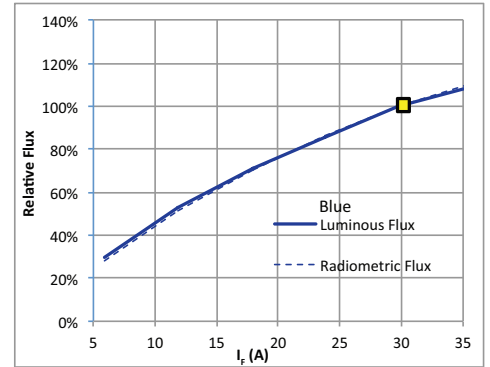
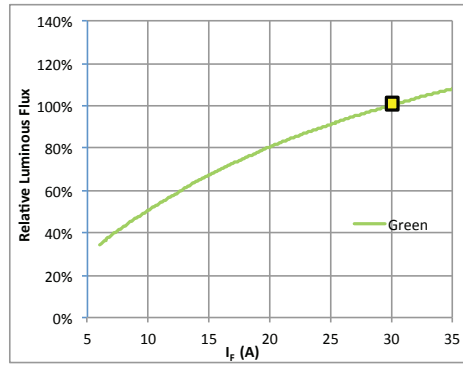
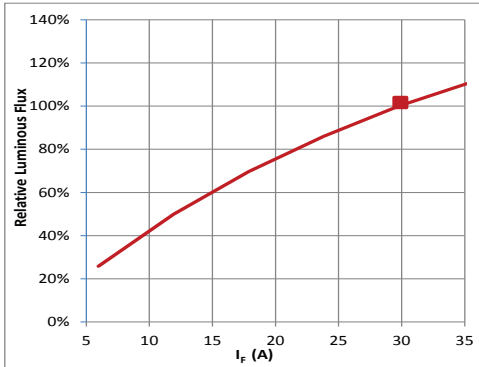
Note 5: **Product is END-OF-LIFE. Contact Luminus for more information.**

Blue Bin Flux Ranges by Dominant Wavelength ^{1,2}

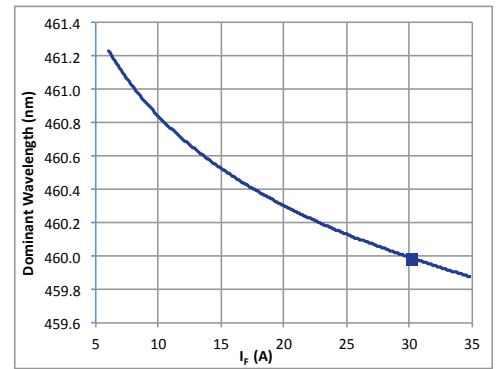
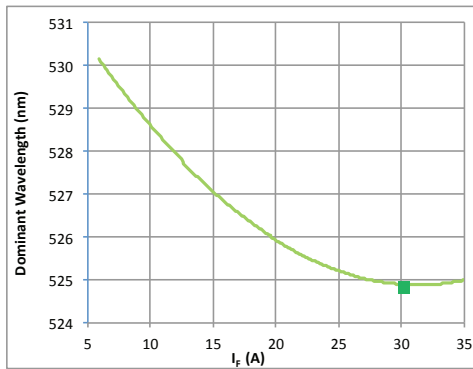
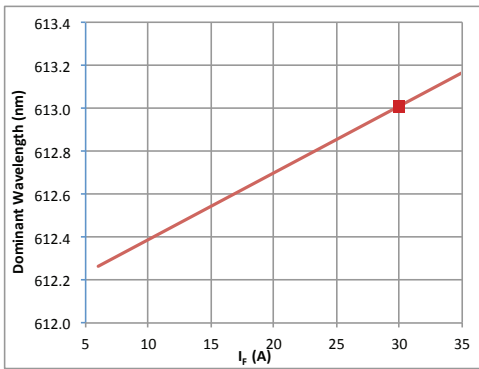
| DWL | Bin 5F | | Bin 5G | | Bin 5H | | Bin 5J | | Bin 5K | | Bin 5L | | Bin 5M | | Bin 5N | |
|-----|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | Min (lm) | Max (lm) | Min (lm) | Max (lm) | Min (lm) | Max (lm) | Min (lm) | Max (lm) | Min (lm) | Max (lm) | Min (lm) | Max (lm) | Min (lm) | Max (lm) | Min (lm) | Max (lm) |
| 450 | 367 | 398 | 398 | 430 | 430 | 459 | 459 | 489 | 489 | 523 | 523 | 560 | 560 | 596 | 596 | 635 |
| 451 | 399 | 433 | 433 | 468 | 468 | 500 | 500 | 531 | 531 | 569 | 569 | 608 | 608 | 648 | 648 | 691 |
| 452 | 431 | 468 | 468 | 505 | 505 | 540 | 540 | 574 | 574 | 614 | 614 | 657 | 657 | 700 | 700 | 746 |
| 453 | 462 | 503 | 503 | 543 | 543 | 580 | 580 | 617 | 617 | 660 | 660 | 706 | 706 | 752 | 752 | 802 |
| 454 | 494 | 537 | 537 | 580 | 580 | 620 | 620 | 659 | 659 | 705 | 705 | 755 | 755 | 804 | 804 | 857 |
| 455 | 526 | 572 | 572 | 618 | 618 | 660 | 660 | 702 | 702 | 751 | 751 | 804 | 804 | 856 | 856 | 912 |
| 456 | 558 | 607 | 607 | 655 | 655 | 700 | 700 | 744 | 744 | 797 | 797 | 852 | 852 | 908 | 908 | 968 |
| 457 | 590 | 641 | 641 | 693 | 693 | 740 | 740 | 787 | 787 | 842 | 842 | 901 | 901 | 960 | 960 | 1023 |
| 458 | 622 | 676 | 676 | 730 | 730 | 780 | 780 | 830 | 830 | 888 | 888 | 950 | 950 | 1012 | 1012 | 1078 |
| 459 | 654 | 711 | 711 | 768 | 768 | 820 | 820 | 872 | 872 | 933 | 933 | 999 | 999 | 1064 | 1064 | 1134 |
| 460 | 686 | 746 | 746 | 805 | 805 | 860 | 860 | 915 | 915 | 979 | 979 | 1047 | 1047 | 1116 | 1116 | 1189 |
| 461 | 718 | 780 | 780 | 843 | 843 | 900 | 900 | 957 | 957 | 1024 | 1024 | 1096 | 1096 | 1168 | 1168 | 1245 |
| 462 | 750 | 815 | 815 | 880 | 880 | 940 | 940 | 1000 | 1000 | 1070 | 1070 | 1145 | 1145 | 1220 | 1220 | 1300 |
| 463 | 782 | 850 | 850 | 917 | 917 | 980 | 980 | 1043 | 1043 | 1116 | 1116 | 1194 | 1194 | 1272 | 1272 | 1355 |
| 464 | 814 | 884 | 884 | 955 | 955 | 1020 | 1020 | 1085 | 1085 | 1161 | 1161 | 1243 | 1243 | 1324 | 1324 | 1411 |
| 465 | 846 | 919 | 919 | 992 | 992 | 1060 | 1060 | 1128 | 1128 | 1207 | 1207 | 1291 | 1291 | 1376 | 1376 | 1466 |
| 466 | 878 | 954 | 954 | 1030 | 1030 | 1100 | 1100 | 1170 | 1170 | 1252 | 1252 | 1340 | 1340 | 1428 | 1428 | 1522 |
| 467 | 910 | 989 | 989 | 1067 | 1067 | 1140 | 1140 | 1203 | 1203 | 1298 | 1298 | 1389 | 1389 | 1480 | 1480 | 1577 |
| 468 | 942 | 1023 | 1023 | 1105 | 1105 | 1180 | 1180 | 1256 | 1256 | 1343 | 1343 | 1438 | 1438 | 1532 | 1532 | 1632 |

Note 1: Flux Min, Max values are continuous as function of dominant wavelength values. For illustration purposes, flux Min and Max values are provided at discrete dominant wavelength values.

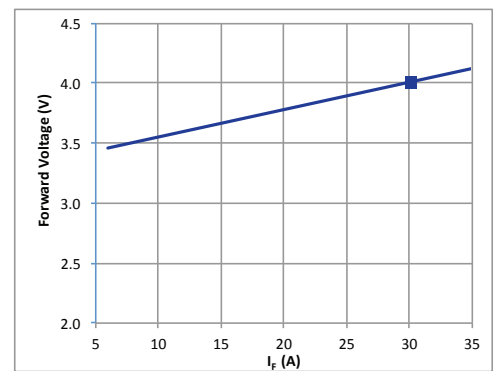
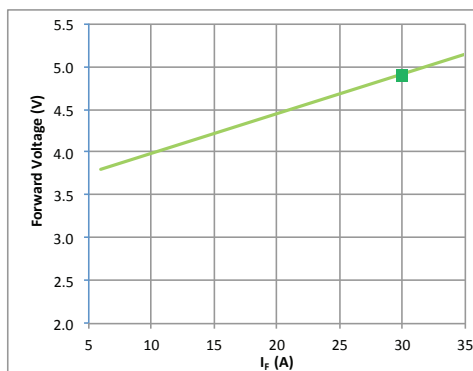
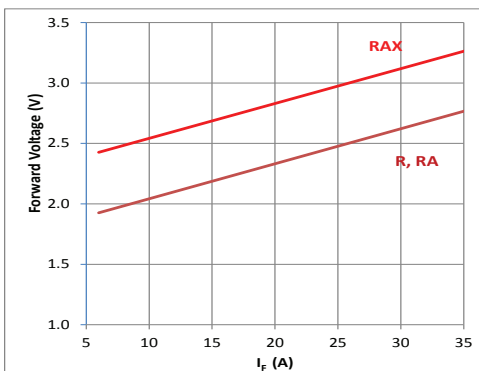
Note 2: Luminus maintains a test measurement accuracy for LED flux and power of +/- 6%.

Normalized Luminous Flux variation with Forward Current: $\Phi_v(I_F) / \Phi_v(30A)$


See notes 1, 2 on page 9.

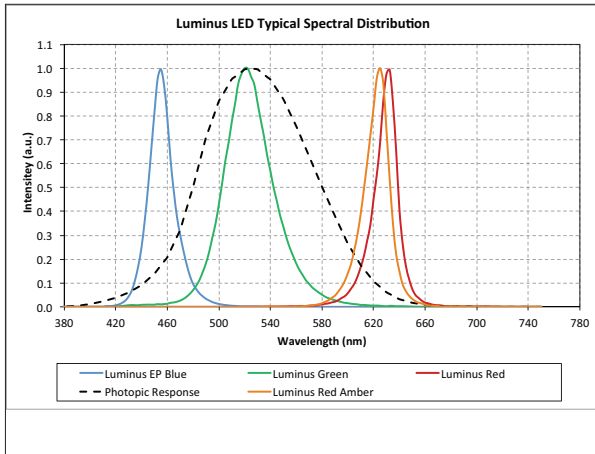
Dominant Wavelength variation with Forward Current - $\lambda_d = f(I_F)$ - Typical


See notes 1, 2 on page 9.

Forward Voltage variation with Drive current - $V_F = f(I_F)$ - Typical


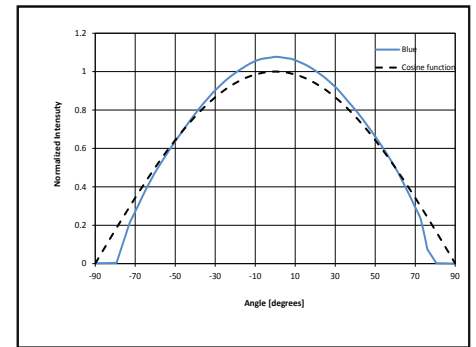
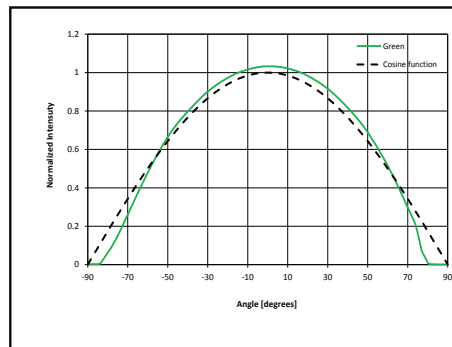
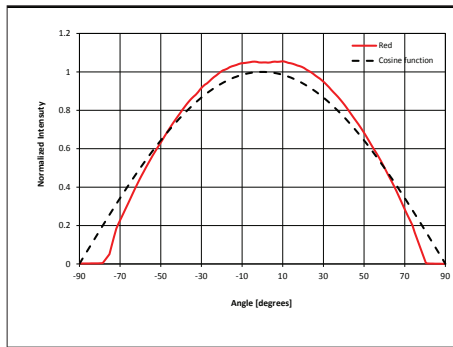
See notes 1, 2 on page 9.

Optical Spectrum (Typical)



See notes 1, 3 on page 9.

Angular Intensity Distribution (Typical)



See note 4 on page 9.

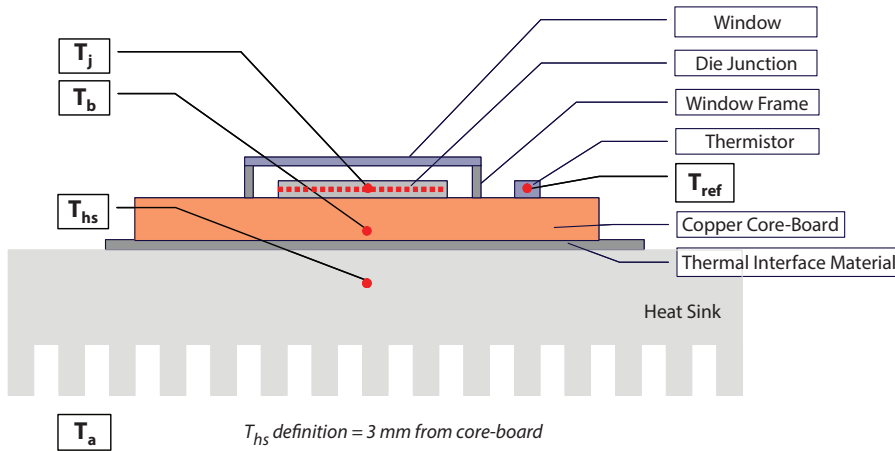
Note 1: For Pulsed operation, the reference R,G, and B duty cycles used are 25%, 50% and 25% respectively ($T_{hs}=40^{\circ}\text{C}$; Frequency =720 Hz).

Note 2: Square on curves indicate device operating current point (30A) under reference conditions listed in the Optical and Electrical Characteristics table.

Note 3: Typical spectrum at recommended peak drive current . Please contact Luminus to obtain data in Excel format.

Note 4: For any specific device, slight variations in angular intensity distribution may be expected.

Thermal Resistance



Typical Thermal Resistance

| | |
|-------------------------|----------|
| $R_{\theta j-b}^1$ | 0.4° C/W |
| $R_{\theta b-hs}^2$ | 0.1 °C/W |
| $R_{\theta j-hs}^{1,2}$ | 0.5 °C/W |
| $R_{\theta j-ref}^2$ | 0.4 °C/W |

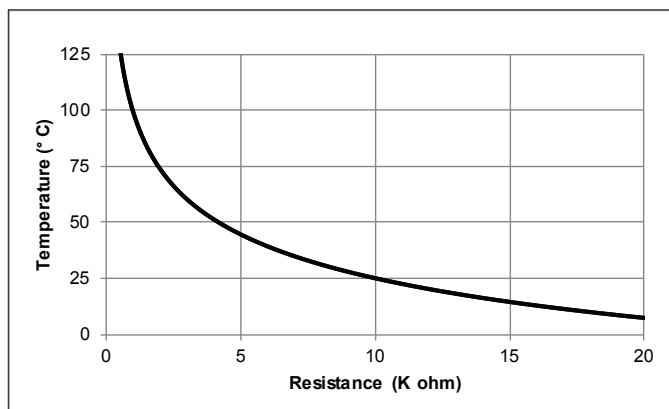
Note 1: Thermal resistance values are measured in accordance to JEDEC Standards JESD51-14 and JESD51-5x series.

Note 2: Thermal Resistance is based on eGraf 1205 Thermal interface.

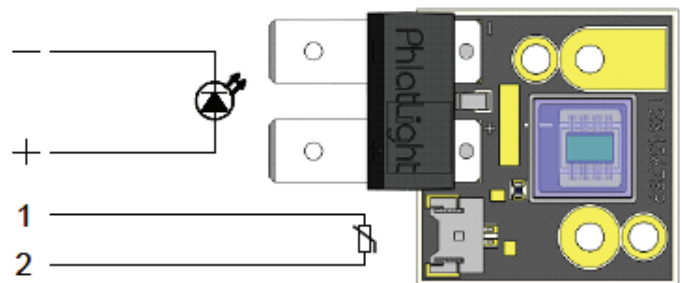
Thermistor Information

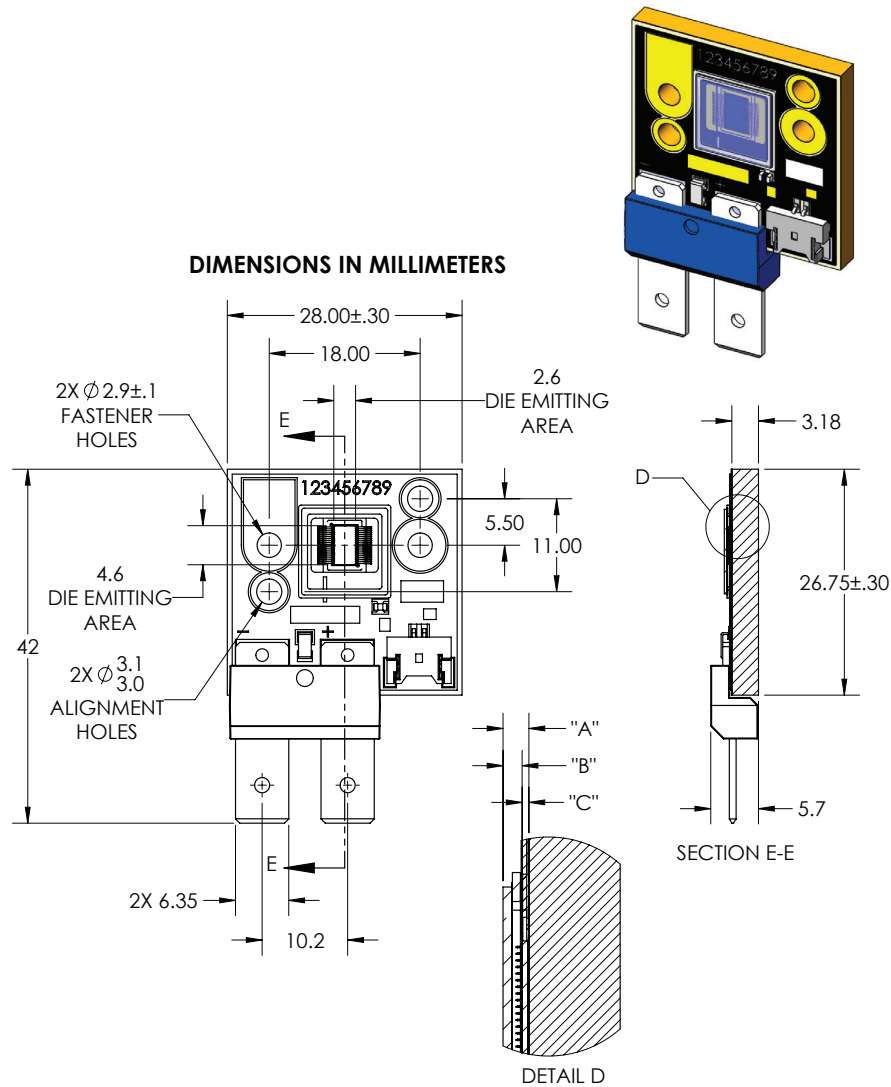
The thermistor (used in PT-120 devices, they are mounted on coreboards) is from Murata Manufacturing Co. The global part number is NCP18XH103J03RB.

Please contact Luminus for information on use of the thermistor and for data in Excel format for temperature vs resistance plot below.



Electrical Pinout



Mechanical Dimensions for PT120 - Red (R)⁴, Red - Amber (RA)⁴, Green and Blue


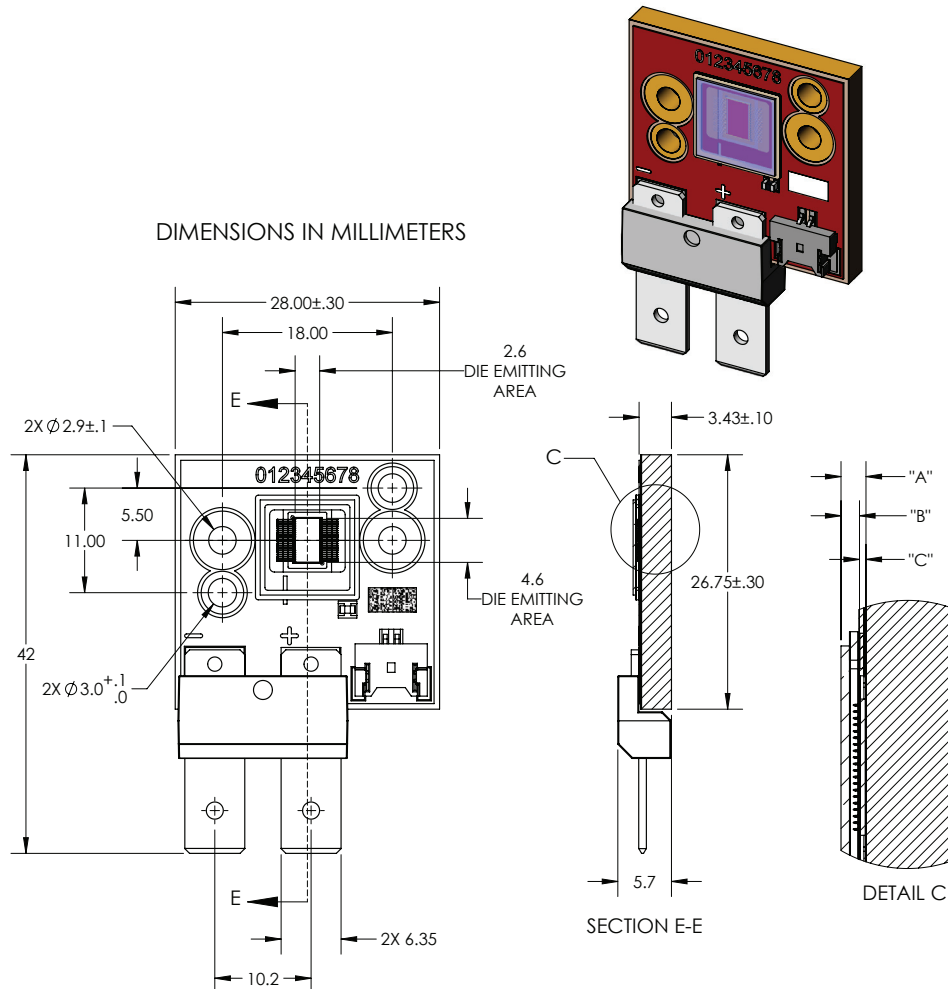
| DIMENSION NAME | DESCRIPTION | NOMINAL DIMENSION | TOLERANCE |
|----------------|--|-------------------|-----------|
| "A" | TOP OF METAL SUBSTRATE TO TOP OF WINDOW | .88 | $\pm .13$ |
| "B" | TOP OF DIE EMITTING AREA TO TOP OF WINDOW | .65 | $\pm .11$ |
| "C" | TOP OF METAL SUBSTRATE TO TOP OF DIE EMITTING AREA | .23 | $\pm .02$ |

DWG-002051

Notes:

- 1) Recommended connector for Anode and Cathode: Panduit Disco Lok™ Series P/N: DNG14-250FIB-C or JST Manufacturing Co: SPS-61T-250 or equivalent
- 2) Thermistor Connector: Global Connector Technology (GCT) P/N WTB08-021S-F. Recommended Female: (GCT) P/N WTB06-020H-A or equivalent
- 3) For detailed drawing of the PT-120 package, please refer to the DWG-002051 mechanical specification document
- 4) **Product is END-OF-LIFE. Contact Luminus for more information.**

Mechanical Dimensions for PT120- RAX Device



| DIMENSION NAME | DESCRIPTION | NOMINAL DIMENSION | TOLERANCE |
|----------------|--|-------------------|-----------|
| "A" | TOP OF METAL SUBSTRATE TO TOP OF WINDOW | .88 | ±.13 |
| "B" | TOP OF DIE EMITTING AREA TO TOP OF WINDOW | .65 | ±.11 |
| "C" | TOP OF METAL SUBSTRATE TO TOP OF DIE EMITTING AREA | .23 | ±.02 |

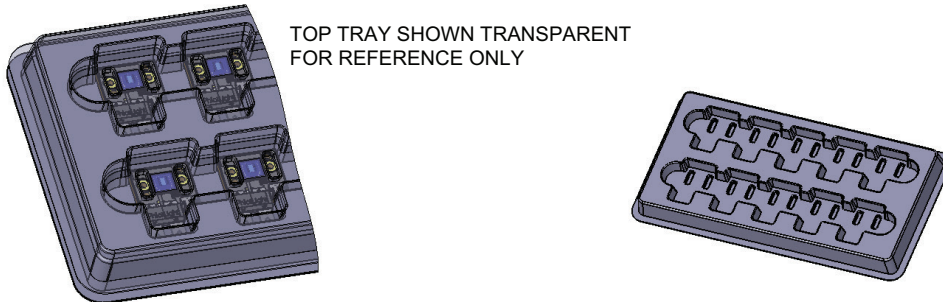
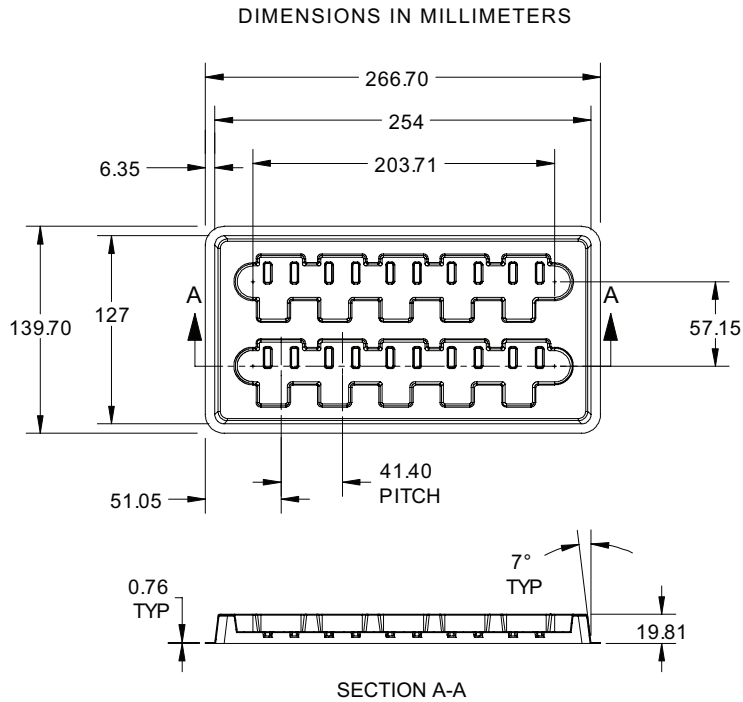
DWG-002189

Notes:

- 1) Recommended connector for Anode and Cathode: Panduit Disco Lok™ Series P/N: DNG14-250FIB-C or JST Manufacturing Co: SPS-61T-250 or equivalent
- 2) Thermistor Connector: Global Connector Technology (GCT) P/N WTB08-021S-F. Recommended Female: (GCT) P/N WTB06-020H-A or equivalent
- 3) For detailed drawing of the PT-120 RAX package, please refer to the DWG-002189 mechanical specification document

For detailed drawing of shipping trays, please refer to document TO-0479, available upon request.

Shipping Tray Outline



For detailed drawing of shipping trays, please refer to document TO-0479, available upon request.

Packing and Shipping Specification (PT-120)

Packing Specification


| Packing Configuration | Qty /Pack | Reel Dimensions (diameter x W, mm) | Gross Weight (kg) |
|---|-----------|---------------------------------------|-------------------|
| Stack of 5 trays with 10 devices per tray Each pack is enclosed in ESD bag | 50 | 150 x 280 x 85 | 2.7 |


Product Label Specification


Label Fields (subject to change):


- 6-8 digit Box number (for Luminus internal use)
- Luminus ordering part number
- Quantity of devices in pack
- Part number revision (for Luminus internal use)
- Customer's part number (optional)
- Flux Bin
- 2D Bar code






LUMINUS
LEADER IN BIG CHIP LEDS Solid State Filament™


BT-012345

Box number


PT-120-G-L11-MPG

Luminus part number

12345678

Customer part number

5F

Bin

Qty: 50


Rev 01




for traceability peel off label and attach

RoHS Compliant

Sample label –for illustration only

Shipping Box

| Shipping Box | Quantity | Material | Dimensions (L x W x H, mm) |
|--------------|------------------------------------|----------|-------------------------------|
| Carton Box | 1 -20 packs (50 - 1000 Devices) | S4651 | 560 x 560 x 200 |



History of Changes

| Rev | | Description of Change |
|-----|----------|--|
| 01 | 7/24/12 | Preliminary Specification |
| 02 | 9/4/12 | Update ordering part numbers |
| 03 | 3/8/13 | Update characterization curves |
| 04 | 4/11/14 | Update Absolute Maximum Ratings table and blue flux bin kits |
| 05 | 9/12/14 | Add PT-120-RAX preliminary product specifications and update PT-120 drawings |
| 06 | 10/19/16 | Remove various "preliminary" notations surrounding -RAX product. Added "END-OF-LIFE" notation around -R and -RA product. Updated CPN table with new -RAX CPN. Updated document to reflect Luminus new address / contact info. |
| 07 | 10/10/19 | Updated Blue typical flux and radiometric power to reflect current product distribution |

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