

Cree® P4 LED

CP41T-RDS/ADS (40 degrees)

CP41T-RFS/AFS (70 degrees)

CP41T-RHS/AHS (100 degrees)

Data Sheet

This revolutionary package design allows the lighting designer to reduce the number of LEDs required and provide a more uniform and unique illuminated appearance than with other LED solutions.

This is possible through the efficient optical package design and high current capabilities. The low-profile package can be easily coupled with reflectors or lenses to efficiently distribute light and provide the desired lit appearance. This product family employs green and blue LED materials, which allow designers to match the color of many lighting applications like vehicle signal lamps and amusement lighting.



FEATURES

- Size (mm): 7.6 x 7.6
- Color and Typical Dominant Wavelength (nm):
 - » Red (628)
 - » Amber (591)
- Luminous Flux (mlm)
 - » CP41T-RDS (2750-6600)
 - » CP41T-RFS/RHS (3300-6600)
 - » CP41T-ADS/AFS/AHS (2200-6600)
- Lead-Free
- RoHS-Compliant

APPLICATIONS

- Channel Letter
- Amusement



Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$)

Items	Symbol	Absolute Maximum Rating	Unit
		Red/Amber	
Forward Current	I_F	70 ^{Note1}	mA
Peak Forward Current ^{Note2}	I_{FP}	200	mA
Reverse Voltage	V_R	5	V
Power Dissipation	P_D	220	mW
Operation Temperature	T_{opr}	-40 ~ +100	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +100	$^\circ\text{C}$
Lead Soldering Temperature	T_{sol}	Max. 260 $^\circ\text{C}$ for 5 sec. max. (3 mm from the base of the epoxy bulb)	

Notes:

- A heat sink is recommended if the device is operated at ambient temperatures higher than 25 $^\circ\text{C}$.
- Pulse width ≤ 0.1 msec, duty $\leq 1/10$.

Typical Electrical & Optical Characteristics ($T_A = 25^\circ\text{C}$)

Characteristics	Color	Symbol	Condition	Unit	Minimum	Typical	Maximum
Forward Voltage	Red/Amber	V_F	$I_F = 70$ mA	V		2.6	3.4
Reverse Current	Red/Amber	I_R	$V_R = 5$ V	μA			100
Dominant Wavelength	Red	λ_D	$I_F = 70$ mA	nm	620	628	637
	Amber	λ_D	$I_F = 70$ mA	nm	584	591	599
Luminous Flux	Red	CP41T-RDS (40 degree)	Φ_v	$I_F = 70$ mA	mlm	2750	4000
		CP41T-RFS (70 degree)	Φ_v	$I_F = 70$ mA	mlm	3300	4500
		CP41T-RHS (100 degree)	Φ_v	$I_F = 70$ mA	mlm	3300	4000
	Amber	CP41T-ADS/AFS/AHS	Φ_v	$I_F = 70$ mA	mlm	2200	3200
50% Power Angle	CP41T-RDS/ADS		$2\theta_{1/2}$	$I_F = 70$ mA	deg	40	
	CP41T-RFS/AFS		$2\theta_{1/2}$	$I_F = 70$ mA	deg	70	
	CP41T-RHS/AHS		$2\theta_{1/2}$	$I_F = 70$ mA	deg	100	



Flux Bin Limit ($I_F = 70 \text{ mA}$)

Red

CP41T-RDS (40 degree)

Bin Code	Min. (mlm)	Max. (mlm)
H0	2750	3300
J0	3300	3850
K0	3850	4400
L0	4400	5500
M0	5500	6600

CP41T-RFS/RHS (70/100 degree)

Bin Code	Min. (mlm)	Max. (mlm)
J0	3300	3850
K0	3850	4400
L0	4400	5500
M0	5500	6600

Amber

CP41T-ADS/AFS/AHS (40/70/100 degree)

Bin Code	Min. (mlm)	Max. (mlm)
G0	2200	2750
H0	2750	3300
J0	3300	3850
K0	3850	4400
L0	4400	5500
M0	5500	6600

Tolerance of measurement of luminous flux is $\pm 15\%$.

Color Bin Limit ($I_F = 70 \text{ mA}$)

Red

Bin Code	Min. (nm)	Max. (nm)
RE	620	637

Amber

Bin Code	Min. (nm)	Max. (nm)
A2	584	587
A3	587	590
A4	590	593
A5	593	596
A6	596	599

Tolerance of measurement of dominant wavelength is $\pm 1 \text{ nm}$.

VF Bin Limit ($I_F = 70 \text{ mA}$)

Red

Bin Code	Min. (V)	Max. (V)
24	2.2	2.4
25	2.4	2.6
26	2.6	2.8
27	2.8	3.0
28	3.0	3.2

Amber

Bin Code	Min. (V)	Max. (V)
24	2.2	2.4
25	2.4	2.6
26	2.6	2.8
27	2.8	3.0
28	3.0	3.2
29	3.2	3.4

Tolerance of measurement of VF is $\pm 0.05 \text{ V}$.



Order Code Table*

Red

Color	Kit Number	Viewing Angle	Luminous Flux (mlm)		Dominant Wavelength			
			Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)
Red	CP41T-RDS-CH0M0EE4	40	2750	6600	RE	620	RE	637

Color	Kit Number	Viewing Angle	Luminous Flux (mlm)		Dominant Wavelength			
			Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)
Red	CP41T-RFS-CJ0M0EE4	70	3300	6600	RE	620	RE	637

Color	Kit Number	Viewing Angle	Luminous Flux (mlm)		Dominant Wavelength			
			Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)
Red	CP41T-RHS-CJ0M0EE4	100	3300	6600	RE	620	RE	637

Amber

Color	Kit Number	Viewing Angle	Luminous Flux (mlm)		Dominant Wavelength			
			Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)
Amber	CP41T-ADS-CG0L0264	40	2200	5500	A2	584	A6	599

Color	Kit Number	Viewing Angle	Luminous Flux (mlm)		Dominant Wavelength			
			Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)
Amber	CP41T-AFS-CG0L0264	70	2200	5500	A2	584	A6	599

Color	Kit Number	Viewing Angle	Luminous Flux (mlm)		Dominant Wavelength			
			Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)
Amber	CP41T-AHS-CG0M0264	100	2200	6600	A2	584	A6	599

Notes:

- The above kit numbers represent order codes that include multiple flux-bin and color-bin codes. Only one flux-bin code and one color-bin code will be shipped on each tube. Single flux-bin codes and single color-bin codes will not be orderable.
- Please refer to the "Cree LED Lamp Reliability Test Standards" document for reliability test conditions.
- Please refer to the "Cree LED Lamp Soldering & Handling" document for information about how to use this LED product safely.

Graphs

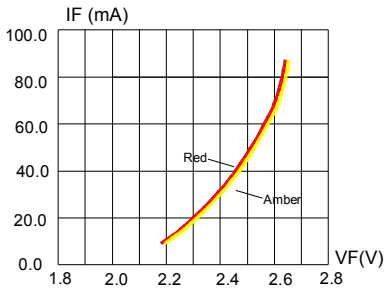


FIG.1 FORWARD CURRENT VS. FORWARD VOLTAGE.

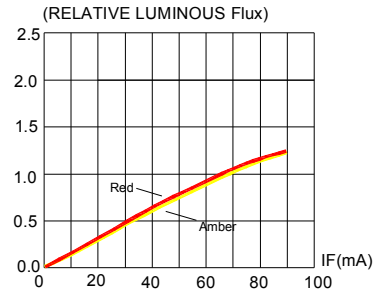


FIG.2 RELATIVE LUMINOUS Flux VS. FORWARD CURRENT

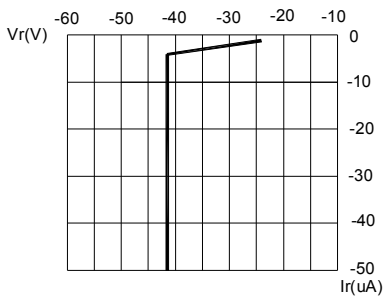


FIG.3 Red & Amber REVERSE CURRENT VS. REVERSE VOLTAGE.

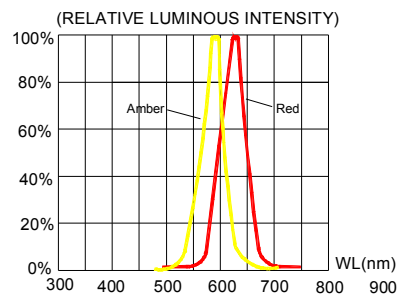


FIG.4 RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH.
CP41T-ADS/RDS 50% Power Angle : 40°

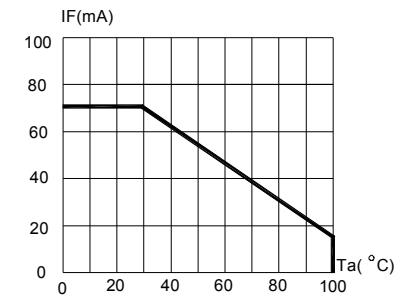


FIG.5 Red & Amber MAXIMUM FORWARD DCCURRENT VS AMBIENT TEMPERATURE (Tjmax=120 °C)

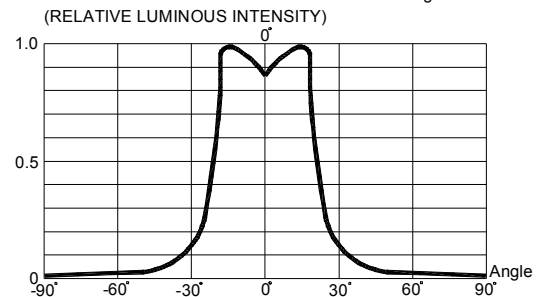


FIG.6 FAR FIELD PATTERN

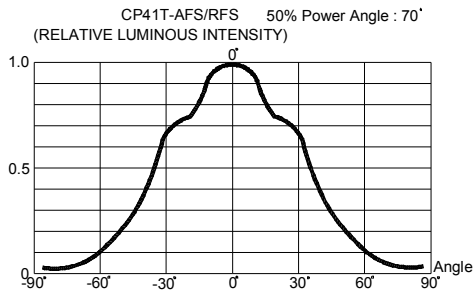


FIG.7 FAR FIELD PATTERN

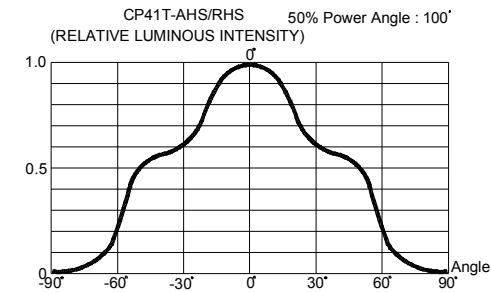


FIG.8 FAR FIELD PATTERN

The above data are collected from statistical figures which do not necessarily correspond to the actual parameters of each single LED. Hence, these data will be changed without further notice.

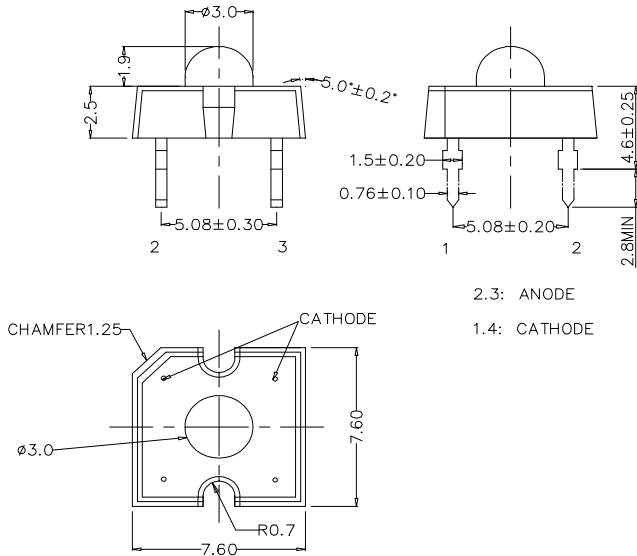
Mechanical Dimensions

All dimensions are in mm. Tolerance is ± 0.25 mm unless otherwise noted.

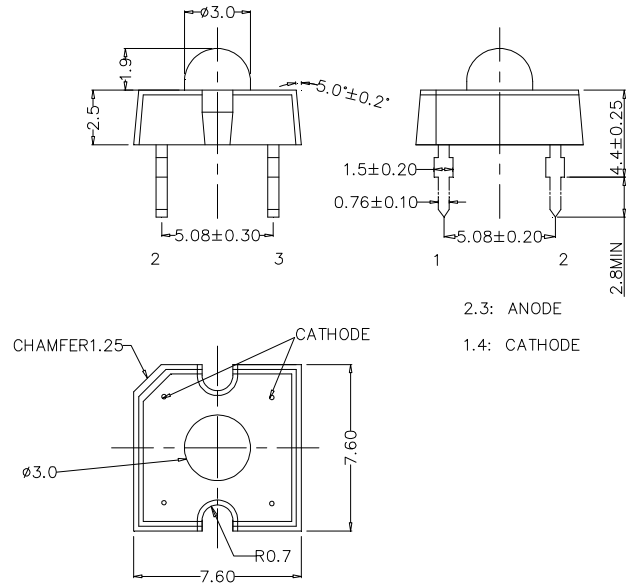
An epoxy meniscus may extend about 1.5 mm down the leads.

Burr around bottom of epoxy may be 0.5 mm max.

CP41T-RDS/ADS:



CP41T-RFS/AFS/RHS/AHS:



Notes

RoHS Compliance

The levels of environmentally sensitive, persistent biologically toxic (PBT), persistent organic pollutants (POP), or otherwise restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), as amended through April 21, 2006.

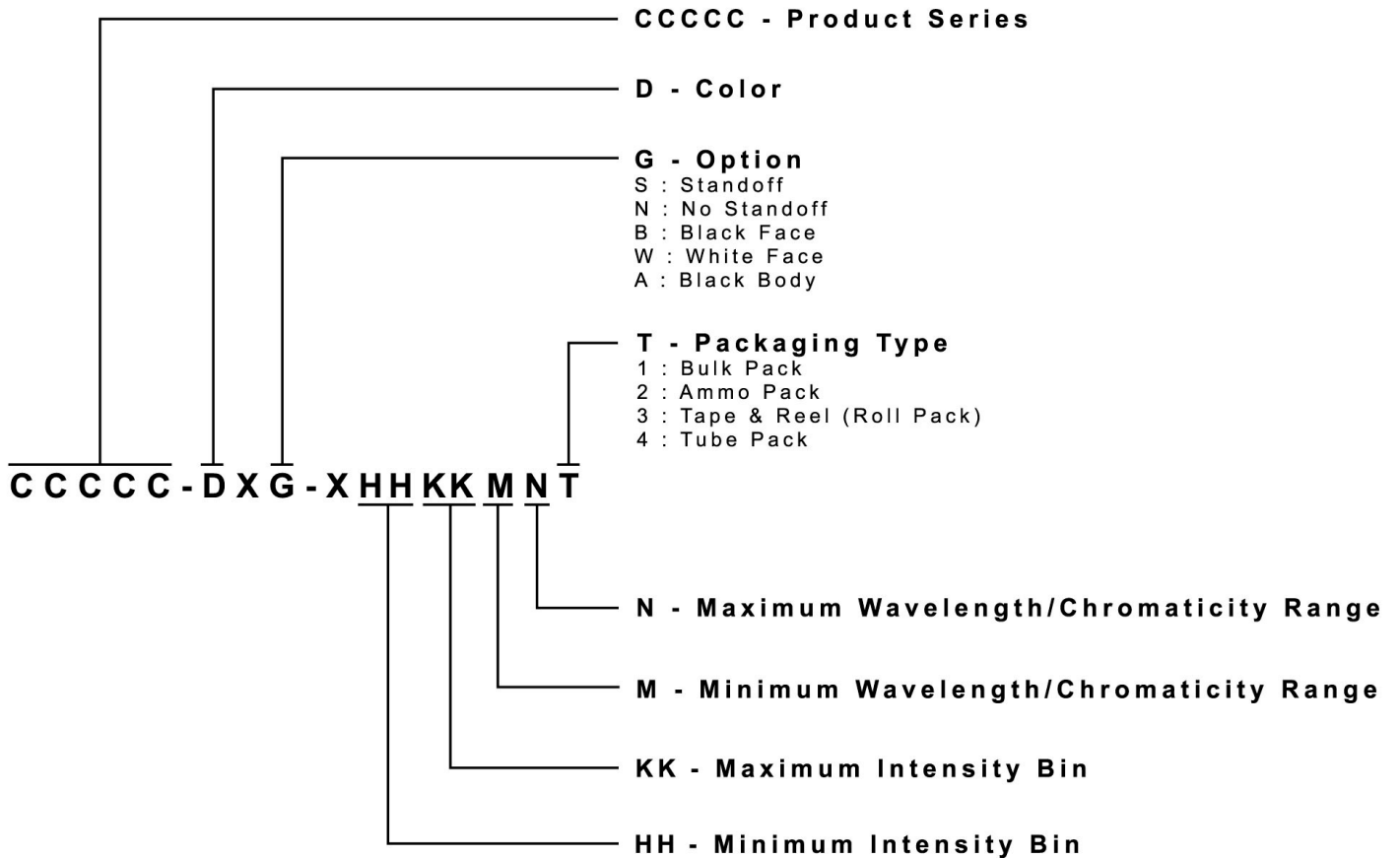
Vision Advisory Claim

Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.

Kit Number System

Cree LED lamps are tested and sorted into performance bins. A bin is specified by ranges of color, forward voltage, and brightness. Sorted LEDs are packaged for shipping in various convenient options. Please refer to the "Cree LED Lamp Packaging Standard" document for more information about shipping and packaging options.

Cree LEDs are sold by order codes in combinations of bins called kits. Order codes are configured in the following manner:



Package

Features:

- The LEDs are packed in cardboard boxes after packaging in normal or anti-electrostatic bags.
- Cardboard boxes will be used to protect the LEDs from mechanical shock during transportation.
- The boxes are not water resistant, and they must be kept away from water and moisture.
- The Tube Pack type of packaging.
- Max 60 pcs per tube.

