



SURFACE MOUNT LED LAMP

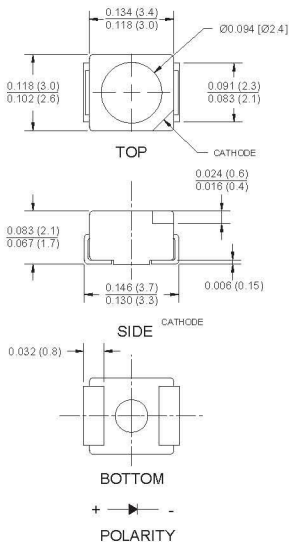
SUPER BRIGHT PLCC-2

QTLP670CTTR Hyper Red
QTLP670CETR Orange
QTLP670CAGTR Yellow-Green
QTLP670CIWTR White

QTLP670CSTR Super Red
QTLP670COTR Yellow-Orange
QTLP670CIGTR True Green
QTLP670CICTR Cyan

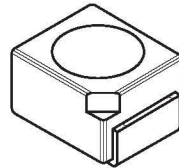
QTLP670CRTR Red
QTLP670CYTR Yellow
QTLP670CIBTR Blue

PACKAGE DIMENSIONS



NOTE:

Dimensions for all drawings are in inches (mm).



APPLICATIONS

- Automotive interior lighting
- Status indication for consumer electronics and office equipment

DESCRIPTION

These surface mount LEDs are designed with flat top and sides for the ease of pick-and-place by automatic placement equipment. They are compatible with convective IR and vapor phase reflow soldering. The package size and configuration conform to EIA-535 BAAC standard specification for case size 3528 tantalum capacitor. These LEDs are ideal for backlighting and optical coupling into light pipes.

FEATURES

- AllGaP technology for -TTR, -STR, -RTR, -ETR, -OTR, -YTR and -AGTR
- InGaN/SiC technology for -IGTR, -IBTR, -IWTR and -ICTR
- Wide viewing angle of 120°
- Water clear optics
- Available in 0.315" (8mm) width tape on 7" (178mm) diameter reel; 2,000 units per reel



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ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless otherwise specified)

Parameter	Symbol	QTLP670C							Units
		-TTR	-STR	-RTR	-ETR	-OTR	-YTR	-AGTR	
Continuous Forward Current	I _F	30	30	30	30	30	30	30	mA
Peak Forward Current (t _p ≤ 10μs, Duty Cycle = 0.005)	I _{FM}	1000	1000	1000	1000	1000	1000	1000	mA
Reverse Voltage (I _R = 10 μA)	V _R	5	5	5	5	5	5	5	V
Power Dissipation	P _D	75	75	75	75	75	75	75	mW
Junction Temperature	T _J	125	125	125	125	125	125	125	°C
Thermal Resistance (Junction-Air)	R _{th JA}	500	500	500	500	500	500	500	K/W
Operating Temperature	T _{OPR}	-40 to +100							°C
Storage Temperature	T _{STG}	-40 to +100							°C
Lead Soldering Time	T _{SOL}	260 for 5 sec							°C

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless otherwise specified)

Parameter	Symbol	QTLP670C				Units
		-IBTR	-ICTR	-IGTR	-IWTR	
Continuous Forward Current	I _F	20	20	20	20	mA
Peak Forward Current (t _p ≤ 10μs, Duty Cycle = 0.005)	I _{FM}	200	200	200	200	mA
Reverse Voltage (I _R = 10 μA)	V _R	5	5	5	5	V
Power Dissipation	P _D	85	85	85	85	mW
Junction Temperature	T _J	125	125	125	125	°C
Thermal Resistance Junction-Air	R _{th JA}	400	400	400	400	K/W
Operating Temperature	T _{OPR}	-40 to +100				°C
Storage Temperature	T _{STG}	-40 to +100				°C
Lead Soldering Time	T _{SOL}	260 for 5 sec				°C



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Parameter	Symbol	QTLP670C							Condition
		-TTR	-STR	-RTR	-ETR	-OTR	-YTR	-AGTR	
Luminous Intensity (mcd)									
Bin P1	I _V	45 - 56	—	—	—	—	—	45 - 56	I _F = 20mA
Bin P2		56 - 71.5	—	—	—	—	—	56 - 71.5	
Bin Q1		71.5 - 90	71.5 - 90	71.5 - 90	—	—	71.5 - 90	71.5 - 90	
Bin Q2		90 - 112.5	90 - 112.5	90 - 112.5	—	—	90 - 112.5	90 - 112.5	
Bin R1		112.5 - 140	112.5 - 140	112.5 - 140	112.5 - 140	112.5 - 140	112.5 - 140	112.5 - 140	
Bin R2		140 - 180	140 - 180	140 - 180	140 - 180	140 - 180	140 - 180	140 - 180	
Bin S1		—	—	180 - 224	180 - 224	180 - 224	180 - 224	—	
Bin S2		—	—	224 - 285	224 - 285	224 - 285	224 - 285	—	
Bin T1		—	—	285 - 355	285 - 355	285 - 355	285 - 355	—	
Bin T2		—	—	355 - 450	355 - 450	355 - 450	355 - 450	—	
Bin U1		—	—	450 - 560	450 - 560	—	450 - 560	—	
Bin U2		—	—	560 - 715	560 - 715	—	560 - 715	—	
Forward Voltage (V)	V _F	2.0	2.0	2.0	2.0	2.0	2.0	I _F = 20mA	
Typ:		2.4	2.4	2.4	2.4	2.4	2.4		2.4
Max:		2.4	2.4	2.4	2.4	2.4	2.4		
Wavelength (nm)									
Peak:	λ _P	650	640	630	620	610	590	575	
Dominant:	λ _D	640	632	625	615	605	587	572	
Viewing Angle (°)	2θ ^{1/2}	120	120	120	120	120	120	120	



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Parameter	Symbol	QTLP670C				Condition
		-IBTR	-ICTR	-IGTR	-IWTR	
Luminous Intensity (mcd)	I _v					I _F = 20mA
Bin P1		45 - 56	—	—	—	
Bin P2		56 - 71.5	—	—	—	
Bin Q1		71.5 - 90	—	—	—	
Bin Q2		90 - 112.5	—	—	—	
Bin R1		112.5 - 140	112.5 - 140	112.5 - 140	112.5 - 140	
Bin R2		140 - 180	140 - 180	140 - 180	140 - 180	
Bin S1		180 - 224	180 - 224	180 - 224	180 - 224	
Bin S2		—	224 - 285	224 - 285	224 - 285	
Bin T1		—	285 - 355	285 - 355	285 - 355	
Bin T2		—	355 - 450	355 - 450	355 - 450	
Bin U1		—	—	450 - 560	450 - 560	
Bin U2		—	—	560 - 715	560 - 715	
Bin V1	—	—	—	715 - 900		
Bin V2	—	—	—	—		
Forward Voltage (V)	V _F					I _F = 20mA
Typ:		3.5	3.5	3.5	3.5	
Max:		4.2	4.2	4.2	4.2	
Wavelength (nm)	λ _P λ _D					I _F = 20mA
Peak:		465	502	520	—	
Dominant:		470	505	525	—	
Chromaticity Coordinate	X, Y					I _F = 20mA
Typ:		—	—	—	X = 0.31 Y = 0.31	
Viewing Angle (°)	2θ ^{1/2}	120	120	120	120	I _F = 20mA

Tolerance for Luminous Intensity (I_v): ±11%

Tolerance for V_F: ±0.1V

Tolerance for λ_D ±1nm



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TYPICAL PERFORMANCE CURVES (QTLP670C-TTR, -STR, -RTR, -ETR, -OTR, -YTR and -AGTR)

Fig. 1 Forward Current vs. Forward Voltage

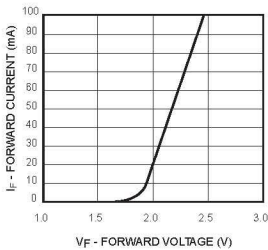


Fig. 2 Relative Luminous Intensity vs. DC Forward Current

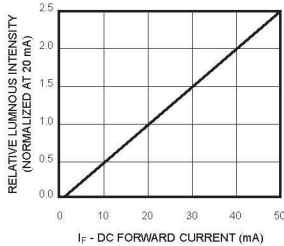


Fig. 3 Relative Intensity vs. Peak Wavelength

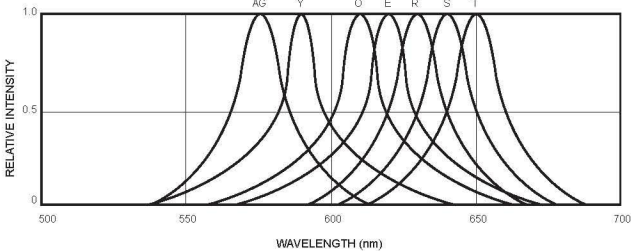


Fig.4 Radiation Diagram

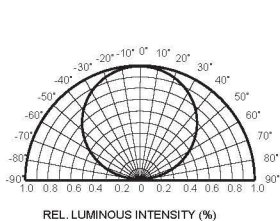
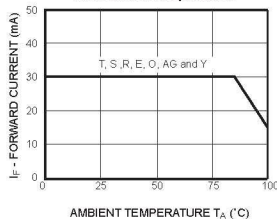


Fig.5 Maximum Forward Current vs. Ambient Temperature





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TYPICAL PERFORMANCE CURVES (QTLP670C-IGTR, -ICTR, -IBTR and -IWTR)

Fig. 6 Forward Current vs. Forward Voltage

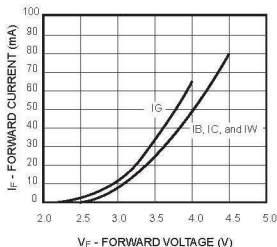


Fig. 7 Relative Luminous Intensity vs. DC Forward Current

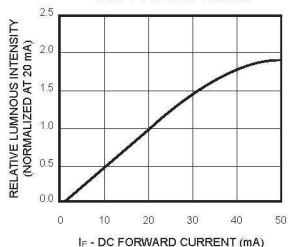


Fig. 8 Relative Intensity vs. Peak Wavelength

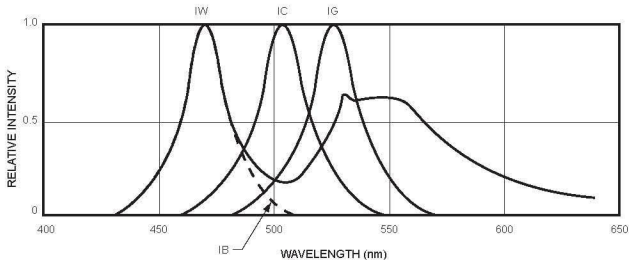


Fig. 9 Radiation Diagram

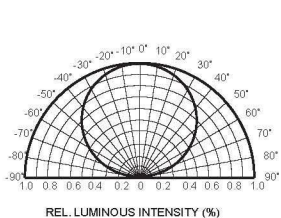
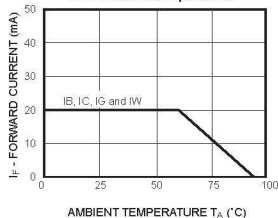


Fig. 10 Maximum Forward Current vs. Ambient Temperature





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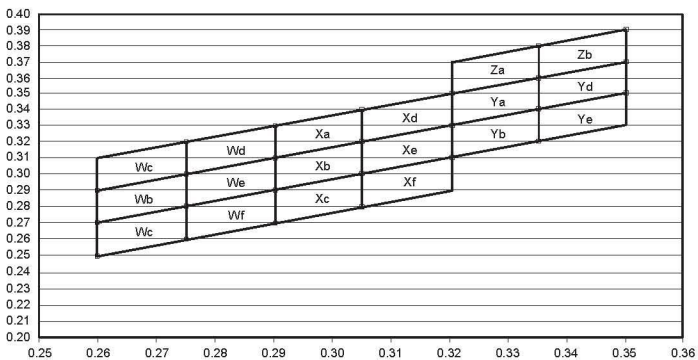
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TYPICAL PERFORMANCE CURVES

Fig. 11 White Bin Structure



Tolerance for XY Chromaticity Bin: | 0.01



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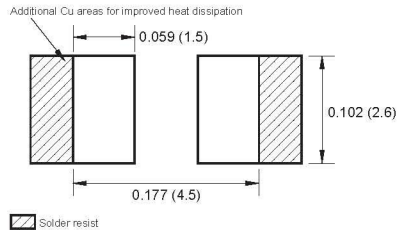
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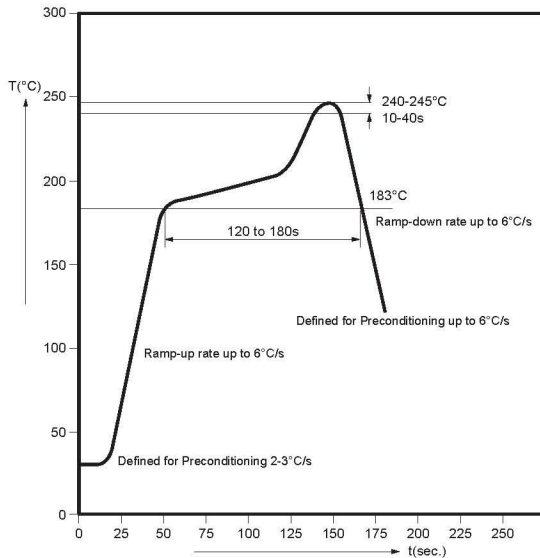
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QTLP670CIBTR Blue

RECOMMENDED PRINTED CIRCUIT BOARD PATTERN



RECOMMENDED IR REFLOW SOLDERING PROFILE





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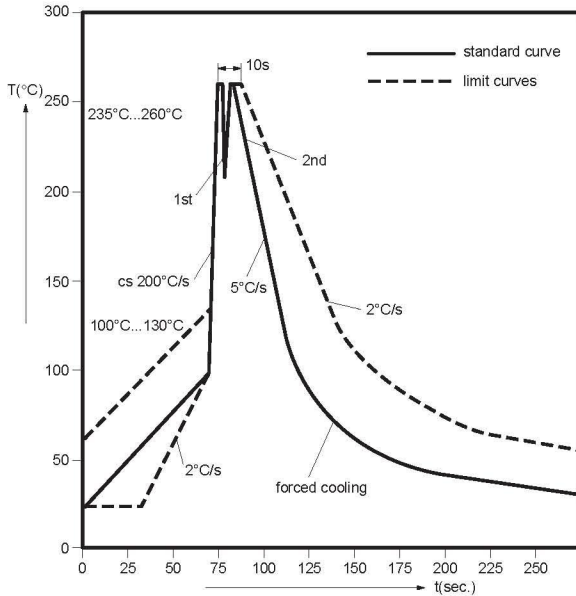
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RECOMMENDED TTW REFLOW SOLDERING PROFILE





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QTLP670CIWTR White

QTLP670CSTR Super Red

QTLP670COTR Yellow-Orange

QTLP670CIGTR True Green

QTLP670CICTR Cyan

QTLP670CRTR Red

QTLP670CYTR Yellow

QTLP670CIBTR Blue

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