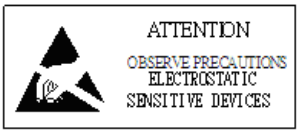
PRODUCT:

7070 SURFACE MOUNT RGBWW LED

FEATURES:
6.9 mm × 6.9 mm x1.35 mm surface-mount LED
120° emission angle
High power red, green, blue, cool white and warm white

DESCRIPTION
Yuji LED's high power RGBWW7070 allows for high brightness with individual red, green, blue, cool white and warm white emission control in a PLCC-10 package.



ELECTRICAL-OPTICAL CHARACTERISTICS (T_A = 25 °C)								
COLOR	PARAMETER	SYMBOL	VALUE			UNIT	TOLERANCE	CONDITION
			MIN.	TYP.	MAX.			
Red	Luminous flux	Φ_R	18	20	22	lm	--	I_f = 150mA
	Dominant wavelength	λ_R	619	622	625	nm	--	
	Viewing angle	2θ1/2	--	120	--	Deg	--	
Green	Luminous flux	Φ_G	38	41	44	lm	--	I_f = 150mA
	Dominant wavelength	λ_G	520	522.5	525	nm	--	
	Viewing angle	2θ1/2	--	120	--	Deg	--	
Blue	Luminous flux	Φ_B	7.5	9	10.5	lm	--	I_f = 150mA
	Dominant wavelength	λ_B	457.5	--	460	nm	--	
	Viewing angle	2θ1/2	--	120	--	Deg	--	
6500K	Luminous flux	Φ_{6500K}	43	--	48	lm	--	I_f = 150mA
	Correlated color temperature	CCT_{6500K}	6150	6500	6850	K	--	
	Color rendering index	Ra	93	95	--	--	--	
	TCS R9 (CRI Red)	R9	--	90	--	--	--	
	Viewing angle	2θ1/2	--	120	--	Deg	--	
2700K	Luminous flux	Φ_{2700K}	38	--	43	lm	--	I_f = 150mA
	Correlated color temperature	CCT_{2700K}	2600	2700	2800	K	--	
	Color rendering index	Ra	95	--	--	--	--	
	TCS R9 (CRI Red)	R9	--	90	--	--	--	
	Viewing angle	2θ1/2	--	120	--	Deg	--	

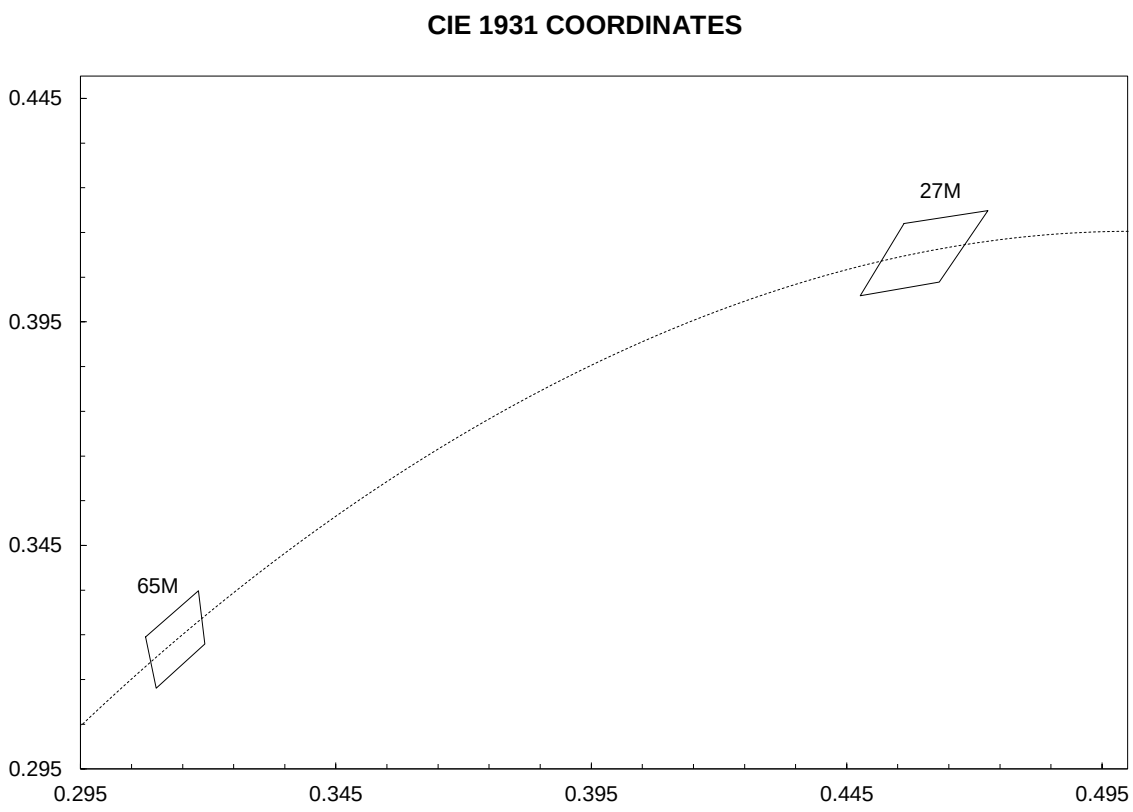
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)								
COLOR	PARAMETER	SYMBOL	VALUE			UNIT	TOLERANCE	CONDITION
			MIN.	TYP.	MAX.			
Red	Forward voltage	V_{FR}	1.9	--	2.5	V	--	I_f = 150mA
	Reverse current	I_{rR}	--	--	5	μA	--	V_r = 5V
Green	Forward voltage	V_{FG}	2.8	--	3.4	V	--	I_f = 150mA
	Reverse current	I_{rG}	--	--	5	μA	--	V_r = 5V
Blue	Forward voltage	V_{FB}	3.0	--	3.4	V	--	I_f = 150mA
	Reverse current	I_{rB}	--	--	5	μA	--	V_r = 5V
6500K	Forward voltage	V_{F6500K}	3.0	--	3.4	V	--	I_f = 150mA
	Reverse current	I_{r6500K}	--	--	5	μA	--	V_r = 5V
2700K	Forward voltage	V_{F2700K}	3.0	--	3.4	V	--	I_f = 150mA
	Reverse current	I_{r2700K}	--	--	5	μA	--	V_r = 5V

ABSOLUTE MAXIMUM RATING (T_A = 25 °C)							
PARAMETER	SYMBOL	RED	GREEN	BLUE	6500K	2700K	UNIT
Power Consumption (Simultaneous)	P_D	360	576	576	576	576	mW
DC Forward Current (pulsed)*	I_{Fp}	360	360	360	360	360	mA
DC Forward Current	I_F	180	180	180	180	180	mA
Reverse Voltage	V_R	5					V
Solder Point Temperature**	T_s	85					°C
Operating Temperature	T_{opr}	-25 ~ +85					°C
Storage Temperature	T_{stg}	-35 ~ +85					°C
Soldering Temperature	T_{sol}	260 ± 5					°C
Reflow Cycles Allowed	--	3					--

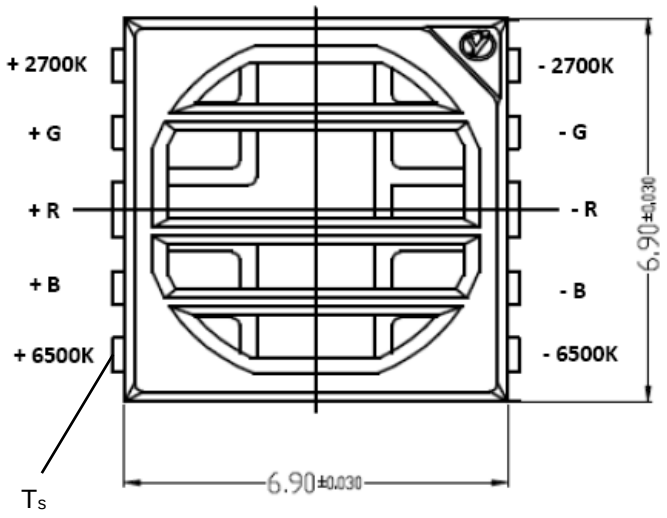
* Pulse width ≤ 0.1ms, Duty ≤ 1/10.
** See page 4 for solder point definition.

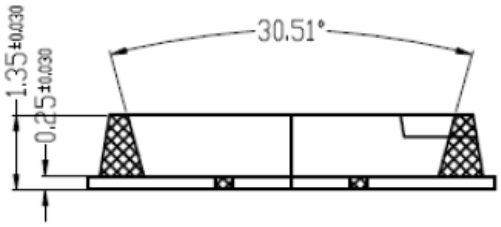
CHROMATICITY BINS & COORDINATES									
CCT	BIN	CIE 1931 COORDINATES							
		X0	Y0	X1	Y1	X2	Y2	X3	Y3
6500K	65M	0.3078	0.3245	0.3098	0.3131	0.3193	0.3230	0.3181	0.3349
2700K	27M	0.4562	0.4170	0.4477	0.4009	0.4631	0.4039	0.4727	0.4199

CHROMATICITY BINS & COORDINATES

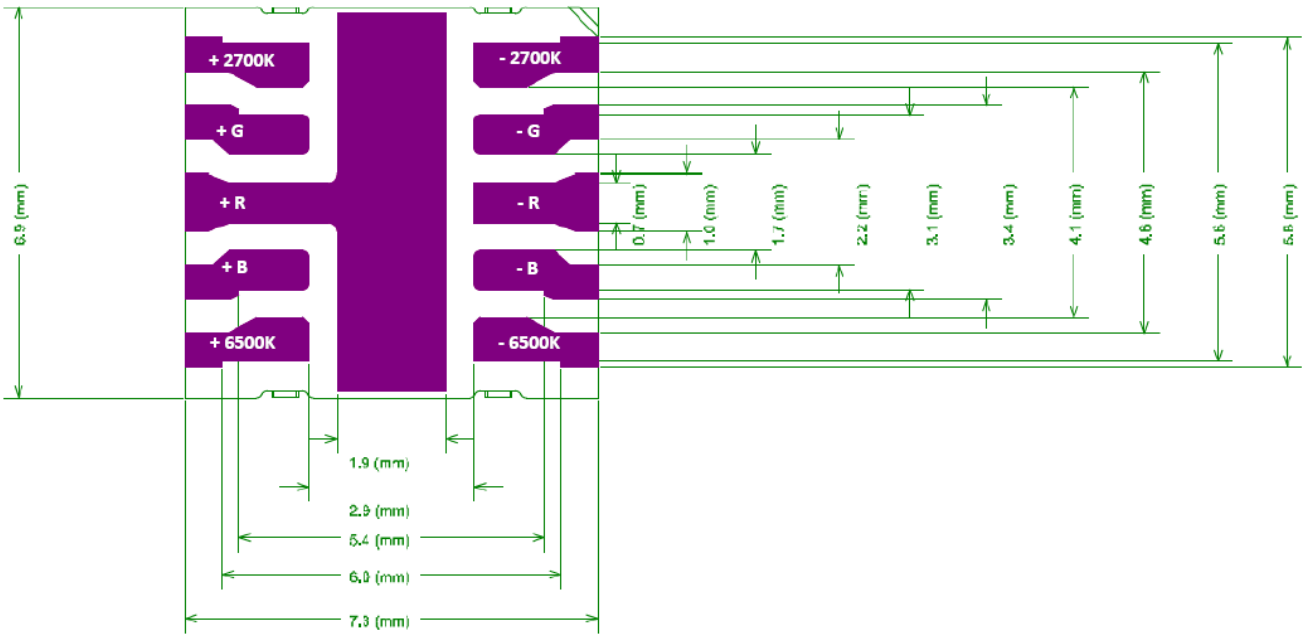


PACKAGE LAYOUT





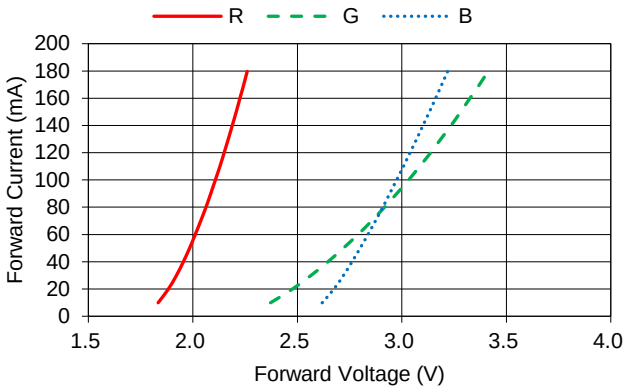
SOLDER PAD LAYOUT



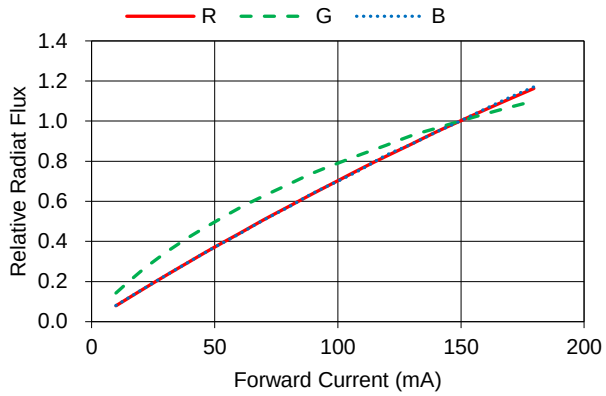
CHARACTERISTIC CURVES

ALL CHARACTERISTIC CURVES ARE FOR REFERENCE ONLY AND NOT GUARANTEED

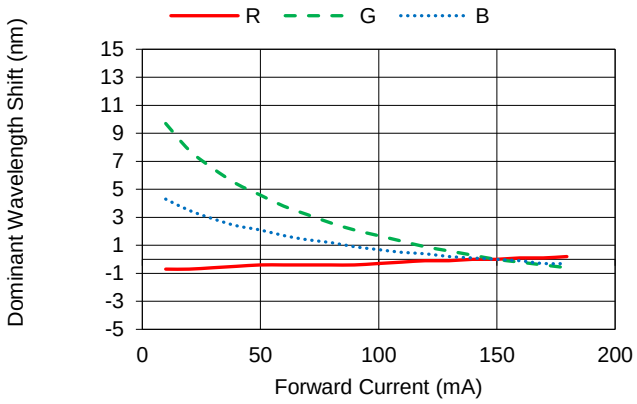
FORWARD CURRENT VS FORWARD VOLTAGE (T_A = 25°C)



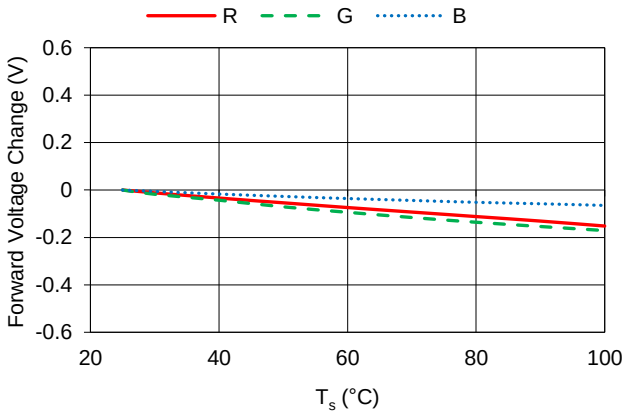
RELATIVE RADIANT FLUX VS FORWARD CURRENT (T_A = 25°C)



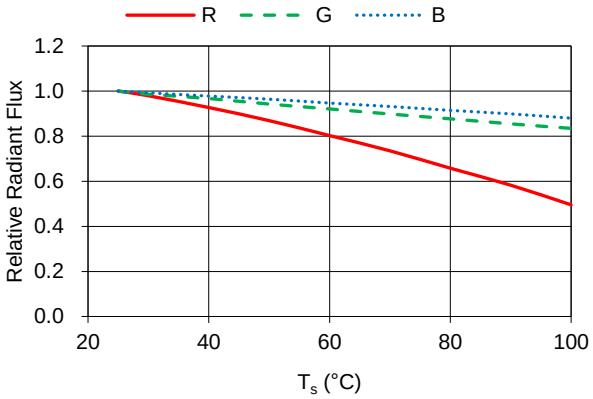
DOMINANT WAVELENGTH SHIFT VS FORWARD CURRENT (T_A = 25°C)



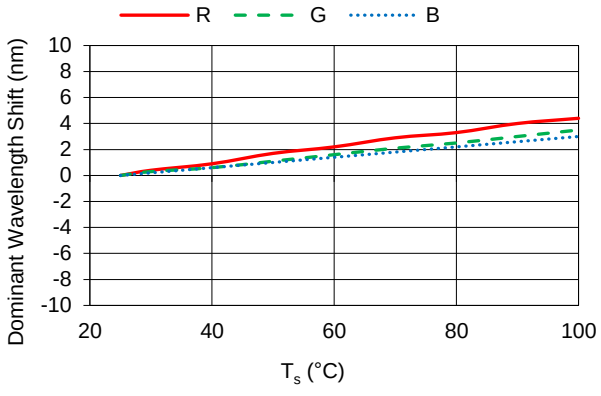
FORWARD VOLTAGE VS SOLDER POINT TEMPERATURE (I_F = 150mA)



RELATIVE RADIANT FLUX VS SOLDER POINT TEMPERATURE (I_F = 150mA)



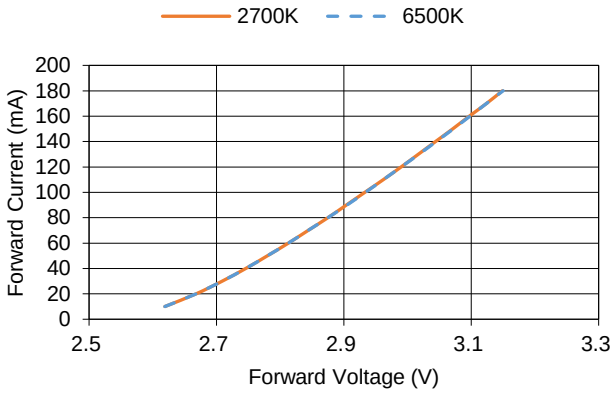
DOMINANT WAVELENGTH SHIFT VS SOLDER POINT TEMPERATURE (I_F = 150mA)



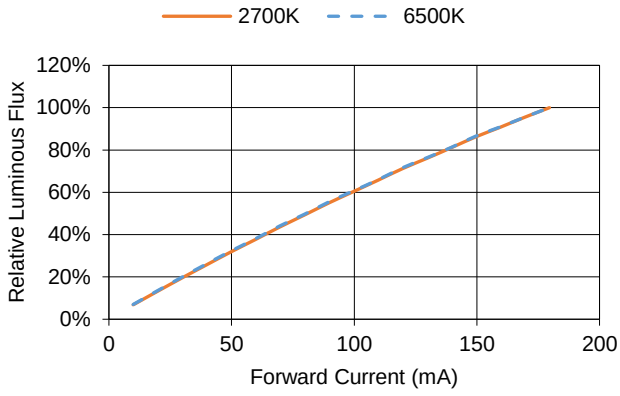
CHARACTERISTIC CURVES

ALL CHARACTERISTIC CURVES ARE FOR REFERENCE ONLY AND NOT GUARANTEED

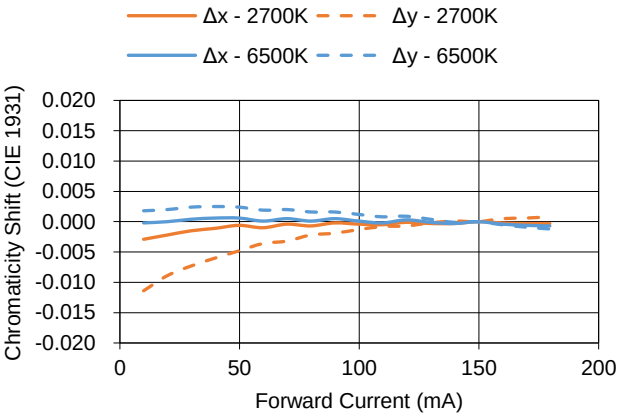
FORWARD CURRENT VS FORWARD VOLTAGE
(T_A = 25°C)



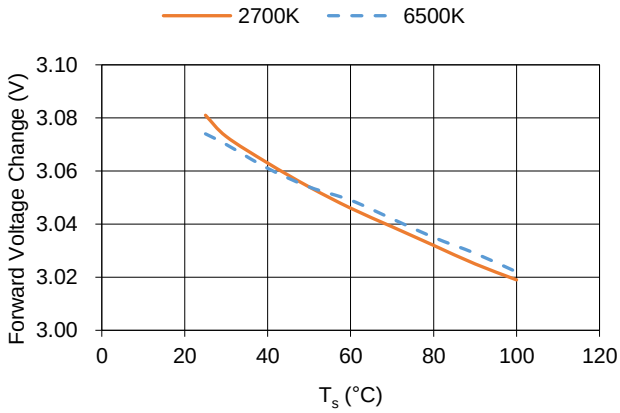
RELATIVE LUMINOUS FLUX VS FORWARD CURRENT
(T_A = 25°C)



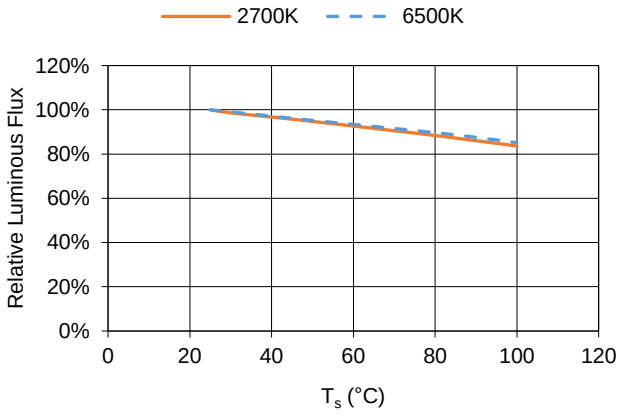
CHROMATICITY SHIFT VS FORWARD CURRENT
(T_A = 25°C)



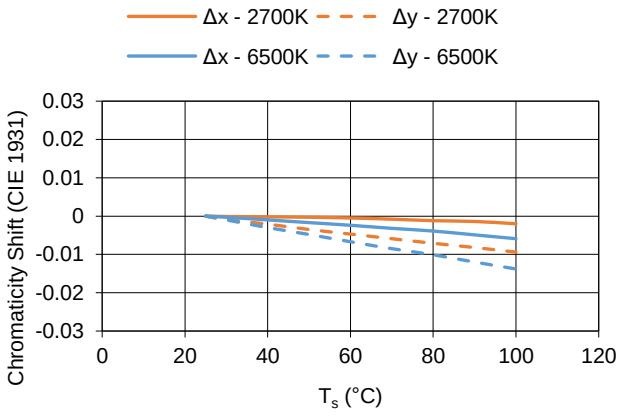
FORWARD VOLTAGE VS SOLDER POINT TEMPERATURE
(I_F = 150mA)



RELATIVE LUMINOUS FLUX VS SOLDER POINT TEMPERATURE (I_F = 150mA)



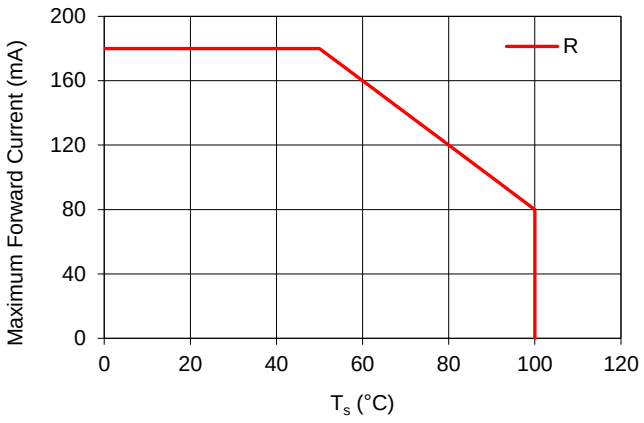
CHROMATICITY SHIFT VS SOLDER POINT TEMPERATURE
(I_F = 150mA)



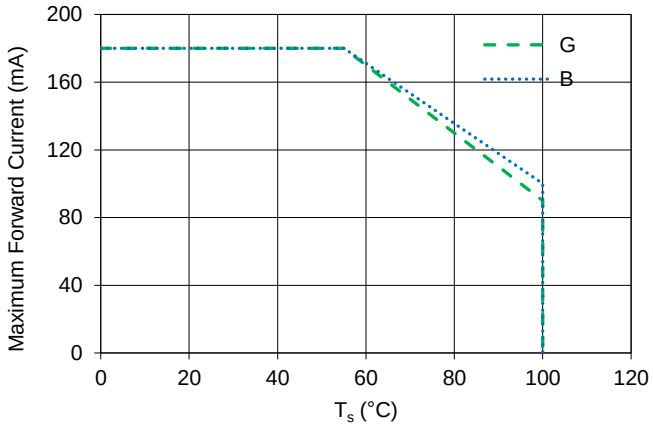
CHARACTERISTIC CURVES

ALL CHARACTERISTIC CURVES ARE FOR REFERENCE ONLY AND NOT GUARANTEED

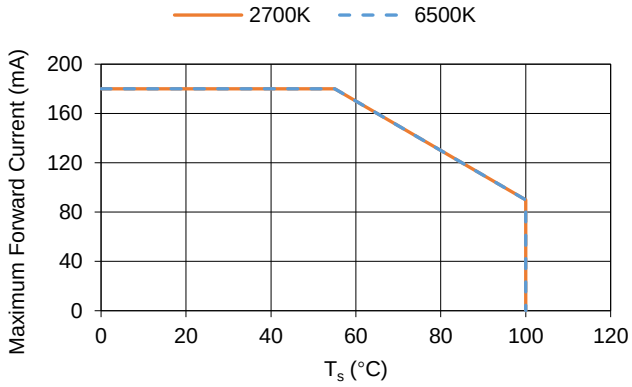
MAXIMUM FORWARD CURRENT VS SOLDER POINT TEMPERATURE



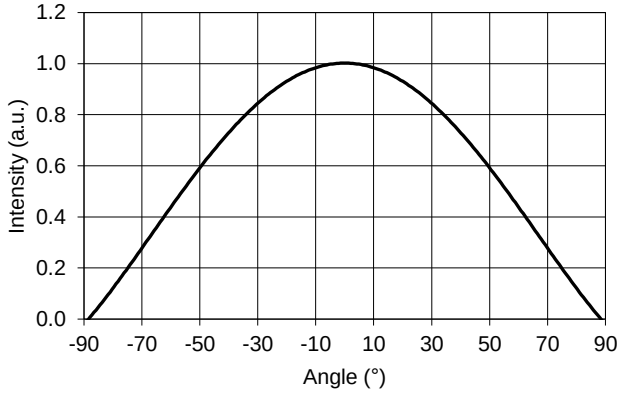
MAXIMUM FORWARD CURRENT VS SOLDER POINT TEMPERATURE



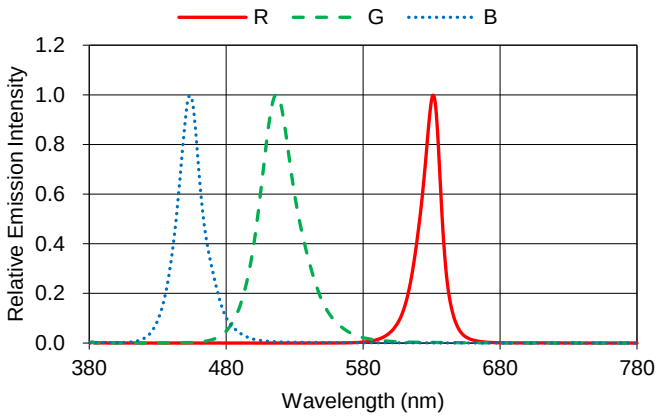
MAXIMUM FORWARD CURRENT VS SOLDER POINT TEMPERATURE



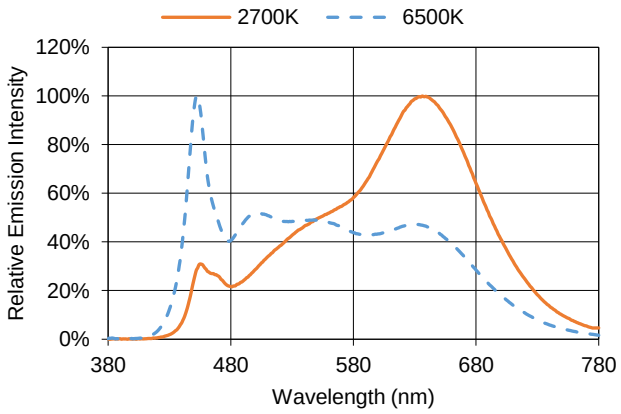
TYPICAL SPATIAL DISTRIBUTION
(T_A = 25°C, I_F = 150 mA)



TYPICAL SPECTRAL POWER DISTRIBUTION
(T_A = 25°C, I_F = 150 mA)

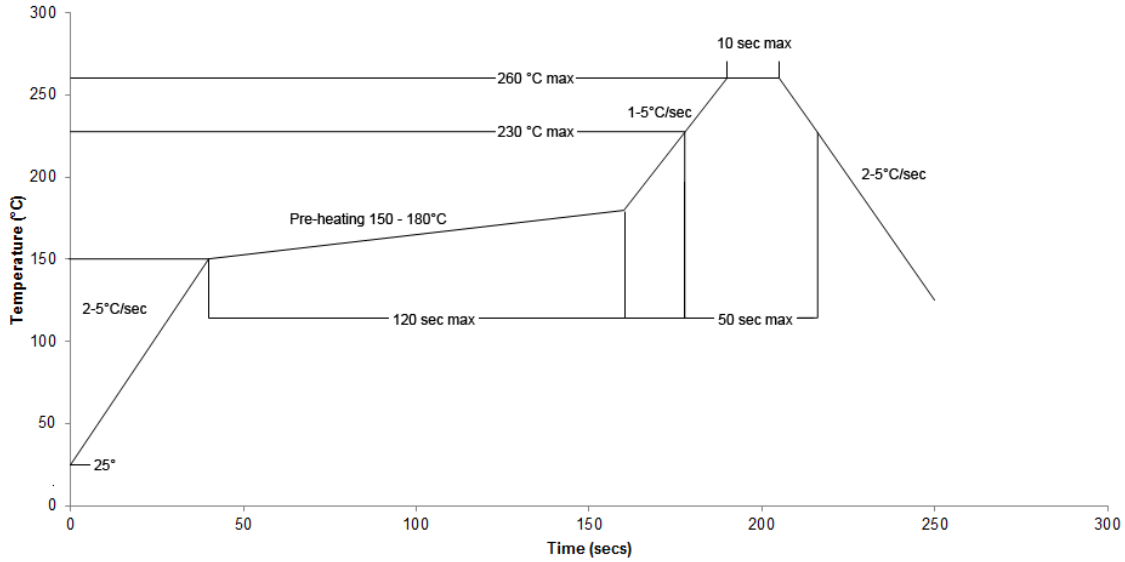


TYPICAL SPECTRAL POWER DISTRIBUTION
(T_A = 25°C, I_F = 150 mA)



REFLOW PROFILE

SOLDERING RAMP-UP TIME (Pb-FREE)



NOTE: Soldering paste with the melting point at 230°C is recommended

INSTRUCTIONS FOR SMT

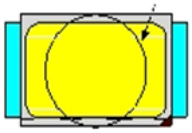
Problems caused by improper selection of collet

Choosing the right collet is important in ensuring product quality after SMT. LEDs are different from other electronic components, as they are not only concerned with electrical output but also optical output. This characteristic makes LEDs more fragile in the process of SMT. If the collet's lowering height is not well set, it will bring damage to the gold wire at the time of collet's pick-and-place process which can cause the LED to not illuminate, flicker or contribute to other quality problems, some of which may not be immediately detectable.

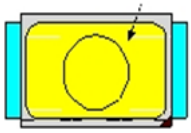
Collet selection

During SMT, please choose the collet that has larger outer diameter than the lighting area of lens, in order to avoid damage the gold wire inside the LED. Different collets fit for different products, please refer to the following figures below.

OK



NOT OK – COLLET TOO SMALL



Setting the height of the collet is crucial in order to avoid damage to the top view SMD. If the collet setting is set to too low of an altitude, the collet will press down on the SMD, causing damage or breakage to the encapsulant and cause distortion or breakage of the gold wire.

Other notes of caution:

- No pressure should be exerted to the epoxy shell of the SMD under high temperature.
- Do not scratch or wipe the lens since the lens and gold wire inside are rather fragile and cross out easy to break.
- LED should be used as soon as possible when being taken out of the original package, and should be stored in anti-moisture and anti-ESD package.
- This usage and handling instructions are for reference only.