SPECIFICATIONS FOR APPROVAL

PRODUCT NAME : Module Type High Power LED (Warm white)

MODEL NAME : LEMWM14X80LZ00

CUSTOMER P/N :

APPROVAL	REMARK

APPENDIX

Designed	Checked	Approved	**LG Innotek Co., Ltd.**	
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Under Development

(30)-4021

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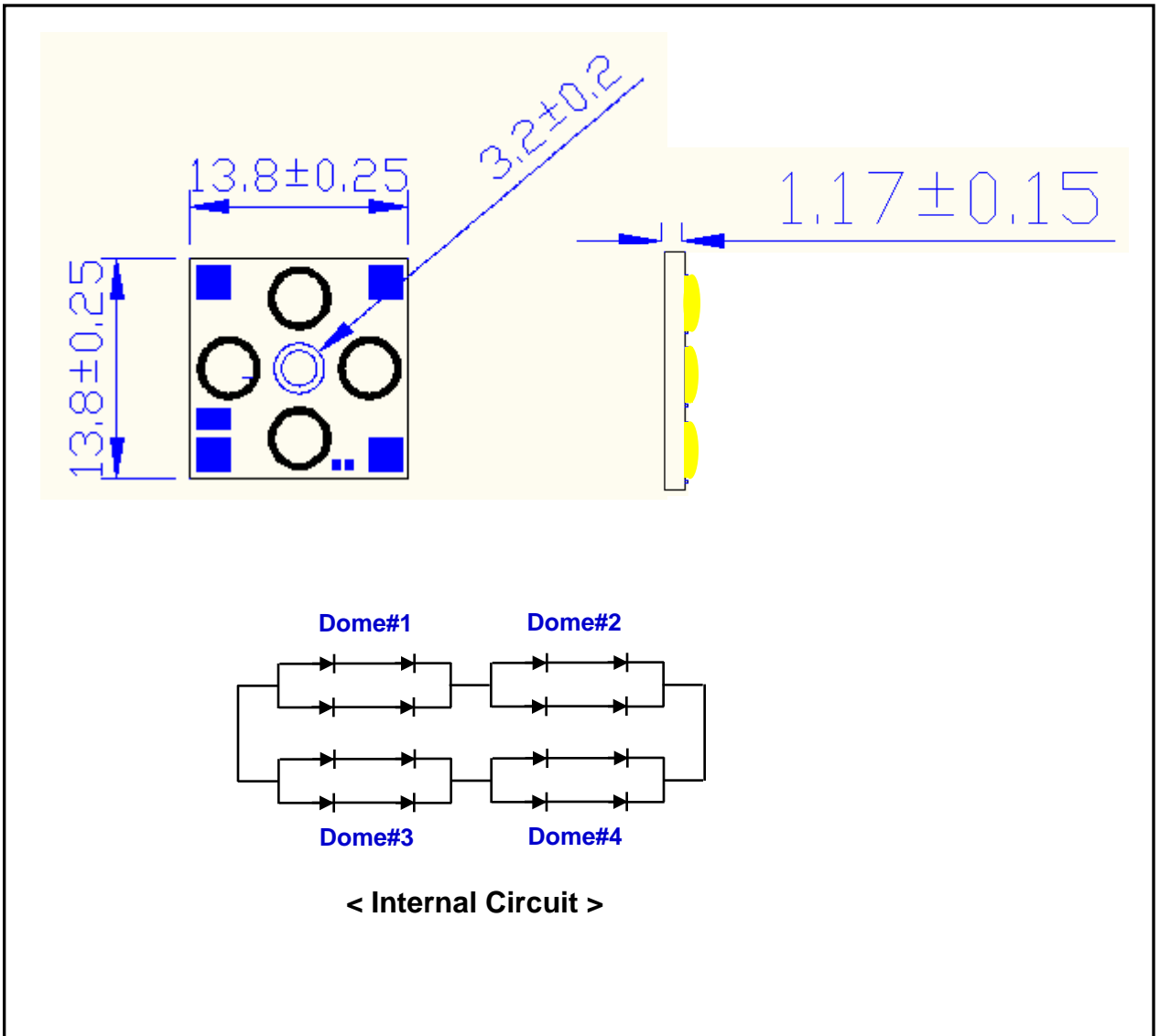## 1. Features

- High flux power LED module with 4 LED
- Compact design (14mmX14mm)
- 110° light distribution pattern, uniform illumination
- Low thermal resistance Rth,j-board < 5 K/W
- High-power LED in COB technology

2. Outline Dimensions

(Unit : mm)

Dome#1   **Dome#2**

Dome#3   **Dome#4**

< Internal Circuit >

◆Tolerances Unless Dimension ±0.2mm

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3. Applications

- General Lighting
- Effect and design lighting
- Emergency lighting
- Spotlights

4. Characteristics, Ta = 25℃

Items	Symbol	Min	Typ	Max	Unit
All data for Ta=25℃, IF=260mA					
Power [1]	Po	3.04	3.25	3.38	W
Forward Voltage [1]	VF	11.68	12.50	13.00	V
Luminance Flux [1]	Φ_V	243	270	-	lm
CTQ Luminous Efficacy	Lm/W	80	83	-	Lm/W
CTQ Color Temperature [1]	CCT	2870	3045	3220	K
CTQ CRI [1]	-	80		-	Ra
Viewing Angle [1]	2Θ1/2	-	110	-	deg
Junction Temperature [2]	Tj			120	℃
Thermal Resistance [2]	Rth j-b		5		℃/W

※ These values measured by Optical Spectrum Analyzer of LG Innotek Co., LTD
　Tolerances are followings as below
　- Luminous Flux (lm) : ±20%, CIE Value : ±0.01, CRI : ±2
※ Rthj-b = Thermal Resistance (Junction – Board)
　If the maximum temperature limits are exceeded, the life of the module will be greatly
　　reduced or the module may be damaged
1) These values measured without heat sink
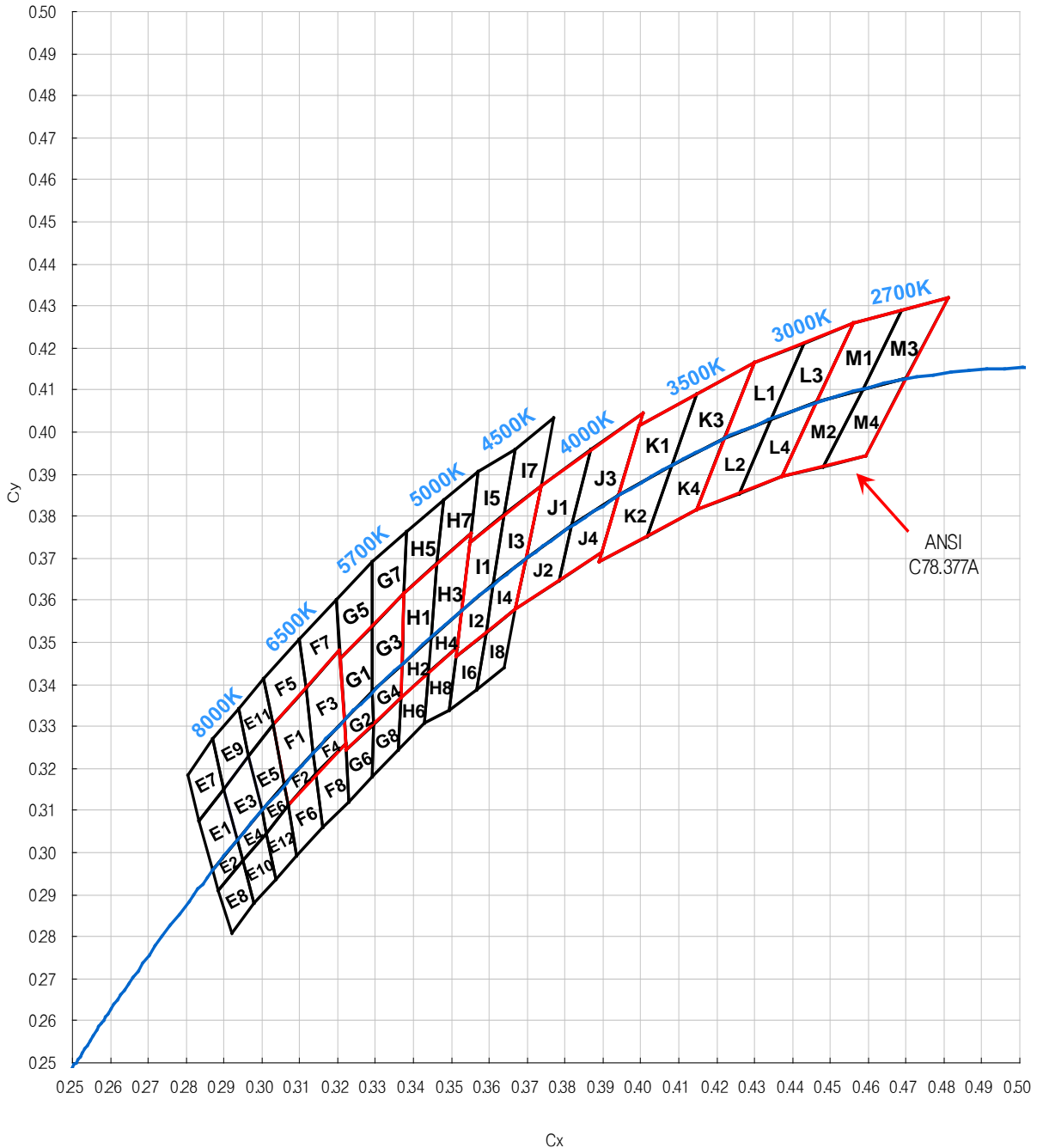　These values are based on 16-dies performance
2) These values is allowed to measure with a heat sink of aluminum.

5. Absolute Maximum Ratings

Item	Symbol	Rating	Unit
Forward Current	IF	480	mA
Pulse Forward Current [1]	IFp	600	mA
Operating Temperature	T_{opr}	-30 ~ +85	℃
Storage Temperature	T_{stg}	-40 ~ +100	℃

*1) Pulse Width ≤ 10msec, Duty ≤ 10%

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6. Chromaticity on the 1931 CIE Curve

- Chromaticity coordinate groups are tested at a current pulse duration of 3000 ms and a tolerance of ±0.01.
- ANSI Cool/Neutral/Warm white

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7. Performance Groups – Chromaticity

Rank of CIE Value (@260mA)

CCT	Rank	CIE X	CIE Y	CCT	Rank	CIE X	CIE Y	CCT	Rank	CIE X	CIE Y
2700K (2725K ±145K)	M1	0.4562	0.4260	4500K (4503K ±243K)	I1	0.3548	0.3736	5700K (5665K ±355K)	G1	0.3207	0.3462
		0.4687	0.4289			0.3641	0.3804			0.3291	0.3538
		0.4586	0.4103			0.3611	0.3638			0.3292	0.3382
		0.4465	0.4071			0.3526	0.3575			0.3217	0.3314
	M2	0.4465	0.4071		I2	0.3526	0.3575		G2	0.3217	0.3314
		0.4586	0.4103			0.3611	0.3638			0.3292	0.3382
		0.4483	0.3918			0.3590	0.3521			0.3293	0.3305
		0.4373	0.3893			0.3512	0.3465			0.3222	0.3243
	M3	0.4687	0.4289		I3	0.3641	0.3804		G3	0.3291	0.3538
		0.4813	0.4319			0.3736	0.3874			0.3376	0.3616
		0.4700	0.4126			0.3697	0.3697			0.3369	0.3449
		0.4586	0.4103			0.3611	0.3638			0.3292	0.3382
	M4	0.4586	0.4103		I4	0.3611	0.3638		G4	0.3292	0.3382
		0.4700	0.4126			0.3697	0.3697			0.3369	0.3449
		0.4593	0.3944			0.3670	0.3578			0.3366	0.3369
		0.4483	0.3918			0.3590	0.3521			0.3293	0.3305
3000K (3045K ±175K)	L1	0.4299	0.4165		I5	0.3571	0.3907		G5	0.3196	0.3602
		0.4430	0.4212			0.3668	0.3957			0.3290	0.3690
		0.4344	0.4032			0.3641	0.3804			0.3291	0.3538
		0.4221	0.3984			0.3548	0.3736			0.3207	0.3462
	L2	0.4221	0.3984		I6	0.3512	0.3465		G6	0.3222	0.3243
		0.4344	0.4032			0.3590	0.3521			0.3293	0.3305
		0.4260	0.3853			0.3567	0.3389			0.3290	0.3180
		0.4147	0.3814			0.3495	0.3339			0.3231	0.3120
	L3	0.4430	0.4212		I7	0.3668	0.3957		G7	0.3290	0.3690
		0.4562	0.4260			0.3771	0.4034			0.3381	0.3762
		0.4465	0.4071			0.3736	0.3874			0.3376	0.3616
		0.4344	0.4032			0.3641	0.3804			0.3291	0.3538
	L4	0.4344	0.4032		I8	0.3590	0.3521		G8	0.3293	0.3305
		0.4465	0.4071			0.3670	0.3578			0.3366	0.3369
		0.4373	0.3893			0.3640	0.3440			0.3361	0.3245
		0.4260	0.3853			0.3567	0.3389			0.3290	0.3180
3500K (3465K ±245K)	K1	0.3996	0.4015	5000K (5028K ±283K)	H1	0.3376	0.3616	6500K (6530K ±510K)	F1	0.3028	0.3304
		0.4146	0.4089			0.3463	0.3687			0.3115	0.3391
		0.4082	0.3922			0.3447	0.3513			0.3136	0.3237
		0.3941	0.3848			0.3369	0.3449			0.3059	0.3160
	K2	0.3941	0.3848		H2	0.3369	0.3449		F2	0.3059	0.3160
		0.4082	0.3922			0.3447	0.3513			0.3136	0.3237
		0.4017	0.3752			0.3440	0.3427			0.3144	0.3186
		0.3889	0.3690			0.3366	0.3369			0.3068	0.3113
	K3	0.4146	0.4089		H3	0.3463	0.3687		F3	0.3115	0.3391
		0.4299	0.4165			0.3551	0.3760			0.3205	0.3481
		0.4221	0.3984			0.3526	0.3575			0.3217	0.3314
		0.4082	0.3922			0.3447	0.3513			0.3136	0.3237
	K4	0.4082	0.3922		H4	0.3447	0.3513		F4	0.3136	0.3237
		0.4221	0.3984			0.3526	0.3575			0.3217	0.3314
		0.4147	0.3814			0.3515	0.3487			0.3221	0.3261
		0.4017	0.3752			0.3440	0.3427			0.3144	0.3186
4000K (3985K ±275K)	J1	0.3736	0.3874		H5	0.3381	0.3762		F5	0.3005	0.3415
		0.3870	0.3958			0.3480	0.3840			0.3099	0.3509
		0.3819	0.3776			0.3463	0.3687			0.3115	0.3391
		0.3697	0.3697			0.3376	0.3616			0.3028	0.3304
	J2	0.3697	0.3697		H6	0.3366	0.3369		F6	0.3068	0.3113
		0.3819	0.3776			0.3440	0.3427			0.3144	0.3186
		0.3783	0.3646			0.3429	0.3307			0.3161	0.3059
		0.3670	0.3578			0.3361	0.3245			0.3093	0.2993
	J3	0.3870	0.3958		H7	0.3480	0.3840		F7	0.3099	0.3509
		0.4006	0.4044			0.3571	0.3907			0.3196	0.3602
		0.3941	0.3848			0.3551	0.3760			0.3205	0.3481
		0.3819	0.3776			0.3463	0.3687			0.3115	0.3391
	J4	0.3819	0.3776		H8	0.3440	0.3427		F8	0.3144	0.3186
		0.3941	0.3848			0.3515	0.3487			0.3221	0.3261
		0.3898	0.3716			0.3495	0.3339			0.3231	0.3120
		0.3783	0.3646			0.3429	0.3307			0.3161	0.3059

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Rank of CIE Value (@260mA)

CCT	Rank	CIE X	CIE Y	CCT	Rank	CIE X	CIE Y	CCT	Rank	CIE X	CIE Y
8000K (8020K ±980K)	E1	0.2835	0.3075	**8000K** (8020K ±980K)	E7	0.2803	0.3185				
		0.2772	0.2992			0.2735	0.3100				
		0.2807	0.2884			0.2772	0.2992				
		0.2870	0.2957			0.2835	0.3075				
	E2	0.2870	0.2957		E8	0.2885	0.2910				
		0.2807	0.2884			0.2824	0.2840				
		0.2824	0.2840			0.2860	0.2740				
		0.2885	0.2910			0.2920	0.2810				
	E3	0.2900	0.3150		E9	0.2870	0.3270				
		0.2835	0.3075			0.2803	0.3185				
		0.2870	0.2957			0.2835	0.3075				
		0.2935	0.3029			0.2900	0.3150				
	E4	0.2935	0.3029		E10	0.2950	0.2980				
		0.2870	0.2957			0.2885	0.2910				
		0.2885	0.2910			0.2920	0.2810				
		0.2950	0.2980			0.2980	0.2880				
	E5	0.2965	0.3230		E11	0.2938	0.3343				
		0.2900	0.3150			0.2870	0.3270				
		0.2935	0.3029			0.2900	0.3150				
		0.3000	0.3100			0.2965	0.3230				
	E6	0.3000	0.3100		E12	0.3010	0.3045				
		0.2935	0.3029			0.2950	0.2980				
		0.2950	0.2980			0.2980	0.2880				
		0.3010	0.3045			0.3037	0.2937				

※ **Model name method: Please refer to the following**
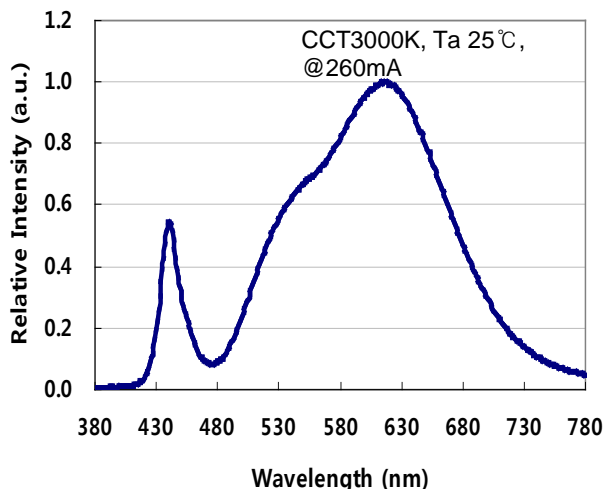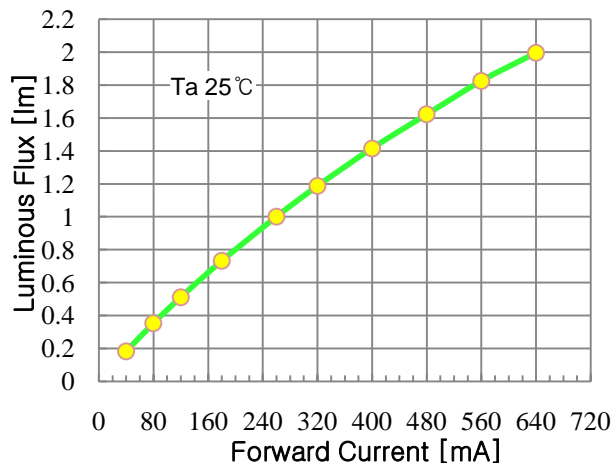**example Model Name :** LEMWM14 X 80 LZ00

Spec of Luminous Flux ←
Spec of CRI ←
Spec of CIE ←

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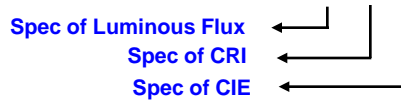
8. Typical Characteristic Curves

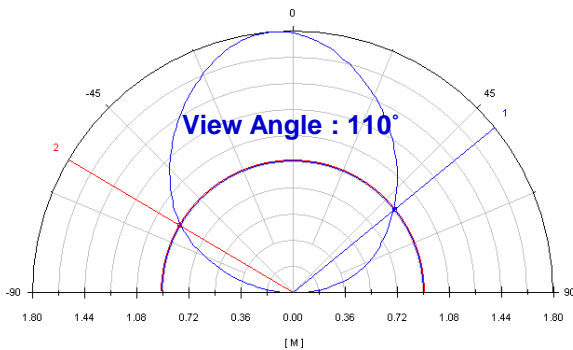■ **Forward Voltage vs. Forward Current**

■ **Spectrum**

CCT3000K, Ta 25℃, @260mA
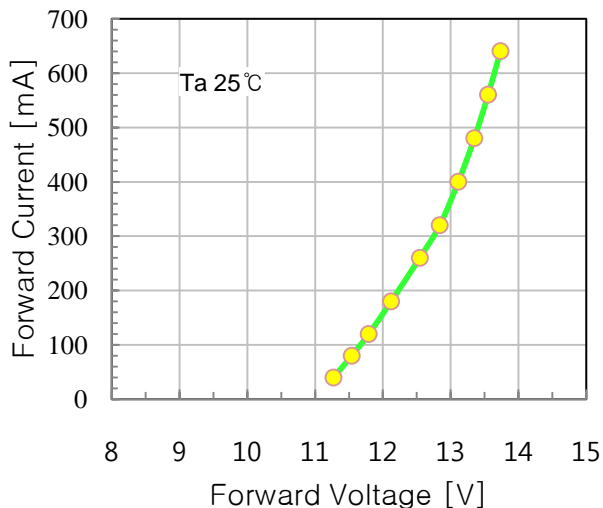
■ **Forward Current vs. Luminous Flux**

■ **Input Watt vs. Luminance Flux**
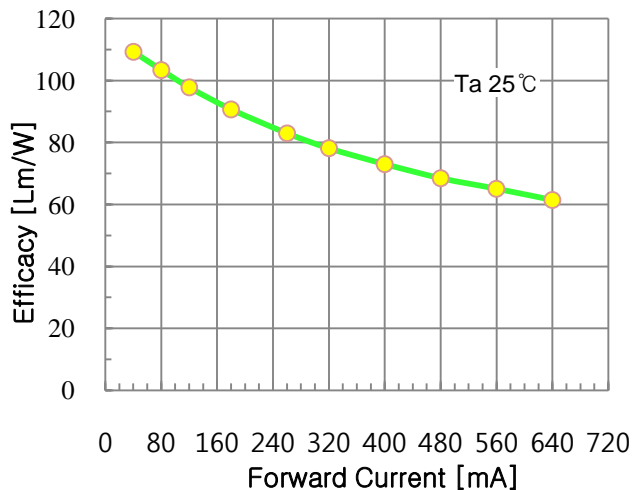
■ **Radiation Characteristics**

View Angle : 110°

■ **CCT variation**

8. Typical Characteristic Curves

■ **Thermal Resistance (junction~Board)**
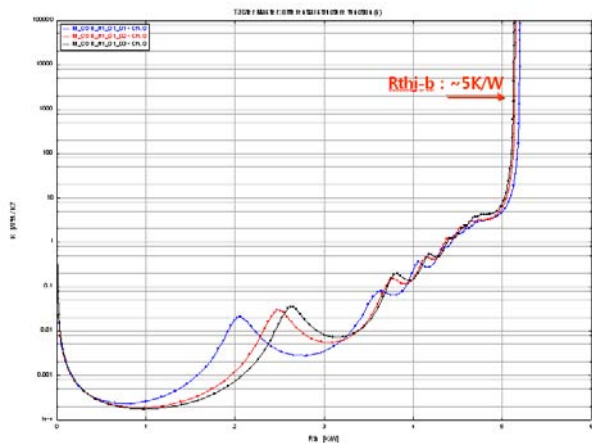
Rthj-b : ~5K/W

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9. Reliability Test Items and Conditions

9-1. Items and Results of Reliability Test

No	Item	Test Condition	Test Hours/ Cycles	Sample No	Ac/Re
1	Steady State Operating Life*1	Ta=25℃, I_F=260 [mA]	1000hr	22 pcs	0 / 1
2	High Temp. Humidity Life	Ta=60℃,90% RH,I_F=260 [mA]	1000hr	22 pcs	0 / 1
3	Steady State Operating Life of High Temperature Ⅰ	Ta=60℃, I_F=260 [mA]	1000hr	22 pcs	0 / 1
4	Steady State Operating Life of High Temperature Ⅱ	Ta=85℃, I_F=260 [mA]	1000hr	22 pcs	0 / 1
5	Steady State Operating Life of Low Temperature*1	Ta= -30℃, I_F=260 [mA]	1000hr	22 pcs	0 / 1
6	High Temp. Storage	100℃	1000hr	22 pcs	0 / 1
7	Low Temp. Storage	-40℃	1000hr	22 pcs	0 / 1
8	Temperature Cycle	-40℃(30min) ~ 25℃(5min) ~ 100℃(30min) ~ 25℃(5min)	100cycle	22 pcs	0 / 1
9	Thermal Shock	100℃(30min) ~ -40℃(30min)	100cycle	22 pcs	0 / 1
10	Resistance to Soldering Heat (Reflow Soldering)	Tsld = 260℃, 10s (pre treat. 30℃, 70%, 168hr)	1 times	22 pcs	0 / 1
11	Vibration	200m/s^2,100~2000Hz(sweep 4min) 48min, 3 directions	4 times	22 pcs	0 / 1
12	Electrostatic Discharge	R=1.5kΩ, C=100pF, Test Voltage 2kV	3times Negative/ Positive	22 pcs	0 / 1

*The operating test is allowed with a heat sink of aluminum, Heat sink surface is designed for Bulb product

※ **These test conditions are requested by the customer**

9-2. Criteria for Judging the Damage

(U.S.L : Upper Spec. Limit,   S : Initial Value)

Item	Symbol	Test Condition	Limit	
			Min.	Max.
Forward Voltage	V_F	I_F =	S.× 0.80	S.× 1.20
Luminous Flux Ⅰ *1	P_O	I_F =	S × 0.85	-
Luminous Flux Ⅱ *2	P_O	I_F =	S × 0.70	-