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Rev: 3.0

Product Family Data Sheet

LM231B – CRI 90 Middle Power LED

Introduction

Features

- Package : Silicone Reflector LED Package
- Beam Angle : 120˚
- Precondition : JEDEC Level 2a
- Dimension : 2.3 x 2.3 x 0.7 mm
- ESD withstand Voltage : up to ± 5KV [HBM]

Applications

- INDOOR LIGHTING : Ambient Light, LED tube, Down light, LED bulb and Ceiling Light

SAMSUNG ELECTRONICS
95, Samsung2-Ro, Giheung-Gu,
Yongin-City, Gyeonggi-Do 446-711, KOREA

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Contents

1. Product Code Information

1) Luminous Flux Bins (T_s = 25℃)

Nominal CCT	Product Code	Flux Rank	Sorting Condition Im @65mA	
			Flux Bin	Flux Range (Φ_v, lm)
2700K	SPMWHT223MD7WAW0S0	S0	S1	16.50 ~ 19.00
			S2	19.00 ~ 21.50
			S3	21.50 ~ 24.00
3000K	SPMWHT223MD7WAV0S0	S0	S1	17.00 ~ 19.50
			S2	19.50 ~ 22.00
			S3	22.00 ~ 24.50
3500K	SPMWHT223MD7WAU0S0	S0	S1	17.50 ~ 20.00
			S2	20.00 ~ 22.50
			S3	22.50 ~ 25.00
4000K	SPMWHT223MD7WAT0S0	S0	S1	18.00 ~ 20.50
			S2	20.50 ~ 23.00
			S3	23.00 ~ 25.50

Notes:

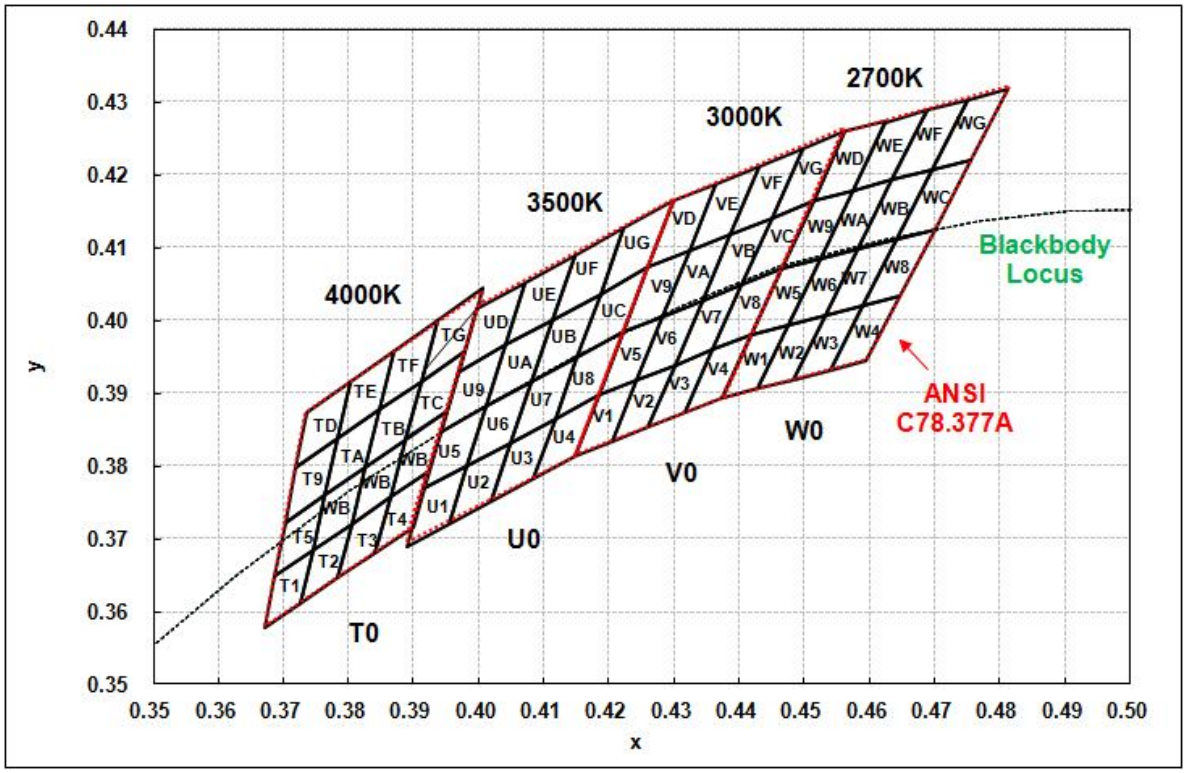
SAMSUNG ELECTRONICS maintains a tolerance of ±5% on Luminous Flux measurements

2) Color Bins (T_s = 25℃)

1) Color Binning

Nominal CCT	Product Code	Color Rank	Chromaticity Bins
2700K	SPMWHT223MD7WAW0S0	W0(Whole bin)	W1, W2, W3, W4, W5, W6, W7, W8, W9, WA, WB, WC, WD, WE, WF, WG
	SPMWHT223MD7WAWKS0	WK(Kitting bin)	-
3000K	SPMWHT223MD7WAV0S0	V0(Whole bin)	V1, V2, V3, V4, V5, V6, V7, V8, V9, VA, VB, VC, VD, VE, VF, VG
	SPMWHT223MD7WAVKS0	VK(Kitting bin)	-
3500K	SPMWHT223MD7WAU0S0	U0(Whole bin)	U1, U2, U3, U4, U5, U6, U7, U8, U9, UA, UB, UC, UD, UE, UF, UG
	SPMWHT223MD7WAUKS0	UK(Kitting bin)	-
4000K	SPMWHT223MD7W0T0S0	T0(Whole bin)	T1, T2, T3, T4, T5, T6, T7, T8, T9, TA, TB, TC, TD, TE, TF, TG
	SPMWHT223MD7W0TKS0	TK(Kitting bin)	-

2) Chromaticity Region & Coordinates



2) Chromaticity Region & Coordinates (Continued)

Region	CIE X	CIE Y	Region	CIE X	CIE Y
W rank (2700K)					
W1	0.4373	0.3893	W9	0.4465	0.4071
	0.4418	0.3981		0.4513	0.4164
	0.4475	0.3994		0.4573	0.4178
	0.4428	0.3906		0.4523	0.4085
W2	0.4428	0.3906	WA	0.4523	0.4085
	0.4475	0.3994		0.4573	0.4178
	0.4532	0.4008		0.4634	0.4193
	0.4483	0.3919		0.4582	0.4099
W3	0.4483	0.3919	WB	0.4582	0.4099
	0.4532	0.4008		0.4634	0.4193
	0.4589	0.4021		0.4695	0.4207
	0.4538	0.3931		0.4641	0.4112
W4	0.4538	0.3931	WC	0.4641	0.4112
	0.4589	0.4021		0.4695	0.4207
	0.4646	0.4034		0.4756	0.4221
	0.4593	0.3944		0.4700	0.4126
W5	0.4418	0.3981	WD	0.4513	0.4164
	0.4465	0.4071		0.4562	0.4260
	0.4523	0.4085		0.4624	0.4274
	0.4475	0.3994		0.4573	0.4178
W6	0.4475	0.3994	WE	0.4573	0.4178
	0.4523	0.4085		0.4624	0.4274
	0.4582	0.4099		0.4687	0.4289
	0.4532	0.4008		0.4634	0.4193
W7	0.4532	0.4008	WF	0.4634	0.4193
	0.4582	0.4099		0.4687	0.4289
	0.4641	0.4112		0.4750	0.4304
	0.4589	0.4021		0.4695	0.4207
W8	0.4589	0.4021	WG	0.4695	0.4207
	0.4641	0.4112		0.4750	0.4304
	0.4700	0.4126		0.4813	0.4319
	0.4646	0.4034		0.4756	0.4221

Region	CIE X	CIE Y	Region	CIE X	CIE Y
V rank (3000K)					
V1	0.4147	0.3814	V9	0.4221	0.3984
	0.4183	0.3898		0.4259	0.4073
	0.4242	0.3919		0.4322	0.4096
	0.4203	0.3833		0.4281	0.4006
V2	0.4203	0.3833	VA	0.4281	0.4006
	0.4242	0.3919		0.4322	0.4096
	0.4300	0.3939		0.4385	0.4119
	0.4259	0.3853		0.4342	0.4028
V3	0.4259	0.3853	VB	0.4342	0.4028
	0.4300	0.3939		0.4385	0.4119
	0.4359	0.3960		0.4449	0.4141
	0.4316	0.3873		0.4403	0.4049
V4	0.4316	0.3873	VC	0.4403	0.4049
	0.4359	0.3960		0.4449	0.4141
	0.4418	0.3981		0.4513	0.4164
	0.4373	0.3893		0.4465	0.4071
V5	0.4183	0.3898	VD	0.4259	0.4073
	0.4221	0.3984		0.4299	0.4165
	0.4281	0.4006		0.4364	0.4188
	0.4242	0.3919		0.4322	0.4096
V6	0.4242	0.3919	VE	0.4322	0.4096
	0.4281	0.4006		0.4364	0.4188
	0.4342	0.4028		0.4430	0.4212
	0.4300	0.3939		0.4385	0.4119
V7	0.4300	0.3939	VF	0.4385	0.4119
	0.4342	0.4028		0.4430	0.4212
	0.4403	0.4049		0.4496	0.4236
	0.4359	0.3960		0.4449	0.4141
V8	0.4359	0.3960	VG	0.4449	0.4141
	0.4403	0.4049		0.4496	0.4236
	0.4465	0.4071		0.4562	0.4260
	0.4418	0.3981		0.4513	0.4164

2) Chromaticity Region & Coordinates (Continued)

Region	CIE X	CIE Y	Region	CIE X	CIE Y
U rank (3500K)					
U1	0.3889	0.3690	U9	0.3941	0.3848
	0.3953	0.3720		0.4010	0.3882
	0.3981	0.3800		0.4040	0.3966
	0.3915	0.3768		0.3968	0.3930
U2	0.3953	0.3720	UA	0.4010	0.3882
	0.4017	0.3751		0.4080	0.3916
	0.4048	0.3832		0.4113	0.4001
	0.3981	0.380		0.4040	0.3966
U3	0.4017	0.3751	UB	0.4080	0.3916
	0.4082	0.3782		0.4150	0.3950
	0.4116	0.3865		0.4186	0.4037
	0.4048	0.3832		0.4113	0.4001
U4	0.4082	0.3782	UC	0.4150	0.3950
	0.4147	0.3814		0.4221	0.3984
	0.4183	0.3898		0.4259	0.4073
	0.4116	0.3865		0.4186	0.4037
U5	0.3915	0.3768	UD	0.3968	0.3930
	0.3981	0.3800		0.4040	0.3966
	0.4010	0.3882		0.4071	0.4052
	0.3941	0.3848		0.3996	0.4015
U6	0.3981	0.3800	UE	0.4040	0.3966
	0.4048	0.3832		0.4113	0.4001
	0.4080	0.3916		0.4146	0.4089
	0.4011	0.3882		0.4071	0.4052
U7	0.4048	0.3832	UF	0.4113	0.4001
	0.4116	0.3865		0.4186	0.4037
	0.4150	0.3950		0.4222	0.4127
	0.4080	0.3916		0.4146	0.4089
U8	0.4116	0.3865	UG	0.4186	0.4037
	0.4183	0.3898		0.4259	0.4073
	0.4221	0.3984		0.4299	0.4165
	0.4150	0.3950		0.4222	0.4127

Region	CIE X	CIE Y	Region	CIE X	CIE Y
T rank (4000K)					
T1	0.3670	0.3578	T9	0.3702	0.3722
	0.3726	0.3612		0.3763	0.3760
	0.3744	0.3685		0.3782	0.3837
	0.3686	0.3649		0.3719	0.3797
T2	0.3726	0.3612	TA	0.3763	0.3760
	0.3783	0.3646		0.3825	0.3798
	0.3804	0.3721		0.3847	0.3877
	0.3744	0.3685		0.3782	0.3837
T3	0.3783	0.3646	TB	0.3825	0.3798
	0.3840	0.3681		0.3887	0.3836
	0.3863	0.3758		0.3912	0.3917
	0.3804	0.3721		0.3847	0.3877
T4	0.3840	0.3681	TC	0.3887	0.3837
	0.3898	0.3716		0.3950	0.3875
	0.3924	0.3794		0.3978	0.3958
	0.3863	0.3758		0.3912	0.3917
T5	0.3686	0.3649	TD	0.3719	0.3797
	0.3744	0.3685		0.3782	0.3837
	0.3763	0.3760		0.3802	0.3916
	0.3702	0.3722		0.3736	0.3874
T6	0.3744	0.3685	TE	0.3782	0.3837
	0.3804	0.3721		0.3847	0.3877
	0.3825	0.3798		0.3869	0.3958
	0.3763	0.3760		0.3802	0.3916
T7	0.3804	0.3721	TF	0.3847	0.3877
	0.3863	0.3758		0.3912	0.3917
	0.3887	0.3836		0.3937	0.4001
	0.3825	0.3798		0.3869	0.3958
T8	0.3863	0.3758	TG	0.3912	0.3917
	0.3924	0.3794		0.3978	0.3958
	0.3950	0.3875		0.4006	0.4044
	0.3887	0.3836		0.3937	0.4001

Notes:

SAMSUNG ELECTRONICS maintains ±0.005 tolerance of CCx, CCy

2. Luminous Flux Characteristics (T_s = 25℃)

Nominal CCT	Minimum CRI	If(mA)	Vf(V)	Power(W)	Flux(lm)	lm/W
2700K	90	50	2.85	0.14	16.3	114
		60	2.88	0.17	19.1	111
		65	2.90	0.19	20.5	109
		70	2.91	0.20	21.8	107
		80	2.93	0.23	24.4	104
		90	2.96	0.27	26.8	101
		100	2.98	0.30	29.2	98
		150	3.07	0.46	39.7	86
3000K	90	50	2.85	0.14	17.1	120
		60	2.88	0.17	20.1	116
		65	2.90	0.19	21.6	114
		70	2.91	0.20	23.0	113
		80	2.93	0.23	25.8	110
		90	2.96	0.27	28.4	107
		100	2.98	0.30	31.0	104
		150	3.07	0.46	42.5	92
3500K	90	50	2.85	0.14	17.9	126
		60	2.88	0.17	21.1	122
		65	2.90	0.19	22.6	120
		70	2.91	0.20	24.1	119
		80	2.93	0.23	27.1	115
		90	2.96	0.27	30.0	113
		100	2.98	0.30	32.8	110
		150	3.07	0.46	45.2	98
4000K	90	50	2.85	0.14	18.2	127
		60	2.88	0.17	21.4	124
		65	2.90	0.19	22.9	122
		70	2.91	0.20	24.5	120
		80	2.93	0.23	27.5	117
		90	2.96	0.27	30.4	114
		100	2.98	0.30	33.3	112
		150	3.07	0.46	46.3	100

Notes:

Luminous Flux(Φ_v, lm) values are for representative reference only

3. Characteristics

1) Absolute Maximum Rating

Item	Symbol	Rating	Condition
Operating temperature range	T_{op}	-40℃ ~ +85℃	-
Storage temperature range	T_{stg}	-40℃ ~ +100℃	-
LED junction temperature	T_J	110℃	-
Forward Current	I_F	150 mA	-
Peak Pulsed Forward Current	I_{FP}	300 mA	Duty 1/10 pulse width 10ms
Assembly Process Temperature	-	260℃, < 10sec	-
ESD	-	5kV	HBM

2) Electro-optical Characteristics

Item	Unit	Nominal CCT	Product Code	Rank		Min	Typ	Max
Forward Voltage[1] (V_F) (@65 mA, Ts = 25℃)	V	-	-	WA	AZ	2.70	-	2.80
					A1	2.80	-	2.90
					A2	2.90	-	3.00
					A3	3.00	-	3.10
					A4	3.10	-	3.20
Luminous Flux[2] (Φ_v) (@65 mA, Ts = 25℃)	lm	2700K (W0)	*WAW0S1	S1		16.50	-	19.00
			*WAW0S2	S2		19.00	-	21.50
			*WAW0S3	S3		21.50	-	24.00
		3000K (V0)	*WAV0S1	S1		17.00	-	19.50
			*WAV0S2	S2		19.50	-	22.00
			*WAV0S3	S3		22.00	-	24.50
		3500K (U0)	*WAU0S1	S1		17.50	-	20.00
			*WAU0S2	S2		20.00	-	22.50
			*WAU0S3	S3		22.50	-	25.00
		4000K (T0)	*WAT0S1	S1		18.00	-	20.50
			*WAT0S2	S2		20.50	-	23.00
			*WAT0S3	S3		23.00	-	25.50
Reverse Voltage (@5 mA, Ts = 25℃)	V	-	-	-		0.7	-	1.2
Color Rendering Index[3](R_a)	-	-	-	7		90	-	-
Special CRI[4] (R9)	-	-	-	-		50	-	-
Thermal resistance	℃/W	-	-	-		-	20	-
Beam Angle						-	120	-

Notes:

1)~4) SAMSUNG ELECTRONICS maintains a tolerance of V_F:±0.1 V, Φ_v:±5 %, R_a :±3.0, R9 :±6.5 on measurements

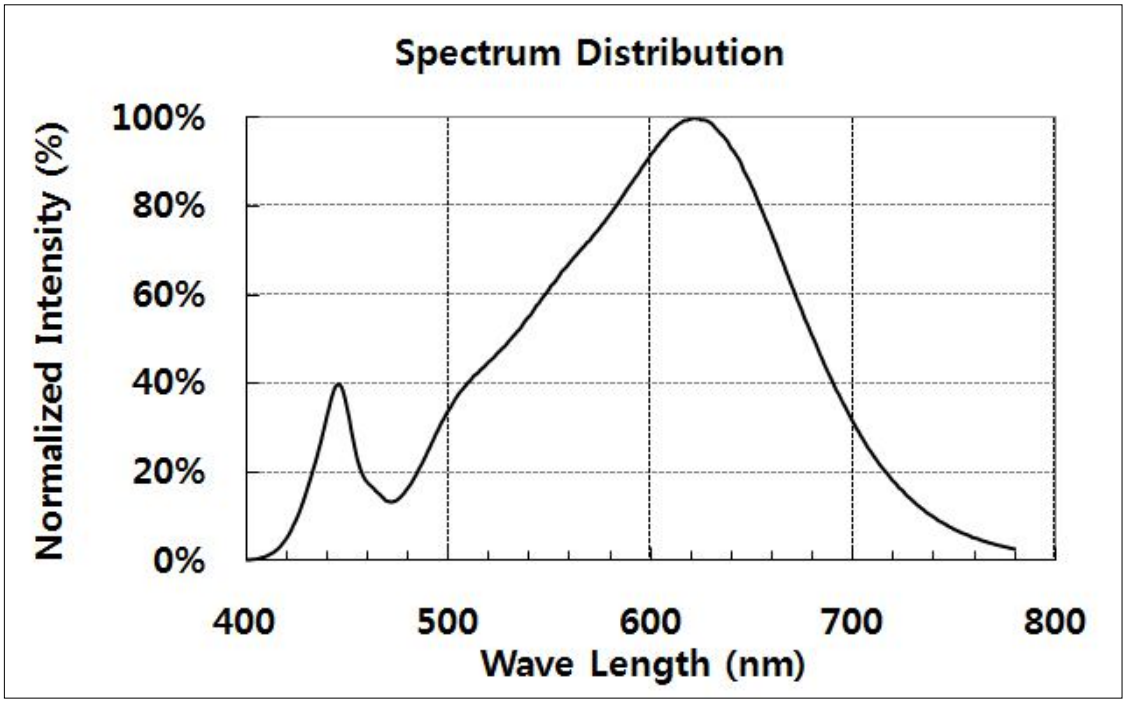
5) " * " is Product Code of "SPMWHT223MD7"

4. Typical Characteristics Graph (@65mA)

1) Spectrum Distribution

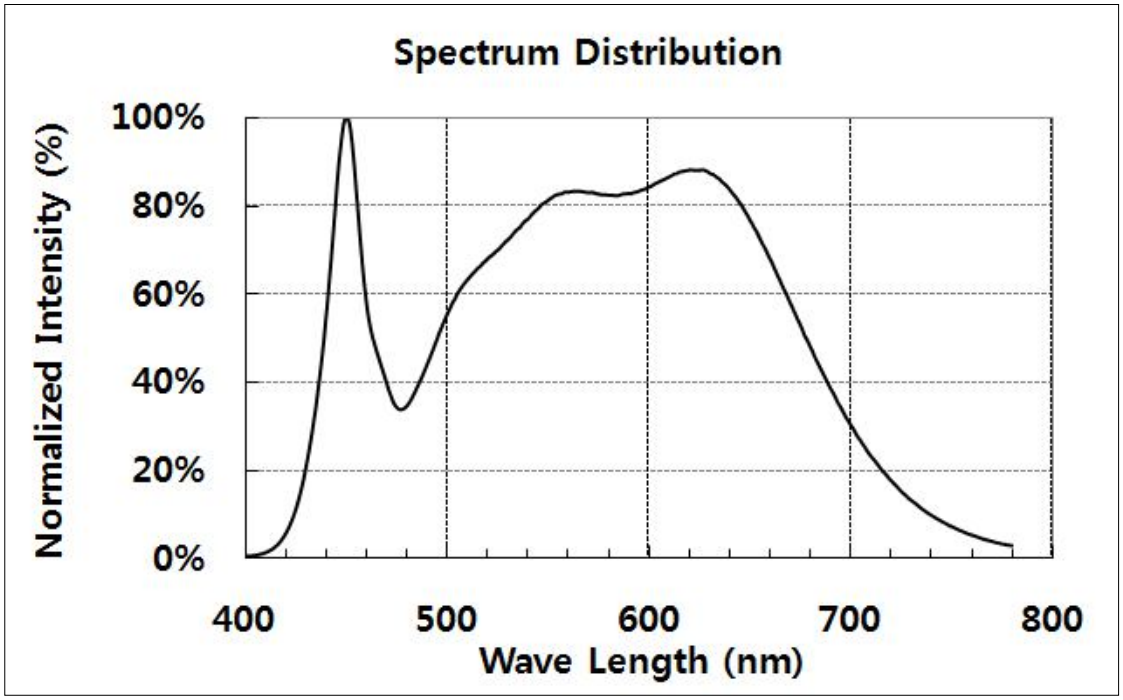
[CCT : 2700K & 3000K]

T_s = 25℃



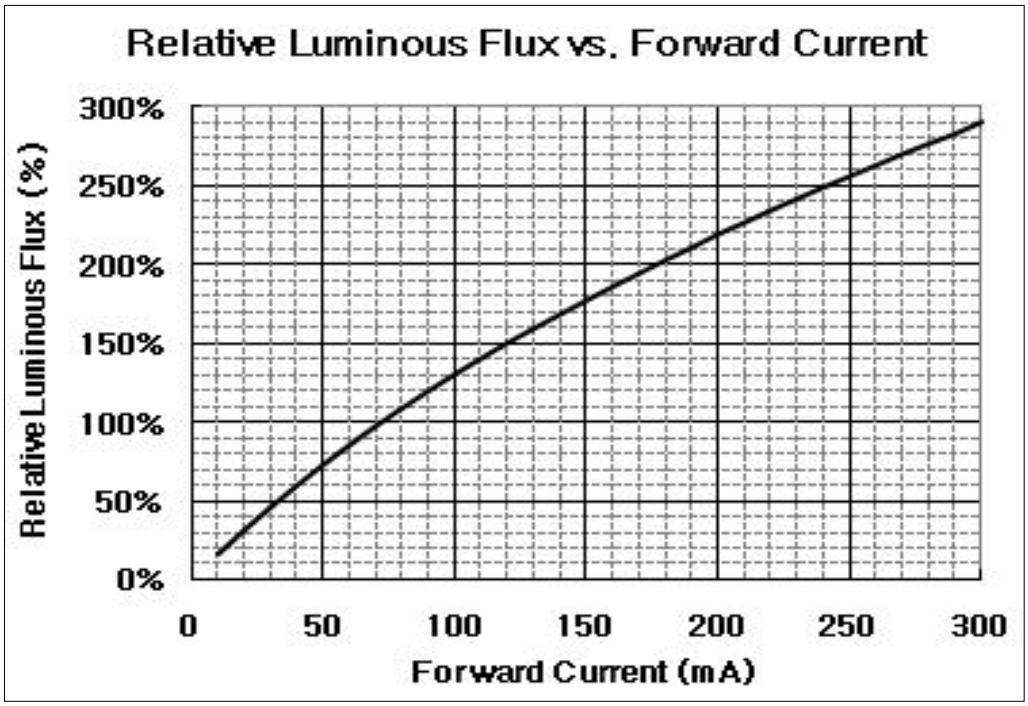
[CCT : 3500K & 4000K]

T_s = 25℃

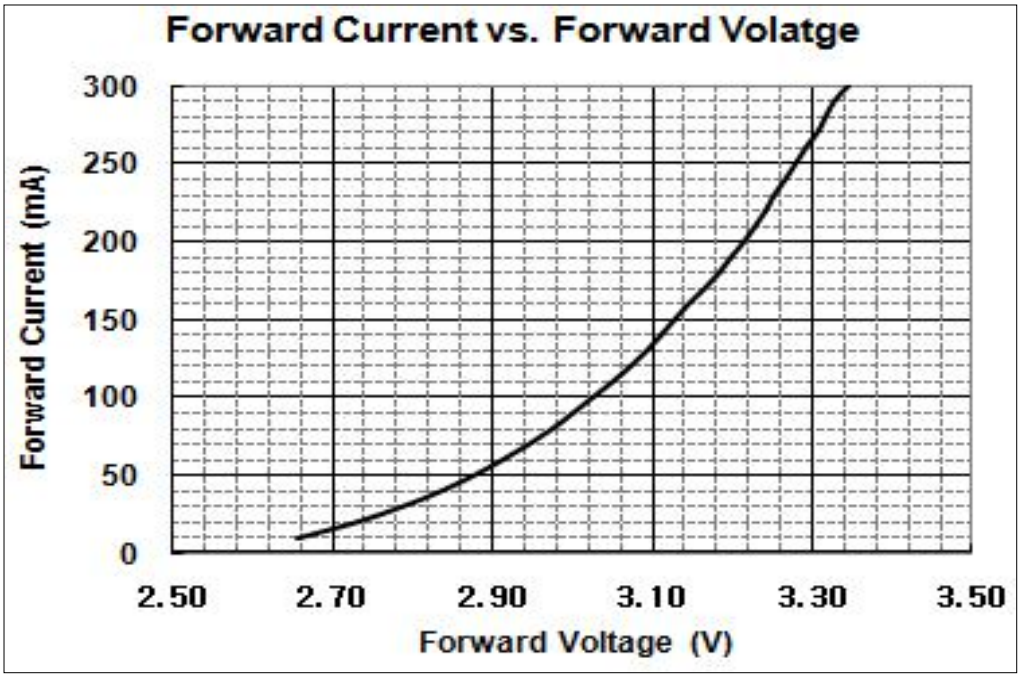


2) Forward Current Characteristics

[Relative Luminous Flux vs. Forward Current] T_s = 25℃

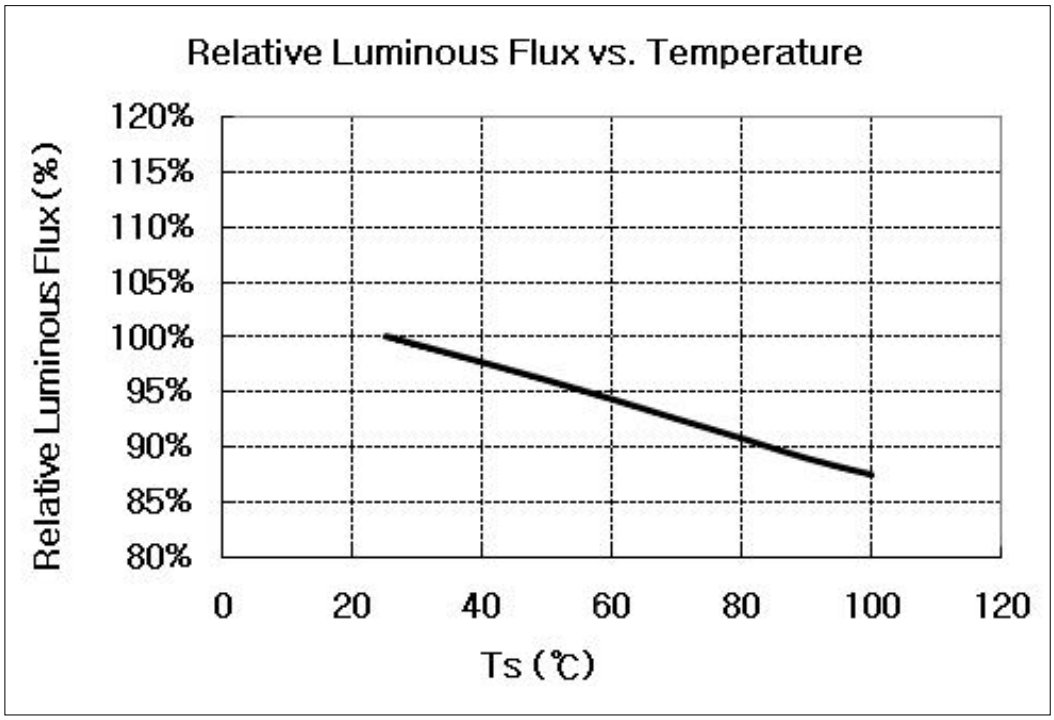


[Forward Current vs. Forward Voltage] T_s = 25℃

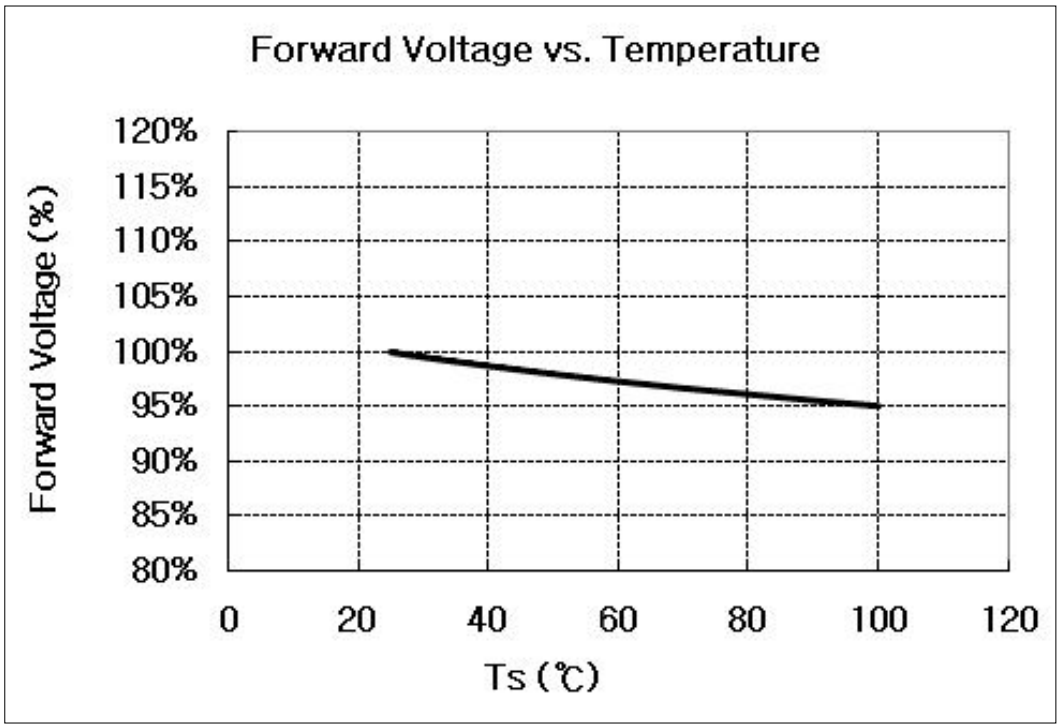


3) Temperature Characteristics (@65mA)

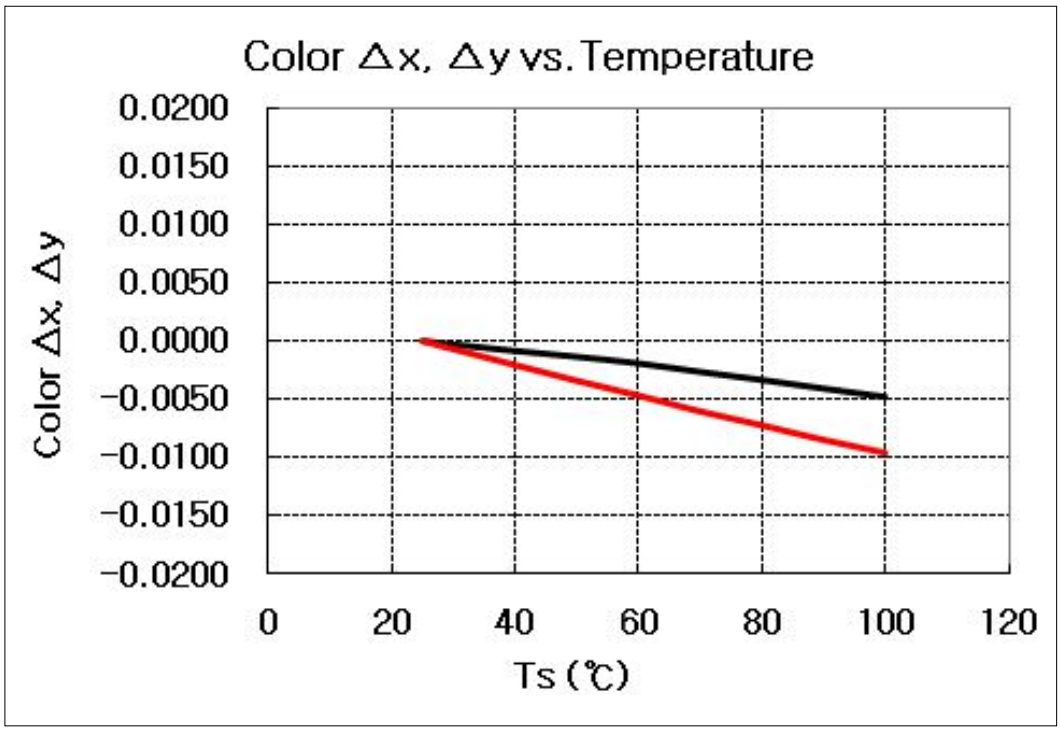
[Relative Luminous Flux vs. Ts (solder temp.)]



[Forward Voltage vs. Ts (solder temp.)]

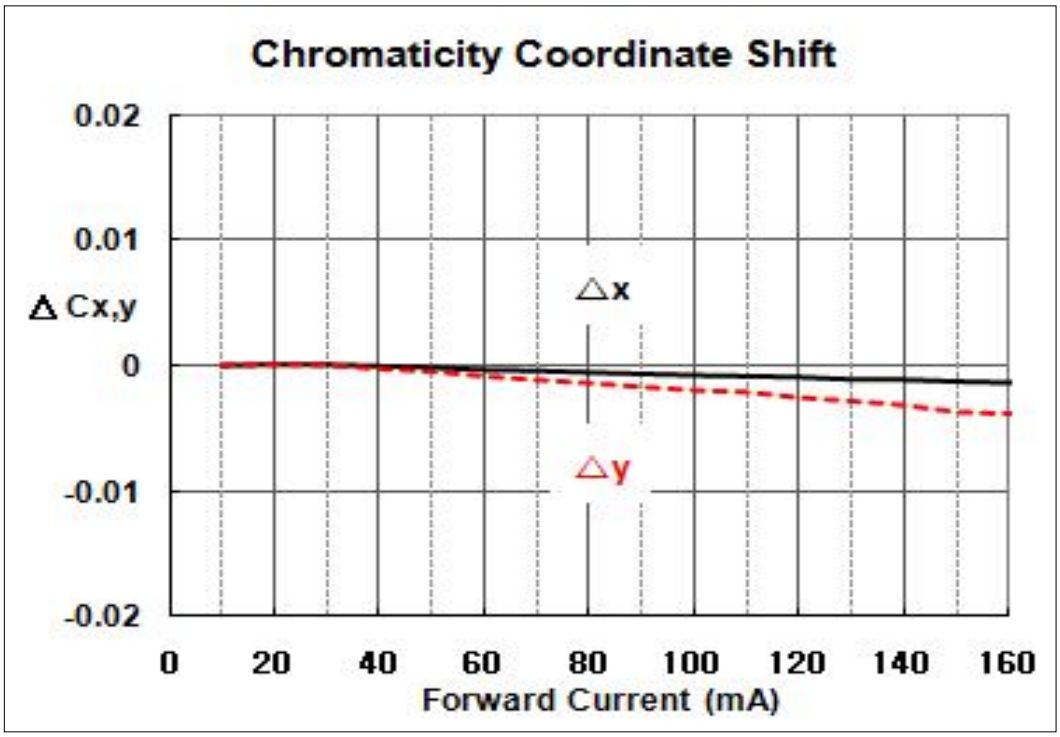


[Color △x, △y vs. Ts (solder temp.) @65mA] CCT : 3000K



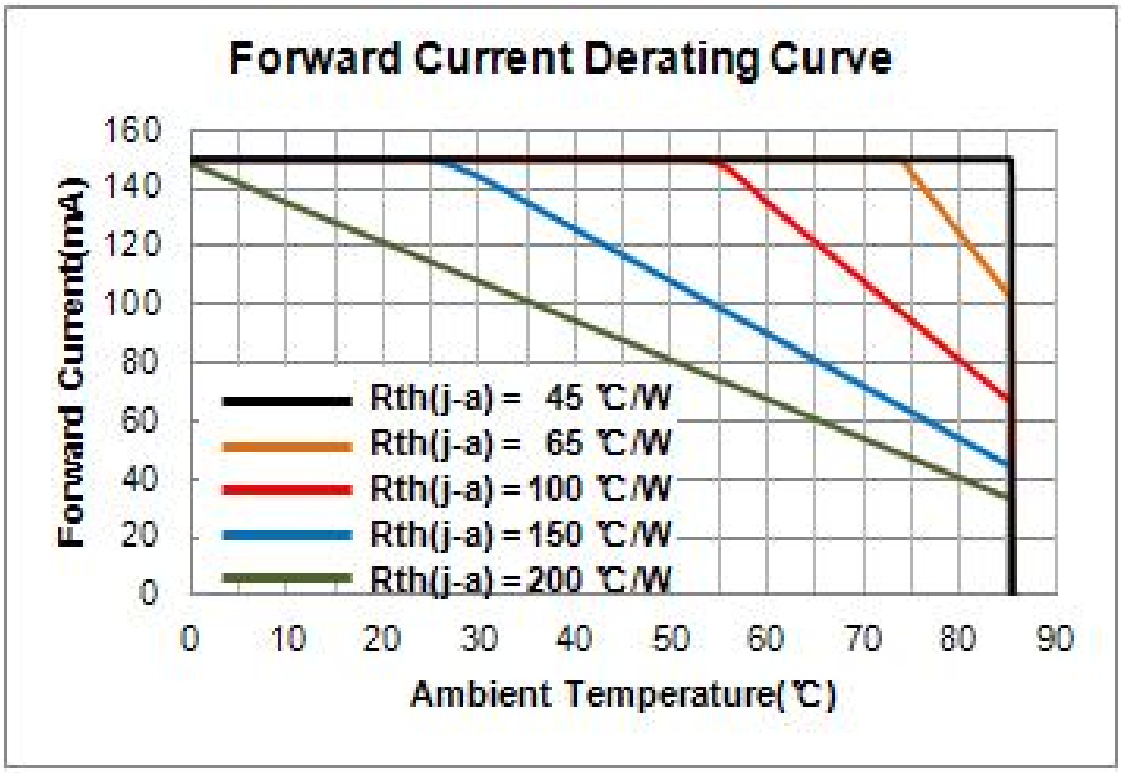
4) Color shift Characteristics (T_s = 25℃)

[Color △x, △y vs.Forward Current



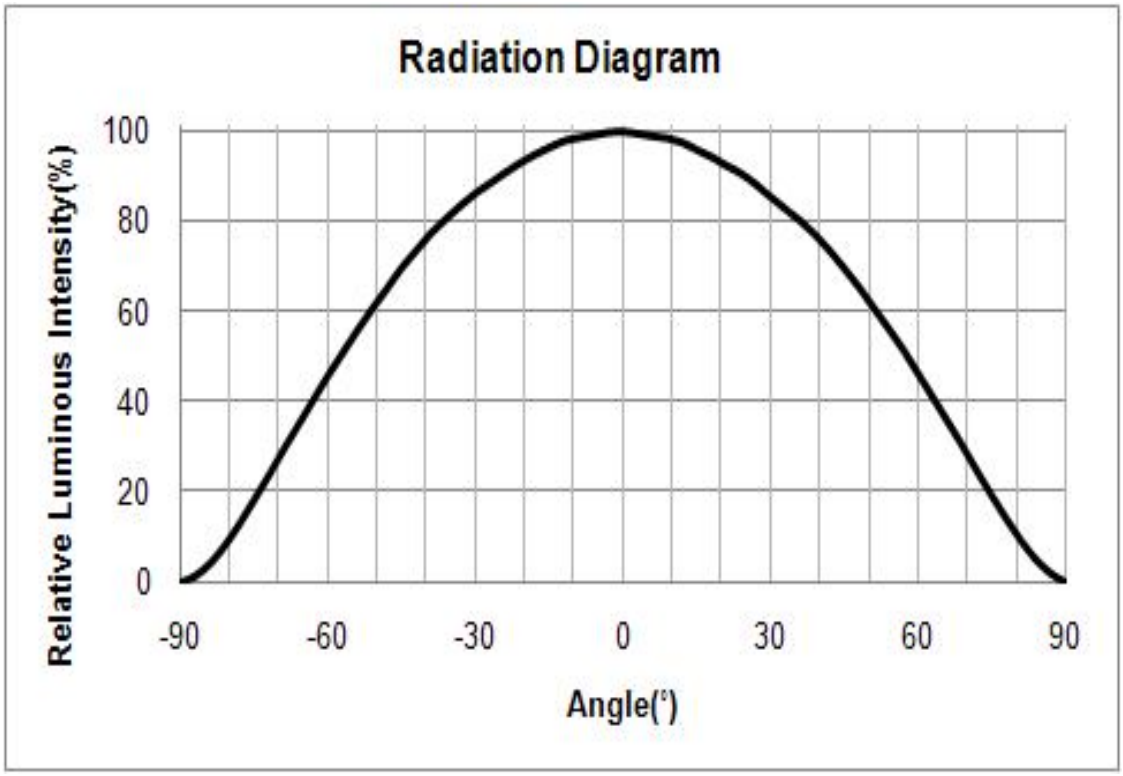
5) Derating Curve

T_a = 25℃

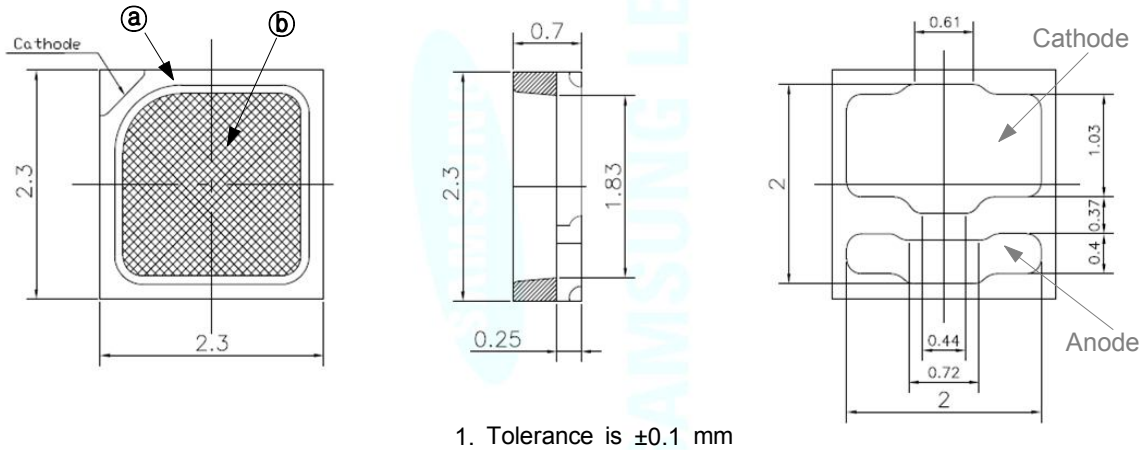


6) Beam Angle Characteristics (@65mA)

T_s = 25℃

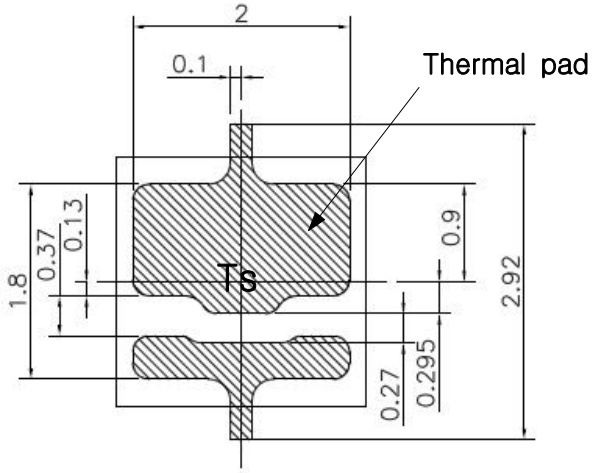


5. Outline Drawing & Dimension



1. Tolerance is ±0.1 mm
2. The maximum compressing force is 15N on the silicone ⓐ
3. Do not place pressure on the encapsulation resin ⓑ

Recommended Land Pattern

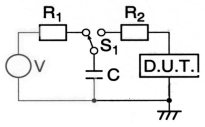


Notes:

1) This LED has built-in ESD protection device(s) connected in parallel to LED Chip(s).
2) Ts point & measurement method
   ① Measure the nearest point to the thermal pad. If necessary, remove PSR of PCB to reach Ts point.
   ② Thermal pad must be soldered to the PCB to dissipate heat properly. Otherwise, LED can be damaged.
3) The thermal pad is electrically connected to the cathode contact pads.
4) Precautions
   ① The pressure on the LEDs will influence to the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the LEDs. Do not put stress on the LEDs during heating.
   ② Re-soldering should not be done after the LEDs have been soldered. If re-soldering is unavoidable, LED`s characteristics should be carefully checked before and after such repair.
   ③ Do not stack assembled PCBs together. Since materials of LEDs is soft, abrasion between two PCB assembled with LED might cause catastrophic failure of the LEDs.

6. Reliability Test Items & Conditions

1) Test Items and Results

Test Item	Test Conditions		Test Hours/Cycles	Sample No
MSL Test	125℃, 24hrs → 60℃, 60%RH, 120hrs → Peak 260±5℃, 220℃ over time 60sec, 3 cycles		1 cycle	11
Room Temperature Life Test	25℃±3℃, DC 150mA		1,000 hrs	22
High Temperature Life Test	85℃±3℃, DC 150mA		1,000 hrs	22
High Temperature Humidity Life Test	85℃±3℃, 85%±2%RH, DC 150mA		1,000 hrs	22
Low Temperature Life Test	-40℃±3℃, DC 150mA		1,000 hrs	22
Powered Temperature Cycle Test	-45℃/20min ↔ 85℃/20min, Sweep 100min cycle on/off: each 5min, DC 150mA		100 cycles	22
Thermal Shock	-45℃/15min ↔ 125℃/15min, → Hot plate 180℃		500 cycles	100
High Temperature Storage	Ta=120℃±3℃		1,000 hrs	11
Low Temperature Storage	Ta=-40℃±3℃		1,000 hrs	11
ESD(HBM)		R1 : 10MΩ, R2 : 1.5KΩ, C : 100pF, V = ±5kV	5 times	5
ESD(MM)		R1 : 10MΩ, R2 : 0, C : 200pF, V = ±0.5kV	5 times	5
Vibration Test	20~2000~20 Hz 200 m/s², Sweep 4 min X, Y, Z 3 direction, each 1 cycle		4 cycles	11
Mechanical Shock Test	1500G, 0.5ms,		5 cycles	11

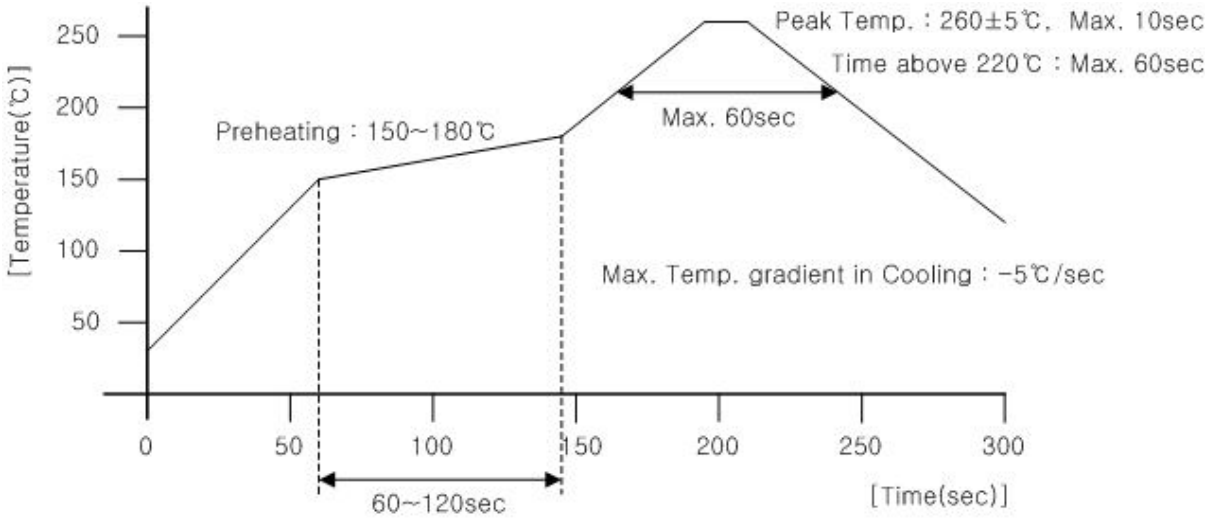
2) Criteria for Judging the Damage

Item	Symbol	Test Condition	Limit	
			Min	Max
Forward Voltage	V_F	I_F = 65 ㎃	Init. Value*0.9	Init. Value*1.1
Luminous Flux	Φ_v	I_F = 65 ㎃	Init. Value*0.7	Init. Value*1.1

7. Solder Conditions

1) Reflow Conditions (Pb Free)

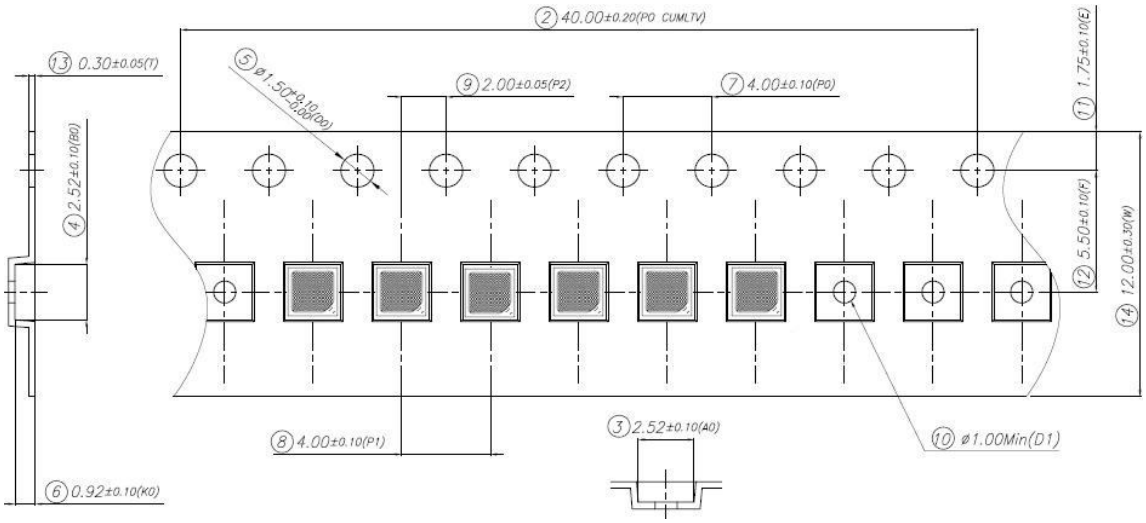
Reflow Frequency : 2 times max.

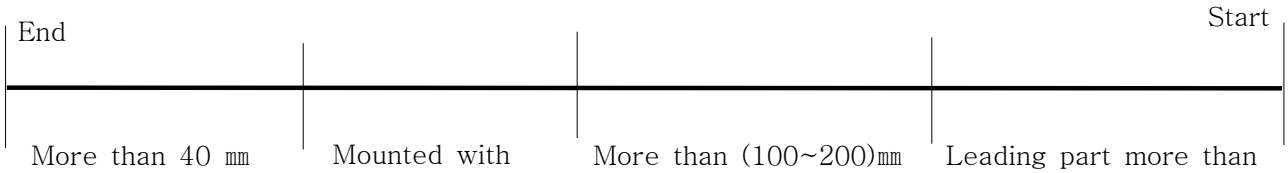


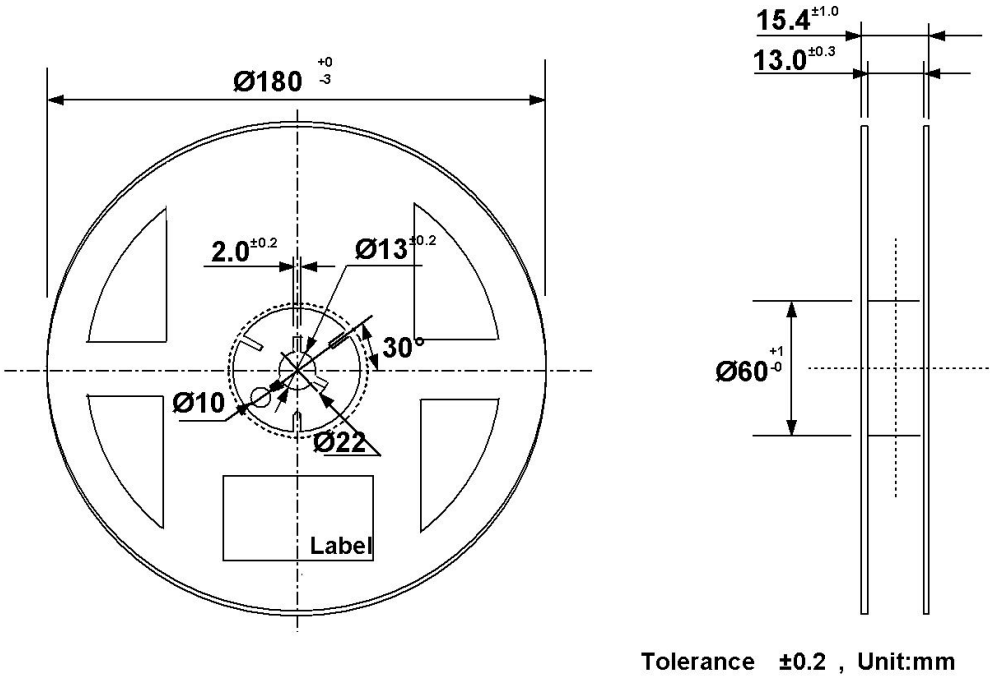
2) For Manual Soldering

Not more than 5 seconds @Max. 300℃, under soldering iron.

8. Tape & Reel





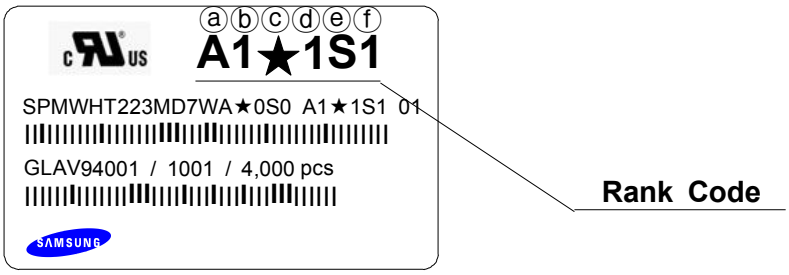


Tolerance ±0.2 , Unit:mm

(1) Quantity : The quantity/reel to be 4,000 pcs.
(2) Cumulative Tolerance : Cumulative tolerance/10 pitches to be ±0.2 ㎜
(3) Adhesion Strength of Cover Tape : Adhesion strength to be 0.1-0.7 N when the cover tape is turned off from the carrier tape at 10 ℃ angle to be the carrier tape.
(4) Packaging : P/N, Manufacturing data code no. and quantity to be indicated on a damp proof package.

9. Label Structure

1) Label Structure



N.B) Denoted rank is the only example.

'★' means All kind of Chromaticity Coordinate Rank.

Rank Code

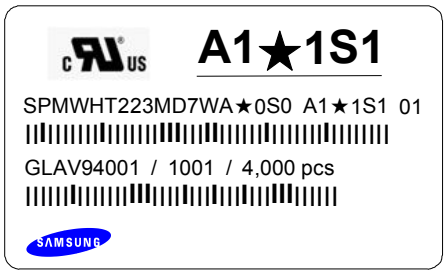
ⓐⓑ : Forward Voltage(V_F) Rank

ⓒⓓ : Chromaticity Coordinate Rank

ⓔⓕ : Luminous Intensity(cd) Rank

2) LOT Number

The Lot number is composed of the following characters



①②③④⑤⑥⑦⑧⑨ / 1ⓐⓑⓒ / 4,000 PCS

① : Production site (S: Giheung, Korea, G: Tianjin, China)

② : L (LED)

③ : Product State (A:Normality, B:Bulk, C:First Production, R:Reproduction, S:Sample)

④ : Year (Y: 2014, Z: 2015, A:2016...)

⑤ : Month (1 ~ 9, A, B, C)

⑥ : Day (1 ~ 9, A, B ~ V)

⑦⑧⑨ : Product serial number (001 ~ 999)

ⓐⓑⓒ : Reel Number (001 ~ 999)

10. Packing Structure

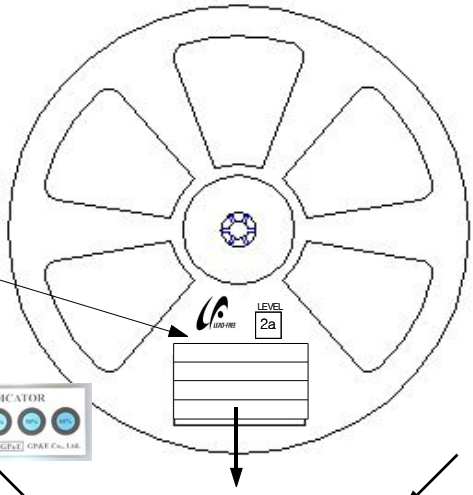
1) Packing Process

Reel

A1★1S1

SPMWHT223MD7WA★0S0 A1★1S1 01

GLAV94001 / 1001 / 4,000 pcs

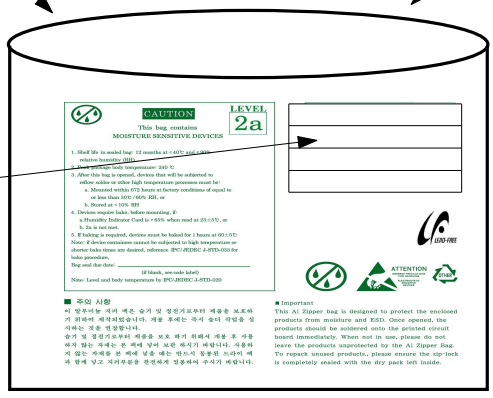


Aluminum Vinyl Bag

A1★1S1

SPMWHT223MD7WA★0S0 A1★1S1 01

GLAV94001 / 1001 / 4,000 pcs



Material : Paper(SW3B(B))

TYPE	SIZE(mm)			Reels/ box
	ⓐ	ⓑ	ⓒ	
7inch	245±5	220±5	182±5	Up to 10 Reels
	245±5	220±5	86±5	Up to 5 Reels

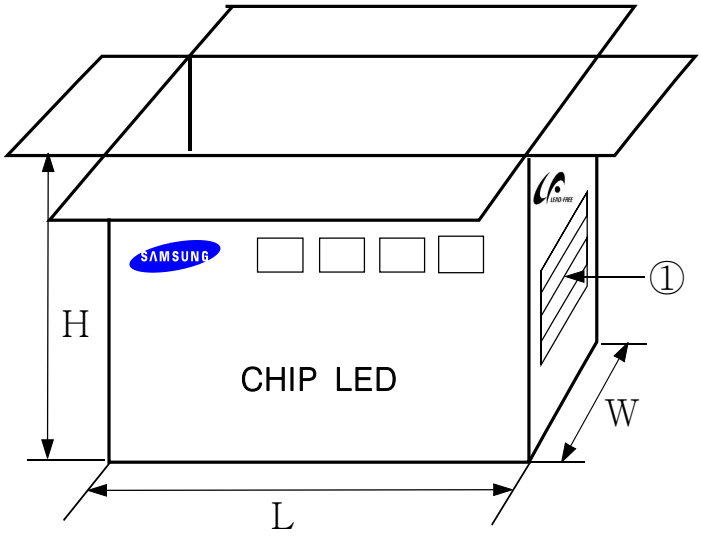
① SIDE

A1★1S1

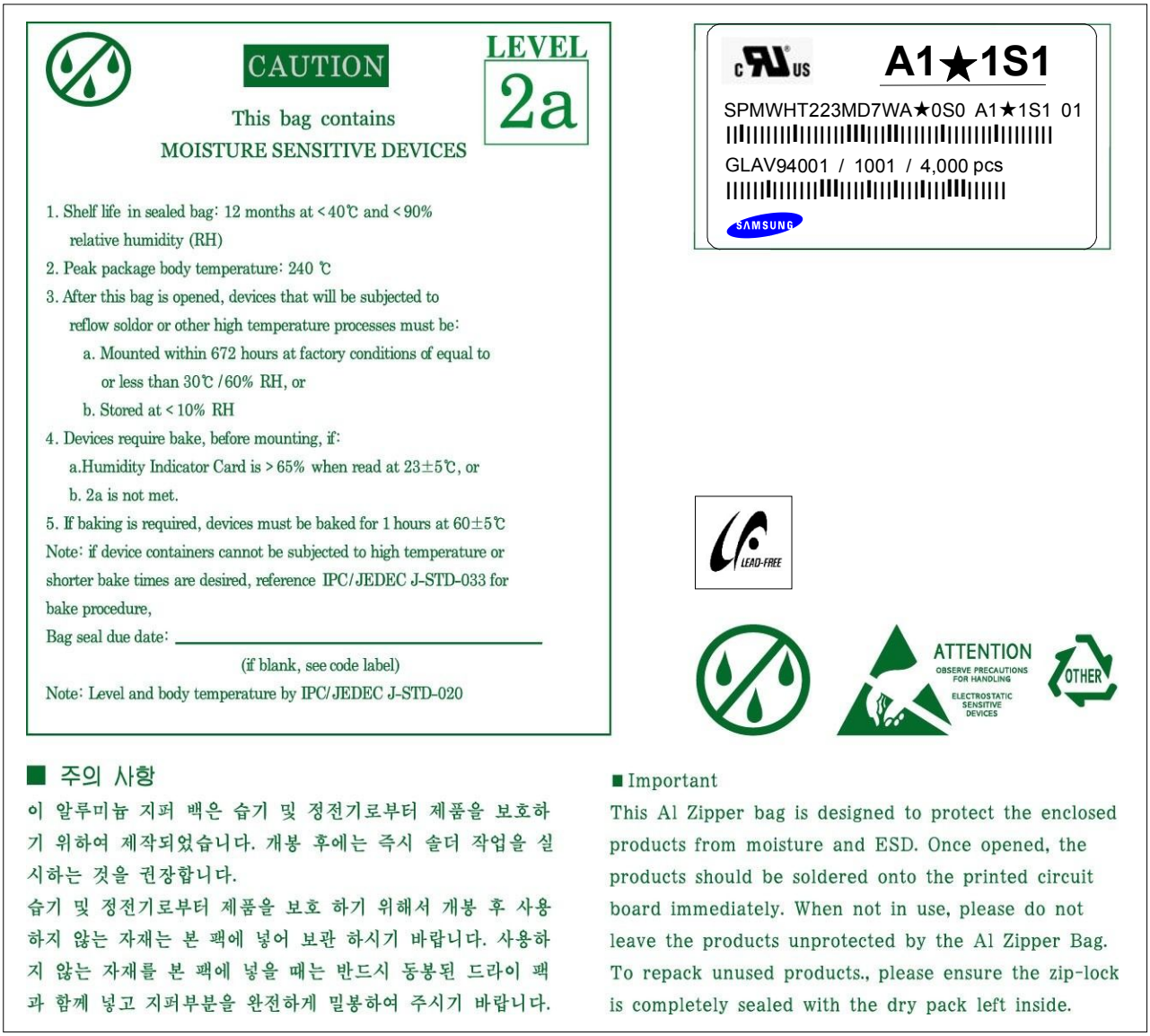
SPMWHT223MD7WA★0S0 A1★1S1 01

GLAV94001 / 1001 / 40,000 pcs

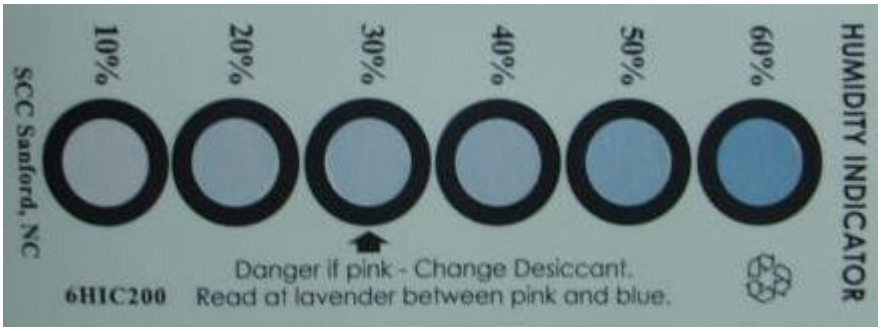
[Box Label]



2) Aluminum Packing Bag



Silica gel & Humidity Indicator Card in Aluminum Vinyl Bag

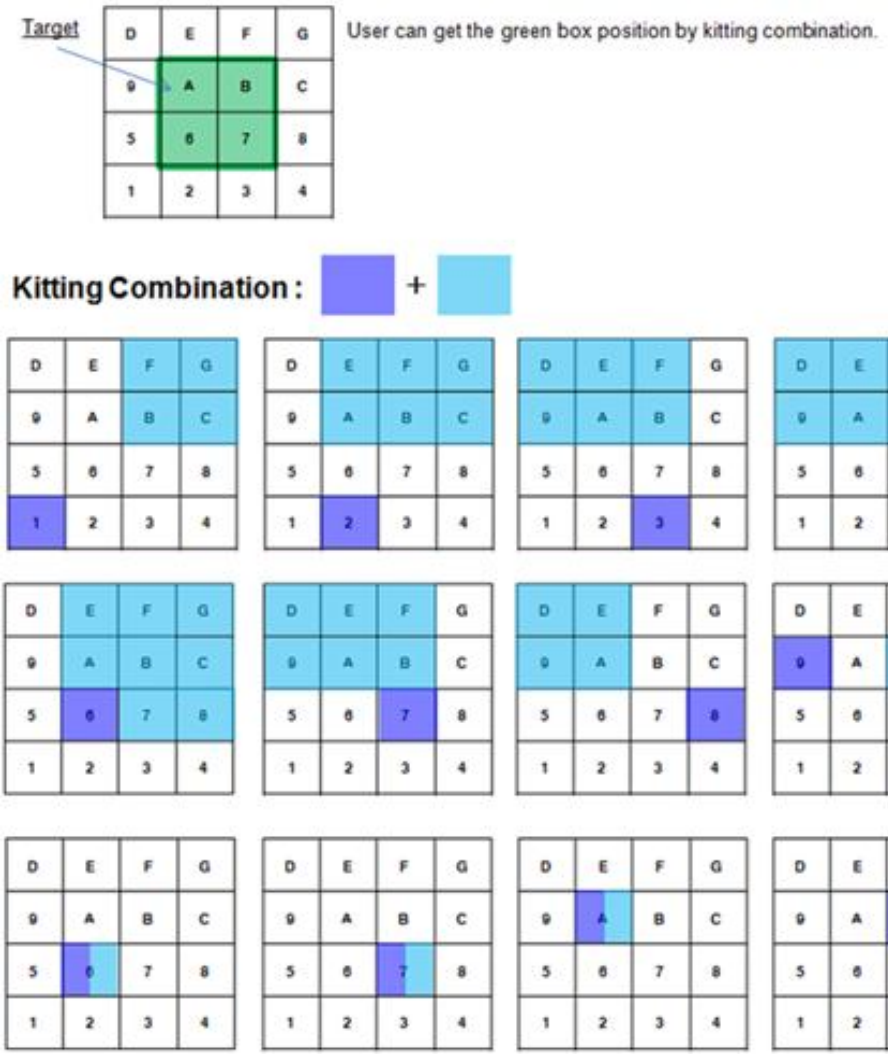


11. Kitting Rule

1) Kitting bin Concept – 2700K, 3000K, 3500K and 4000K

1. This item is included to ☆K models.
2. Under agreement between customer and SAMSUNG ELECTRONICS, SAMSUNG can supply kitting bin(V_F, Color, Im).
3. A forward voltage(V_F) of kitting bin is combined by a pair of same V_F rank such as (A1+A1), (A2+A2), (A3+A3), (A4+A4) or (AZ+AZ).
4. A Chromaticity Coordinates of kitting bin is mixed by kitting procedure.(below kitting simulation) Especially, one of 1, 2, 3, or 4 rank can be mixed with other rank, or can be used alone.
5. A luminous flux(Im) is average by kitting procedure.(below kitting simulation) For example Kitting Im is average S1 and S2 [Kitting Im = (S1+S2)/2]
6. '□' means one of the W(2700K), V(3000K), U(3500K) and T(4000K) a segment of the CCT rank.

[Kitting example]



[Kitting combination – 2700K, 3000K, 3500K and 4000K]

-	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2
1	A1□1S1	A1□GS1	A2□1S1	A2□FS1	A3□1S1	A3□BS1	A4□1S1	A4□CS1	AZ□2S1	AZ□GS1	A1□2S1	A1□ES1
2	A1□1S1	A1□GS2	A2□1S1	A2□FS2	A3□1S1	A3□BS2	A4□1S1	A4□CS2	AZ□2S1	AZ□GS2	A1□2S1	A1□ES2
3	A1□1S1	A1□GS3	A2□1S1	A2□FS3	A3□1S1	A3□BS3	A4□1S1	A4□CS3	AZ□2S1	AZ□GS3	A1□2S1	A1□ES3
4	A1□1S2	A1□GS1	A2□1S2	A2□FS1	A3□1S2	A3□BS1	A4□1S2	A4□CS1	AZ□2S2	AZ□GS1	A1□2S2	A1□ES1
5	A1□1S2	A1□GS2	A2□1S2	A2□FS2	A3□1S2	A3□BS2	A4□1S2	A4□CS2	AZ□2S2	AZ□GS2	A1□2S2	A1□ES2
6	A1□1S2	A1□GS3	A2□1S2	A2□FS3	A3□1S2	A3□BS3	A4□1S2	A4□CS3	AZ□2S2	AZ□GS3	A1□2S2	A1□ES3
7	A1□1S3	A1□GS1	A2□1S3	A2□FS1	A3□1S3	A3□BS1	A4□1S3	A4□CS1	AZ□2S3	AZ□GS1	A1□2S3	A1□ES1
8	A1□1S3	A1□GS2	A2□1S3	A2□FS2	A3□1S3	A3□BS2	A4□1S3	A4□CS2	AZ□2S3	AZ□GS2	A1□2S3	A1□ES2
9	A1□1S3	A1□GS3	A2□1S3	A2□FS3	A3□1S3	A3□BS3	A4□1S3	A4□CS3	AZ□2S3	AZ□GS3	A1□2S3	A1□ES3
10	A2□1S1	A2□GS1	A3□1S1	A3□FS1	A4□1S1	A4□BS1	AZ□1S1	AZ□CS1	A1□2S1	A1□FS1	A1□AS1	A1□AS1
11	A2□1S1	A2□GS2	A3□1S1	A3□FS2	A4□1S1	A4□BS2	AZ□1S1	AZ□CS2	A1□2S1	A1□FS2	A1□AS1	A1□AS2
12	A2□1S1	A2□GS3	A3□1S1	A3□FS3	A4□1S1	A4□BS3	AZ□1S1	AZ□CS3	A1□2S1	A1□FS3	A1□AS1	A1□AS3
13	A2□1S2	A2□GS1	A3□1S2	A3□FS1	A4□1S2	A4□BS1	AZ□1S2	AZ□CS1	A1□2S2	A1□FS1	A1□AS2	A1□AS1
14	A2□1S2	A2□GS2	A3□1S2	A3□FS2	A4□1S2	A4□BS2	AZ□1S2	AZ□CS2	A1□2S2	A1□FS2	A1□AS2	A1□AS2
15	A2□1S2	A2□GS3	A3□1S2	A3□FS3	A4□1S2	A4□BS3	AZ□1S2	AZ□CS3	A1□2S2	A1□FS3	A1□AS2	A1□AS3
16	A2□1S3	A2□GS1	A3□1S3	A3□FS1	A4□1S3	A4□BS1	AZ□1S3	AZ□CS1	A1□2S3	A1□FS1	A1□AS3	A1□AS1
17	A2□1S3	A2□GS2	A3□1S3	A3□FS2	A4□1S3	A4□BS2	AZ□1S3	AZ□CS2	A1□2S3	A1□FS2	A1□AS3	A1□AS2
18	A2□1S3	A2□GS3	A3□1S3	A3□FS3	A4□1S3	A4□BS3	AZ□1S3	AZ□CS3	A1□2S3	A1□FS3	A1□AS3	A1□AS3
19	A3□1S1	A3□GS1	A4□1S1	A4□FS1	AZ□1S1	AZ□BS1	A1□2S1	A1□GS1	A2□2S1	A2□FS1	A2□AS1	A2□AS1
20	A3□1S1	A3□GS2	A4□1S1	A4□FS2	AZ□1S1	AZ□BS2	A1□2S1	A1□GS2	A2□2S1	A2□FS2	A2□AS1	A2□AS2
21	A3□1S1	A3□GS3	A4□1S1	A4□FS3	AZ□1S1	AZ□BS3	A1□2S1	A1□GS3	A2□2S1	A2□FS3	A2□AS1	A2□AS3
22	A3□1S2	A3□GS1	A4□1S2	A4□FS1	AZ□1S2	AZ□BS1	A1□2S2	A1□GS1	A2□2S2	A2□FS1	A2□AS2	A2□AS1
23	A3□1S2	A3□GS2	A4□1S2	A4□FS2	AZ□1S2	AZ□BS2	A1□2S2	A1□GS2	A2□2S2	A2□FS2	A2□AS2	A2□AS2
24	A3□1S2	A3□GS3	A4□1S2	A4□FS3	AZ□1S2	AZ□BS3	A1□2S2	A1□GS3	A2□2S2	A2□FS3	A2□AS2	A2□AS3
25	A3□1S3	A3□GS1	A4□1S3	A4□FS1	AZ□1S3	AZ□BS1	A1□2S3	A1□GS1	A2□2S3	A2□FS1	A2□AS3	A2□AS1
26	A3□1S3	A3□GS2	A4□1S3	A4□FS2	AZ□1S3	AZ□BS2	A1□2S3	A1□GS2	A2□2S3	A2□FS2	A2□AS3	A2□AS2
27	A3□1S3	A3□GS3	A4□1S3	A4□FS3	AZ□1S3	AZ□BS3	A1□2S3	A1□GS3	A2□2S3	A2□FS3	A2□AS3	A2□AS3
28	A4□1S1	A4□GS1	AZ□1S1	AZ□FS1	A1□1S1	A1□CS1	A2□2S1	A2□GS1	A3□2S1	A3□FS1	A3□AS1	A3□AS1
29	A4□1S1	A4□GS2	AZ□1S1	AZ□FS2	A1□1S1	A1□CS2	A2□2S1	A2□GS2	A3□2S1	A3□FS2	A3□AS1	A3□AS2
30	A4□1S1	A4□GS3	AZ□1S1	AZ□FS3	A1□1S1	A1□CS3	A2□2S1	A2□GS3	A3□2S1	A3□FS3	A3□AS1	A3□AS3
31	A4□1S2	A4□GS1	AZ□1S2	AZ□FS1	A1□1S2	A1□CS1	A2□2S2	A2□GS1	A3□2S2	A3□FS1	A3□AS2	A3□AS1
32	A4□1S2	A4□GS2	AZ□1S2	AZ□FS2	A1□1S2	A1□CS2	A2□2S2	A2□GS2	A3□2S2	A3□FS2	A3□AS2	A3□AS2
33	A4□1S2	A4□GS3	AZ□1S2	AZ□FS3	A1□1S2	A1□CS3	A2□2S2	A2□GS3	A3□2S2	A3□FS3	A3□AS2	A3□AS3
34	A4□1S3	A4□GS1	AZ□1S3	AZ□FS1	A1□1S3	A1□CS1	A2□2S3	A2□GS1	A3□2S3	A3□FS1	A3□AS3	A3□AS1
35	A4□1S3	A4□GS2	AZ□1S3	AZ□FS2	A1□1S3	A1□CS2	A2□2S3	A2□GS2	A3□2S3	A3□FS2	A3□AS3	A3□AS2
36	A4□1S3	A4□GS3	AZ□1S3	AZ□FS3	A1□1S3	A1□CS3	A2□2S3	A2□GS3	A3□2S3	A3□FS3	A3□AS3	A3□AS3
37	AZ□1S1	AZ□GS1	A1□1S1	A1□BS1	A2□1S1	A2□CS1	A3□2S1	A3□GS1	A4□2S1	A4□FS1	A4□AS1	A4□AS1
38	AZ□1S1	AZ□GS2	A1□1S1	A1□BS2	A2□1S1	A2□CS2	A3□2S1	A3□GS2	A4□2S1	A4□FS2	A4□AS1	A4□AS2
39	AZ□1S1	AZ□GS3	A1□1S1	A1□BS3	A2□1S1	A2□CS3	A3□2S1	A3□GS3	A4□2S1	A4□FS3	A4□AS1	A4□AS3
40	AZ□1S2	AZ□GS1	A1□1S2	A1□BS1	A2□1S2	A2□CS1	A3□2S2	A3□GS1	A4□2S2	A4□FS1	A4□AS2	A4□AS1
41	AZ□1S2	AZ□GS2	A1□1S2	A1□BS2	A2□1S2	A2□CS2	A3□2S2	A3□GS2	A4□2S2	A4□FS2	A4□AS2	A4□AS2
42	AZ□1S2	AZ□GS3	A1□1S2	A1□BS3	A2□1S2	A2□CS3	A3□2S2	A3□GS3	A4□2S2	A4□FS3	A4□AS2	A4□AS3
43	AZ□1S3	AZ□GS1	A1□1S3	A1□BS1	A2□1S3	A2□CS1	A3□2S3	A3□GS1	A4□2S3	A4□FS1	A4□AS3	A4□AS1
44	AZ□1S3	AZ□GS2	A1□1S3	A1□BS2	A2□1S3	A2□CS2	A3□2S3	A3□GS2	A4□2S3	A4□FS2	A4□AS3	A4□AS2
45	A1□1S1	A1□GS1	A2□1S1	A2□FS1	A3□1S1	A3□BS1	A4□1S1	A4□CS1	AZ□2S1	AZ□GS1	A1□2S1	A1□ES1
46	A1□1S1	A1□GS2	A2□1S1	A2□FS2	A3□1S1	A3□BS2	A4□1S1	A4□CS2	AZ□2S1	AZ□GS2	A1□2S1	A1□ES2
47	A1□1S1	A1□GS3	A2□1S1	A2□FS3	A3□1S1	A3□BS3	A4□1S1	A4□CS3	AZ□2S1	AZ□GS3	A1□2S1	A1□ES3
48	A1□1S2	A1□GS1	A2□1S2	A2□FS1	A3□1S2	A3□BS1	A4□1S2	A4□CS1	AZ□2S2	AZ□GS1	A1□2S2	A1□ES1
49	A1□1S2	A1□GS2	A2□1S2	A2□FS2	A3□1S2	A3□BS2	A4□1S2	A4□CS2	AZ□2S2	AZ□GS2	A1□2S2	A1□ES2
50	A1□1S2	A1□GS3	A2□1S2	A2□FS3	A3□1S2	A3□BS3	A4□1S2	A4□CS3	AZ□2S2	AZ□GS3	A1□2S2	A1□ES3
51	A1□1S3	A1□GS1	A2□1S3	A2□FS1	A3□1S3	A3□BS1	A4□1S3	A4□CS1	AZ□2S3	AZ□GS1	A1□2S3	A1□ES1
52	A1□1S3	A1□GS2	A2□1S3	A2□FS2	A3□1S3	A3□BS2	A4□1S3	A4□CS2	AZ□2S3	AZ□GS2	A1□2S3	A1□ES2
53	A1□1S3	A1□GS3	A2□1S3	A2□FS3	A3□1S3	A3□BS3	A4□1S3	A4□CS3	AZ□2S3	AZ□GS3	A1□2S3	A1□ES3
54	A2□1S1	A2□GS1	A3□1S1	A3□FS1	A4□1S1	A4□BS1	AZ□1S1	AZ□CS1	A1□2S1	A1□FS1	A1□AS1	A1□AS1

[Kitting combination – 2700K, 3000K, 3500K and 4000K]

-	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2
1	A2□2S1	A2□ES1	A3□2S1	A3□CS1	A4□2S1	A4□AS1	AZ□2S1	AZ□BS1	A1□3S1	A1□ES1	A2□3S1	A2□DS1
2	A2□2S1	A2□ES2	A3□2S1	A3□CS2	A4□2S1	A4□AS2	AZ□2S1	AZ□BS2	A1□3S1	A1□ES2	A2□3S1	A2□DS2
3	A2□2S1	A2□ES3	A3□2S1	A3□CS3	A4□2S1	A4□AS3	AZ□2S1	AZ□BS3	A1□3S1	A1□ES3	A2□3S1	A2□DS3
4	A2□2S2	A2□ES1	A3□2S2	A3□CS1	A4□2S2	A4□AS1	AZ□2S2	AZ□BS1	A1□3S2	A1□ES1	A2□3S2	A2□DS1
5	A2□2S2	A2□ES2	A3□2S2	A3□CS2	A4□2S2	A4□AS2	AZ□2S2	AZ□BS2	A1□3S2	A1□ES2	A2□3S2	A2□DS2
6	A2□2S2	A2□ES3	A3□2S2	A3□CS3	A4□2S2	A4□AS3	AZ□2S2	AZ□BS3	A1□3S2	A1□ES3	A2□3S2	A2□DS3
7	A2□2S3	A2□ES1	A3□2S3	A3□CS1	A4□2S3	A4□AS1	AZ□2S3	AZ□BS1	A1□3S3	A1□ES1	A2□3S3	A2□DS1
8	A2□2S3	A2□ES2	A3□2S3	A3□CS2	A4□2S3	A4□AS2	AZ□2S3	AZ□BS2	A1□3S3	A1□ES2	A2□3S3	A2□DS2
9	A2□2S3	A2□ES3	A3□2S3	A3□CS3	A4□2S3	A4□AS3	AZ□2S3	AZ□BS3	A1□3S3	A1□ES3	A2□3S3	A2□DS3
10	A3□2S1	A3□ES1	A4□2S1	A4□CS1	AZ□2S1	AZ□AS1	A1□3S1	A1□FS1	A2□3S1	A2□ES1	A3□3S1	A3□DS1
11	A3□2S1	A3□ES2	A4□2S1	A4□CS2	AZ□2S1	AZ□AS2	A1□3S1	A1□FS2	A2□3S1	A2□ES2	A3□3S1	A3□DS2
12	A3□2S1	A3□ES3	A4□2S1	A4□CS3	AZ□2S1	AZ□AS3	A1□3S1	A1□FS3	A2□3S1	A2□ES3	A3□3S1	A3□DS3
13	A3□2S2	A3□ES1	A4□2S2	A4□CS1	AZ□2S2	AZ□AS1	A1□3S2	A1□FS1	A2□3S2	A2□ES1	A3□3S2	A3□DS1
14	A3□2S2	A3□ES2	A4□2S2	A4□CS2	AZ□2S2	AZ□AS2	A1□3S2	A1□FS2	A2□3S2	A2□ES2	A3□3S2	A3□DS2
15	A3□2S2	A3□ES3	A4□2S2	A4□CS3	AZ□2S2	AZ□AS3	A1□3S2	A1□FS3	A2□3S2	A2□ES3	A3□3S2	A3□DS3
16	A3□2S3	A3□ES1	A4□2S3	A4□CS1	AZ□2S3	AZ□AS1	A1□3S3	A1□FS1	A2□3S3	A2□ES1	A3□3S3	A3□DS1
17	A3□2S3	A3□ES2	A4□2S3	A4□CS2	AZ□2S3	AZ□AS2	A1□3S3	A1□FS2	A2□3S3	A2□ES2	A3□3S3	A3□DS2
18	A3□2S3	A3□ES3	A4□2S3	A4□CS3	AZ□2S3	AZ□AS3	A1□3S3	A1□FS3	A2□3S3	A2□ES3	A3□3S3	A3□DS3
19	A4□2S1	A4□ES1	AZ□2S1	AZ□CS1	A1□2S1	A1□BS1	A2□3S1	A2□FS1	A3□3S1	A3□ES1	A4□3S1	A4□DS1
20	A4□2S1	A4□ES2	AZ□2S1	AZ□CS2	A1□2S1	A1□BS2	A2□3S1	A2□FS2	A3□3S1	A3□ES2	A4□3S1	A4□DS2
21	A4□2S1	A4□ES3	AZ□2S1	AZ□CS3	A1□2S1	A1□BS3	A2□3S1	A2□FS3	A3□3S1	A3□ES3	A4□3S1	A4□DS3
22	A4□2S2	A4□ES1	AZ□2S2	AZ□CS1	A1□2S2	A1□BS1	A2□3S2	A2□FS1	A3□3S2	A3□ES1	A4□3S2	A4□DS1
23	A4□2S2	A4□ES2	AZ□2S2	AZ□CS2	A1□2S2	A1□BS2	A2□3S2	A2□FS2	A3□3S2	A3□ES2	A4□3S2	A4□DS2
24	A4□2S2	A4□ES3	AZ□2S2	AZ□CS3	A1□2S2	A1□BS3	A2□3S2	A2□FS3	A3□3S2	A3□ES3	A4□3S2	A4□DS3
25	A4□2S3	A4□ES1	AZ□2S3	AZ□CS1	A1□2S3	A1□BS1	A2□3S3	A2□FS1	A3□3S3	A3□ES1	A4□3S3	A4□DS1
26	A4□2S3	A4□ES2	AZ□2S3	AZ□CS2	A1□2S3	A1□BS2	A2□3S3	A2□FS2	A3□3S3	A3□ES2	A4□3S3	A4□DS2
27	A4□2S3	A4□ES3	AZ□2S3	AZ□CS3	A1□2S3	A1□BS3	A2□3S3	A2□FS3	A3□3S3	A3□ES3	A4□3S3	A4□DS3
28	AZ□2S1	AZ□ES1	A1□2S1	A1□AS1	A2□2S1	A2□BS1	A3□3S1	A3□FS1	A4□3S1	A4□ES1	AZ□3S1	AZ□DS1
29	AZ□2S1	AZ□ES2	A1□2S1	A1□AS2	A2□2S1	A2□BS2	A3□3S1	A3□FS2	A4□3S1	A4□ES2	AZ□3S1	AZ□DS2
30	AZ□2S1	AZ□ES3	A1□2S1	A1□AS3	A2□2S1	A2□BS3	A3□3S1	A3□FS3	A4□3S1	A4□ES3	AZ□3S1	AZ□DS3
31	AZ□2S2	AZ□ES1	A1□2S2	A1□AS1	A2□2S2	A2□BS1	A3□3S2	A3□FS1	A4□3S2	A4□ES1	AZ□3S2	AZ□DS1
32	AZ□2S2	AZ□ES2	A1□2S2	A1□AS2	A2□2S2	A2□BS2	A3□3S2	A3□FS2	A4□3S2	A4□ES2	AZ□3S2	AZ□DS2
33	AZ□2S2	AZ□ES3	A1□2S2	A1□AS3	A2□2S2	A2□BS3	A3□3S2	A3□FS3	A4□3S2	A4□ES3	AZ□3S2	AZ□DS3
34	AZ□2S3	AZ□ES1	A1□2S3	A1□AS1	A2□2S3	A2□BS1	A3□3S3	A3□FS1	A4□3S3	A4□ES1	AZ□3S3	AZ□DS1
35	AZ□2S3	AZ□ES2	A1□2S3	A1□AS2	A2□2S3	A2□BS2	A3□3S3	A3□FS2	A4□3S3	A4□ES2	AZ□3S3	AZ□DS2
36	AZ□2S3	AZ□ES3	A1□2S3	A1□AS3	A2□2S3	A2□BS3	A3□3S3	A3□FS3	A4□3S3	A4□ES3	AZ□3S3	AZ□DS3
37	A1□2S1	A1□CS1	A2□2S1	A2□AS1	A3□2S1	A3□BS1	A4□3S1	A4□FS1	AZ□3S1	AZ□ES1	A1□3S1	A1□9S1
38	A1□2S1	A1□CS2	A2□2S1	A2□AS2	A3□2S1	A3□BS2	A4□3S1	A4□FS2	AZ□3S1	AZ□ES2	A1□3S1	A1□9S2
39	A1□2S1	A1□CS3	A2□2S1	A2□AS3	A3□2S1	A3□BS3	A4□3S1	A4□FS3	AZ□3S1	AZ□ES3	A1□3S1	A1□9S3
40	A1□2S2	A1□CS1	A2□2S2	A2□AS1	A3□2S2	A3□BS1	A4□3S2	A4□FS1	AZ□3S2	AZ□ES1	A1□3S2	A1□9S1
41	A1□2S2	A1□CS2	A2□2S2	A2□AS2	A3□2S2	A3□BS2	A4□3S2	A4□FS2	AZ□3S2	AZ□ES2	A1□3S2	A1□9S2
42	A1□2S2	A1□CS3	A2□2S2	A2□AS3	A3□2S2	A3□BS3	A4□3S2	A4□FS3	AZ□3S2	AZ□ES3	A1□3S2	A1□9S3
43	A1□2S3	A1□CS1	A2□2S3	A2□AS1	A3□2S3	A3□BS1	A4□3S3	A4□FS1	AZ□3S3	AZ□ES1	A1□3S3	A1□9S1
44	A1□2S3	A1□CS2	A2□2S3	A2□AS2	A3□2S3	A3□BS2	A4□3S3	A4□FS2	AZ□3S3	AZ□ES2	A1□3S3	A1□9S2
45	A1□2S3	A1□CS3	A2□2S3	A2□AS3	A3□2S3	A3□BS3	A4□3S3	A4□FS3	AZ□3S3	AZ□ES3	A1□3S3	A1□9S3
46	A2□2S1	A2□CS1	A3□2S1	A3□AS1	A4□2S1	A4□BS1	AZ□3S1	AZ□FS1	A1□3S1	A1□DS1	A2□3S1	A2□9S1
47	A2□2S1	A2□CS2	A3□2S1	A3□AS2	A4□2S1	A4□BS2	AZ□3S1	AZ□FS2	A1□3S1	A1□DS2	A2□3S1	A2□9S2
48	A2□2S1	A2□CS3	A3□2S1	A3□AS3	A4□2S1	A4□BS3	AZ□3S1	AZ□FS3	A1□3S1	A1□DS3	A2□3S1	A2□9S3
49	A2□2S2	A2□CS1	A3□2S2	A3□AS1	A4□2S2	A4□BS1	AZ□3S2	AZ□FS1	A1□3S2	A1□DS1	A2□3S2	A2□9S1
50	A2□2S2	A2□CS2	A3□2S2	A3□AS2	A4□2S2	A4□BS2	AZ□3S2	AZ□FS2	A1□3S2	A1□DS2	A2□3S2	A2□9S2
51	A2□2S2	A2□CS3	A3□2S2	A3□AS3	A4□2S2	A4□BS3	AZ□3S2	AZ□FS3	A1□3S2	A1□DS3	A2□3S2	A2□9S3
52	A2□2S3	A2□CS1	A3□2S3	A3□AS1	A4□2S3	A4□BS1	AZ□3S3	AZ□FS1	A1□3S3	A1□DS1	A2□3S3	A2□9S1
53	A2□2S3	A2□CS2	A3□2S3	A3□AS2	A4□2S3	A4□BS2	AZ□3S3	AZ□FS2	A1□3S3	A1□DS2	A2□3S3	A2□9S2
54	A2□2S3	A2□CS3	A3□2S3	A3□AS3	A4□2S3	A4□BS3	AZ□3S3	AZ□FS3	A1□3S3	A1□DS3	A2□3S3	A2□9S3

[Kitting combination – 2700K, 3000K, 3500K and 4000K]

-	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2
1	A3□3S1	A3□9S1	A4□3S1	A4□AS1	AZ□3S1	AZ□BS1	A1□4S1	A1□CS1	A2□4S1	A2□9S1	A3□4S1	A3□AS1
2	A3□3S1	A3□9S2	A4□3S1	A4□AS2	AZ□3S1	AZ□BS2	A1□4S1	A1□CS2	A2□4S1	A2□9S2	A3□4S1	A3□AS2
3	A3□3S1	A3□9S3	A4□3S1	A4□AS3	AZ□3S1	AZ□BS3	A1□4S1	A1□CS3	A2□4S1	A2□9S3	A3□4S1	A3□AS3
4	A3□3S2	A3□9S1	A4□3S2	A4□AS1	AZ□3S2	AZ□BS1	A1□4S2	A1□CS1	A2□4S2	A2□9S1	A3□4S2	A3□AS1
5	A3□3S2	A3□9S2	A4□3S2	A4□AS2	AZ□3S2	AZ□BS2	A1□4S2	A1□CS2	A2□4S2	A2□9S2	A3□4S2	A3□AS2
6	A3□3S2	A3□9S3	A4□3S2	A4□AS3	AZ□3S2	AZ□BS3	A1□4S2	A1□CS3	A2□4S2	A2□9S3	A3□4S2	A3□AS3
7	A3□3S3	A3□9S1	A4□3S3	A4□AS1	AZ□3S3	AZ□BS1	A1□4S3	A1□CS1	A2□4S3	A2□9S1	A3□4S3	A3□AS1
8	A3□3S3	A3□9S2	A4□3S3	A4□AS2	AZ□3S3	AZ□BS2	A1□4S3	A1□CS2	A2□4S3	A2□9S2	A3□4S3	A3□AS2
9	A3□3S3	A3□9S3	A4□3S3	A4□AS3	AZ□3S3	AZ□BS3	A1□4S3	A1□CS3	A2□4S3	A2□9S3	A3□4S3	A3□AS3
10	A4□3S1	A4□9S1	AZ□3S1	AZ□AS1	A1□4S1	A1□ES1	A2□4S1	A2□CS1	A3□4S1	A3□9S1	A4□4S1	A4□AS1
11	A4□3S1	A4□9S2	AZ□3S1	AZ□AS2	A1□4S1	A1□ES2	A2□4S1	A2□CS2	A3□4S1	A3□9S2	A4□4S1	A4□AS2
12	A4□3S1	A4□9S3	AZ□3S1	AZ□AS3	A1□4S1	A1□ES3	A2□4S1	A2□CS3	A3□4S1	A3□9S3	A4□4S1	A4□AS3
13	A4□3S2	A4□9S1	AZ□3S2	AZ□AS1	A1□4S2	A1□ES1	A2□4S2	A2□CS1	A3□4S2	A3□9S1	A4□4S2	A4□AS1
14	A4□3S2	A4□9S2	AZ□3S2	AZ□AS2	A1□4S2	A1□ES2	A2□4S2	A2□CS2	A3□4S2	A3□9S2	A4□4S2	A4□AS2
15	A4□3S2	A4□9S3	AZ□3S2	AZ□AS3	A1□4S2	A1□ES3	A2□4S2	A2□CS3	A3□4S2	A3□9S3	A4□4S2	A4□AS3
16	A4□3S3	A4□9S1	AZ□3S3	AZ□AS1	A1□4S3	A1□ES1	A2□4S3	A2□CS1	A3□4S3	A3□9S1	A4□4S3	A4□AS1
17	A4□3S3	A4□9S2	AZ□3S3	AZ□AS2	A1□4S3	A1□ES2	A2□4S3	A2□CS2	A3□4S3	A3□9S2	A4□4S3	A4□AS2
18	A4□3S3	A4□9S3	AZ□3S3	AZ□AS3	A1□4S3	A1□ES3	A2□4S3	A2□CS3	A3□4S3	A3□9S3	A4□4S3	A4□AS3
19	AZ□3S1	AZ□9S1	A1□3S1	A1□BS1	A2□4S1	A2□ES1	A3□4S1	A3□CS1	A4□4S1	A4□9S1	AZ□4S1	AZ□AS1
20	AZ□3S1	AZ□9S2	A1□3S1	A1□BS2	A2□4S1	A2□ES2	A3□4S1	A3□CS2	A4□4S1	A4□9S2	AZ□4S1	AZ□AS2
21	AZ□3S1	AZ□9S3	A1□3S1	A1□BS3	A2□4S1	A2□ES3	A3□4S1	A3□CS3	A4□4S1	A4□9S3	AZ□4S1	AZ□AS3
22	AZ□3S2	AZ□9S1	A1□3S2	A1□BS1	A2□4S2	A2□ES1	A3□4S2	A3□CS1	A4□4S2	A4□9S1	AZ□4S2	AZ□AS1
23	AZ□3S2	AZ□9S2	A1□3S2	A1□BS2	A2□4S2	A2□ES2	A3□4S2	A3□CS2	A4□4S2	A4□9S2	AZ□4S2	AZ□AS2
24	AZ□3S2	AZ□9S3	A1□3S2	A1□BS3	A2□4S2	A2□ES3	A3□4S2	A3□CS3	A4□4S2	A4□9S3	AZ□4S2	AZ□AS3
25	AZ□3S3	AZ□9S1	A1□3S3	A1□BS1	A2□4S3	A2□ES1	A3□4S3	A3□CS1	A4□4S3	A4□9S1	AZ□4S3	AZ□AS1
26	AZ□3S3	AZ□9S2	A1□3S3	A1□BS2	A2□4S3	A2□ES2	A3□4S3	A3□CS2	A4□4S3	A4□9S2	AZ□4S3	AZ□AS2
27	AZ□3S3	AZ□9S3	A1□3S3	A1□BS3	A2□4S3	A2□ES3	A3□4S3	A3□CS3	A4□4S3	A4□9S3	AZ□4S3	AZ□AS3
28	A1□3S1	A1□AS1	A2□3S1	A2□BS1	A3□4S1	A3□ES1	A4□4S1	A4□CS1	AZ□4S1	AZ□9S1	A1□5S1	A1□8S1
29	A1□3S1	A1□AS2	A2□3S1	A2□BS2	A3□4S1	A3□ES2	A4□4S1	A4□CS2	AZ□4S1	AZ□9S2	A1□5S1	A1□8S2
30	A1□3S1	A1□AS3	A2□3S1	A2□BS3	A3□4S1	A3□ES3	A4□4S1	A4□CS3	AZ□4S1	AZ□9S3	A1□5S1	A1□8S3
31	A1□3S2	A1□AS1	A2□3S2	A2□BS1	A3□4S2	A3□ES1	A4□4S2	A4□CS1	AZ□4S2	AZ□9S1	A1□5S2	A1□8S1
32	A1□3S2	A1□AS2	A2□3S2	A2□BS2	A3□4S2	A3□ES2	A4□4S2	A4□CS2	AZ□4S2	AZ□9S2	A1□5S2	A1□8S2
33	A1□3S2	A1□AS3	A2□3S2	A2□BS3	A3□4S2	A3□ES3	A4□4S2	A4□CS3	AZ□4S2	AZ□9S3	A1□5S2	A1□8S3
34	A1□3S3	A1□AS1	A2□3S3	A2□BS1	A3□4S3	A3□ES1	A4□4S3	A4□CS1	AZ□4S3	AZ□9S1	A1□5S3	A1□8S1
35	A1□3S3	A1□AS2	A2□3S3	A2□BS2	A3□4S3	A3□ES2	A4□4S3	A4□CS2	AZ□4S3	AZ□9S2	A1□5S3	A1□8S2
36	A1□3S3	A1□AS3	A2□3S3	A2□BS3	A3□4S3	A3□ES3	A4□4S3	A4□CS3	AZ□4S3	AZ□9S3	A1□5S3	A1□8S3
37	A2□3S1	A2□AS1	A3□3S1	A3□BS1	A4□4S1	A4□ES1	AZ□4S1	AZ□CS1	A1□4S1	A1□AS1	A2□5S1	A2□8S1
38	A2□3S1	A2□AS2	A3□3S1	A3□BS2	A4□4S1	A4□ES2	AZ□4S1	AZ□CS2	A1□4S1	A1□AS2	A2□5S1	A2□8S2
39	A2□3S1	A2□AS3	A3□3S1	A3□BS3	A4□4S1	A4□ES3	AZ□4S1	AZ□CS3	A1□4S1	A1□AS3	A2□5S1	A2□8S3
40	A2□3S2	A2□AS1	A3□3S2	A3□BS1	A4□4S2	A4□ES1	AZ□4S2	AZ□CS1	A1□4S2	A1□AS1	A2□5S2	A2□8S1
41	A2□3S2	A2□AS2	A3□3S2	A3□BS2	A4□4S2	A4□ES2	AZ□4S2	AZ□CS2	A1□4S2	A1□AS2	A2□5S2	A2□8S2
42	A2□3S2	A2□AS3	A3□3S2	A3□BS3	A4□4S2	A4□ES3	AZ□4S2	AZ□CS3	A1□4S2	A1□AS3	A2□5S2	A2□8S3
43	A2□3S3	A2□AS1	A3□3S3	A3□BS1	A4□4S3	A4□ES1	AZ□4S3	AZ□CS1	A1□4S3	A1□AS1	A2□5S3	A2□8S1
44	A2□3S3	A2□AS2	A3□3S3	A3□BS2	A4□4S3	A4□ES2	AZ□4S3	AZ□CS2	A1□4S3	A1□AS2	A2□5S3	A2□8S2
45	A2□3S3	A2□AS3	A3□3S3	A3□BS3	A4□4S3	A4□ES3	AZ□4S3	AZ□CS3	A1□4S3	A1□AS3	A2□5S3	A2□8S3
46	A3□3S1	A3□AS1	A4□3S1	A4□BS1	AZ□4S1	AZ□ES1	A1□4S1	A1□9S1	A2□4S1	A2□AS1	A3□5S1	A3□8S1
47	A3□3S1	A3□AS2	A4□3S1	A4□BS2	AZ□4S1	AZ□ES2	A1□4S1	A1□9S2	A2□4S1	A2□AS2	A3□5S1	A3□8S2
48	A3□3S1	A3□AS3	A4□3S1	A4□BS3	AZ□4S1	AZ□ES3	A1□4S1	A1□9S3	A2□4S1	A2□AS3	A3□5S1	A3□8S3
49	A3□3S2	A3□AS1	A4□3S2	A4□BS1	AZ□4S2	AZ□ES1	A1□4S2	A1□9S1	A2□4S2	A2□AS1	A3□5S2	A3□8S1
50	A3□3S2	A3□AS2	A4□3S2	A4□BS2	AZ□4S2	AZ□ES2	A1□4S2	A1□9S2	A2□4S2	A2□AS2	A3□5S2	A3□8S2
51	A3□3S2	A3□AS3	A4□3S2	A4□BS3	AZ□4S2	AZ□ES3	A1□4S2	A1□9S3	A2□4S2	A2□AS3	A3□5S2	A3□8S3
52	A3□3S3	A3□AS1	A4□3S3	A4□BS1	AZ□4S3	AZ□ES1	A1□4S3	A1□9S1	A2□4S3	A2□AS1	A3□5S3	A3□8S1
53	A3□3S3	A3□AS2	A4□3S3	A4□BS2	AZ□4S3	AZ□ES2	A1□4S3	A1□9S2	A2□4S3	A2□AS2	A3□5S3	A3□8S2
54	A3□3S3	A3□AS3	A4□3S3	A4□BS3	AZ□4S3	AZ□ES3	A1□4S3	A1□9S3	A2□4S3	A2□AS3	A3□5S3	A3□8S3

[Kitting combination – 2700K, 3000K, 3500K and 4000K]

-	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2	RANK 1	RANK 2
1	A4□5S1	A4□8S1	AZ□5S1	AZ□CS1	A1□5S1	A1□FS1	A2□5S1	A2□BS1	A3□5S1	A3□7S1	A4□6S1	A4□8S1
2	A4□5S1	A4□8S2	AZ□5S1	AZ□CS2	A1□5S1	A1□FS2	A2□5S1	A2□BS2	A3□5S1	A3□7S2	A4□6S1	A4□8S2
3	A4□5S1	A4□8S3	AZ□5S1	AZ□CS3	A1□5S1	A1□FS3	A2□5S1	A2□BS3	A3□5S1	A3□7S3	A4□6S1	A4□8S3
4	A4□5S2	A4□8S1	AZ□5S2	AZ□CS1	A1□5S2	A1□FS1	A2□5S2	A2□BS1	A3□5S2	A3□7S1	A4□6S2	A4□8S1
5	A4□5S2	A4□8S2	AZ□5S2	AZ□CS2	A1□5S2	A1□FS2	A2□5S2	A2□BS2	A3□5S2	A3□7S2	A4□6S2	A4□8S2
6	A4□5S2	A4□8S3	AZ□5S2	AZ□CS3	A1□5S2	A1□FS3	A2□5S2	A2□BS3	A3□5S2	A3□7S3	A4□6S2	A4□8S3
7	A4□5S3	A4□8S1	AZ□5S3	AZ□CS1	A1□5S3	A1□FS1	A2□5S3	A2□BS1	A3□5S3	A3□7S1	A4□6S3	A4□8S1
8	A4□5S3	A4□8S2	AZ□5S3	AZ□CS2	A1□5S3	A1□FS2	A2□5S3	A2□BS2	A3□5S3	A3□7S2	A4□6S3	A4□8S2
9	A4□5S3	A4□8S3	AZ□5S3	AZ□CS3	A1□5S3	A1□FS3	A2□5S3	A2□BS3	A3□5S3	A3□7S3	A4□6S3	A4□8S3
10	AZ□5S1	AZ□8S1	A1□5S1	A1□GS1	A2□5S1	A2□FS1	A3□5S1	A3□BS1	A4□5S1	A4□7S1	AZ□6S1	AZ□8S1
11	AZ□5S1	AZ□8S2	A1□5S1	A1□GS2	A2□5S1	A2□FS2	A3□5S1	A3□BS2	A4□5S1	A4□7S2	AZ□6S1	AZ□8S2
12	AZ□5S1	AZ□8S3	A1□5S1	A1□GS3	A2□5S1	A2□FS3	A3□5S1	A3□BS3	A4□5S1	A4□7S3	AZ□6S1	AZ□8S3
13	AZ□5S2	AZ□8S1	A1□5S2	A1□GS1	A2□5S2	A2□FS1	A3□5S2	A3□BS1	A4□5S2	A4□7S1	AZ□6S2	AZ□8S1
14	AZ□5S2	AZ□8S2	A1□5S2	A1□GS2	A2□5S2	A2□FS2	A3□5S2	A3□BS2	A4□5S2	A4□7S2	AZ□6S2	AZ□8S2
15	AZ□5S2	AZ□8S3	A1□5S2	A1□GS3	A2□5S2	A2□FS3	A3□5S2	A3□BS3	A4□5S2	A4□7S3	AZ□6S2	AZ□8S3
16	AZ□5S3	AZ□8S1	A1□5S3	A1□GS1	A2□5S3	A2□FS1	A3□5S3	A3□BS1	A4□5S3	A4□7S1	AZ□6S3	AZ□8S1
17	AZ□5S3	AZ□8S2	A1□5S3	A1□GS2	A2□5S3	A2□FS2	A3□5S3	A3□BS2	A4□5S3	A4□7S2	AZ□6S3	AZ□8S2
18	AZ□5S3	AZ□8S3	A1□5S3	A1□GS3	A2□5S3	A2□FS3	A3□5S3	A3□BS3	A4□5S3	A4□7S3	AZ□6S3	AZ□8S3
19	A1□5S1	A1□CS1	A2□5S1	A2□GS1	A3□5S1	A3□FS1	A4□5S1	A4□BS1	AZ□5S1	AZ□7S1	A1□6S1	A1□CS1
20	A1□5S1	A1□CS2	A2□5S1	A2□GS2	A3□5S1	A3□FS2	A4□5S1	A4□BS2	AZ□5S1	AZ□7S2	A1□6S1	A1□CS2
21	A1□5S1	A1□CS3	A2□5S1	A2□GS3	A3□5S1	A3□FS3	A4□5S1	A4□BS3	AZ□5S1	AZ□7S3	A1□6S1	A1□CS3
22	A1□5S2	A1□CS1	A2□5S2	A2□GS1	A3□5S2	A3□FS1	A4□5S2	A4□BS1	AZ□5S2	AZ□7S1	A1□6S2	A1□CS1
23	A1□5S2	A1□CS2	A2□5S2	A2□GS2	A3□5S2	A3□FS2	A4□5S2	A4□BS2	AZ□5S2	AZ□7S2	A1□6S2	A1□CS2
24	A1□5S2	A1□CS3	A2□5S2	A2□GS3	A3□5S2	A3□FS3	A4□5S2	A4□BS3	AZ□5S2	AZ□7S3	A1□6S2	A1□CS3
25	A1□5S3	A1□CS1	A2□5S3	A2□GS1	A3□5S3	A3□FS1	A4□5S3	A4□BS1	AZ□5S3	AZ□7S1	A1□6S3	A1□CS1
26	A1□5S3	A1□CS2	A2□5S3	A2□GS2	A3□5S3	A3□FS2	A4□5S3	A4□BS2	AZ□5S3	AZ□7S2	A1□6S3	A1□CS2
27	A1□5S3	A1□CS3	A2□5S3	A2□GS3	A3□5S3	A3□FS3	A4□5S3	A4□BS3	AZ□5S3	AZ□7S3	A1□6S3	A1□CS3
28	A2□5S1	A2□CS1	A3□5S1	A3□GS1	A4□5S1	A4□FS1	AZ□5S1	AZ□BS1	A1□6S1	A1□8S1	A2□6S1	A2□CS1
29	A2□5S1	A2□CS2	A3□5S1	A3□GS2	A4□5S1	A4□FS2	AZ□5S1	AZ□BS2	A1□6S1	A1□8S2	A2□6S1	A2□CS2
30	A2□5S1	A2□CS3	A3□5S1	A3□GS3	A4□5S1	A4□FS3	AZ□5S1	AZ□BS3	A1□6S1	A1□8S3	A2□6S1	A2□CS3
31	A2□5S2	A2□CS1	A3□5S2	A3□GS1	A4□5S2	A4□FS1	AZ□5S2	AZ□BS1	A1□6S2	A1□8S1	A2□6S2	A2□CS1
32	A2□5S2	A2□CS2	A3□5S2	A3□GS2	A4□5S2	A4□FS2	AZ□5S2	AZ□BS2	A1□6S2	A1□8S2	A2□6S2	A2□CS2
33	A2□5S2	A2□CS3	A3□5S2	A3□GS3	A4□5S2	A4□FS3	AZ□5S2	AZ□BS3	A1□6S2	A1□8S3	A2□6S2	A2□CS3
34	A2□5S3	A2□CS1	A3□5S3	A3□GS1	A4□5S3	A4□FS1	AZ□5S3	AZ□BS1	A1□6S3	A1□8S1	A2□6S3	A2□CS1
35	A2□5S3	A2□CS2	A3□5S3	A3□GS2	A4□5S3	A4□FS2	AZ□5S3	AZ□BS2	A1□6S3	A1□8S2	A2□6S3	A2□CS2
36	A2□5S3	A2□CS3	A3□5S3	A3□GS3	A4□5S3	A4□FS3	AZ□5S3	AZ□BS3	A1□6S3	A1□8S3	A2□6S3	A2□CS3
37	A3□5S1	A3□CS1	A4□5S1	A4□GS1	AZ□5S1	AZ□FS1	A1□5S1	A1□7S1	A2□6S1	A2□8S1	A3□6S1	A3□CS1
38	A3□5S1	A3□CS2	A4□5S1	A4□GS2	AZ□5S1	AZ□FS2	A1□5S1	A1□7S2	A2□6S1	A2□8S2	A3□6S1	A3□CS2
39	A3□5S1	A3□CS3	A4□5S1	A4□GS3	AZ□5S1	AZ□FS3	A1□5S1	A1□7S3	A2□6S1	A2□8S3	A3□6S1	A3□CS3
40	A3□5S2	A3□CS1	A4□5S2	A4□GS1	AZ□5S2	AZ□FS1	A1□5S2	A1□7S1	A2□6S2	A2□8S1	A3□6S2	A3□CS1
41	A3□5S2	A3□CS2	A4□5S2	A4□GS2	AZ□5S2	AZ□FS2	A1□5S2	A1□7S2	A2□6S2	A2□8S2	A3□6S2	A3□CS2
42	A3□5S2	A3□CS3	A4□5S2	A4□GS3	AZ□5S2	AZ□FS3	A1□5S2	A1□7S3	A2□6S2	A2□8S3	A3□6S2	A3□CS3
43	A3□5S3	A3□CS1	A4□5S3	A4□GS1	AZ□5S3	AZ□FS1	A1□5S3	A1□7S1	A2□6S3	A2□8S1	A3□6S3	A3□CS1
44	A3□5S3	A3□CS2	A4□5S3	A4□GS2	AZ□5S3	AZ□FS2	A1□5S3	A1□7S2	A2□6S3	A2□8S2	A3□6S3	A3□CS2
45	A3□5S3	A3□CS3	A4□5S3	A4□GS3	AZ□5S3	AZ□FS3	A1□5S3	A1□7S3	A2□6S3	A2□8S3	A3□6S3	A3□CS3
46	A4□5S1	A4□CS1	AZ□5S1	AZ□GS1	A1□5S1	A1□BS1	A2□5S1	A2□7S1	A3□6S1	A3□8S1	A4□6S1	A4□CS1
47	A4□5S1	A4□CS2	AZ□5S1	AZ□GS2	A1□5S1	A1□BS2	A2□5S1	A2□7S2	A3□6S1	A3□8S2	A4□6S1	A4□CS2
48	A4□5S1	A4□CS3	AZ□5S1	AZ□GS3	A1□5S1	A1□BS3	A2□5S1	A2□7S3	A3□6S1	A3□8S3	A4□6S1	A4□CS3
49	A4□5S2	A4□CS1	AZ□5S2	AZ□GS1	A1□5S2	A1□BS1	A2□5S2	A2□7S1	A3□6S2	A3□8S1	A4□6S2	A4□CS1
50	A4□5S2	A4□CS2	AZ□5S2	AZ□GS2	A1□5S2	A1□BS2	A2□5S2	A2□7S2	A3□6S2	A3□8S2	A4□6S2	A4□CS2
51	A4□5S2	A4□CS3	AZ□5S2	AZ□GS3	A1□5S2	A1□BS3	A2□5S2	A2□7S3	A3□6S2	A3□8S3	A4□6S2	A4□CS3
52	A4□5S3	A4□CS1	AZ□5S3	AZ□GS1	A1□5S3	A1□BS1	A2□5S3	A2□7S1	A3□6S3	A3□8S1	A4□6S3	A4□CS1
53	A4□5S3	A4□CS2	AZ□5S3	AZ□GS2	A1□5S3	A1□BS2	A2□5S3	A2□7S2	A3□6S3	A3□8S2	A4□6S3	A4□CS2
54	A4□5S3	A4□CS3	AZ□5S3	AZ□GS3	A1□5S3	A1□BS3	A2□5S3	A2□7S3	A3□6S3	A3□8S3	A4□6S3	A4□CS3