S P E C I F I C A T I O N S

SMD TYPE TOP VIEW WHITE LED
MODEL : AT285L□PDB

1. General Description

(1) Features

- Package size - 2.8(L) × 3.5(W) × 0.65(T) mm
- Wide beam angle ($2\theta_{1/2}$=120deg)
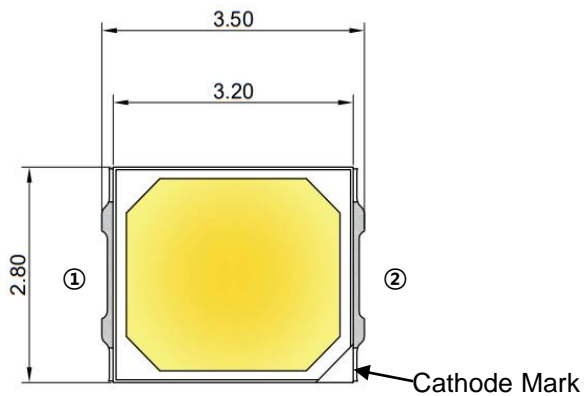- RoHS Compliant

(2) Applications

- Coupling into light guides
- Optical indicator
- Interior automotive lighting

(3) Outline Dimensions

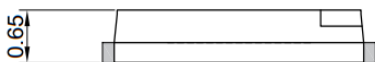[Tolerance : ±0.1, unit : mm]

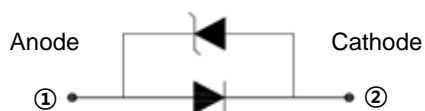**[Top View]**

3.50

3.20

2.80

① ②

Cathode Mark

[Bottom View]

1.90 0.50 1.10

② 2.00 1.80 ①

Cathode

[Side View]

0.65

[Circuit]

Anode   Cathode

①   ②
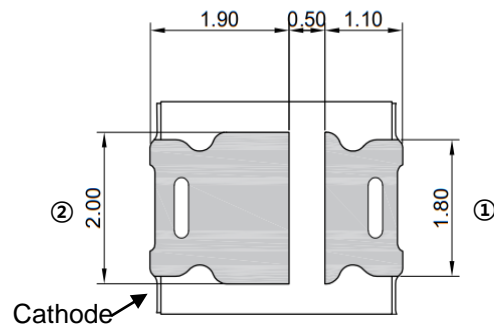
2. Specifications

(1) Absolute Maximum Ratings

$(T_a=25℃)$

Parameter	Symbol	Absolute Maximum Rating	Unit	Remark
Power Dissipation	P_D	612	mW	
Forward Current	I_F	180	mA	
Operating Temperature	T_{OPR}	-30 to +85	℃	
Storage Temperature	T_{STG}	-40 to +100	℃	
Junction Temperature	T_J	120	℃	

(2) Initial Electrical/Optical Characteristics

$(T_a=25℃)$

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	$I_F = 150mA$	2.9	-	3.4	V
Luminous Flux	Φ_V	$I_F = 150mA$	51.3	-	71.3	lm
Reverse Voltage	V_R	$I_R = 5mA$	0.5	-	1.2	V
Color Rendering Index [1]	Ra	$I_F = 150mA$	80	-	-	-
CRI Strong Red	R9	$I_F = 150mA$	0	-	-	R9

* Notes : (1) Color rendering index(Ra) measurement tolerance is ± 3.

(2) Initial electrical/optical characteristics data could be changeable if the user use the product in different condtion besides above data.

(3) Characteristics Rank

■ Forward Voltage Rank

$(I_F = 150mA, T_a=25℃)$

Symbol	Rank	Min.	Max.	Unit
V_F	V29	2.9	3.0	V
	V30	3.0	3.1	
	V31	3.1	3.2	
	V32	3.2	3.3	
	V33	3.3	3.4	

* Notes : Forward voltage measurement tolerance is ± 0.1V.

Based on the measuring instruments of Dongbu LED

■ Luminous Flux Rank

$(I_F = 150mA, T_a=25℃)$

Parameter	CCT	Rank	Min.	Max.	Unit
AT285L**D**PDB	6500K (D00)	D2P	55.3	59.3	lm
		D2	57.3	61.3	
		D3	61.3	65.3	
		D4	65.3	69.3	
AT285L**E**PDB	5700K (E00)	D2P	56.3	60.3	lm
		D2	58.3	62.3	
		D3	62.3	66.3	
		D4	66.3	70.3	
AT285L**F**PDB	5000K (F00)	D2P	57.3	61.3	lm
		D2	59.3	63.3	
		D3	63.3	67.3	
		D4	67.3	71.3	
AT285L**G**PDB	4500K (G00)	D2P	57.3	61.3	lm
		D2	59.3	63.3	
		D3	63.3	67.3	
		D4	67.3	71.3	
AT285L**H**PDB	4000K (H00)	D2P	55.3	59.3	lm
		D2	57.3	61.3	
		D3	61.3	65.3	
		D4	65.3	69.3	
AT285L**I**PDB	3500K (I00)	D2P	53.3	57.3	lm
		D2	55.3	59.3	
		D3	59.3	63.3	
		D4	63.3	67.3	
AT285L**J**PDB	3000K (J00)	D2P	52.3	56.3	lm
		D2	54.3	58.3	
		D3	58.3	62.3	
		D4	62.3	66.3	
AT285L**K**PDB	2700K (K00)	D2P	51.3	55.3	lm
		D2	53.3	57.3	
		D3	57.3	61.3	
		D4	61.3	65.3	

* Notes : Luminous flux measurement tolerance is ± 7%.

Based on the measuring instruments of Dongbu LED

■ Color Rank

$(I_F = 150mA, T_a = 25°C)$

6500K			5700K		
Rank	Cx	Cy	Rank	Cx	Cy
D00	0.3068	0.3113	**E00**	0.3222	0.3243
	0.3221	0.3261		0.3366	0.3369
	0.3205	0.3481		0.3376	0.3616
	0.3028	0.3304		0.3207	0.3462

Rank	Cx	Cy	Rank	Cx	Cy	Rank	Cx	Cy	Rank	Cx	Cy
D01	0.3038	0.3256	**D09**	0.3123	0.3342	**E00**	0.3211	0.3407	**E09**	0.3293	0.3481
	0.3080	0.3299		0.3166	0.3384		0.3252	0.3444		0.3333	0.3518
	0.3072	0.3349		0.3160	0.3437		0.3250	0.3501		0.3334	0.3578
	0.3028	0.3304		0.3115	0.3393		0.3207	0.3462		0.3292	0.3539
D02	0.3048	0.3209	**D10**	0.3131	0.3290	**E02**	0.3215	0.3353	**E10**	0.3293	0.3423
	0.3089	0.3249		0.3172	0.3331		0.3254	0.3388		0.3332	0.3458
	0.3080	0.3299		0.3166	0.3384		0.3252	0.3444		0.3333	0.3518
	0.3038	0.3256		0.3123	0.3342		0.3211	0.3407		0.3293	0.3481
D03	0.3058	0.3161	**D11**	0.3138	0.3239	**E03**	0.3218	0.3298	**E11**	0.3294	0.3364
	0.3098	0.3200		0.3178	0.3277		0.3256	0.3331		0.3331	0.3398
	0.3089	0.3249		0.3172	0.3331		0.3254	0.3388		0.3332	0.3458
	0.3048	0.3209		0.3131	0.3290		0.3215	0.3353		0.3293	0.3423
D04	0.3068	0.3113	**D12**	0.3146	0.3187	**E04**	0.3222	0.3243	**E12**	0.3294	0.3306
	0.3107	0.3150		0.3184	0.3224		0.3258	0.3275		0.3330	0.3338
	0.3098	0.3200		0.3178	0.3277		0.3256	0.3331		0.3331	0.3398
	0.3058	0.3161		0.3138	0.3239		0.3218	0.3298		0.3294	0.3364
D05	0.3080	0.3299	**D13**	0.3166	0.3384	**E05**	0.3252	0.3444	**E13**	0.3333	0.3518
	0.3123	0.3342		0.3209	0.3426		0.3293	0.3481		0.3374	0.3554
	0.3115	0.3393		0.3205	0.3481		0.3292	0.3539		0.3376	0.3616
	0.3072	0.3349		0.3160	0.3437		0.3250	0.3501		0.3334	0.3578
D06	0.3089	0.3249	**D14**	0.3172	0.3331	**E06**	0.3254	0.3388	**E14**	0.3332	0.3458
	0.3131	0.3290		0.3213	0.3371		0.3293	0.3423		0.3371	0.3493
	0.3123	0.3342		0.3209	0.3426		0.3293	0.3481		0.3374	0.3554
	0.3080	0.3299		0.3166	0.3384		0.3252	0.3444		0.3333	0.3518
D07	0.3098	0.3200	**D15**	0.3178	0.3277	**E07**	0.3256	0.3331	**E15**	0.3331	0.3398
	0.3138	0.3239		0.3217	0.3316		0.3294	0.3364		0.3369	0.3431
	0.3131	0.3290		0.3213	0.3371		0.3293	0.3423		0.3371	0.3493
	0.3089	0.3249		0.3172	0.3331		0.3254	0.3388		0.3332	0.3458
D08	0.3107	0.3150	**D16**	0.3184	0.3224	**E08**	0.3258	0.3275	**E16**	0.3330	0.3338
	0.3146	0.3187		0.3221	0.3261		0.3294	0.3306		0.3366	0.3369
	0.3138	0.3239		0.3217	0.3316		0.3294	0.3364		0.3369	0.3431
	0.3098	0.3200		0.3178	0.3277		0.3256	0.3331		0.3331	0.3398

■ Color Rank

$(I_F = 150mA, T_a = 25℃)$

	5000K				4500K	
Rank	**Cx**	**Cy**		**Rank**	**Cx**	**Cy**
F00	0.3366	0.3369		**G00**	0.3512	0.3465
	0.3515	0.3487			0.3670	0.3578
	0.3551	0.3760			0.3736	0.3874
	0.3376	0.3616			0.3548	0.3736

Rank	Cx	Cy	Rank	Cx	Cy	Rank	Cx	Cy	Rank	Cx	Cy
F01	0.3374	0.3554	**F09**	0.3457	0.3622	**G01**	0.3539	0.3668	**G09**	0.3628	0.3733
	0.3415	0.3588		0.3500	0.3657		0.3584	0.3701		0.3674	0.3767
	0.3420	0.3652		0.3507	0.3724		0.3595	0.3770		0.3689	0.3839
	0.3376	0.3616		0.3463	0.3687		0.3548	0.3736		0.3641	0.3804
F02	0.3371	0.3493	**F10**	0.3452	0.3558	**G02**	0.3530	0.3601	**G10**	0.3616	0.3663
	0.3411	0.3525		0.3492	0.3591		0.3573	0.3632		0.3659	0.3694
	0.3415	0.3588		0.3500	0.3657		0.3584	0.3701		0.3674	0.3767
	0.3374	0.3554		0.3457	0.3622		0.3539	0.3668		0.3628	0.3733
F03	0.3369	0.3431	**F11**	0.3446	0.3493	**G03**	0.3520	0.3533	**G11**	0.3603	0.3592
	0.3407	0.3462		0.3485	0.3524		0.3562	0.3562		0.3645	0.3622
	0.3411	0.3525		0.3492	0.3591		0.3573	0.3632		0.3659	0.3694
	0.3371	0.3493		0.3452	0.3558		0.3530	0.3601		0.3616	0.3663
F04	0.3366	0.3369	**F12**	0.3440	0.3428	**G04**	0.3512	0.3465	**G12**	0.3590	0.3521
	0.3403	0.3399		0.3477	0.3458		0.3551	0.3493		0.3630	0.3550
	0.3407	0.3462		0.3485	0.3524		0.3562	0.3562		0.3645	0.3622
	0.3369	0.3431		0.3446	0.3493		0.3520	0.3533		0.3603	0.3592
F05	0.3415	0.3588	**F13**	0.3500	0.3657	**G05**	0.3584	0.3701	**G13**	0.3674	0.3767
	0.3457	0.3622		0.3542	0.3692		0.3628	0.3733		0.3720	0.3800
	0.3463	0.3687		0.3551	0.3760		0.3641	0.3804		0.3736	0.3874
	0.3420	0.3652		0.3507	0.3724		0.3595	0.3770		0.3689	0.3839
F06	0.3411	0.3525	**F14**	0.3492	0.3591	**G06**	0.3573	0.3632	**G14**	0.3659	0.3694
	0.3452	0.3558		0.3533	0.3624		0.3616	0.3663		0.3703	0.3726
	0.3457	0.3622		0.3542	0.3692		0.3628	0.3733		0.3720	0.3800
	0.3415	0.3588		0.3500	0.3657		0.3584	0.3701		0.3674	0.3767
F07	0.3407	0.3462	**F15**	0.3485	0.3524	**G07**	0.3562	0.3562	**G15**	0.3645	0.3622
	0.3446	0.3493		0.3524	0.3554		0.3603	0.3592		0.3687	0.3652
	0.3452	0.3558		0.3533	0.3624		0.3616	0.3663		0.3703	0.3726
	0.3411	0.3525		0.3492	0.3591		0.3573	0.3632		0.3659	0.3694
F08	0.3403	0.3399	**F16**	0.3477	0.3458	**G08**	0.3551	0.3493	**G16**	0.3630	0.3550
	0.3440	0.3428		0.3515	0.3487		0.3590	0.3521		0.3670	0.3578
	0.3446	0.3493		0.3524	0.3554		0.3603	0.3592		0.3687	0.3652
	0.3407	0.3462		0.3485	0.3524		0.3562	0.3562		0.3645	0.3622

■ Color Rank

$(I_F = 150mA, T_a=25℃)$

4000K						3500K					
Rank	Cx	Cy				Rank	Cx	Cy			
H00	0.3670	0.3578				I00	0.3889	0.3690			
	0.3898	0.3716					0.4147	0.3814			
	0.4006	0.4044					0.4299	0.4165			
	0.3736	0.3874					0.3996	0.4015			
Rank	Cx	Cy	Rank	Cx	Cy	Rank	Cx	Cy	Rank	Cx	Cy
H01	0.3720	0.3800	H09	0.3849	0.3881	I01	0.3969	0.3932	I09	0.4114	0.4005
	0.3785	0.3841		0.3915	0.3922		0.4041	0.3969		0.4187	0.4040
	0.3804	0.3917		0.3939	0.4002		0.4071	0.4052		0.4223	0.4127
	0.3736	0.3874		0.3871	0.3959		0.3996	0.4015		0.4146	0.4089
H02	0.3703	0.3726	H10	0.3828	0.3803	I02	0.3941	0.3848	I10	0.4082	0.3922
	0.3766	0.3765		0.3890	0.3842		0.4012	0.3885		0.4151	0.3953
	0.3785	0.3841		0.3915	0.3922		0.4041	0.3969		0.4187	0.4040
	0.3720	0.3800		0.3849	0.3881		0.3969	0.3932		0.4114	0.4005
H03	0.3687	0.3652	H11	0.3806	0.3725	I03	0.3915	0.3769	I11	0.4050	0.3837
	0.3746	0.3689		0.3866	0.3762		0.3982	0.3803		0.4117	0.3868
	0.3766	0.3765		0.3890	0.3842		0.4012	0.3885		0.4151	0.3953
	0.3703	0.3726		0.3828	0.3803		0.3941	0.3848		0.4082	0.3922
H04	0.3670	0.3578	H12	0.3784	0.3647	I04	0.3889	0.3690	I12	0.4017	0.3752
	0.3727	0.3613		0.3841	0.3682		0.3951	0.3721		0.4082	0.3783
	0.3746	0.3689		0.3866	0.3762		0.3982	0.3803		0.4117	0.3868
	0.3687	0.3652		0.3806	0.3725		0.3915	0.3769		0.4050	0.3837
H05	0.3785	0.3841	H13	0.3915	0.3922	I05	0.4041	0.3969	I13	0.4187	0.4040
	0.3849	0.3881		0.3979	0.3962		0.4114	0.4005		0.4260	0.4075
	0.3871	0.3959		0.4006	0.4044		0.4146	0.4089		0.4299	0.4165
	0.3804	0.3917		0.3939	0.4002		0.4071	0.4052		0.4223	0.4127
H06	0.3766	0.3765	H14	0.3890	0.3842	I06	0.4012	0.3885	I14	0.4151	0.3953
	0.3828	0.3803		0.3952	0.3880		0.4082	0.3922		0.4221	0.3984
	0.3849	0.3881		0.3979	0.3962		0.4114	0.4005		0.4260	0.4075
	0.3785	0.3841		0.3915	0.3922		0.4041	0.3969		0.4187	0.4040
H07	0.3746	0.3689	H15	0.3866	0.3762	I07	0.3982	0.3803	I15	0.4117	0.3868
	0.3806	0.3725		0.3925	0.3798		0.4050	0.3837		0.4184	0.3899
	0.3828	0.3803		0.3952	0.3880		0.4082	0.3922		0.4221	0.3984
	0.3766	0.3765		0.3890	0.3842		0.4012	0.3885		0.4151	0.3953
H08	0.3727	0.3613	H16	0.3841	0.3682	I08	0.3951	0.3721	I16	0.4082	0.3783
	0.3784	0.3647		0.3898	0.3716		0.4017	0.3752		0.4147	0.3814
	0.3806	0.3725		0.3925	0.3798		0.4050	0.3837		0.4184	0.3899
	0.3746	0.3689		0.3866	0.3762		0.3982	0.3803		0.4117	0.3868

■ Color Rank

(I_F = 150mA, T_a=25℃)

3000K			2700K		
Rank	Cx	Cy	Rank	Cx	Cy
J00	0.4147	0.3814	K00	0.4373	0.3893
	0.4373	0.3893		0.4593	0.3944
	0.4562	0.4260		0.4813	0.4319
	0.4299	0.4165		0.4562	0.4260

Rank	Cx	Cy	Rank	Cx	Cy	Rank	Cx	Cy	Rank	Cx	Cy
J01	0.4260	0.4075	J09	0.4387	0.4122	K01	0.4513	0.4166	K09	0.4637	0.4196
	0.4323	0.4098		0.4450	0.4144		0.4575	0.4181		0.4697	0.4209
	0.4364	0.4189		0.4496	0.4236		0.4625	0.4275		0.4750	0.4304
	0.4299	0.4165		0.4430	0.4212		0.4562	0.4260		0.4687	0.4289
J02	0.4221	0.3984	J10	0.4344	0.4032	K02	0.4465	0.4071	K10	0.4586	0.4103
	0.4282	0.4008		0.4404	0.4052		0.4525	0.4087		0.4642	0.4114
	0.4323	0.4098		0.4450	0.4144		0.4575	0.4181		0.4697	0.4209
	0.4260	0.4075		0.4387	0.4122		0.4513	0.4166		0.4637	0.4196
J03	0.4184	0.3899	J11	0.4302	0.3943	K03	0.4419	0.3982	K11	0.4535	0.4011
	0.4243	0.3921		0.4360	0.3962		0.4477	0.3996		0.4590	0.4023
	0.4282	0.4008		0.4404	0.4052		0.4525	0.4087		0.4642	0.4114
	0.4221	0.3984		0.4344	0.4032		0.4465	0.4071		0.4586	0.4103
J04	0.4147	0.3814	J12	0.4260	0.3853	K04	0.4373	0.3893	K12	0.4483	0.3918
	0.4203	0.3834		0.4316	0.3873		0.4428	0.3906		0.4538	0.3931
	0.4243	0.3921		0.4360	0.3962		0.4477	0.3996		0.4590	0.4023
	0.4184	0.3899		0.4302	0.3943		0.4419	0.3982		0.4535	0.4011
J05	0.4323	0.4098	J13	0.4450	0.4144	K05	0.4575	0.4181	K13	0.4697	0.4209
	0.4387	0.4122		0.4513	0.4166		0.4637	0.4196		0.4756	0.4223
	0.4430	0.4212		0.4562	0.4260		0.4687	0.4289		0.4813	0.4319
	0.4364	0.4189		0.4496	0.4236		0.4625	0.4275		0.4750	0.4304
J06	0.4282	0.4008	J14	0.4404	0.4052	K06	0.4525	0.4087	K14	0.4642	0.4114
	0.4344	0.4032		0.4465	0.4071		0.4586	0.4103		0.4700	0.4126
	0.4387	0.4122		0.4513	0.4166		0.4637	0.4196		0.4756	0.4223
	0.4323	0.4098		0.4450	0.4144		0.4575	0.4181		0.4697	0.4209
J07	0.4243	0.3921	J15	0.4360	0.3962	K07	0.4477	0.3996	K15	0.4590	0.4023
	0.4302	0.3943		0.4419	0.3982		0.4535	0.4011		0.4646	0.4035
	0.4344	0.4032		0.4465	0.4071		0.4586	0.4103		0.4700	0.4126
	0.4282	0.4008		0.4404	0.4052		0.4525	0.4087		0.4642	0.4114
J08	0.4203	0.3834	J16	0.4316	0.3873	K08	0.4428	0.3906	K16	0.4538	0.3931
	0.4260	0.3853		0.4373	0.3893		0.4483	0.3918		0.4593	0.3944
	0.4302	0.3943		0.4419	0.3982		0.4535	0.4011		0.4646	0.4035
	0.4243	0.3921		0.4360	0.3962		0.4477	0.3996		0.4590	0.4023

* Notes : (1) The color coordinates measurement tolerance is ± 0.01.

　　　　Based on the measuring instruments of Dongbu LED

　　(2) The chromaticity coordinates refer to CIE 1931 chromaticity diagram.

■ CIE Chromaticity Diagram
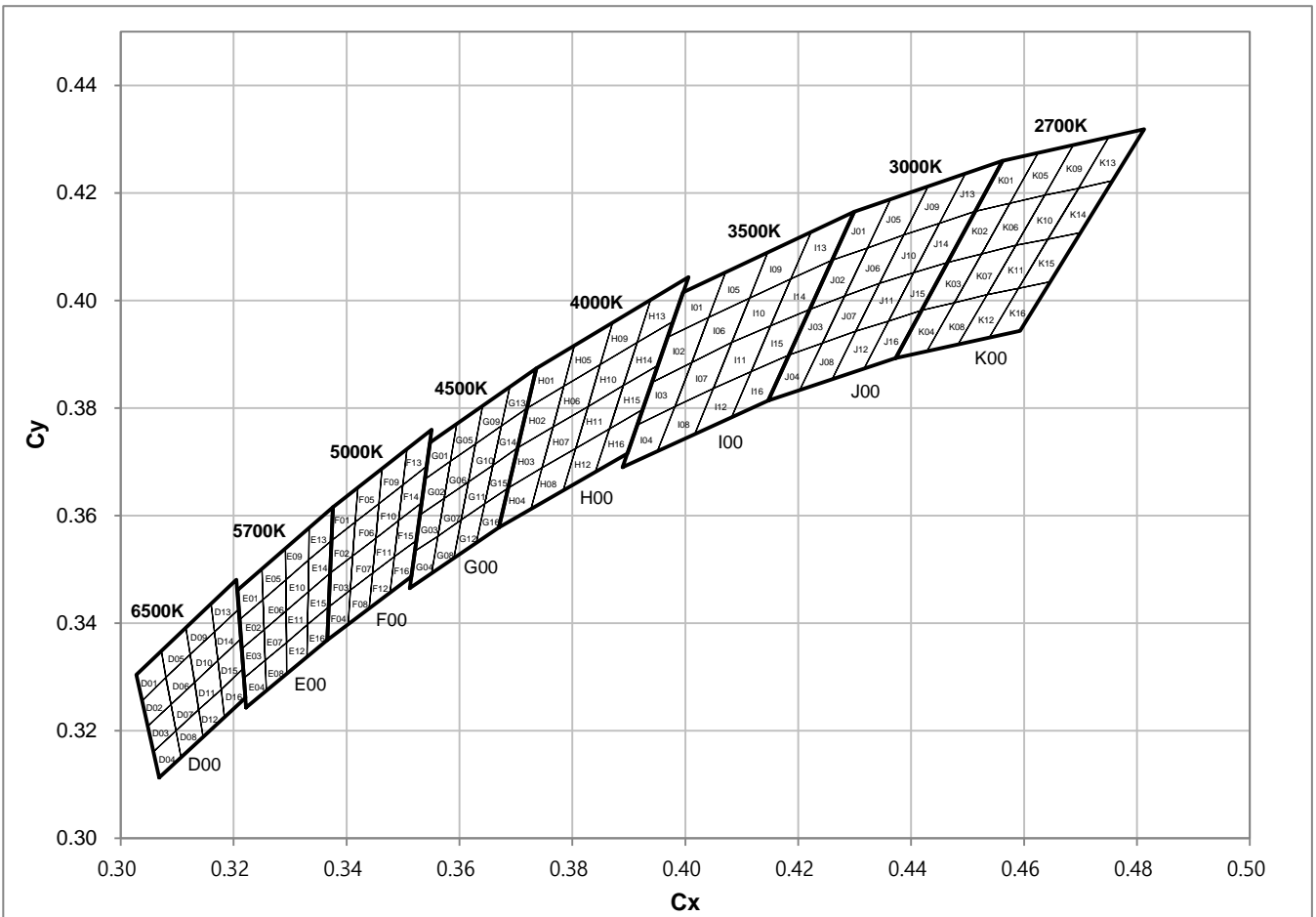
Ex) F00 (5000K) 16 Rank Bin			

F01	F05	F09	F13
F02	F06	F10	F14
F03	F07	F11	F15
F04	F08	F12	F16

Ex) F00 (5000K) 5 Rank Bin

F51	F05	F09	F52
F02	F06	F10	F14
F03	F07 F55	F11	F15
F53	F08	F12	F54

Ex) F00 (5000K) 1 Rank Bin

F01	F05	F09	F13
F02	F06	F10	F14
F03	F07	F11 F00	F15
F04	F08	F12	F16

3. Rank Code

The rank inscription is composed of the follow method.

Ex)	D3	F00	V30	080	150
	①	②	③	④	⑤

①	Φ_V Rank
②	Color Rank
③	V_F Rank
④	CRI Rank (080 : 80Ra~)
⑤	I_F (150mA)

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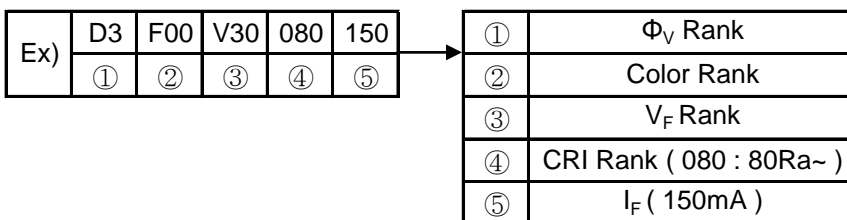
4. Characteristics Diagrams
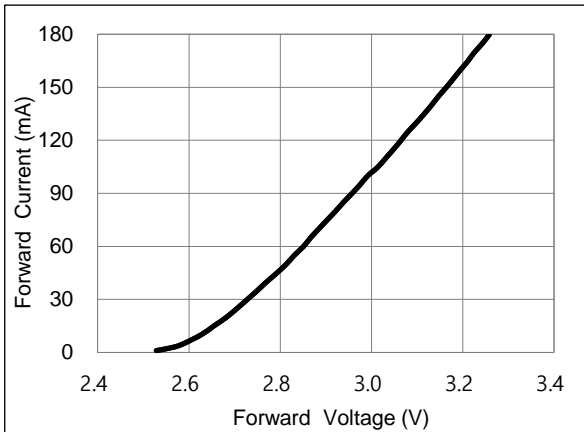
Forward Voltage vs Forward Current, T$_a$=25℃
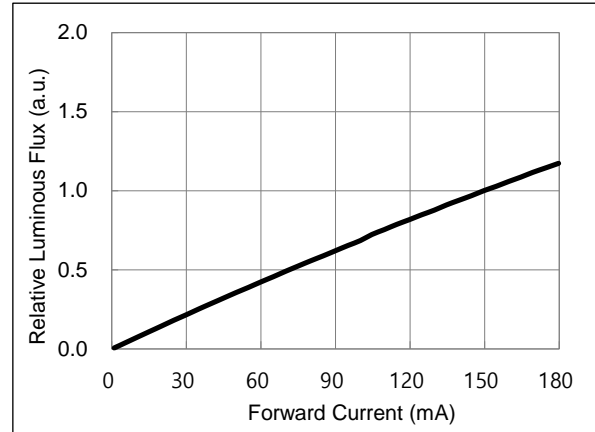
Forward Current vs Relative Luminous Flux, T$_a$=25℃
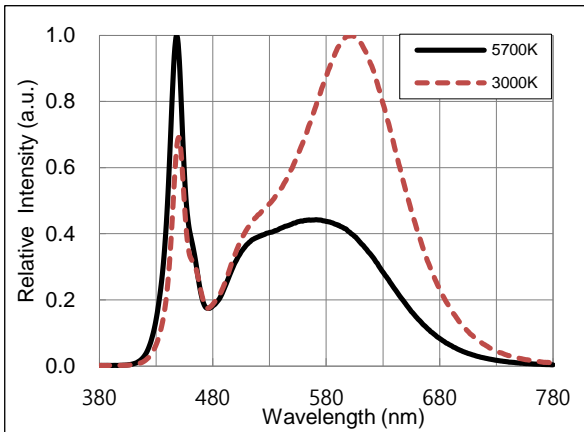
Spectrum, T$_a$=25℃, I$_F$=150mA
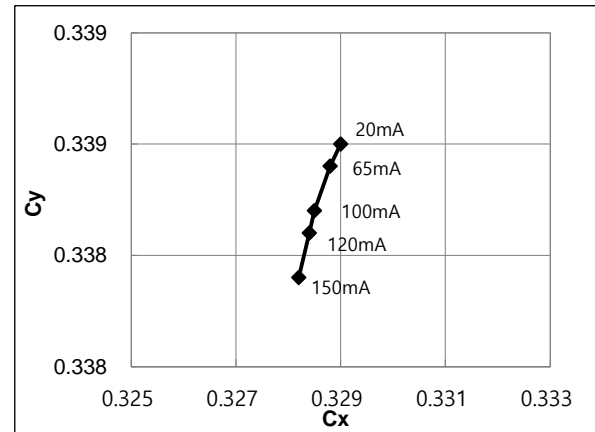
Forward Current vs Chromaticity Coordinate, T$_a$=25℃

R$_{θJA}$= 100℃/W
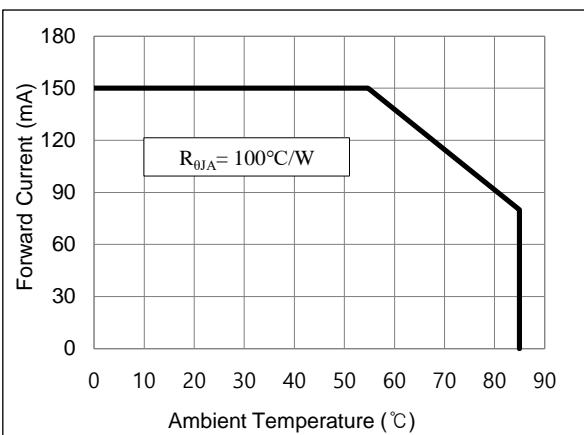
Derating Curve
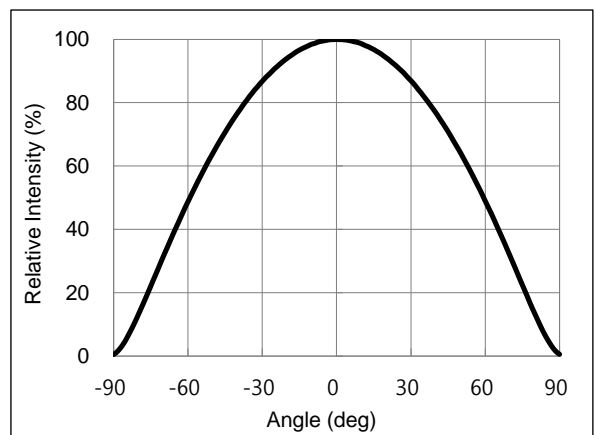
Beam Angle, T$_a$=25℃, I$_F$=150mA

* Note : The graph of characteristics is the sampling data for the reference.

5. Soldering Conditions

(1) Recommended Soldering Conditions

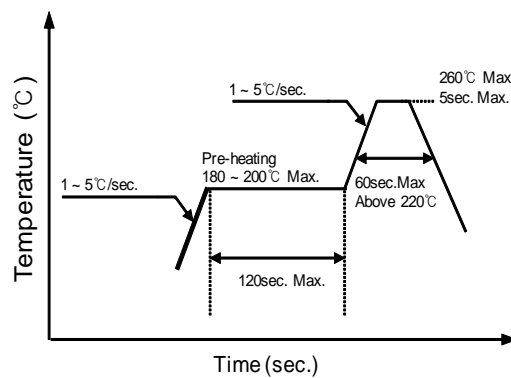|	Reflow Soldering		Hand Soldering	
Conditions	Lead Solder	Lead-Free Solder		
Pre-Heating	120 ~ 150℃	180 ~ 200℃	Temperature Soldering time	300℃ Max. 3 sec. Max. (one time only)
Pre-Heat Time	120sec. Max.	120sec. Max.		
Peak Temperature	240℃ Max.	260℃ Max.		
Soldering Time	5sec. Max.	5sec. Max.		

 * After reflow soldering, rapid cooling should be avoid.
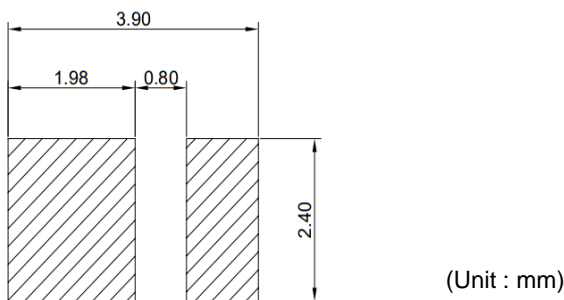
(2) Recommended Reflow Soldering Profile

■ Lead Solder
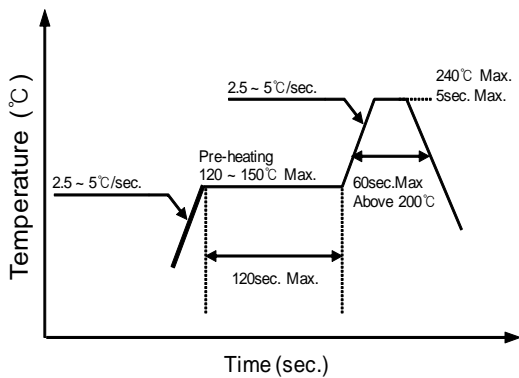
■ Lead Free Solder

(3) Recommended Soldering Pad Pattern

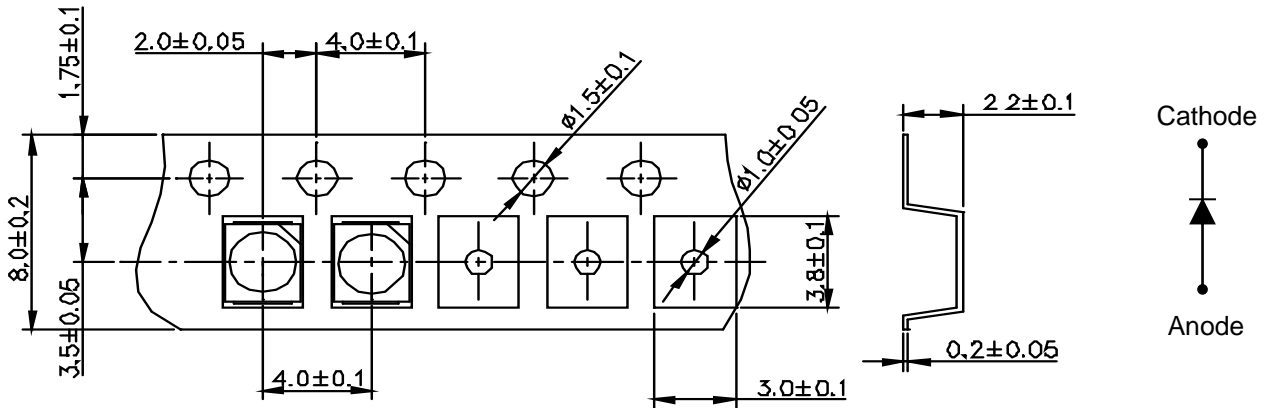(Unit : mm)

(4) Soldering Cautions

 -. Reflow soldering should not be done more than two times.

 -. When soldering, do not put stress on the LEDs during heating.

 -. After soldering, do not wrap the circuit board.

 -. The LEDs can be soldered on place using the reflow soldering method.

 -. Occasionally there is a brightness decrease cause by the influence of heat or ambient atmosphere during
    air reflow. It is recommend that the user use the nitrogen reflow method.

 -. After complete soldering, the product should be handled after cooling. (required to be handled under 60℃)

6. Packing

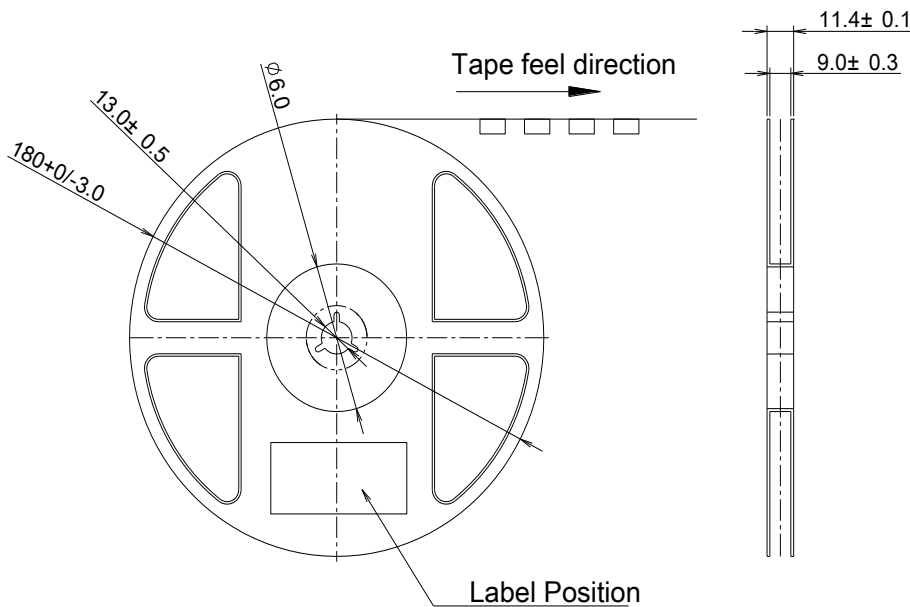### (1) Carrier Tape & Carrier Reel Dimensions

■ Carrier Tape   (Unit : mm)

Cathode

Anode

■ Carrier Reel   (Unit : mm)

Tape feel direction

Label Position
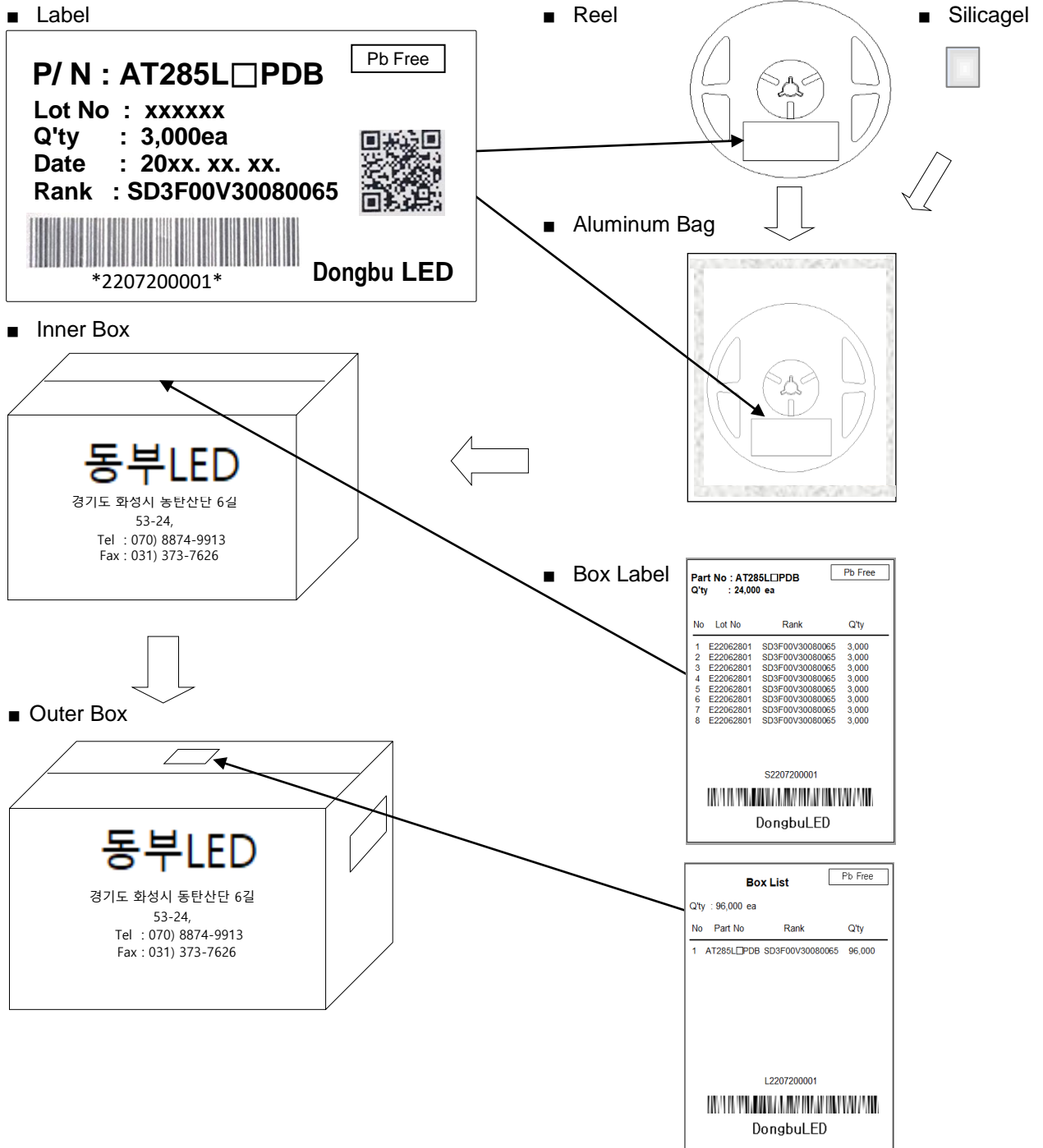
< 7" Reel >

* Notes

1) Quantity : Taping of 1 reel will be from 1,000 pcs to 3,000 pcs in unit of a number in the thousands.

2) Adhesion strength of cover tape is 0.1 ~ 0.7N(20gf ~60gf) when the cover tape is turned off from the carrier tape.

(2) Packing and Packaging

■ Label

P/ N : **AT285L□PDB**   Pb Free

Lot No : **xxxxxx**
Q'ty : **3,000ea**
Date : **20xx. xx. xx.**
Rank : **SD3F00V30080065**

2207200001   **Dongbu LED**

■ Reel

■ Silicagel

■ Aluminum Bag

■ Inner Box

동부LED
경기도 화성시 농탄산단 6길
53-24,
Tel : 070) 8874-9913
Fax : 031) 373-7626

■ Box Label

Part No : AT285L□PDB   Pb Free
Q'ty   : 24,000 ea

No	Lot No	Rank	Q'ty
1	E22062801	SD3F00V30080065	3,000
2	E22062801	SD3F00V30080065	3,000
3	E22062801	SD3F00V30080065	3,000
4	E22062801	SD3F00V30080065	3,000
5	E22062801	SD3F00V30080065	3,000
6	E22062801	SD3F00V30080065	3,000
7	E22062801	SD3F00V30080065	3,000
8	E22062801	SD3F00V30080065	3,000

S2207200001

DongbuLED

■ Outer Box

동부LED
경기도 화성시 동탄산단 6길
53-24,
Tel : 070) 8874-9913
Fax : 031) 373-7626

Box List   Pb Free
Q'ty : 96,000 ea

No	Part No	Rank	Q'ty
1	AT285L□PDB	SD3F00V30080065	96,000

L2207200001

DongbuLED

Box Type	Inner Box	Outer Box	
		Medium	Large
Max. Packing Q'ty(pcs)	24,000	96,000	192,000

1) The carrier tape winded on the reel are placed into an ESD protected pack with a silicagel and sealed by the thermal pressure sealer. Then this sealed pack is packaged in a cardboard box.

7. Precaution

(1) Static Electricity

These LEDs are highly susceptible to static electricity or surge voltage. So a wrist strap or an anti-electrostatic glove necessarily be used when handling the LEDs.

Do not use the equipment that surge voltage is came into existence.

All devices and equipment that measure or mount the LEDs must be properly grounded.

After being assembled LEDs, it should be ascertained a electrical characteristic whether that are damaged by static electricity or not.

(2) Packing

The moisture that is absorbed into the LED products may cause a badness and damage to the optical characteristics of the LEDs. Therefore the moisture barrier aluminum bag is used to keep moisture in the packing. And a silicagel is inserted into a moisture barrier aluminum bag that sealed by the thermal pressure sealer.

(3) Cleaning

Ethanol can be used for LED cleaning. The maximum exposure time with ethanol is 1 minute for cleaning.

Do not use ultrasonic for cleaning the LEDs or other solvents, If ultrasonic cleaning is absolutely necessary, a pre-test should be done before cleaning to see if the LED is damaged.

(4) Storage

In order to avoid the absorption of moisture, it is recommended to store LEDs in the moisture barrier aluminum bag is not opened.

Storage condition before opening the packing :

     Temperature ： below 30℃

     Humidity   ： 90%RH max

The LEDs should be used within a year.

Storage condition after opening the packing :

     Temperature ： below 30℃

     Humidity   ： 60%RH max

The products have to be used within one year from the date marked on label which is attached to reel or aluminium bag. After opening the packing, the LEDs should be used within 168 hours(7days). If unused LEDs remain, they should be stored in the place kept away moisture.

If the LEDs have exceeded the above storage time, it should be used after to bake using the following conditions.

     Baking condition ： 60±5℃, 10 ~ 24 hours

A slight amount of sulfur, chlorine or VOC from the surrounding environment may cause discoloration of the LEDs.

(5) Pick and Place

It should be avoided to rub or scratch the surface of resin by any hard material. It is possible that the LEDs are damaged to the optical characteristics.

(6) Heat

The LEDs are products that are generated heat. It must be considered the heat generation of the LEDs when it is designed the PCB. After considering the ambient temperature and the heat generation of LEDs, the operating current should be decided .

(7) Others

If the forward or reverse voltage which exceeds the absolute maximum rating is applied to the LEDs, that will cause the damage to the LEDs. It is possible that the damaged LEDs do not light on at the current.
Be careful not to look the LEDs that the output power is strongly increased in the face. It is possible that eyesight has been getting weaker.
Light emitting part should not be exposed by physical contact. It can be the reason of material desquamation and progressive disconnection.
This LED is made for in-door use only. If the user wants the LED for out-door use, it is necessary to take some additional treatment on the product after surface mounting technology(SMT).
This specification could be changed without a notice to the customer because of the inside circumstance of the company.