

Pb-free
HEAT



GSPW16□3J Series

High Efficiency , Power LED

Features

Package	CLCC Type Outer dimension 5.0 x 5.0 x 1.0mm (L x W x H)
Product features	<ul style="list-style-type: none"> ▪ 133lm/W(5,000K, CRI(Ra):70) of environmentally friendly like CO₂ reduction, white color source. ▪ Wide variety of color temperatures correspond to general lighting uses ▪ Long life : 60,000h / 70% (retention of initial luminosity) ▪ According to ANSI standard. ▪ 3 type color rendering index variation.(CRI(Ra):95, 85, 70) ▪ Storage temperature :-40 ~ 100 ▪ Operating temperature :-40 ~ 85 ▪ Lead-free soldering compatible ▪ RoHS compliant
Color temperature	9 type color temperature variation. 6,500K, 5,700K, 5,000K, 4,500K, 4,000K, 3,500K, 3,000K, 2,700K,2,400K We will make response depending on your detail requirements. Please contact Stanley directly.
Half Intensity Angle	120 deg.
Die materials	InGaN
Rank grouping parameter	Sorted by luminous flux and chromaticity ,forward voltage per rank taping
Assembly method	Auto pick & place machine (Auto Mounter)
Soldering methods	Recommendation of Reflow soldering / Manual soldering
Taping and reel	1,000pcs per reel in a 12mm width tape. (Standard) Reel diameter: φ180mm
ESD-withstand voltage	Up to 1kV (HBM) Reference

Recommended Applications

- Residential lighting, Office lighting, Plant lighting, Store lighting, and Special lighting etc.

Color , Luminous Flux and CRI

(Ta=25 ,If=350mA)

Part No.	Emitted Color	Lens Color	CCT TYP.	Chromaticity Coordinates ^{※1,2}		CRI(Ra) TYP.	Luminous Flux ^{※1}	
				x	y		ϕ_v (lm)	
				MIN.	TYP.			
GSPW1643JTE-65X	Daylight	Pale Yellow	6,500K	0.313	0.329	70	100	135
GSPW1643JTE-57X		Pale Yellow	5,700K	0.329	0.342	70	100	140
GSPW1643JTE-50X	Natural White	Pale Yellow				70	100	140
GSPW1653JTE-50Y		Yellow	5,000K	0.345	0.355	85	90	110
GSPW1653JTE-50Z		Yellow				95	70	95
GSPW1653JTE-45X	White	Pale Orange	4,500K	0.362	0.366	70	100	140
GSPW1653JTE-40X					70	100	130	
GSPW1653JTE-40Y			4,000K	0.383	0.380	85	80	110
GSPW1653JTE-40Z					95	60	85	
GSPW1653JTE-35X	Light Warm	Pale Orange	3,500K	0.408	0.392	70	100	130
GSPW1653JTE-30X	Warm White					70	90	125
GSPW1653JTE-30Y			3,000K	0.435	0.403	85	70	100
GSPW1653JTE-30Z					95	60	80	
GSPW1653JTE-27X						70	90	120
GSPW1653JTE-27Y			2,700K	0.459	0.410	85	70	100
GSPW1653JTE-27Z					95	60	80	
GSPW1653JTE-24Y			2,400K	0.488	0.414	85	70	100

1 Please refer to the attached sheets, each sorting chart.

2 Chromaticity coordinates : x and y according to CIE1931.

Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Power Dissipation	P_d	3,360	mW
Continuous Forward Current	I_F	800	mA
Repetitive Peak Forward Current ※ ¹	I_{FRM}	1,200	mA
Allowable Reverse Current	I_R	85	mA
ESD-withstand voltage(HBM)※ ²	ESD	1,000	V
Junction Temperature	T_j	150	°C
Solder Temperature ※ ³ (Reflow soldering)	T_{sld}	260	°C
Operating Temperature ※ ⁴	T_{opr}	-40~+85	°C
Storage Temperature ※ ⁴	T_{stg}	-40~+100	°C

1 I_{FRM} Measurement condition / Pulse Width 1ms., Duty 1/20

2 ESD-withstand voltage testing method : EIAJ 4701/300(304) (HBM) 1.5kΩ, 100pF

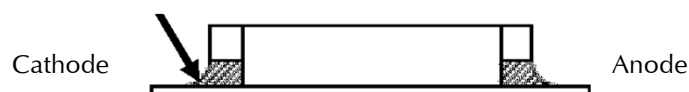
3 Please refer to the attached sheets soldering conditions.

4 The range of operating and storage temperature is not taping condition.

Thermal Characteristics

Item	Symbol	Ratings TYP.	Unit
Thermal Resistance (Junction - Solder Point)※ ⁵	$R_{th(j-s)}$	20	°C/W

5 Junction - solder point(measurement point)



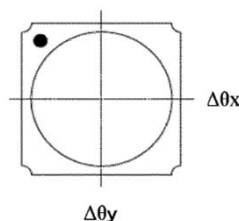
Electro-Optical Characteristics

(Ta=25)

Item	Condition	Symbol	Characteristics		Unit
			MIN.	TYP.	
Forward Voltage	I _F =350mA	V _F	MIN.	2.75	V
			TYP.	3.00	
			MAX.	3.50	
Reverse Voltage ^{※1}	I _R =85mA	V _R	MIN.	0.9	V
			MAX.	1.7	
Half Intensity Angle ^{※2}	I _F =350mA	Δθ _x	TYP.	120	deg.
		Δθ _y			

1 Please do not input reverse voltage for prevent the destruction by static electricity.

2 Viewing Angle at 50% I_v, Δθ_x, Δθ_y, as shown in the figure below.



Sorting chart for Forward Voltage Characteristics

(Ta=25 , Tj=40)

Rank	V _F (V)		Condition
	MIN.	MAX.	
A	2.75	3.00	I _F =350mA
B	3.00	3.25	
C	3.25	3.50	

Tolerance Each Rank : +/- 0.1V

LEDs shall be "Forward Voltage" sorted put into the following chart and each rank parts shall be packed separately when shipping.

Luminous Flux Rank (Unit : lm)

(Ta=25 ,Tj=40 ,If=350mA)

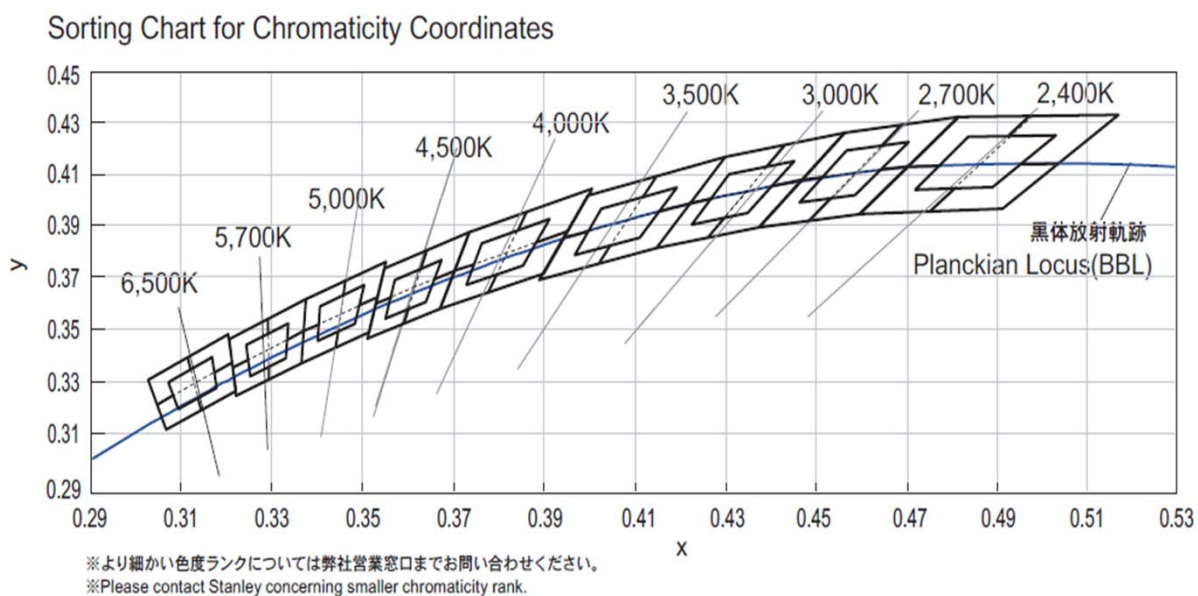
Part No.	FF	FG	FH	FJ	GA	GB	GC	GD	GE	GF	GG	Rank
	60	70	80	90	100	110	120	130	140	150	160	Flux (MIN.)
	70	80	90	100	110	120	130	140	150	160	170	Flux (MAX.)
GSPW1643JTE-65X												
GSPW1643JTE-57X												
GSPW1643JTE-50X												
GSPW1653JTE-50Y												
GSPW1653JTE-50Z												
GSPW1653JTE-45X												
GSPW1653JTE-40X												
GSPW1653JTE-40Y												
GSPW1653JTE-40Z												
GSPW1653JTE-35X												
GSPW1653JTE-30X												
GSPW1653JTE-30Y												
GSPW1653JTE-30Z												
GSPW1653JTE-27X												
GSPW1653JTE-27Y												
GSPW1653JTE-27Z												
GSPW1653JTE-24Y												

※LEDs shall be "Luminous Flux" sorted put into the following chart and each rank parts shall be packed separately when shipping.

Tolerance Each Rank : +/-10%

Sorting Chart for Chromaticity Coordinates

(Ta=25 , Tj=40 , If=350mA)



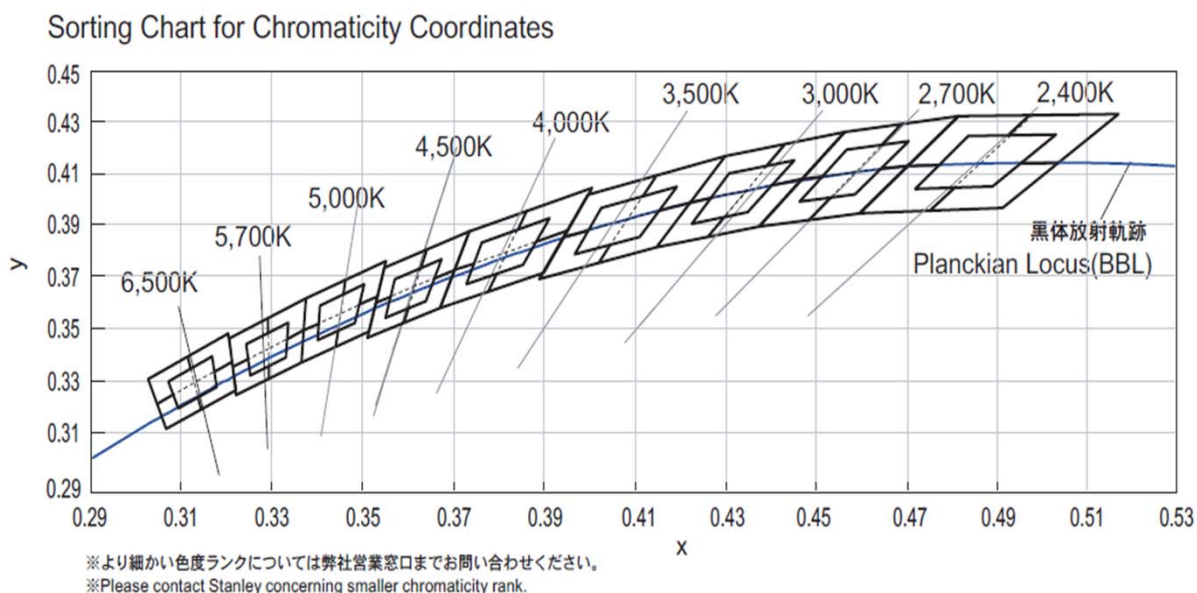
Tolerance Each Rank : +/-0.01

Rank	CCT	ccx	ccy	Rank	CCT	ccx	ccy	Rank	CCT	ccx	ccy	Rank	CCT	ccx	ccy
24A	2400K	0.5189	0.4345	27A	2700K	0.4813	0.4319	30A	3000K	0.4562	0.4260	35A	3500K	0.4299	0.4165
		0.5001	0.4332			0.4688	0.4290			0.4431	0.4213			0.4148	0.4090
		0.4881	0.4145			0.4585	0.4104			0.4345	0.4033			0.4083	0.3921
		0.5059	0.4157			0.4703	0.4132			0.4468	0.4077			0.4223	0.3990
24B	2400K	0.5059	0.4157	27B	2700K	0.4703	0.4132	30B	3000K	0.4468	0.4077	35B	3500K	0.4223	0.3990
		0.4881	0.4145			0.4585	0.4104			0.4345	0.4033			0.4083	0.3921
		0.4761	0.3957			0.4483	0.3919			0.4260	0.3854			0.4018	0.3752
		0.4970	0.4151			0.4593	0.3944			0.4373	0.3893			0.4147	0.3814
24C	2400K	0.4468	0.4332	27C	2700K	0.4688	0.4290	30C	3000K	0.4431	0.4213	35C	3500K	0.4148	0.4090
		0.4562	0.4319			0.4562	0.4260			0.4299	0.4165			0.3996	0.4015
		0.4688	0.4132			0.4468	0.4077			0.4223	0.3990			0.3943	0.3853
		0.4585	0.4145			0.4585	0.4104			0.4345	0.4033			0.4083	0.3921
24D	2400K	0.4881	0.4145	27D	2700K	0.4585	0.4104	30D	3000K	0.4345	0.4033	35D	3500K	0.4083	0.3921
		0.4703	0.4132			0.4468	0.4077			0.4223	0.3990			0.3943	0.3853
		0.4593	0.3944			0.4373	0.3893			0.4147	0.3814			0.3889	0.3690
		0.4761	0.3957			0.4483	0.3919			0.4260	0.3854			0.4018	0.3752
24G	2400K	0.5032	0.4245	27G	2700K	0.4697	0.4211	30G	3001K	0.4451	0.4146	35G	3500K	0.4188	0.4041
		0.4849	0.4232			0.4576	0.4183			0.4324	0.4100			0.4042	0.3970
		0.4734	0.4044			0.4477	0.3998			0.4244	0.3923			0.3983	0.3804
		0.4907	0.4057			0.4591	0.4025			0.4361	0.3964			0.4118	0.3869

Please contact our sales concerning rank designation.

Sorting Chart for Chromaticity Coordinates

(Ta=25 ,Tj=40 , If=350mA)



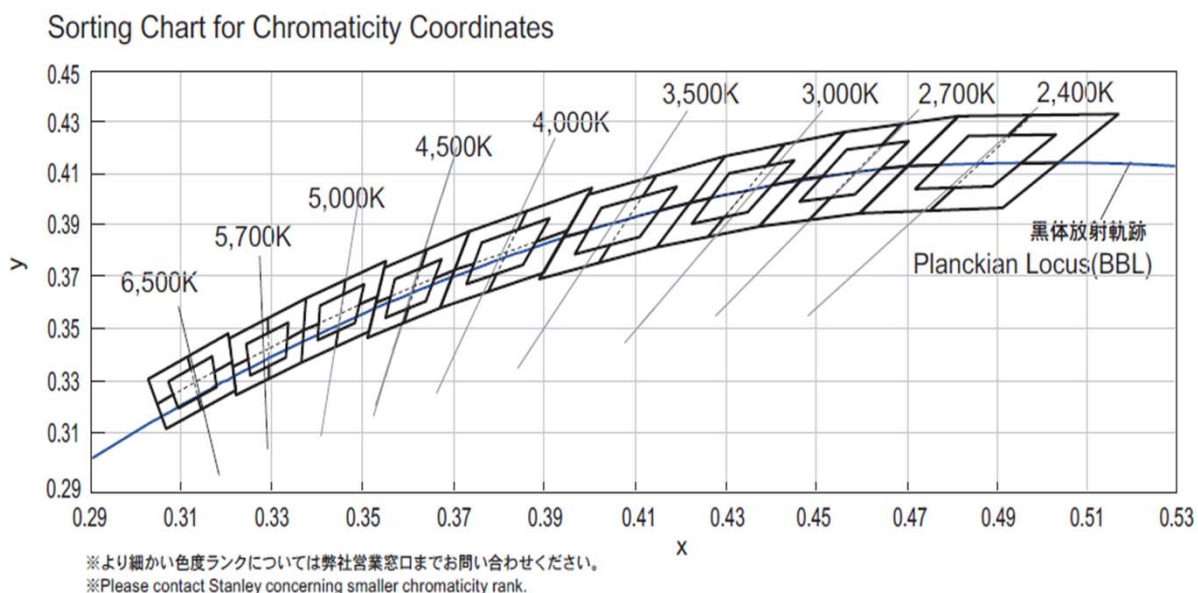
Tolerance Each Rank : +/-0.01

Rank	CCT	ccx	ccy	Rank	CCT	ccx	ccy	Rank	CCT	ccx	ccy	Rank	CCT	ccx	ccy
40A	4000K	0.4006	0.4044	45A	4500K	0.3736	0.3874	50A	5000K	0.3551	0.3760	57A	5700K	0.3376	0.3616
		0.3871	0.3959			0.3642	0.3805			0.3464	0.3688			0.3292	0.3539
		0.3828	0.3803			0.3617	0.3663			0.3452	0.3558			0.3293	0.3423
		0.3952	0.3880			0.3703	0.3726			0.3533	0.3624			0.3371	0.3493
40B	4000K	0.3952	0.3880	45B	4500K	0.3703	0.3726	50B	5000K	0.3533	0.3624	57B	5700K	0.3371	0.3493
		0.3828	0.3803			0.3617	0.3663			0.3452	0.3558			0.3293	0.3423
		0.3784	0.3647			0.3593	0.3522			0.3441	0.3428			0.3294	0.3306
		0.3898	0.3716			0.3670	0.3578			0.3515	0.3487			0.3366	0.3369
40C	4000K	0.3871	0.3959	45C	4500K	0.3642	0.3805	50C	5000K	0.3464	0.3688	57C	5700K	0.3292	0.3539
		0.3736	0.3874			0.3548	0.3736			0.3376	0.3616			0.3207	0.3462
		0.3703	0.3726			0.3532	0.3601			0.3371	0.3493			0.3215	0.3353
		0.3828	0.3803			0.3617	0.3663			0.3452	0.3558			0.3293	0.3423
40D	4000K	0.3828	0.3803	45D	4500K	0.3617	0.3663	50D	5000K	0.3452	0.3558	57D	5700K	0.3293	0.3423
		0.3703	0.3726			0.3532	0.3601			0.3371	0.3493			0.3215	0.3353
		0.3670	0.3578			0.3512	0.3465			0.3366	0.3369			0.3222	0.3243
		0.3784	0.3647			0.3593	0.3522			0.3441	0.3428			0.3294	0.3306
40G	4000K	0.3914	0.3922	45G	4500K	0.3674	0.3767	50G	5000K	0.3500	0.3657	57G	5700K	0.3333	0.3518
		0.3784	0.3841			0.3584	0.3701			0.3416	0.3589			0.3251	0.3444
		0.3746	0.3689			0.3562	0.3563			0.3407	0.3462			0.3256	0.3331
		0.3865	0.3762			0.3645	0.3622			0.3485	0.3524			0.3333	0.3398

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Sorting Chart for Chromaticity Coordinates

($T_a=25$, $T_j=40$, $I_f=350mA$)

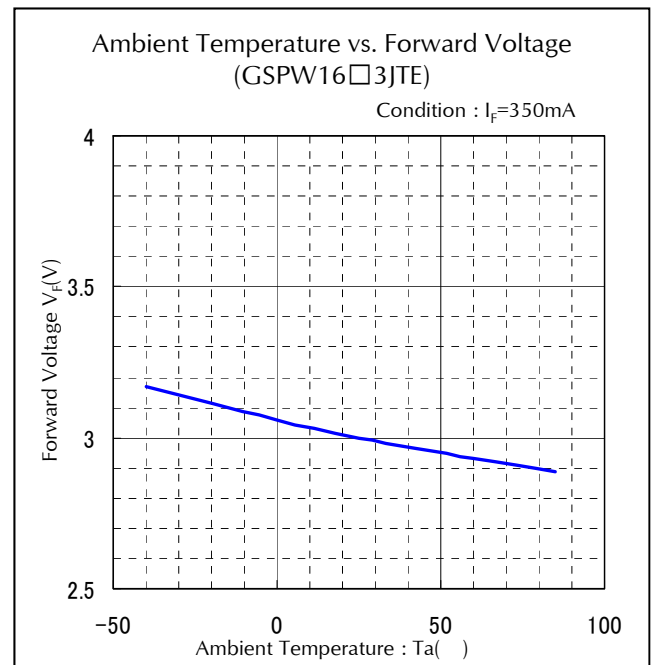
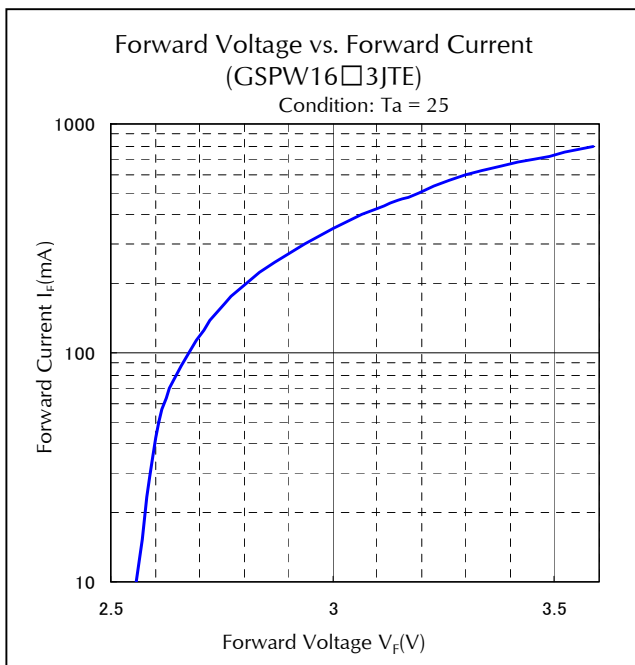
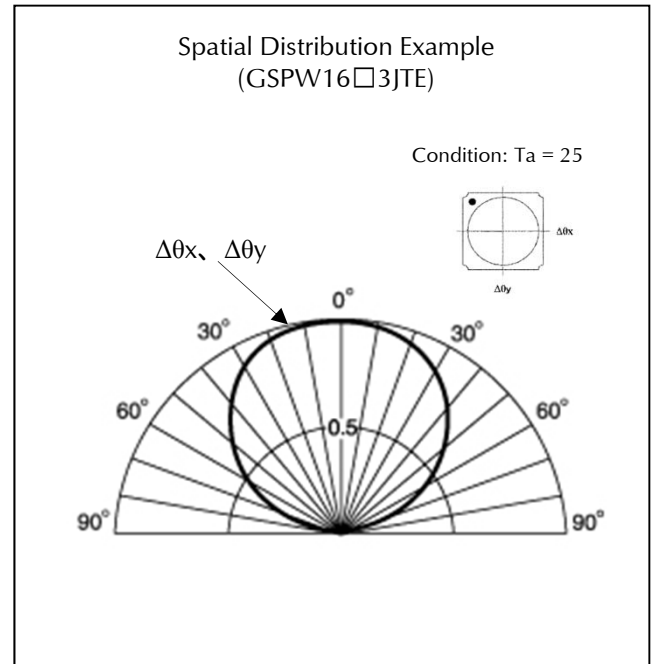
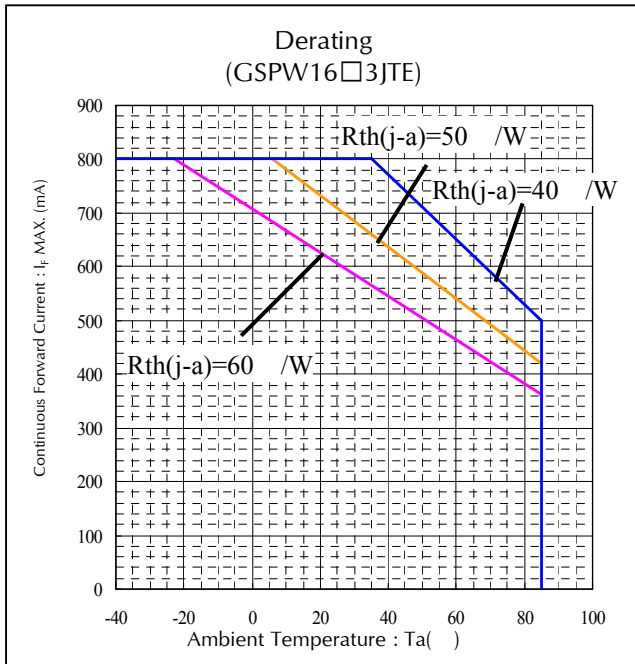


Tolerance Each Rank : +/-0.01

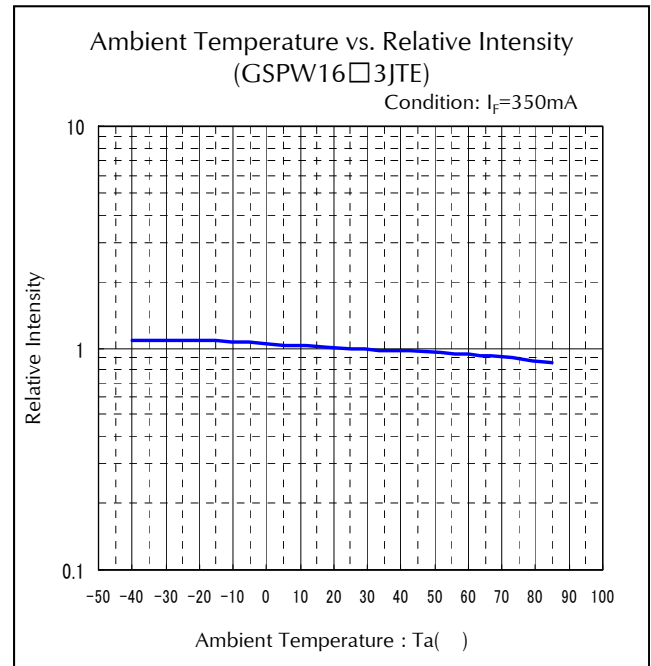
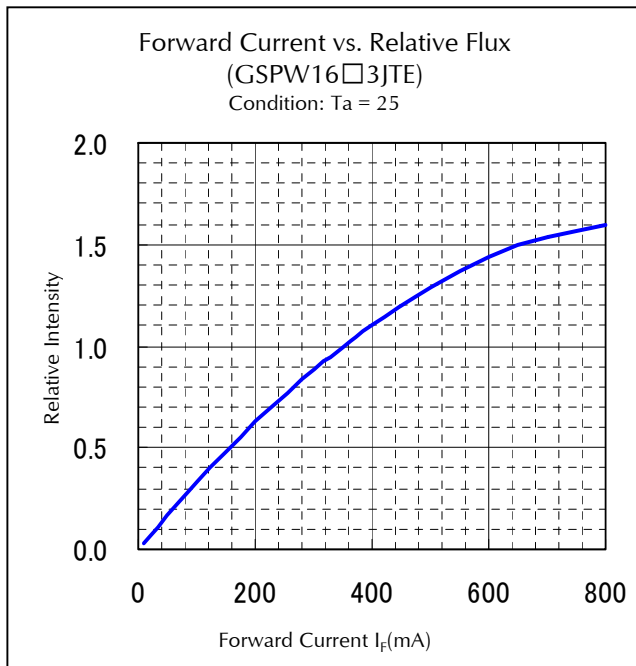
Rank	CCT	cx	cy
65A	6500K	0.3205	0.3481
		0.3117	0.3393
		0.3131	0.3290
		0.3213	0.3371
65B	6500K	0.3213	0.3371
		0.3131	0.3290
		0.3145	0.3187
65C	6500K	0.3221	0.3261
		0.3117	0.3393
		0.3028	0.3304
		0.3048	0.3209
65D	6500K	0.3131	0.3290
		0.3131	0.3290
		0.3048	0.3209
		0.3068	0.3113
65G	6500K	0.3145	0.3187
		0.3166	0.3384
		0.3081	0.3299
		0.3098	0.3200
		0.3177	0.3277

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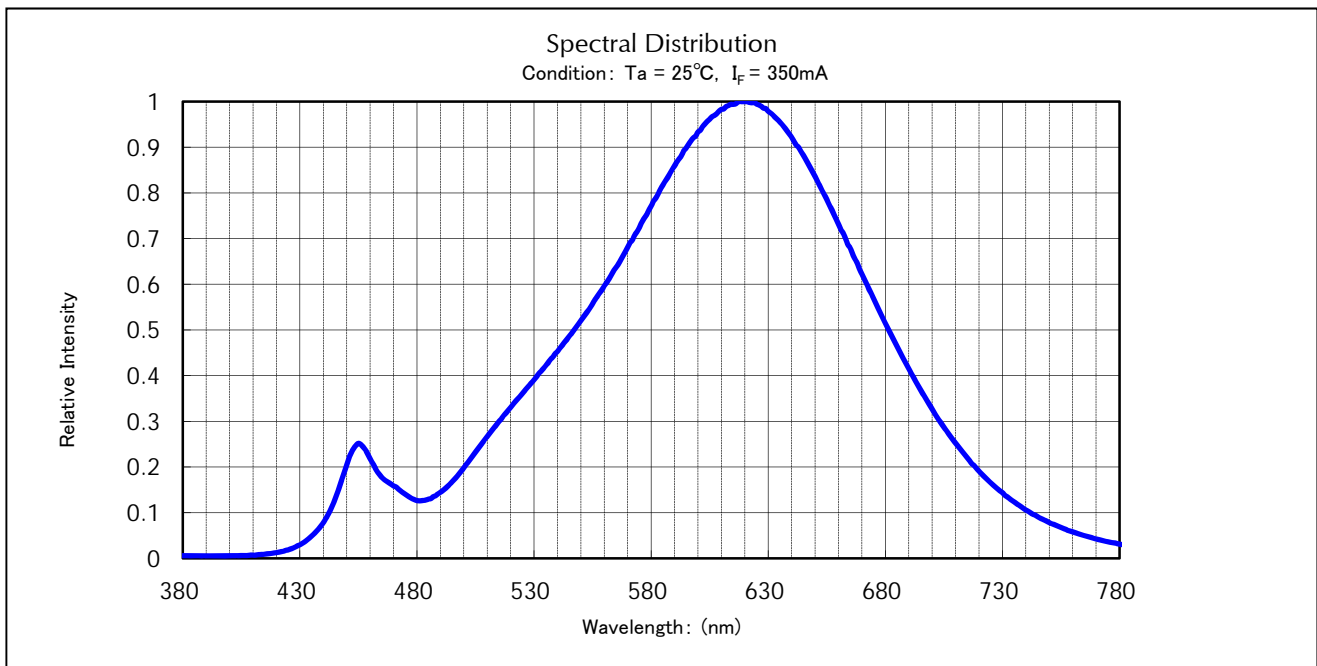
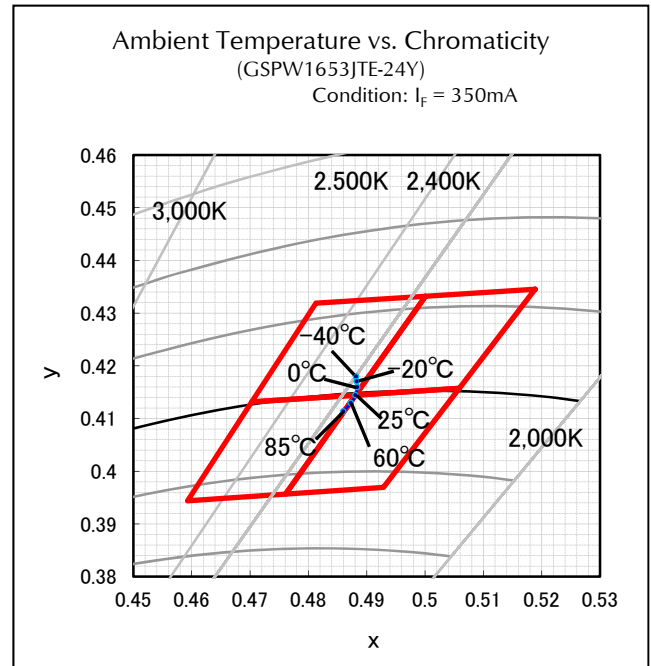
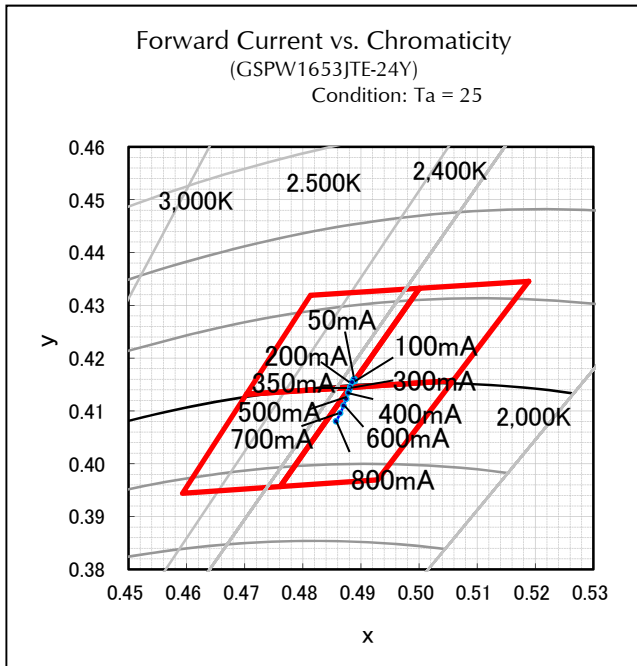
Technical Data



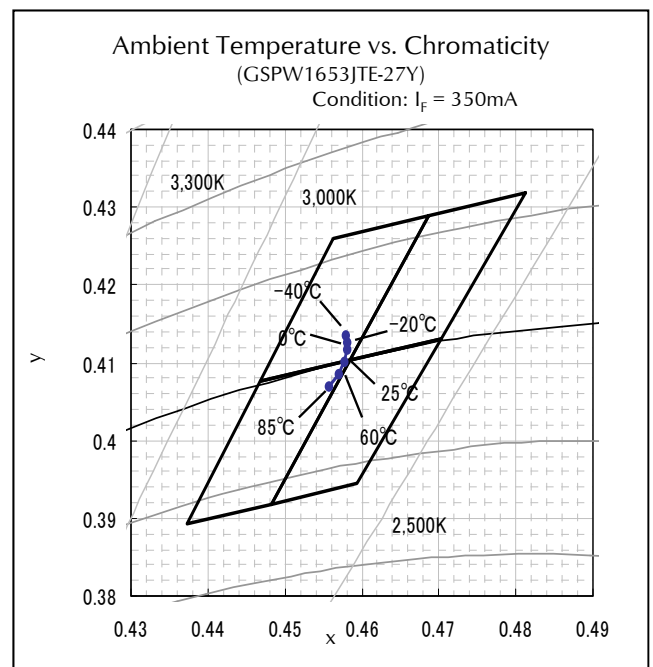
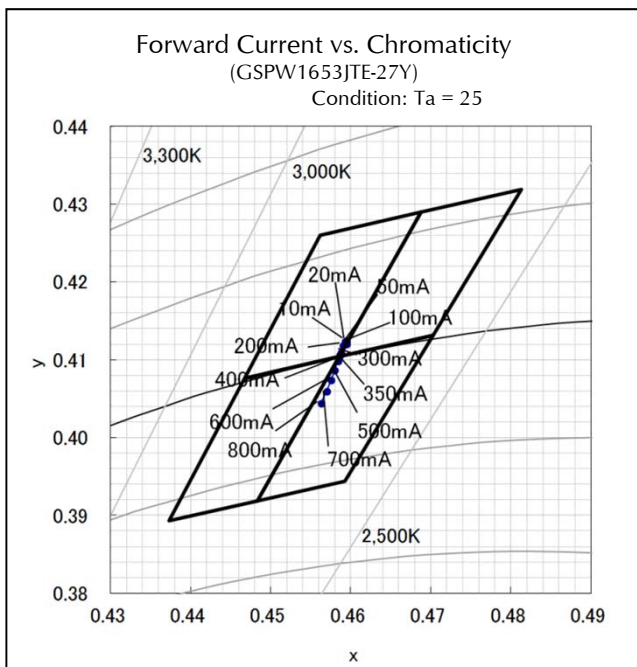
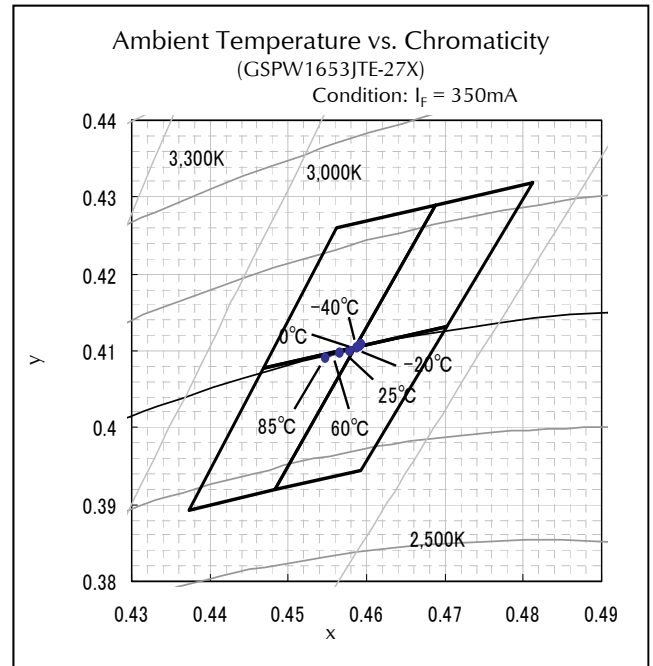
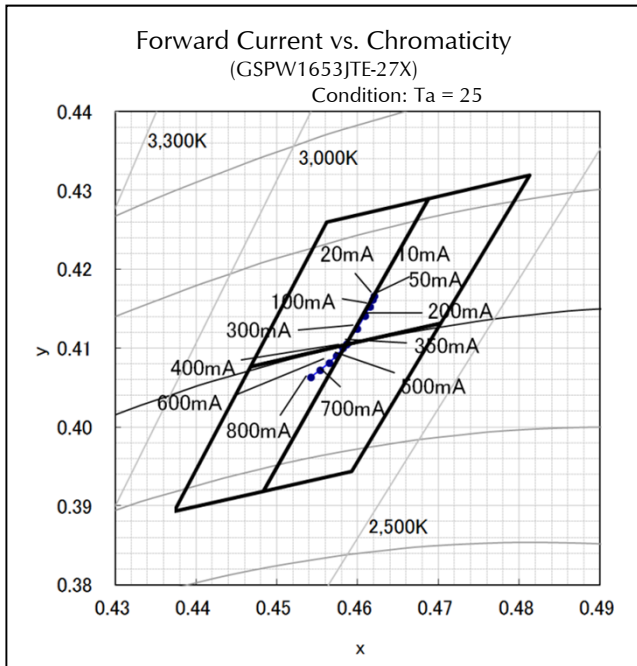
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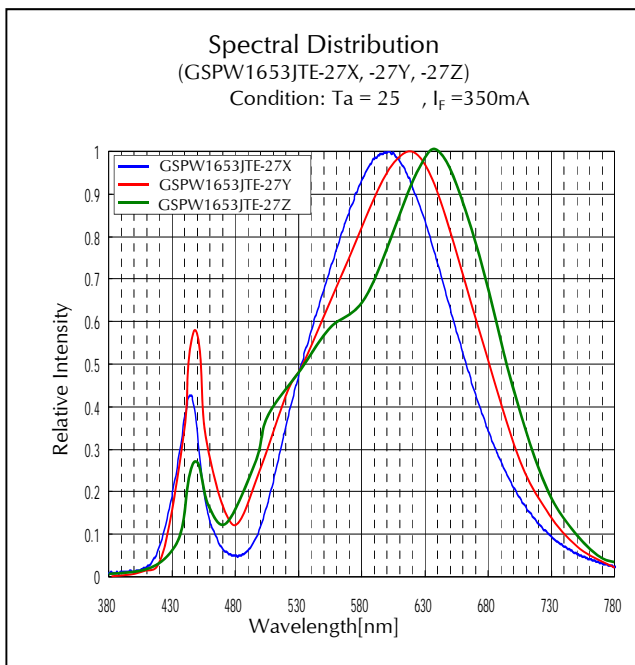
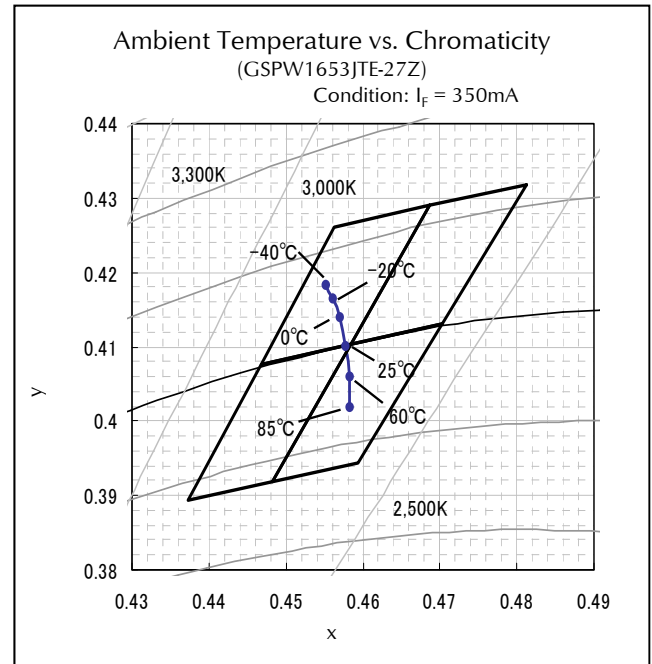
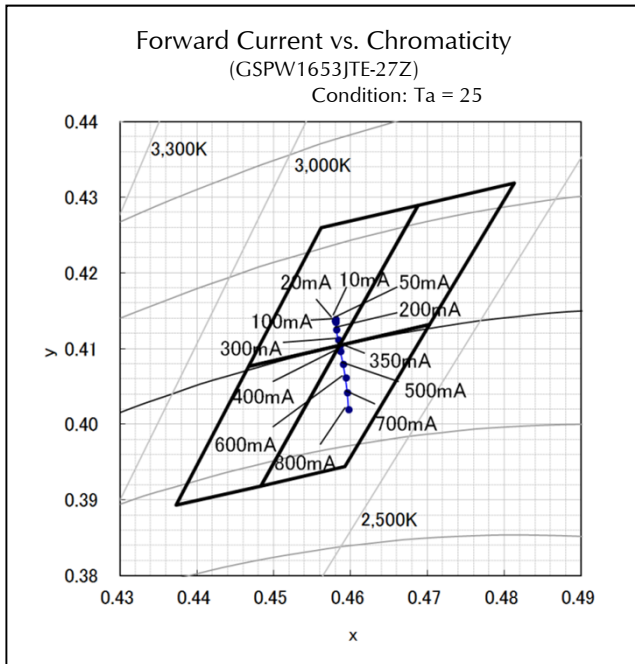
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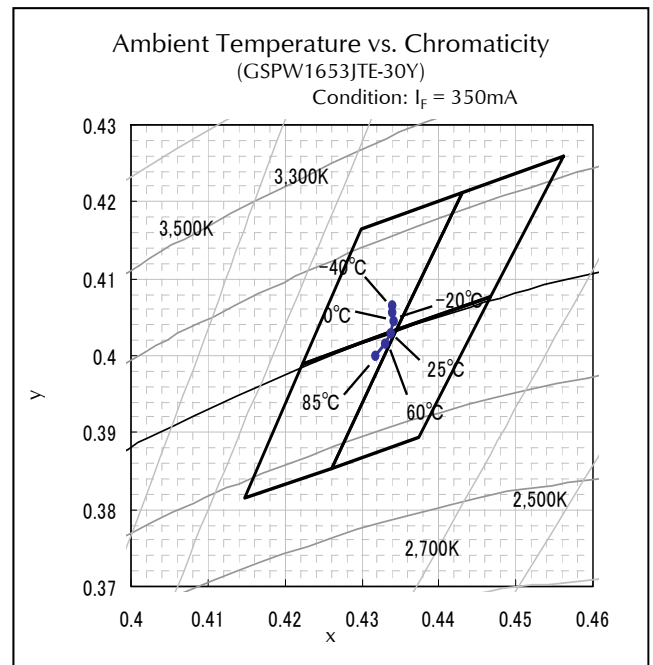
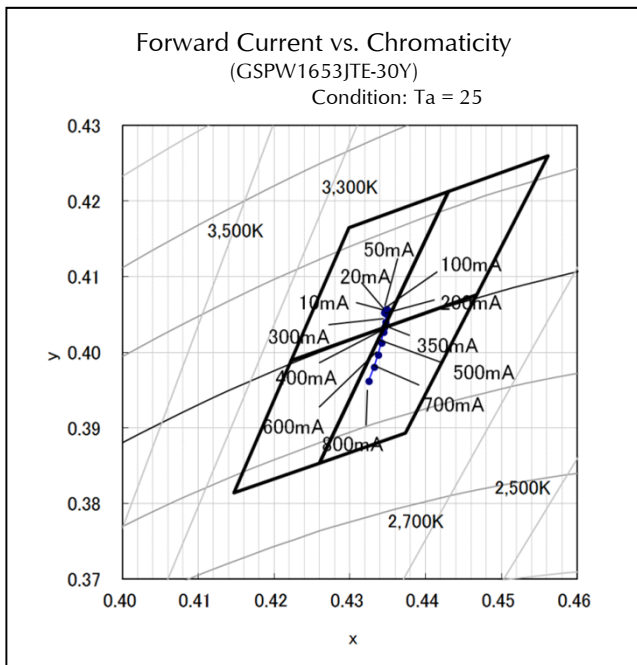
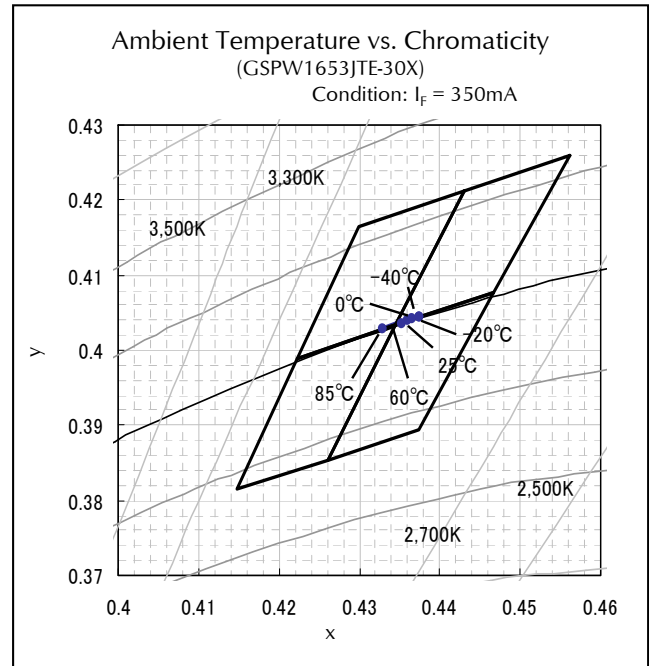
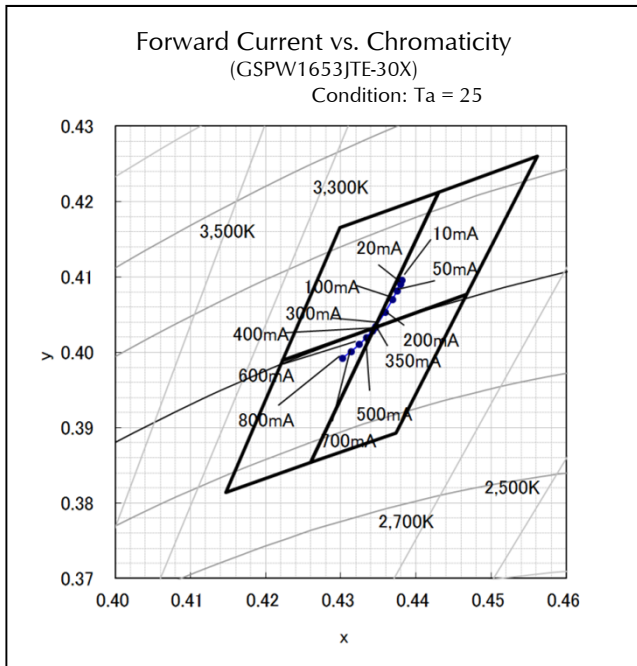
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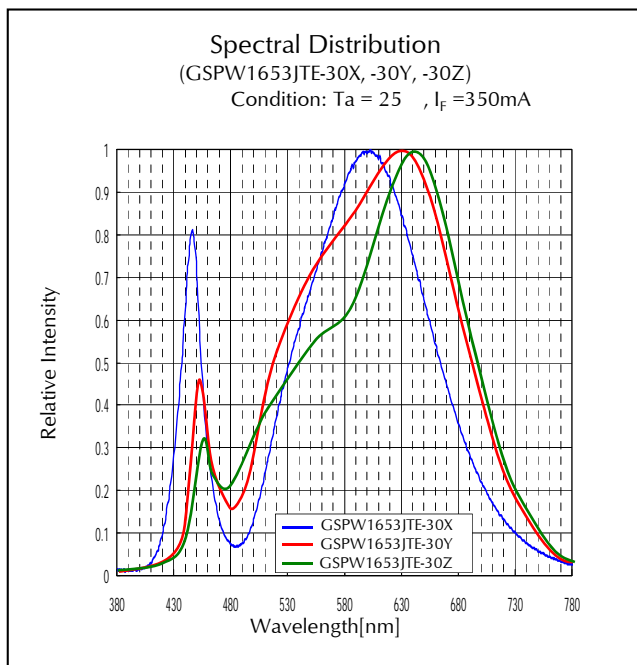
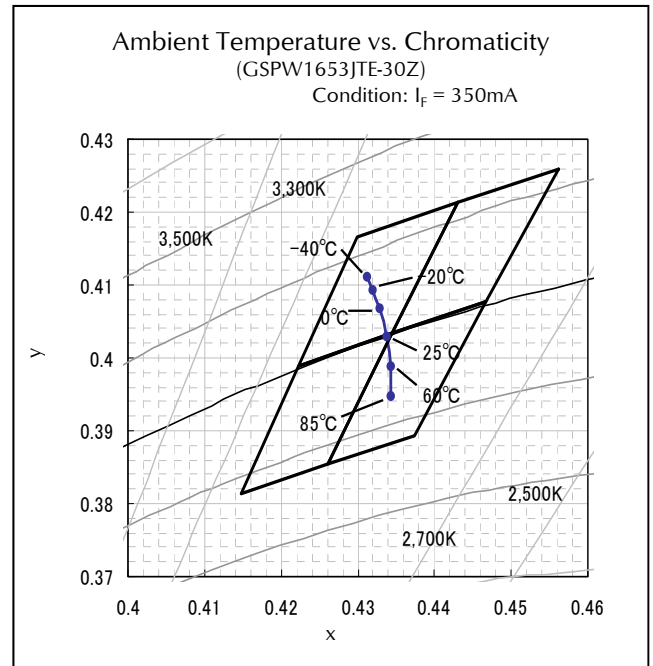
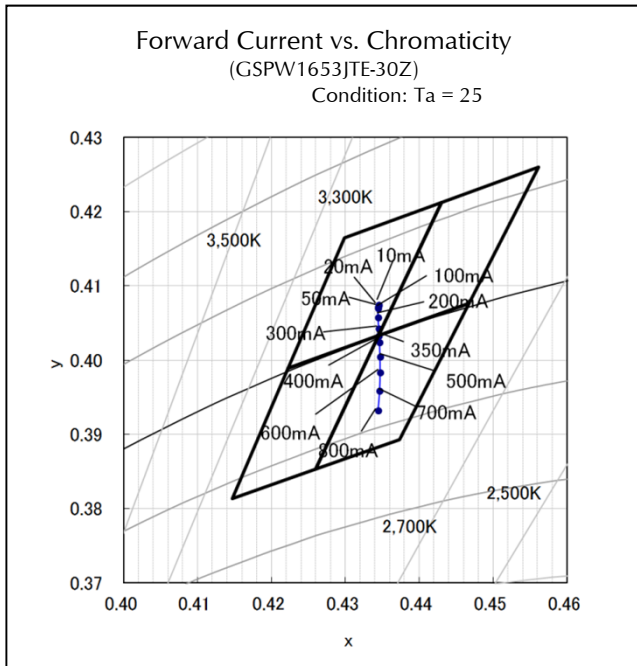
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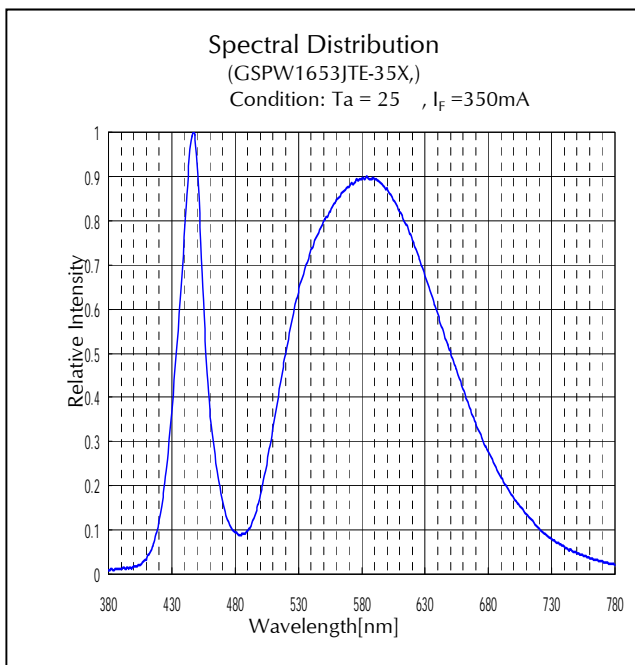
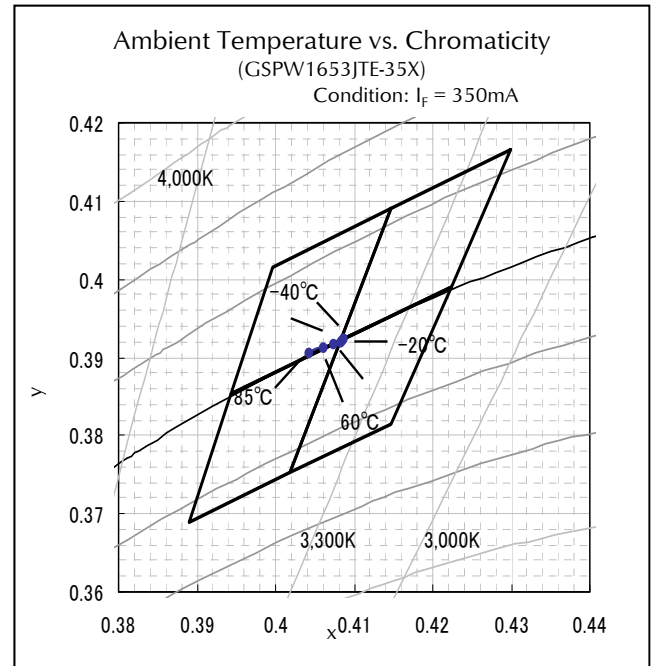
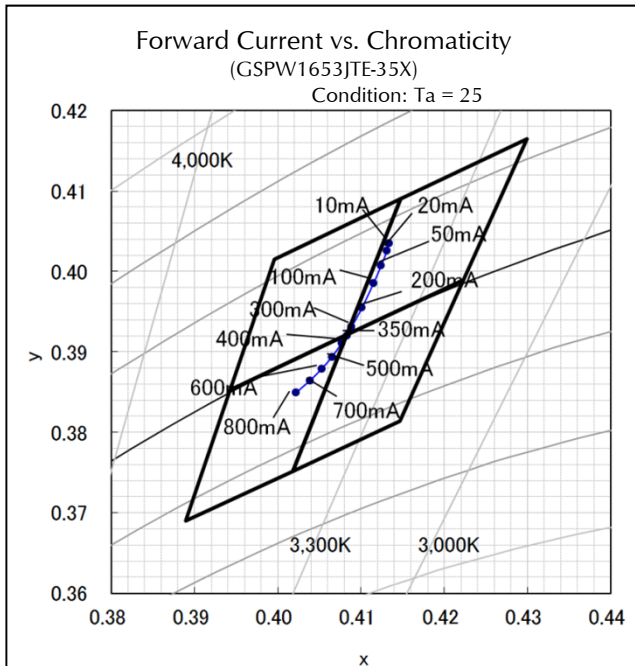
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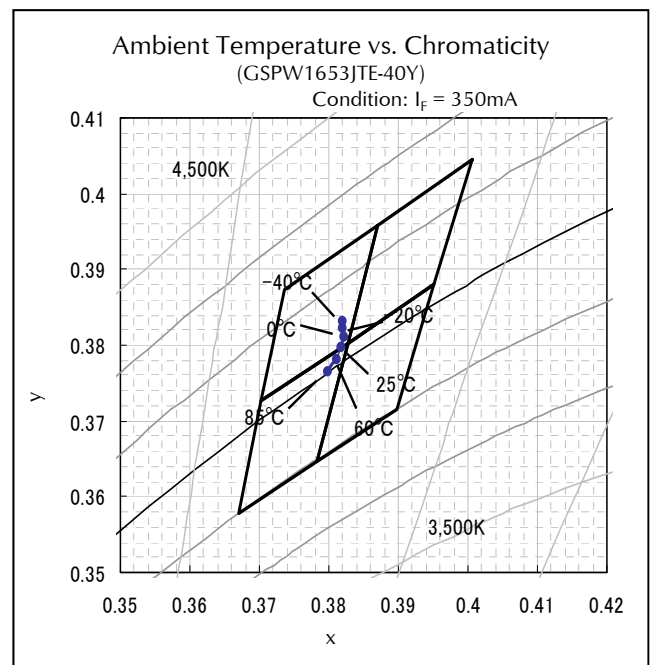
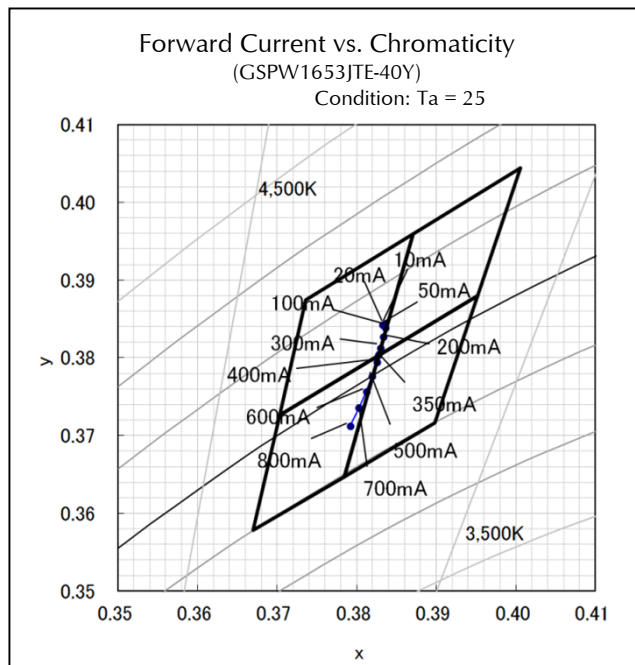
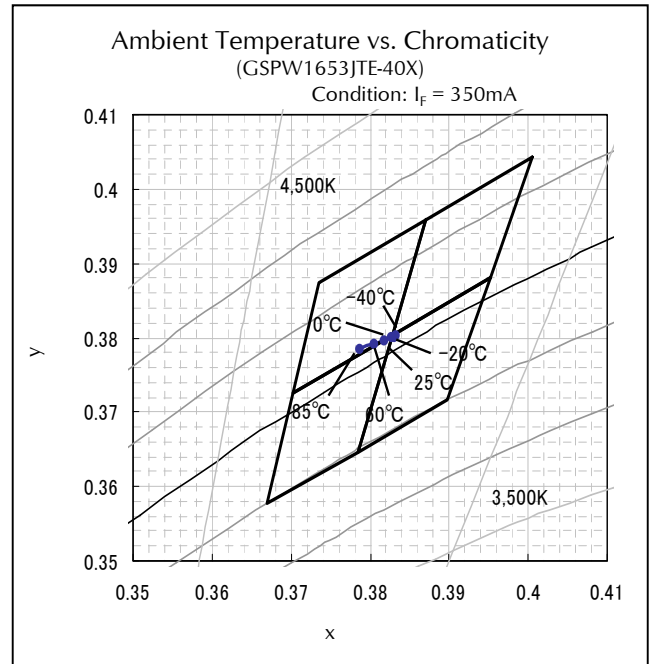
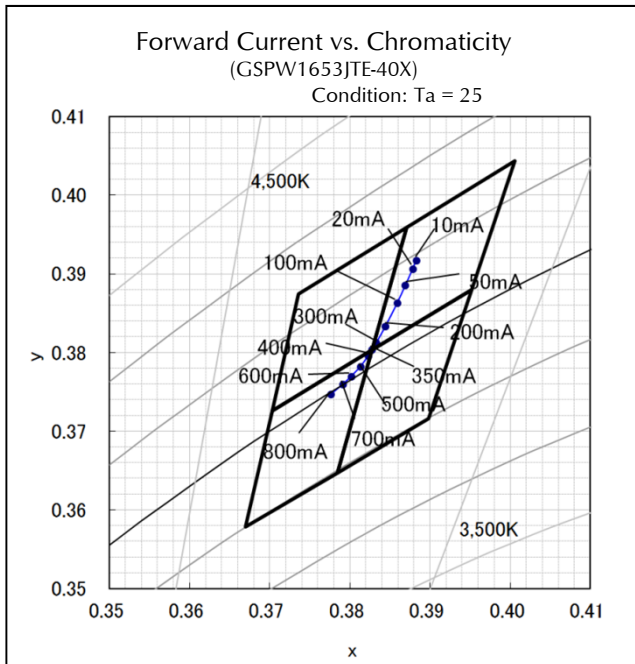
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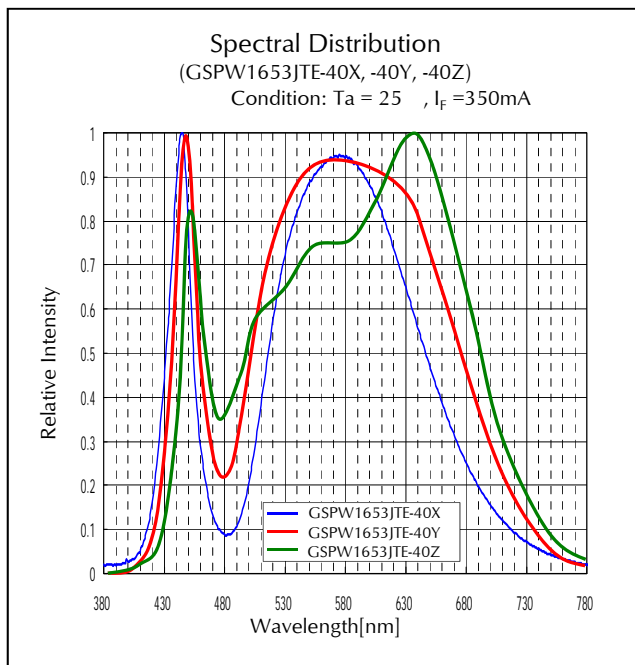
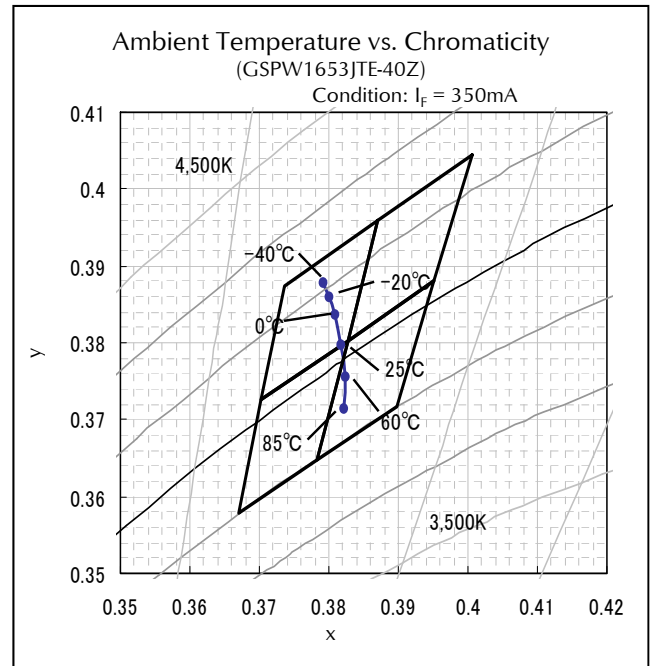
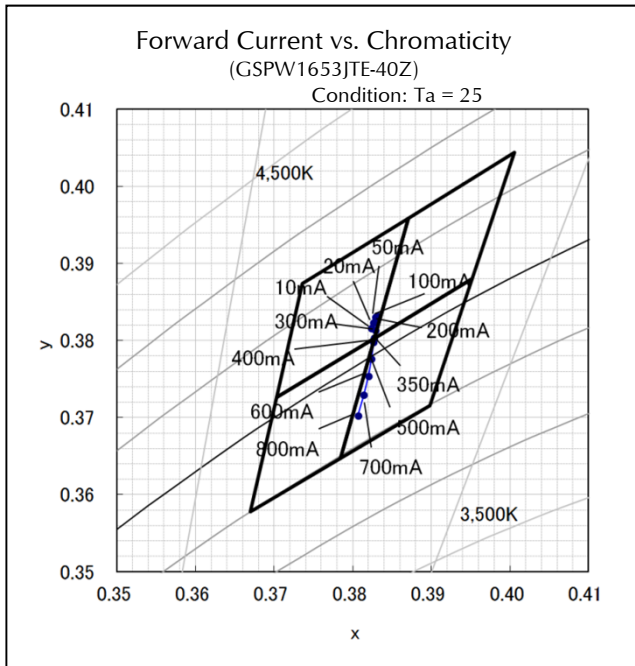
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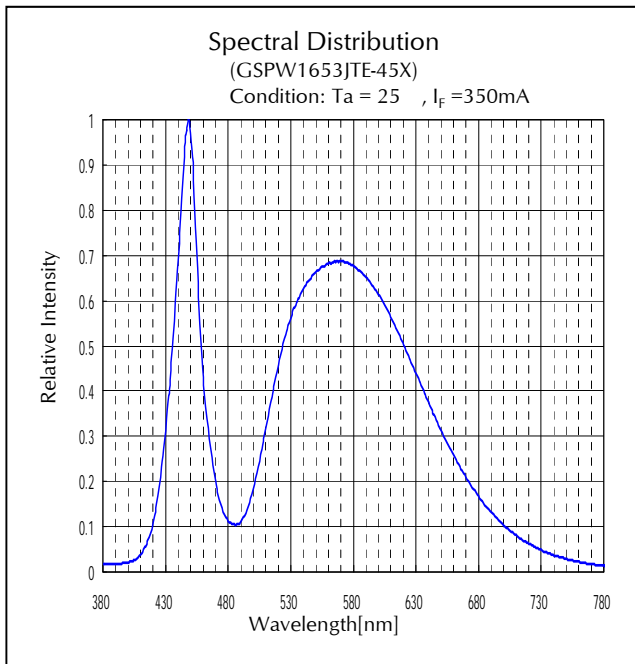
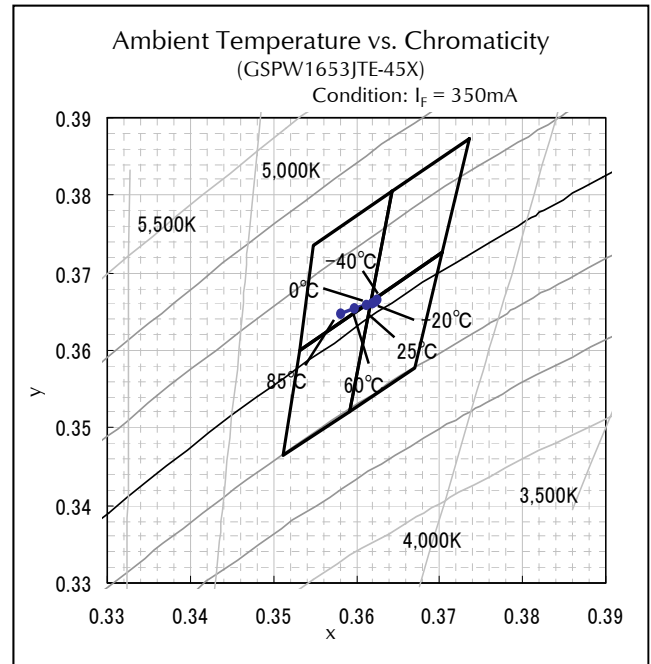
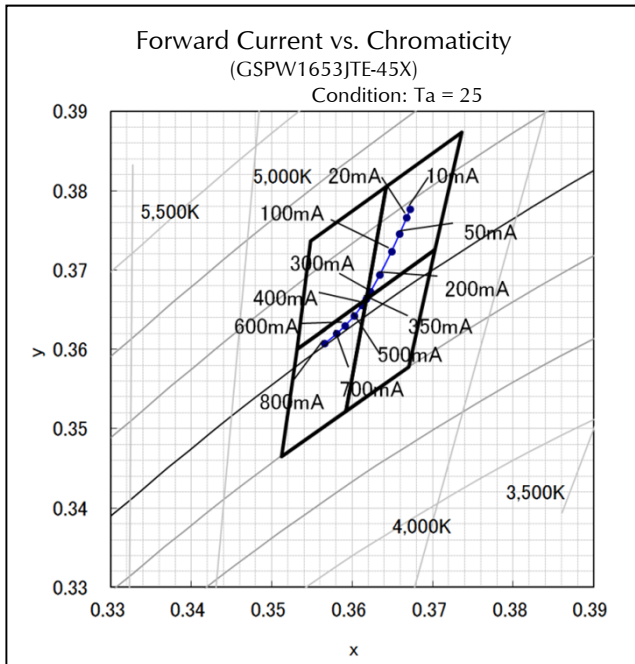
Technical Data(4,000K)



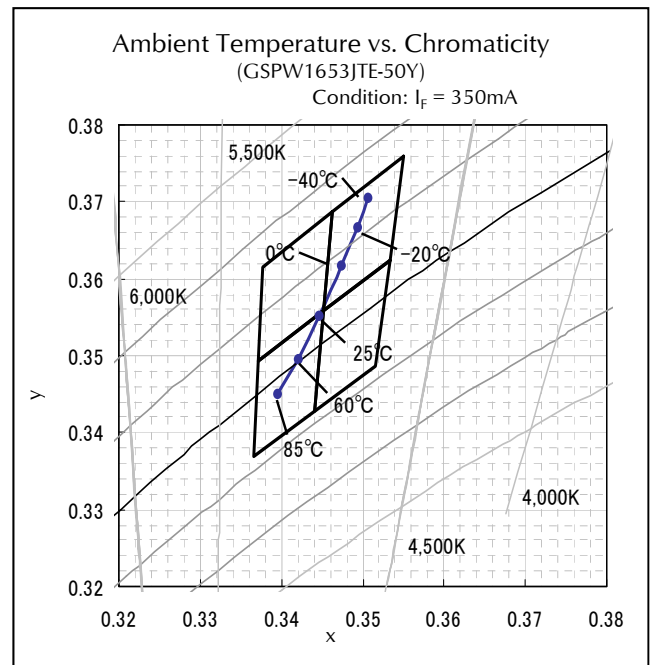
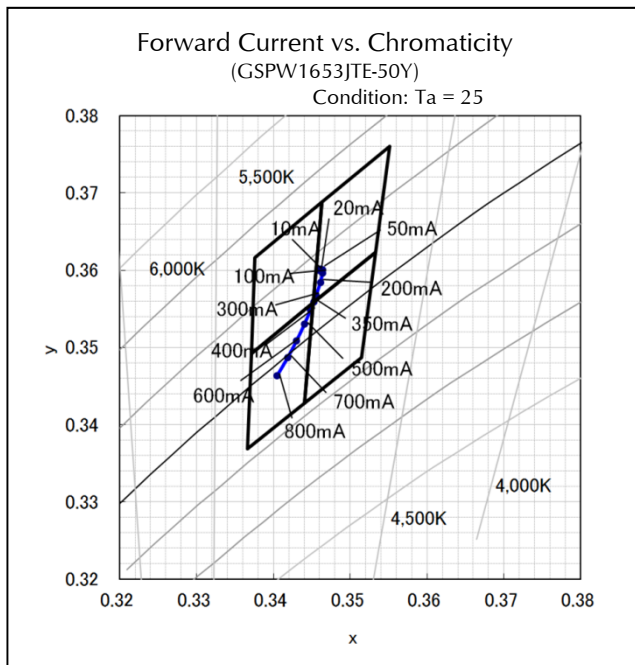
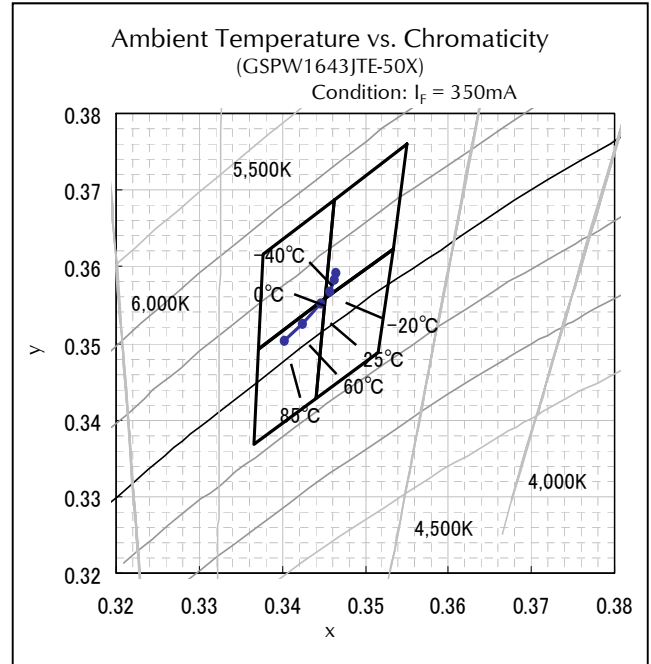
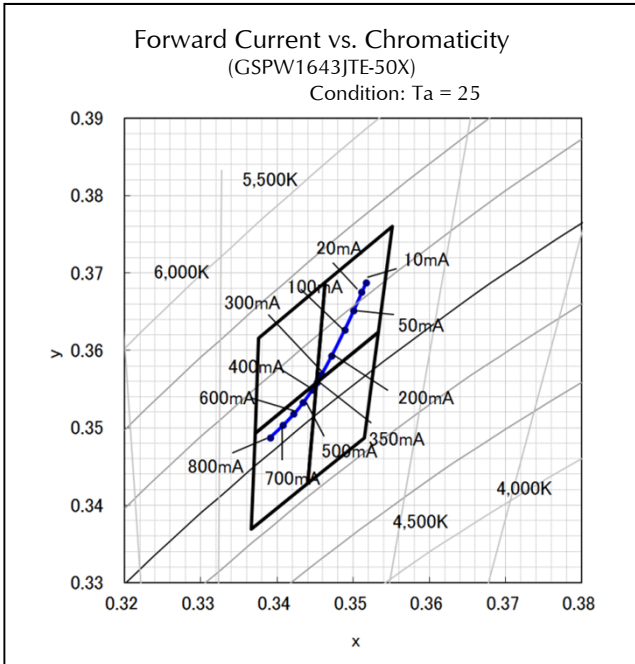
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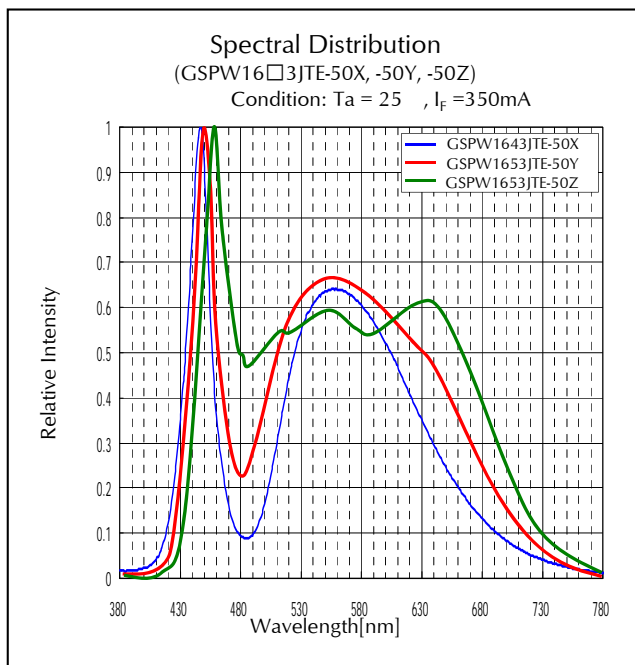
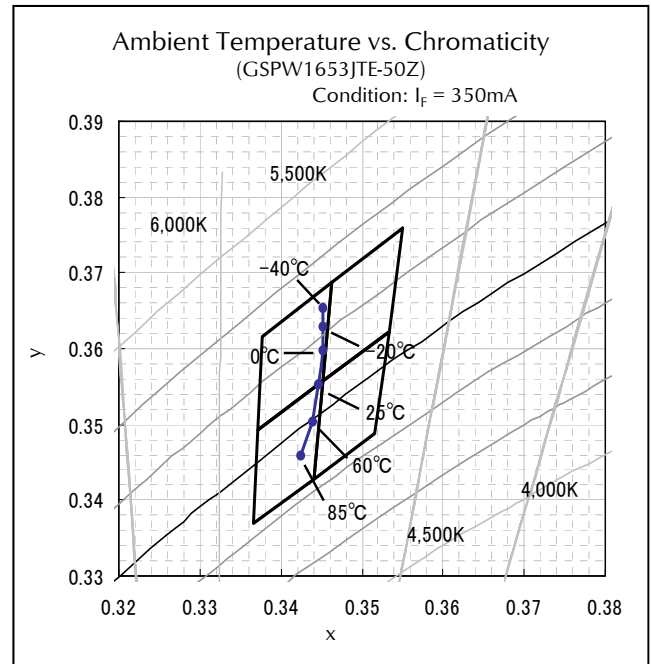
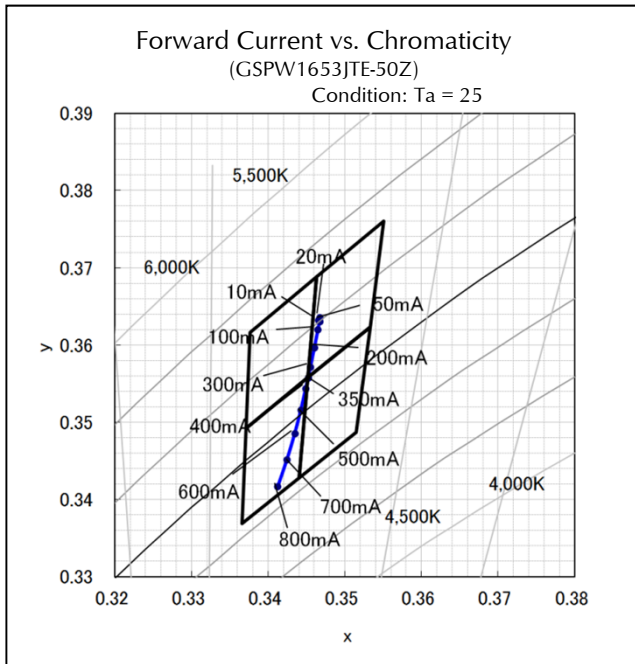
Technical Data(4,500K)



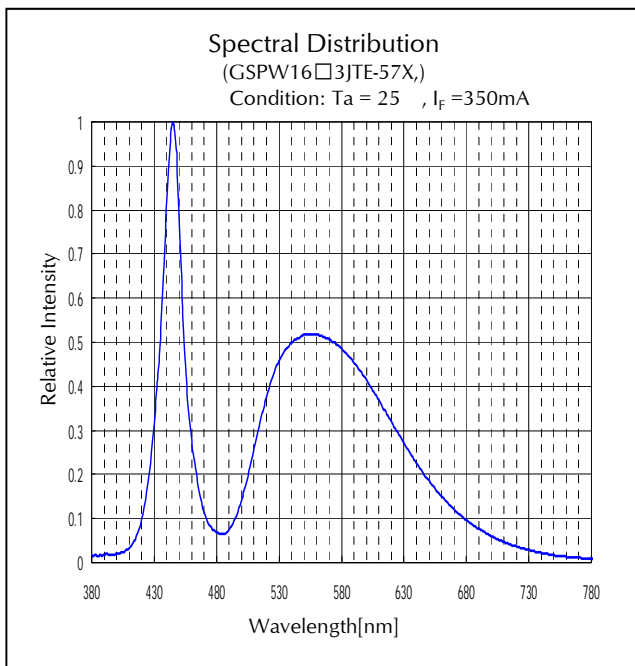
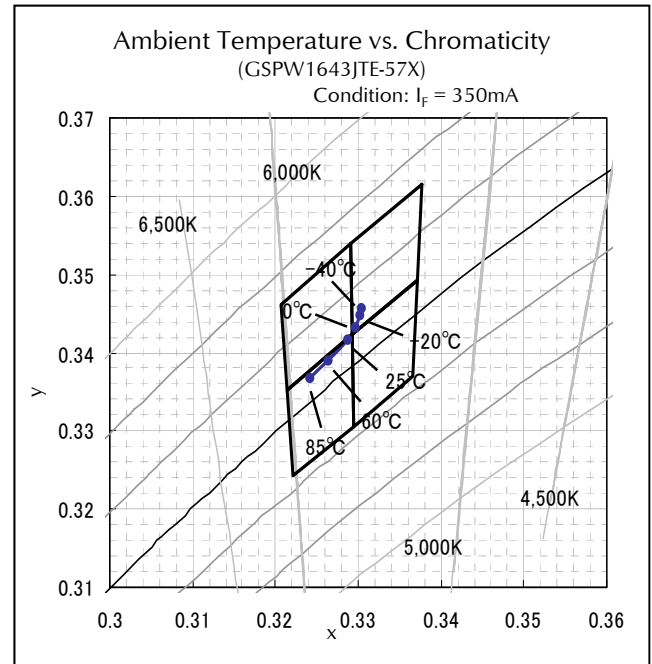
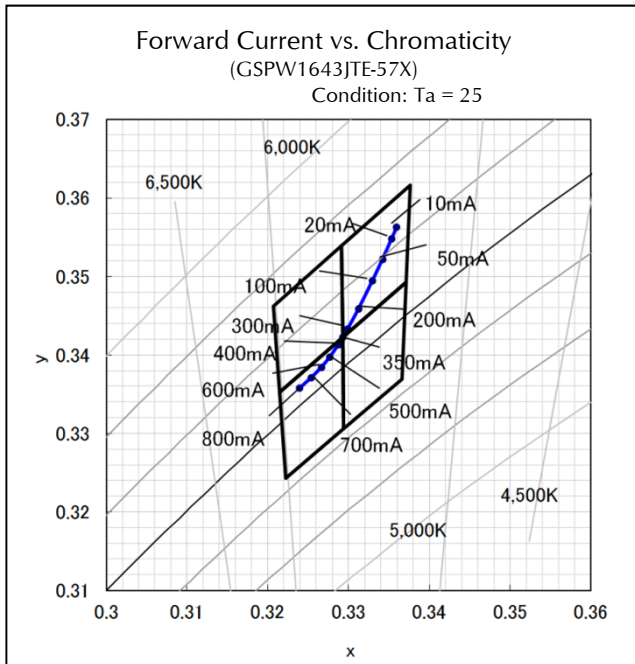
Technical Data(5,000K)



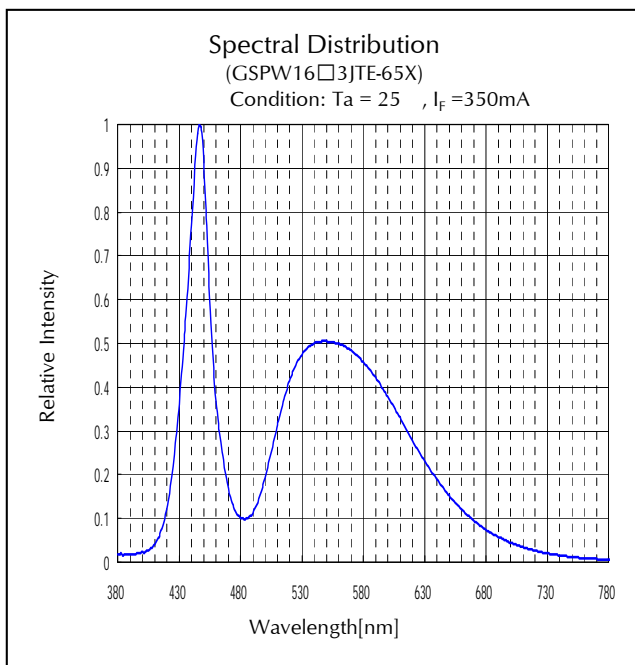
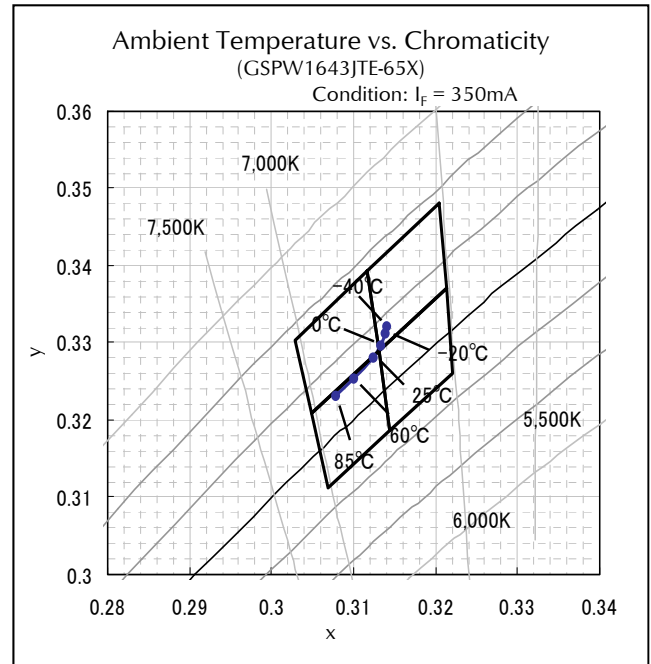
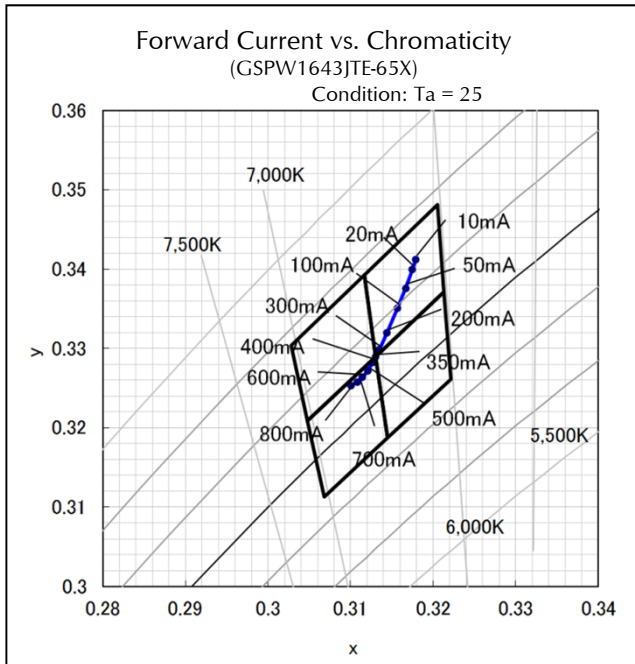
Technical Data(5,000K)



Technical Data(5,700K)



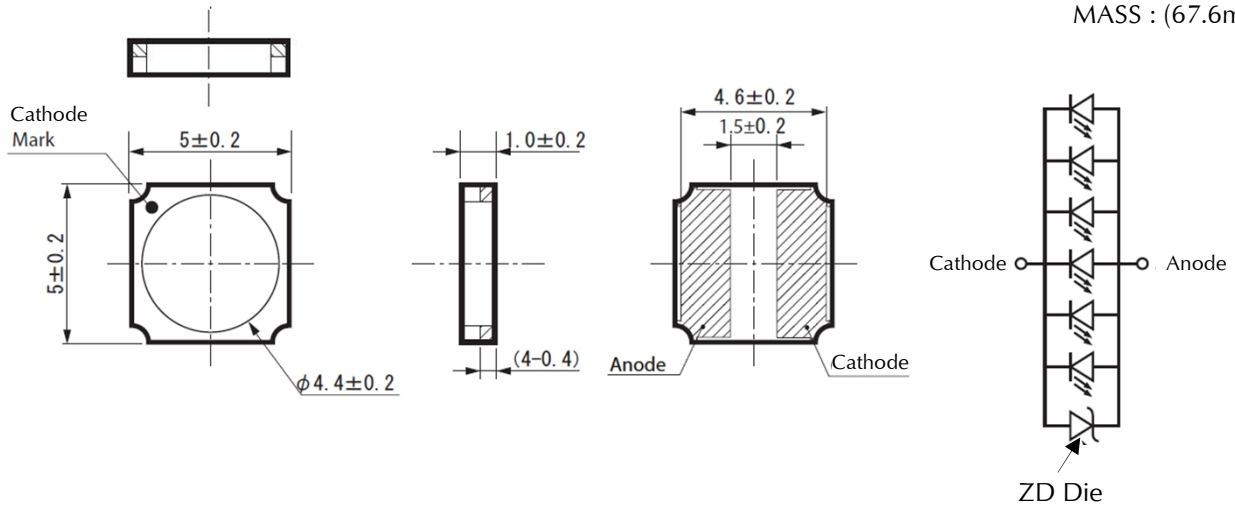
Technical Data(6,500K)



Package Dimensions

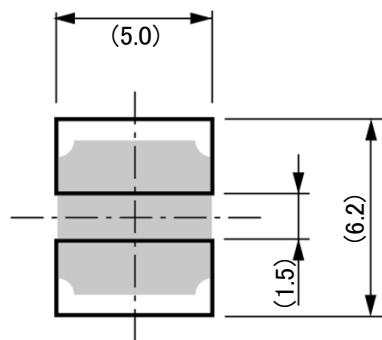
(Unit : mm)

MASS : (67.6mg)



Recommended Soldering Pattern

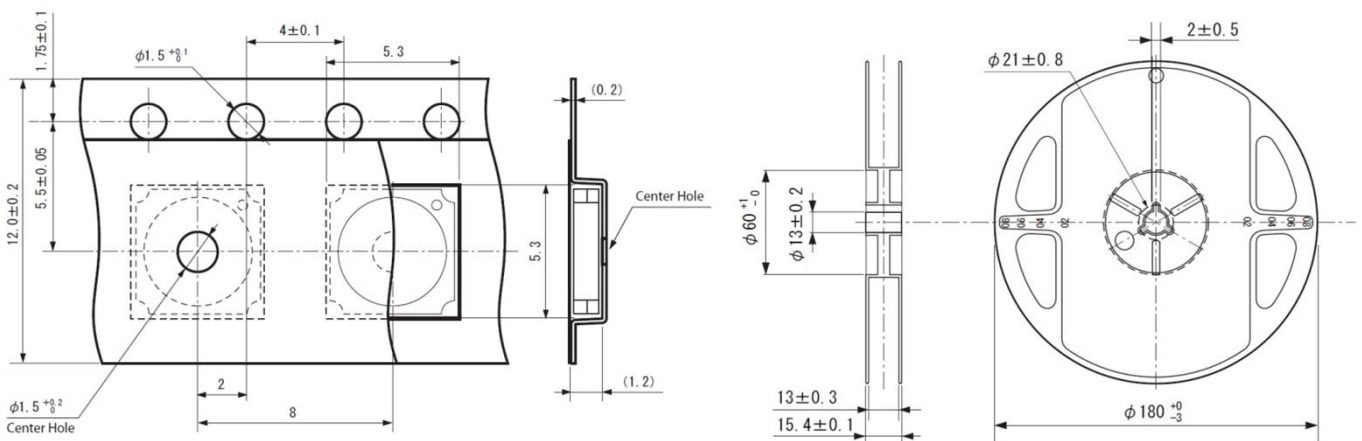
(Unit : mm)



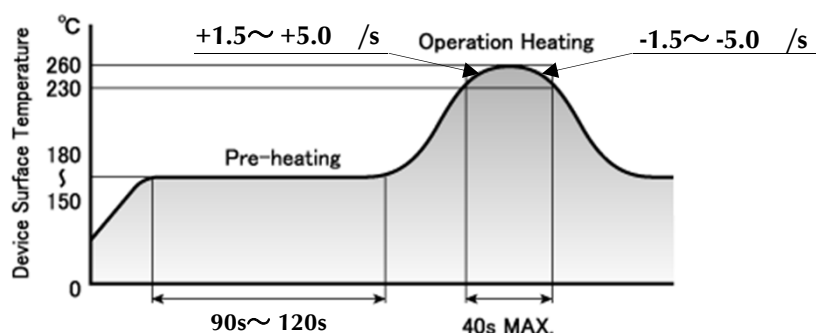
Taping Specification

(Unit : mm)

Quantity : 1,000pcs/ reel (standard)



Reflow Soldering Conditions



- 1) The above profile temperature gives the maximum temperature of the LED resin surface. Please set the temperature so as to avoid exceeding this range.
- 2) Total times of reflow soldering process shall be no more than 2 times. When the second reflow soldering process is performed, intervals between the first and second reflow should be short as possible (while allowing some time for the component to return to room temperature after the first reflow) in order to prevent the LED resin from absorbing moisture.
- 3) Temperature fluctuation to the LED during the pre-heating process shall be minimized.

Manual Soldering Conditions

Iron tip temp.	350 °C	(MAX.)
Soldering time and frequency	3 s	(MAX.)
	1 time	(MAX.)

Reliability Testing Result

Reliability Testing Result	Applicable Standard	Testing Conditions	Duration	Failure
Room Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = 25°C, If = 800mA	1,000 h	0/20
High Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = 85°C, If = 350mA	1,000 h	0/20
Low Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = -40°C, If = 350mA	1,000 h	0/20
Wet High Temp. Operating Life	EIAJ ED-4701/100(102)	Ta = 60°C, 90%, If = 350mA	1,000 h	0/20
High Temp. Storage Life	EIAJ ED-4701/200(201)	Ta = 100°C	1,000 h	0/20
Low Temp. Storage Life	EIAJ ED-4701/200(202)	Ta = 40°C	1,000 h	0/20
Wet High Temp. Storage Life	EIAJ ED-4701/100(101)	Ta = 85°C 85%	1,000 h	0/20
Thermal Shock	EIAJ ED-4701/100(105)	Ta = -40°C ~ 100°C (each 15min.)	1,000 cycles	0/20
Cycled Temp. Humidity Operating Life	EIAJ ED-4701/200(203)	Ta = -30°C ~ 80°C 95% 8h/cycle If = 350mA 5min on - off	30 Cycles	0/20
Resistance to Reflow Soldering	EIAJ ED-4701/300(301)	Moisture Soak : 60°C 60% 120h Preheating : 150 ~ 180°C(120s Max.) Soldering : 260°C Peak	2 times	0/20
Electrostatic Discharge (ESD)	EIAJ ED-4701/300(304)	C = 100pF R2 = 1.5kΩ ±2,000V	once each polarity	0/20
Vibration, Variable Frequency	EIAJ ED-4701/400(403)	98.1 m/s ² (10G) 100~2,000Hz 20min. XYZ direction	Each direction 2h	0/20

Failure Criteria

Items	Symbols	Conditions	Failure criteria
Luminous Intensity	Iv	If = 100mA	Testing Min. Value < Spec. Min. Value x 0.5
Forward Voltage	Vf	If = 100mA	Testing Max. Value ≥ Spec. Max. Value x 1.2
Cosmetic Appearance	-	-	Notable, discoloration, deformation and cracking

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