

PRODUCT SPECIFICATION

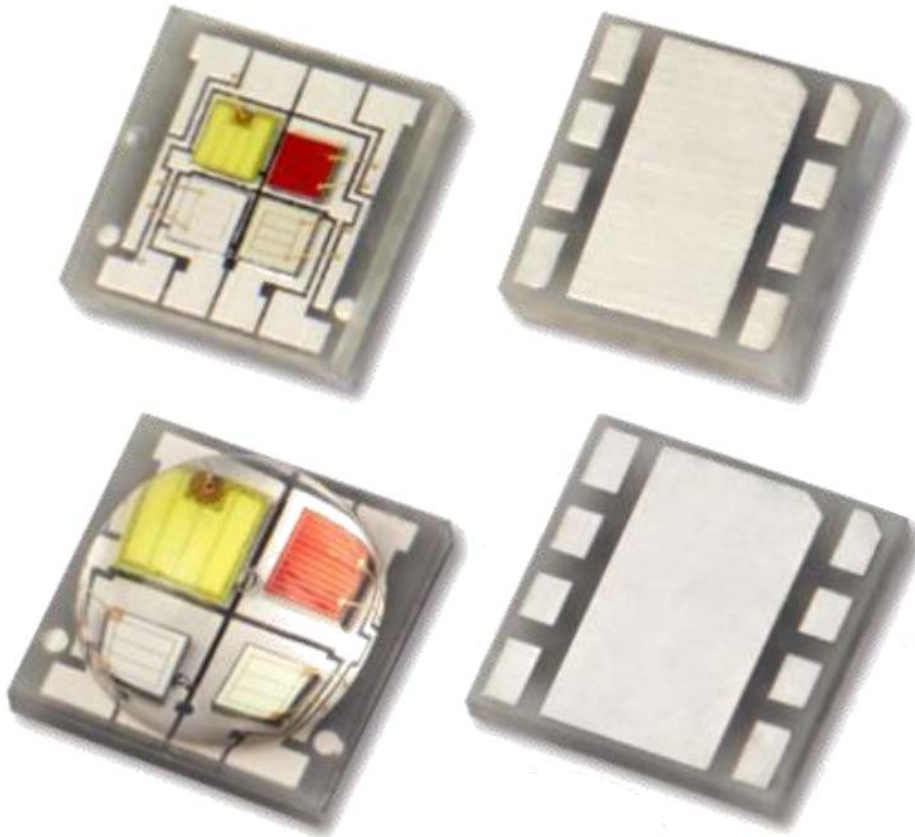
Part Number
PLBT5252 White RGB Series

Details

- High Power 5252 LED
- 5.2 x 5.2 x 3.1mm
- 500 piece reels
- Emitting Color: White
- InGaN based phosphor-converted LED

Features

- ESD 2KV (HBM : MIL-STD-883)
- MSL 2 qualified according to J-STD 020
- ROHS and REACH-compliant



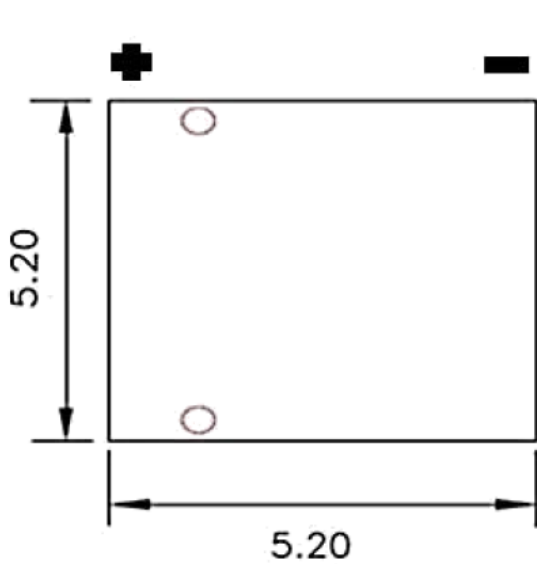
Notes:

1. Specifications subject to change.

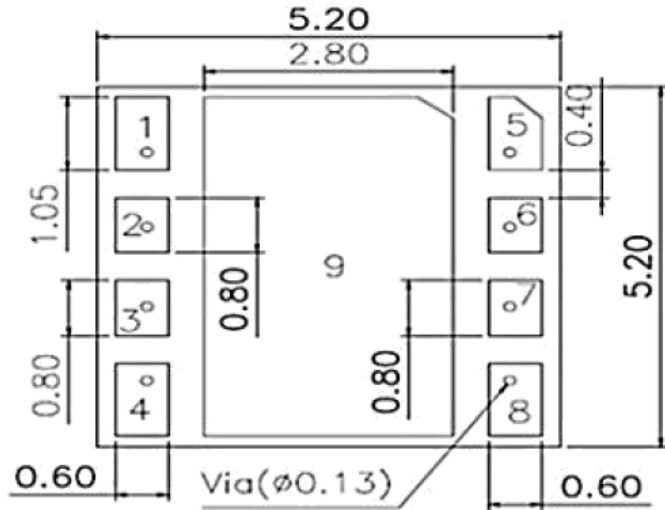


Mechanical Dimensions

Flat



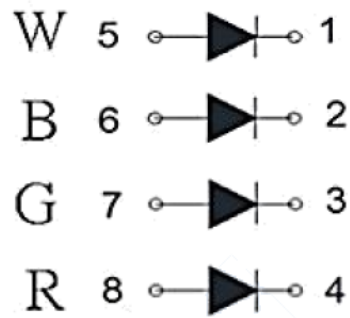
Front View



Bottom View

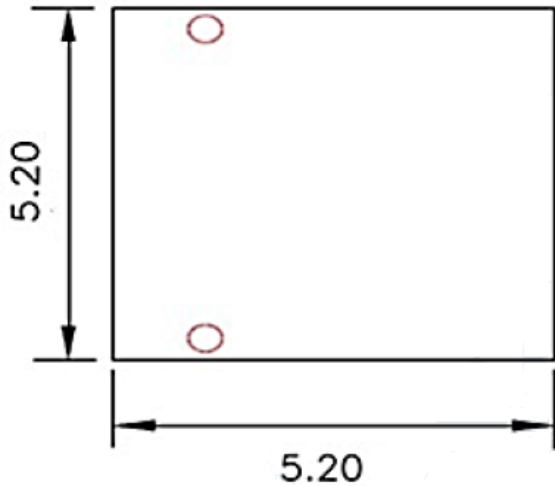


Side View

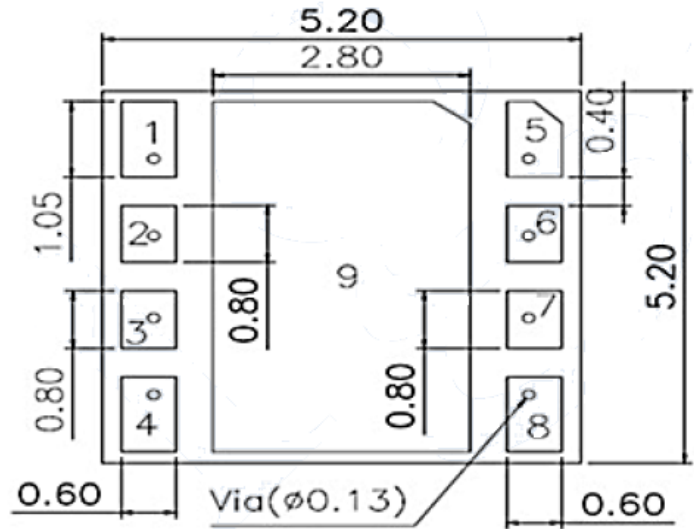


Circuit Type

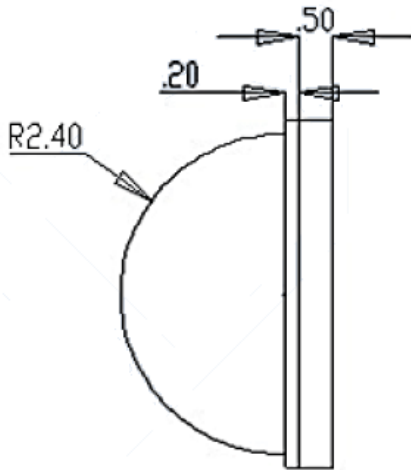
120°



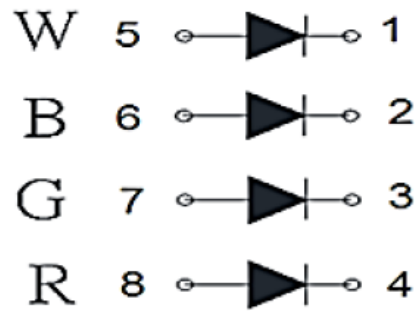
Front View



Bottom View



Side View



Circuit Type

Notes:

1. Dimension in millimeter [inch], and tolerance is ± 0.13 mm unless otherwise noted.



Device Selection Guide

Part Number	Color	Luminous Flux (Lm) (350mA)		Wavelength(nm)/CCT(K) (350mA)		Forward Voltage (V)(350mA)	
		Min	Max	Min	Max	Min	Max
PLBT52523W- YDCWRGB (Flat Lens)	Cool white	65	90	5000	8220	2.8	3.4
	Red	30	55	620	630	2.0	2.6
	Green	60	90	520	530	2.6	3.2
	Blue	14	24	455	465	2.8	3.4
PLBT5252R3W- YDCWRGB (Round Lens)	Cool white	65	90	5000	8220	2.8	3.4
	Red	30	55	620	630	2.0	2.6
	Green	60	90	520	530	2.6	3.2
	Blue	14	24	455	465	2.8	3.4
PLBT52523W- YDWRGB1 (Flat Lens)	Warm white	65	90	5000	8220	2.8	3.4
	Red	30	55	620	630	2.0	2.6
	Green	60	90	520	530	2.6	3.2
	Blue	14	24	455	465	2.8	3.4
PLBT52523W- YDCWRGB2 (Flat Lens)	Cool white	65	90	5000	8220	2.8	3.4
	Red	30	55	620	630	2.0	2.6
	Green	60	90	520	530	2.6	3.2
	Blue	14	24	455	465	2.8	3.4

Notes:

1. Forward voltage (VF) \pm 0.05V, Luminous flux (ϕ_v) \pm 5%
2. IS standard testing.

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Forward Current (note1)	If	-	350	1000	mA
Pulse Forward Current (note2)	Ipf	-	-	1200	mA
Forward Voltage (350mA) White	VF	2.8	-	3.4	V
Forward Voltage (350mA) Red	VF	2.0	-	2.6	V
Forward Voltage (350mA) Green	VF	2.6	-	3.2	V
Forward Voltage (350mA) Blue	VF	2.8	-	3.4	V
Reverse Voltage	Vr	-	-5	-	V
Leakage Current (5V)	Ir	-	-	10	μ A
Junction Temperature (note3)	Tj	-	150	-	°C
Storage Temperature Range	Tstg	-40	-	100	°C
Soldering Temperature	Tsol	-	-	260	°C
Thermal resistance Junction/Solder Point	Rth	4	-	6	°C/W
Viewing Angle	2 θ 1/2	-	120/130	-	Deg

Notes:

1. For other ambient, limited setting of current will depend on de-rating curves.
2. D=0.01s duty 1/10.
3. When drive on maximum current , Tj must be kept below 150
4. Viewing angle (2 θ 1/2) \pm 10°



Intensity Binning

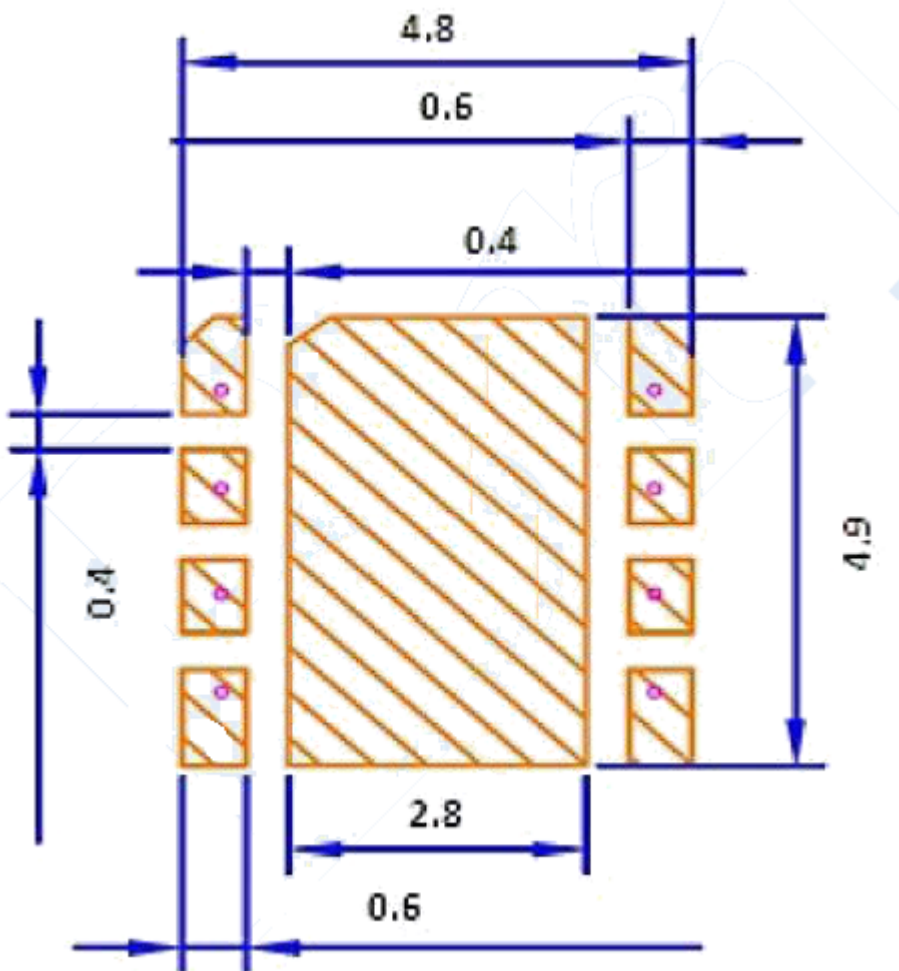
White series		
Bin Code (350mA)	Min. ϕ_v (Lm)	Max. ϕ_v (Lm)
B24	45	50
B25	50	55
B26	55	60
B27	60	65
B28	65	70
B29	70	75
B30	75	80
B31	80	90
B32	90	100
B33	100	110
B34	110	120
B35	120	130

Red series		
Bin Code (350mA)	Min. ϕ_v (Lm)	Max. ϕ_v (Lm)
B21	30	35
B22	35	40
B23	40	45
B24	45	50
B25	50	55
B26	55	60
B27	60	65
B28	65	70

Green series		
Bin Code (350mA)	Min. ϕ_v (Lm)	Max. ϕ_v (Lm)
B27	60	65
B28	65	70
B29	70	75
B30	75	80
B31	80	90
B32	90	100
B33	100	110
B34	110	120
B35	120	130

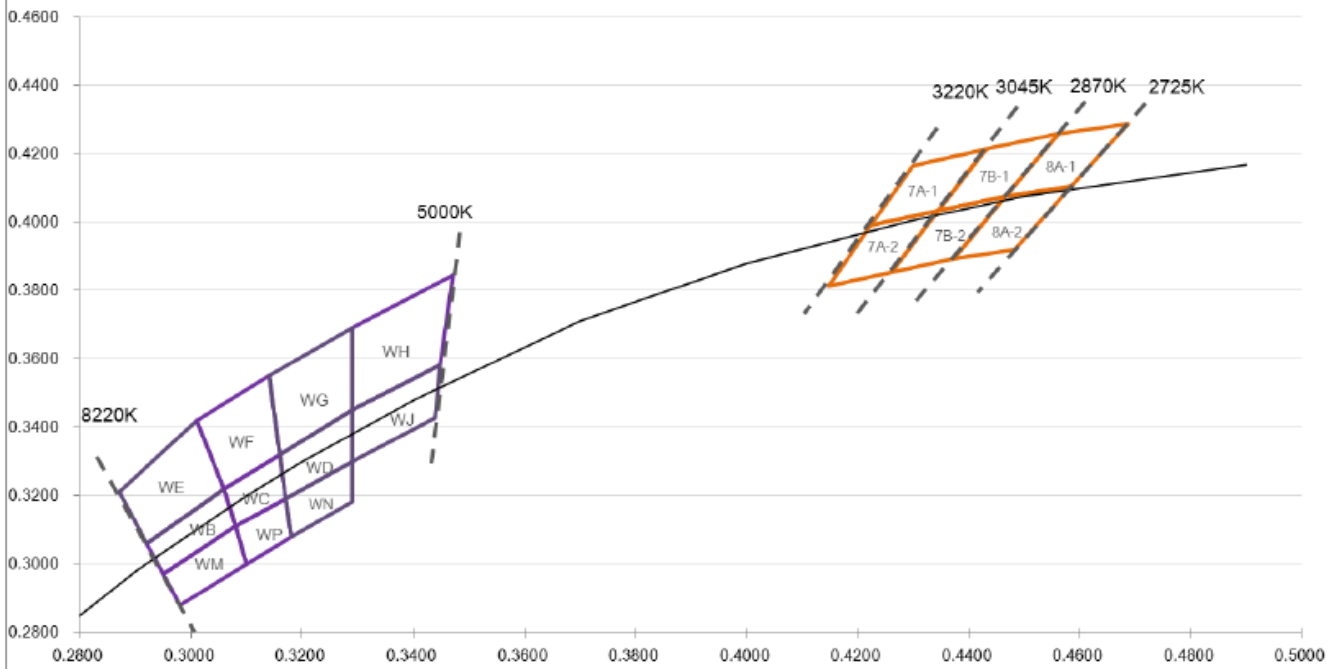
Blue series		
Bin Code (350mA)	Min. ϕ_v (Lm)	Max. ϕ_v (Lm)
B13	14	16
B14	16	18
B15	18	20
B16	20	22
B17	22	24
B18	24	26
B19	26	28

Recommended solder pad





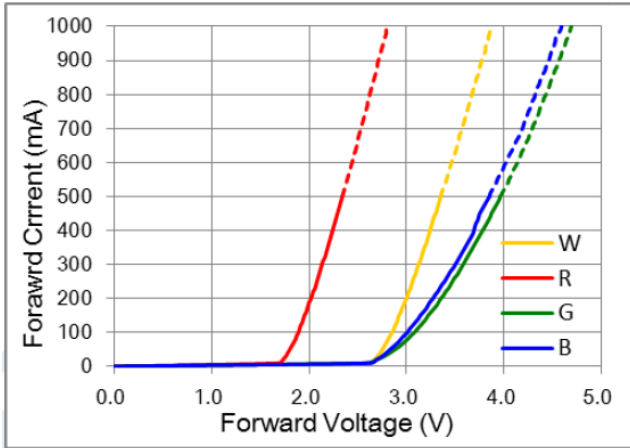
Color Coordinate Binning



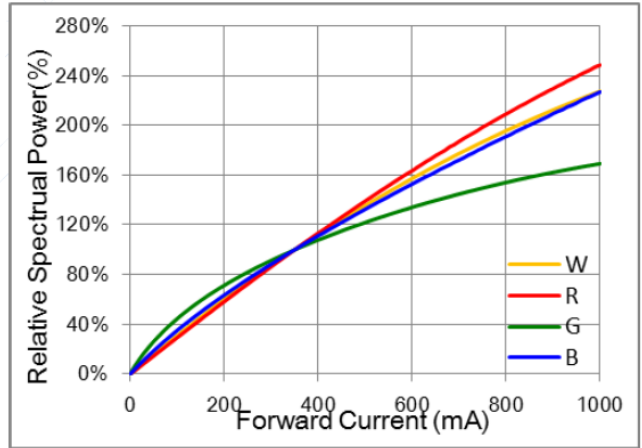
BIN	CIE X	CIE Y	BIN	CIE X	CIE Y	BIN	CIE X	CIE Y	BIN	CIE X	CIE Y
WM	0.3080	0.3110	WB	0.3060	0.3220	WE	0.3010	0.3420	WD	0.3290	0.3450
	0.3100	0.3000		0.3080	0.3110		0.3060	0.3220		0.3290	0.3300
	0.2980	0.2880		0.2950	0.2970		0.2920	0.3060		0.3170	0.3190
	0.2950	0.2970		0.2920	0.3060		0.2870	0.3210		0.3160	0.3320
WN	0.3170	0.3190	WC	0.3160	0.3320	WF	0.3010	0.3420	WH	0.3472	0.3845
	0.3180	0.3080		0.3170	0.3190		0.3060	0.3220		0.3449	0.3581
	0.3100	0.3000		0.3080	0.3110		0.3160	0.3320		0.3290	0.3450
	0.3080	0.3110		0.3060	0.3220		0.3140	0.3550		0.3290	0.3690
WG	0.3290	0.3690	WP	0.3290	0.3300	WJ	0.3449	0.3581			
	0.3290	0.3450		0.3290	0.3183		0.3439	0.3428			
	0.3160	0.3320		0.3180	0.3080		0.3290	0.3300			
	0.3140	0.3550		0.3170	0.3190		0.3290	0.3450			
7A-1	0.4431	0.4213	7A-2	0.4345	0.4033	7B-1	0.4562	0.4260	7B-2	0.4467	0.4076
	0.4299	0.4165		0.4223	0.3990		0.4430	0.4213		0.4345	0.4033
	0.4223	0.3990		0.4147	0.3814		0.4345	0.4033		0.4260	0.3854
	0.4345	0.4033		0.4260	0.3854		0.4467	0.4076		0.4373	0.3893
8A-1	0.4687	0.4289	8A-2	0.4585	0.4104						
	0.4562	0.4260		0.4467	0.4076						
	0.4467	0.4076		0.4373	0.3893						
	0.4585	0.4104		0.4483	0.3918						

Typical Electrical / Optical Characteristic Curves

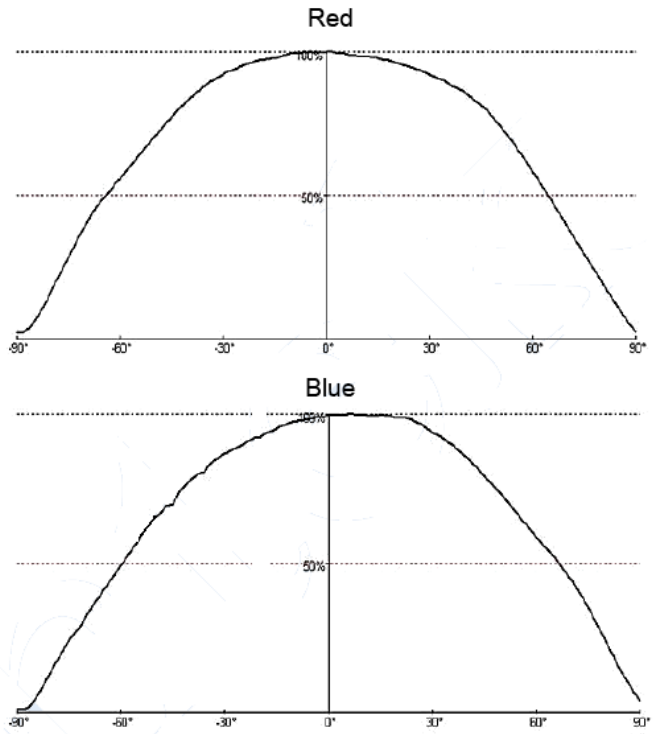
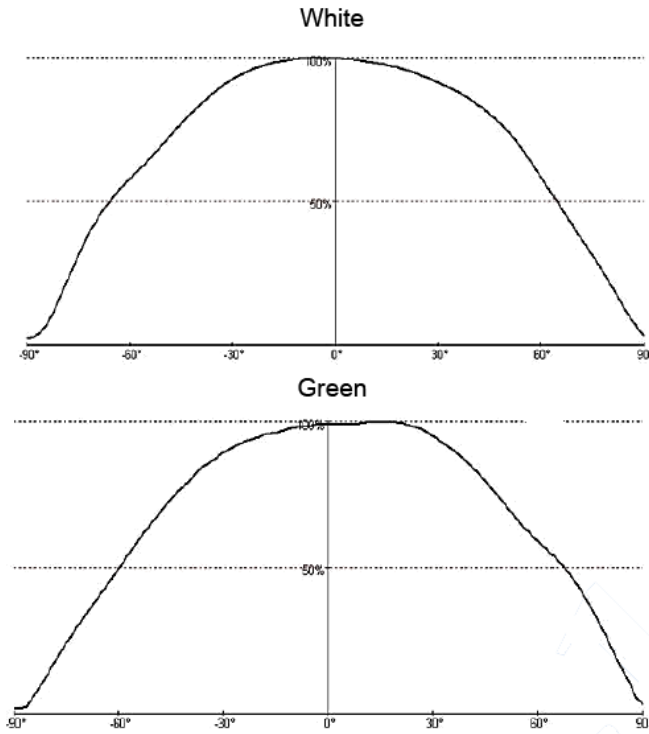
Forward Current vs. Forward Voltage (Ta=25°C)



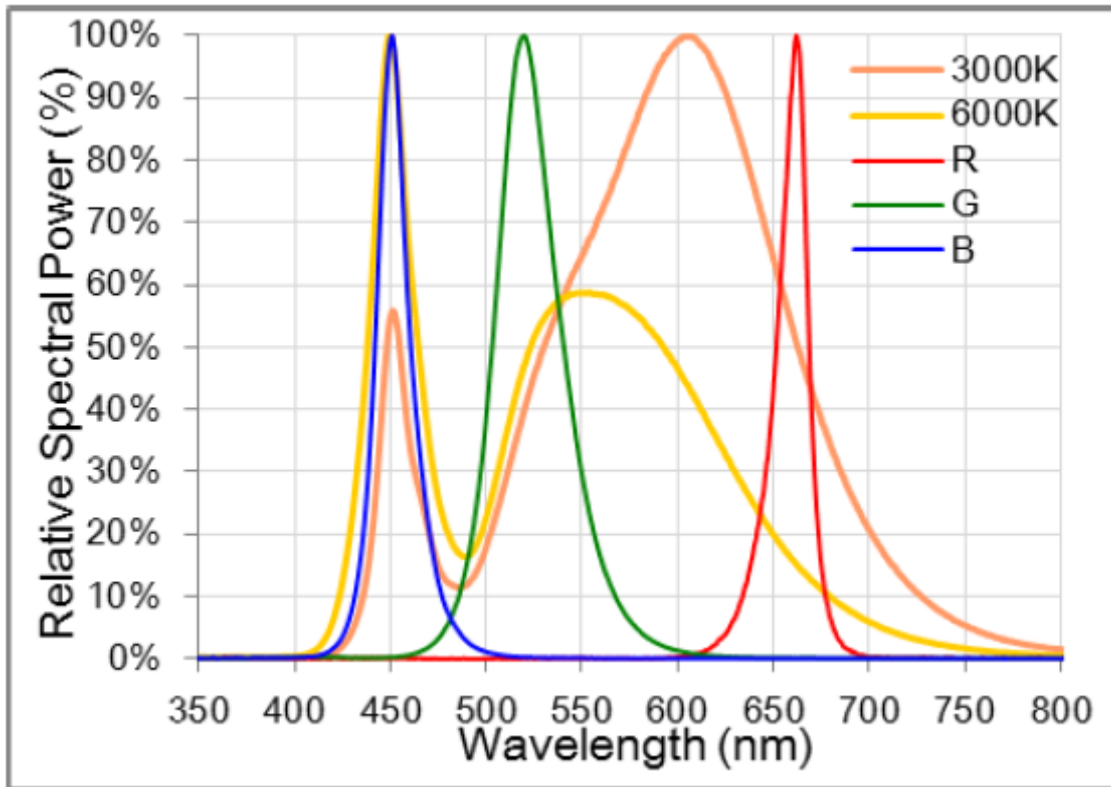
Relative luminous Flux vs. Forward Current (Ta=25°C)



Typical Spatial Distribution

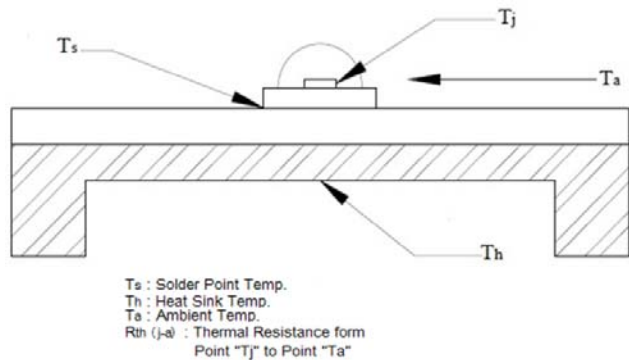
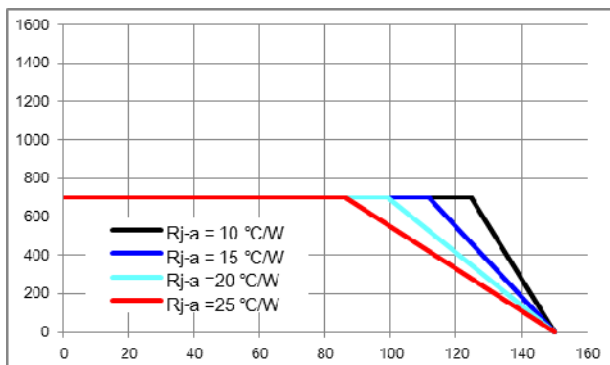


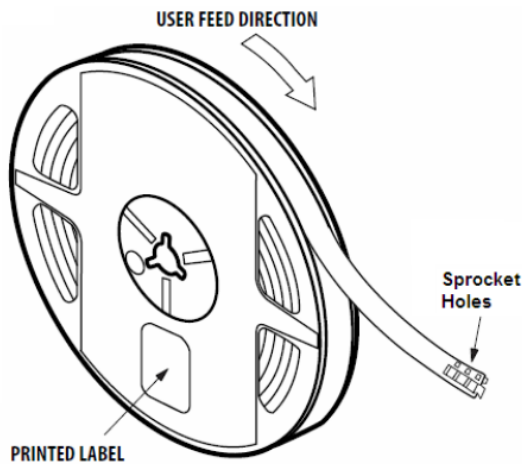
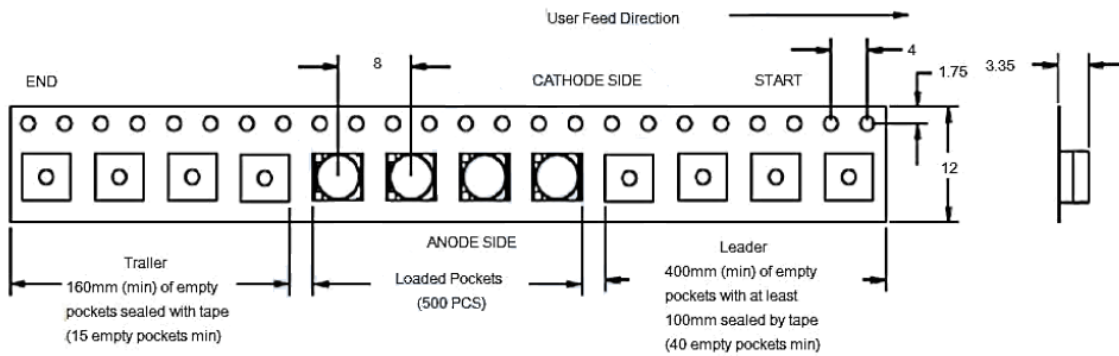
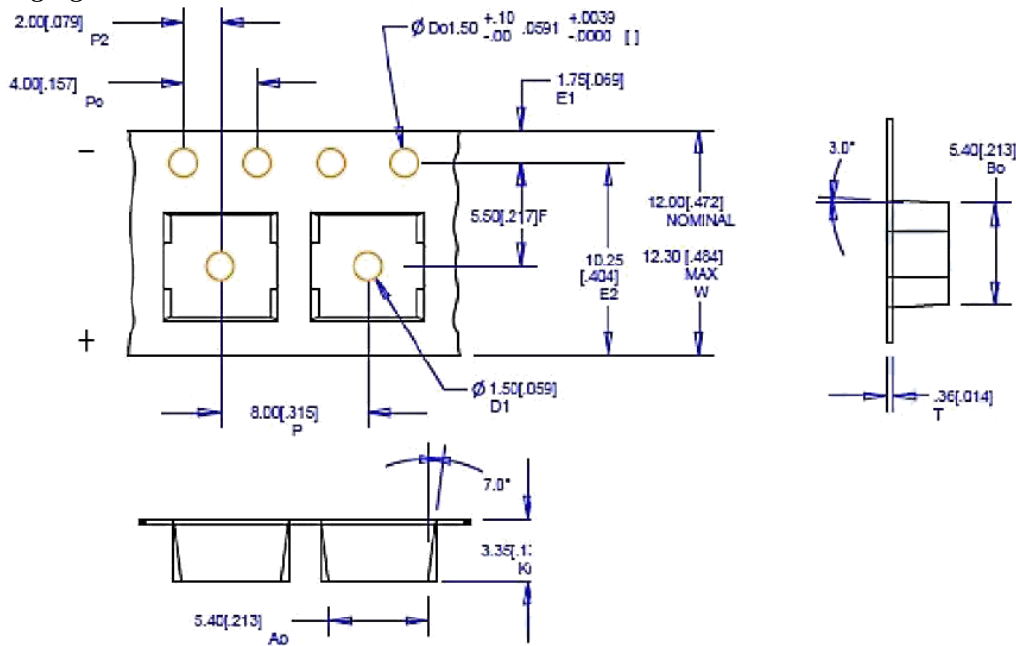
Relative Spectral Power Distribution

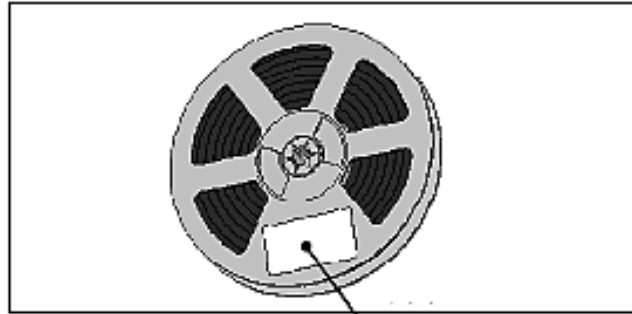


Thermal design for de-rating

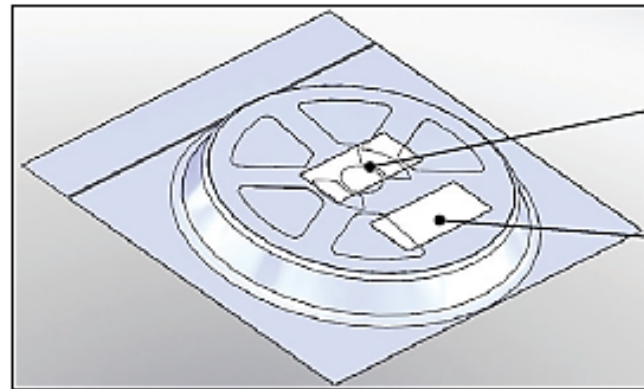
The maximum forward current is determined by the thermal resistance between the LED junction and ambient. It is crucial for the end product to be designed in a manner that minimizes the thermal resistance from the solder point to ambient in order to optimize lamp life and optical characteristics.



Packaging


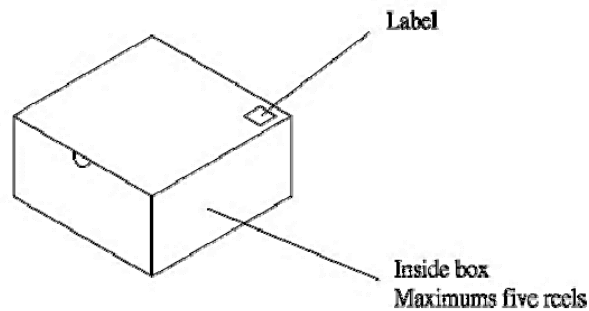
Unpackaged Reel


Label

Packaged Reel


Label

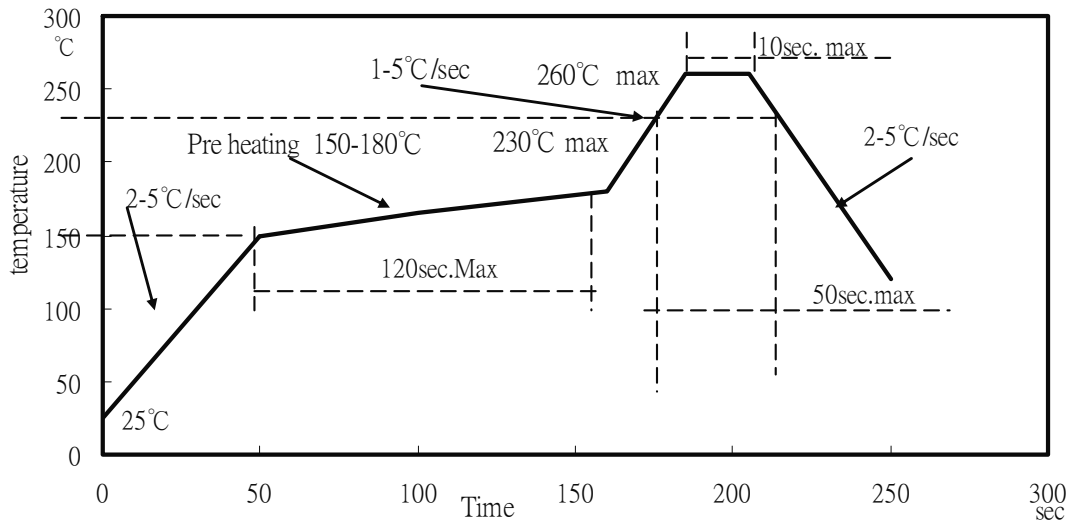
Label


Notes:

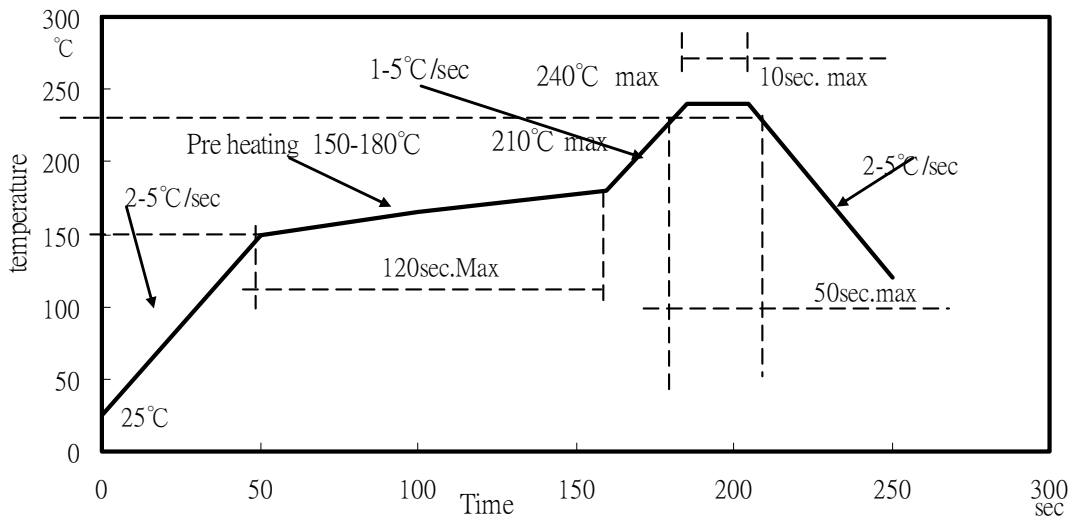
1. Reeled products (minimum number of pieces is 10 and maximum is 500) packed in sealed moisture-proof bags along with a desiccant;
2. a maximum of five moisture-proof bags packed inside the box (size: 240mm x 200mm x 105mm \pm 5mm) and a maximum of four inside boxes are put in the outside box (size: 410mm x 255mm x 240mm \pm 5mm) together with buffer material packed.
3. (Part No., Lot No., quantity should appear on the label of the moisture-proof bag and the cardboard box.)

Reflow profile

Lead Free solder



Lead solder



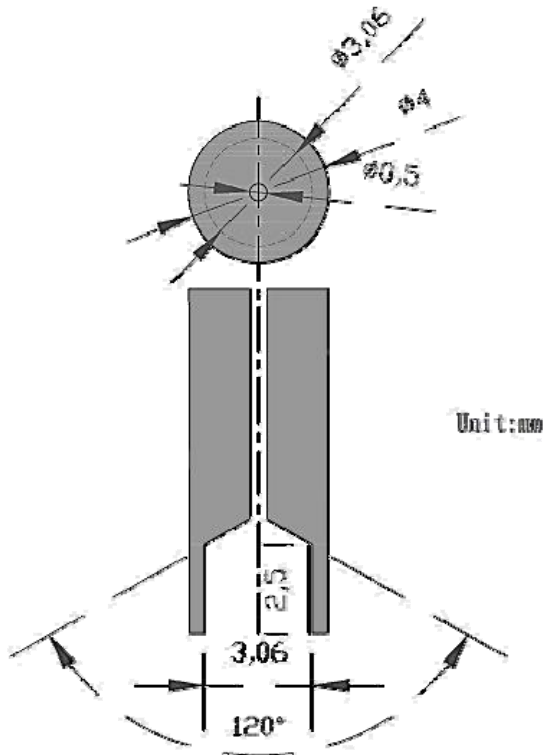
Notes:

1. The recommended reflow temperature is 240°C (±5°C). The maximum soldering temperature should be limited to 260°C.
2. Do not stress the silicone resin while it is exposed to high temperature.
3. The number of reflow process should not exceed 3 times.

Precautions

1. Recommendation for using LEDs
 - 1.1 The lens of LEDs should not be exposed to dust or debris. Excessive dust and debris may cause a drastic decrease in the luminosity.
 - 1.2 Avoid mechanical stress on LED lens.
 - 1.3 Do not touch the LED lens surface. It would affect the optical performance of the LED due to the LED lens' damage.
 - 1.4 Pick & place tools are recommended for the remove of LEDs from the factory tape & reel packaging
2. Pick & place nozzle

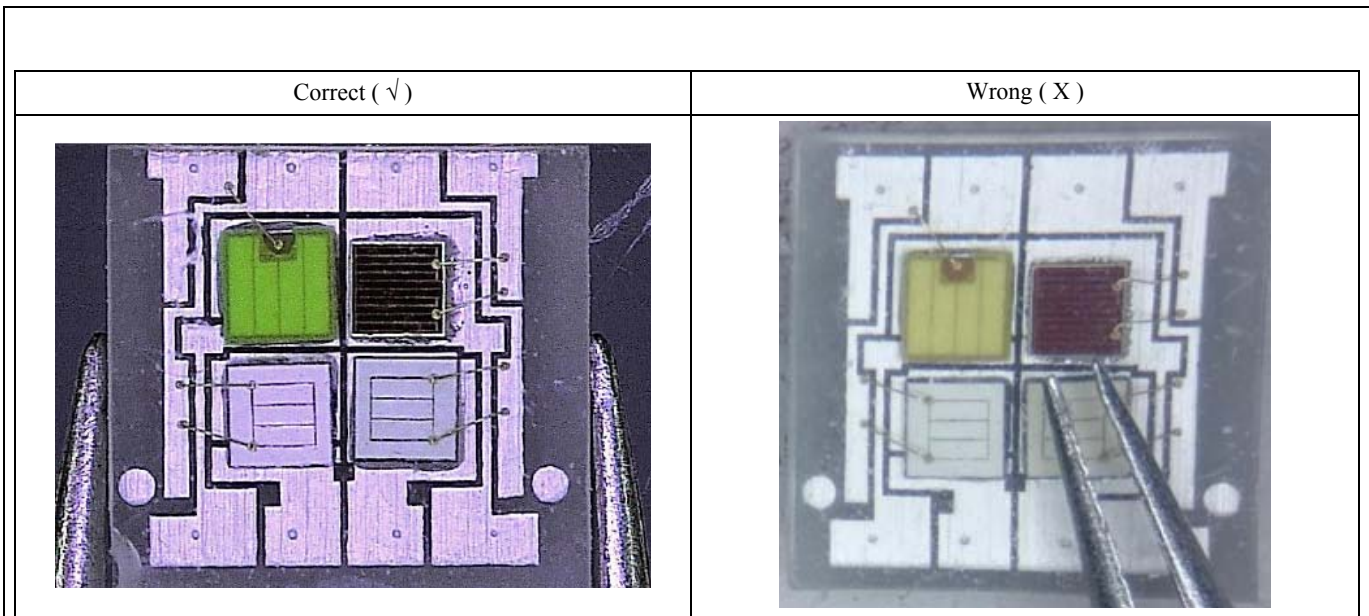
The pickup tool was recommended and shown as below



3. Lens handling

Please follow the guideline to pick LEDs

 - 3.1 Use tweezers to pick LEDs
 - 3.2 Do not touch the lens by using tweezers
 - 3.3 Do not touch lens with fingers
 - 3.4 Do not apply more than 4N of lens (400g) directly onto the lens



4. Lens cleaning

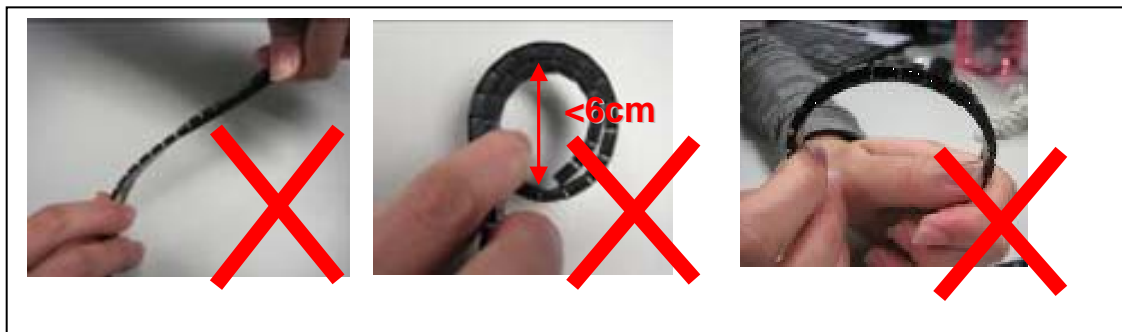
In the case which a small amount of dirt and dust particles remain on the lens surface, a suitable cleaning solution can be applied.

- 4.1 Try a gentle wiping with dust-free cloth
- 4.2 If needed, use dust-free cloth and isopropyl alcohol to gently clean the dirt from the lens surface.
- 4.3 Do not use other solvents as they may directly react with the LED assembly
- 4.4 Do not use ultrasonic cleaning which will damage the LEDs

5. Carrier tape handling

The following items are recommended when handling the carrier tape of LEDs

- 5.1 Do not twist the carrier tape
- 5.2 The inward bending diameter should not be smaller than 6cm for each carrier tape.
- 5.3 Do not bend the tape outward.



Reliability

Test Item	Test Conditions	Duration/ Cycle	Number of Damage	Reference
Thermal Shock	-40C 30min ↑↓5min 125°C 30min	100 cycles	0/22	JEITA ED-4701 300 307
High Temperature Storage	T _a =100°C	1000 hrs	0/22	EIAJ ED-4701 200 201
Humidity Heat Storage	T _a =85°C RH=85%	1000 hrs	0/22	EIAJ ED-4701 100 103
Low Temperature Storage	T _a =-40°C	1000 hrs	0/22	EIAJ ED-4701 200 202
Life Test	T _a =25°C I _f =500mA	1000 hrs	0/22	Tested with factory standard
High Humidity Heat Life Test	85°C RH=85% I _f =500mA	1000 hrs	0/22	Tested with factory standard
High Temperature Life Test	T _a =85°C	1000 hrs	0/22	Tested with factory standard
ESD(HBM)	2KV at 1.5kΩ;100pf	3 Times	0/22	MIL-STD-883

Criteria for Judging the Damage

Item	Symbol	Condition	Criteria for Judgment	
			Min	Max
Forward Voltage	V _f	I _f =350A	-	USL ¹ ×1.1
Luminous Intensity	I _v	I _f =350mA	LSL ² ×0.7	-

Notes:

1. USL: Upper specification level
2. LSL: Lower specification level