

SPECIFICATIONS

NAME: 30×30mm RG SQUARE LED CLUSTER (30 角 110° クラスタ)

Features: (特徴)

- LED lamp cluster: 30mm Square. (30mm 角 LED クラスタランプ)
- High visibility (高視野角)
- Emitting Color:red,green (発光色:赤、緑)
- No of Built-in 5mm LED Lamps: (LED 装着数:赤 6 個、緑 2 個)
red-6pcs; and green-2pcs
- Waterproof Package With Hood Suitable (フード付防水品)
- For Outdoor and indoor information Boards (屋内、屋外掲示板用)
- LEDs(red and green) in cluster is the product with Rohs certification
(クラスタの LED 赤、緑は Rohs 対応品です)
- Connector is PHR-3 by JST with Rohs certification
(コネクタは Rohs 対応の JST 製 PHR-3 です)
- Cable length is 300mm (ケーブルの長さ 300mm)
- Average ESD Capability:H.B.M-600V/charge one time
(ESD 平均値:H.B.M-600V/1回のチャージ)

二, Selection Guide: (品番)

Part No. (品番)	Description (記述)
	30mm square Lamp cluster (30mm 角クラスタ) .6red, 2green, square packed (赤 6 個 緑 2 個角型)

三, Description: (記述)

Part No. (品番)	Built-in Lamp Package (LED 外形)	Built-in Lamp Part No.BL (LED 品番)	Chip	Lens Appearance (レンズ仕様)
			Material (材質) Emitted Color (発光色)	
	4×5×7mm 1.0” Lead Oval	LWL-54P4AR-S00	AlGaInP/ Ultra Orange	Red Diffuse
		LWL-54P4TF-S00	InGaN/ Ultra Pure green	Green Diffuse

四, Cable and connector: (ケーブル及びコネクタ)

Connector	Cable color	circuit
1	Red	Red-
2	White	Common +
3	Green	Green-

五, Absolute Maximum Rating (Each lamp, Ta=25°C Derate above 25°C)

(絶対最大定格)

Item (項目)	Symbol (略号)	Test condition (測定条件)		Rating (値)	Unit (単位)
DC Forward Current (順方向電流)	If	red	30×2	60	mA
		green	30×1	30	
Reverse Voltage (逆方向電圧)	V _R	red	5.0×3	15	V
		green	5.0×2	10	
Power dissipature (電力)	PD	red	80×6	480	mW
		green	100×2	200	
Operating temperature (動作温度)	Topr	-25~+80			°C
Storage temperature (保存温度)	Tstg	-40~+100			°C
Lead soldering Temperature (リード線半田条件)		MAX.260±5°C for 5 sec Max. (5mm from the base of the epoxy bulb) (エポキシ底面から 5mm)			°C

六, Elctrical/Optical characteristic Ta=25°C (電氣的/光学的特性)

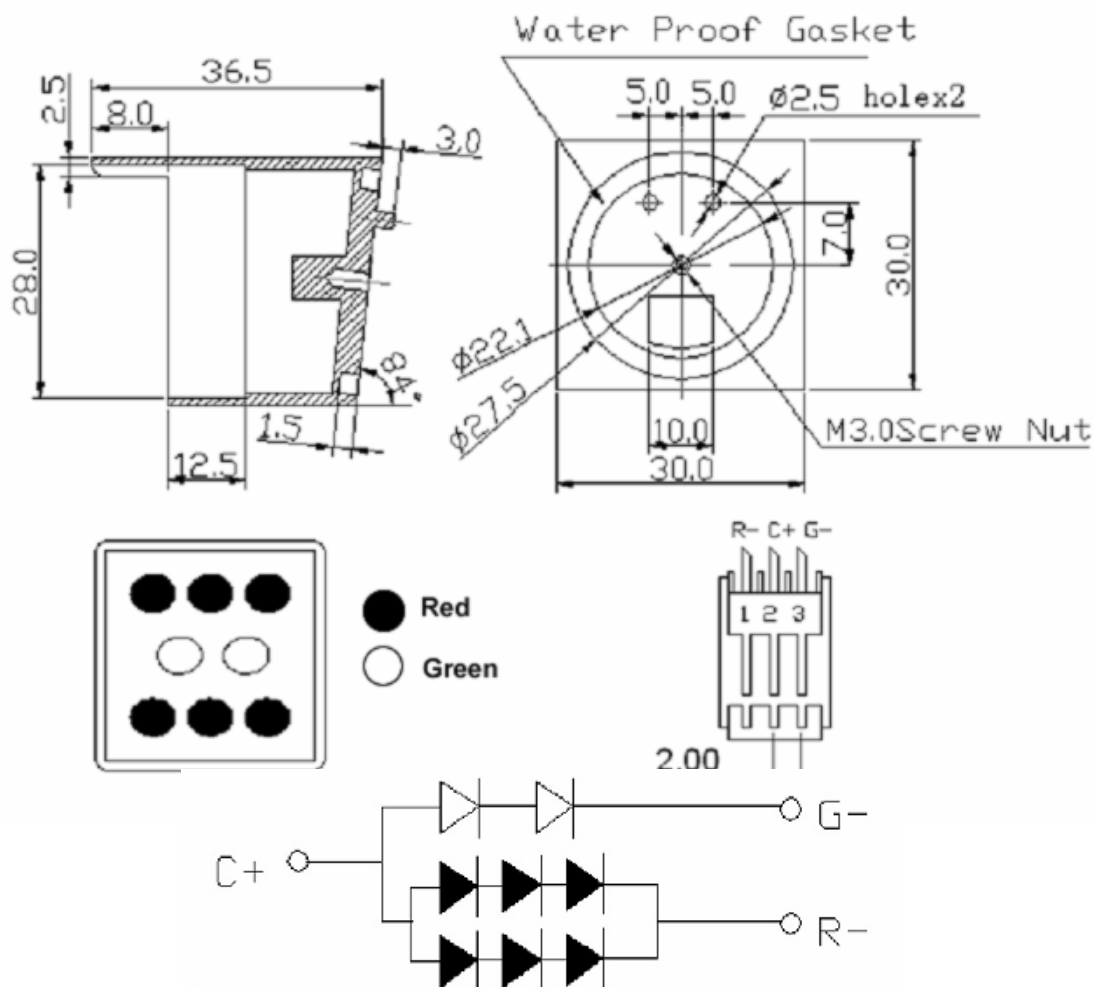
Item (項目)	Symbol (略号)	Test condition (条件)		Rating (条件)			Unit (単位)
				Min	Typ	Max	
Forward voltage (順方向電圧降下)	VF	red	If=40mA	2.0×3	2.1×3	2.3×3	V
		green	If=20mA	3.0×2	3.3×2	3.6×2	
Peak emission (ピーク発光波長)	λ P	red	If=20mA	620	625	630	nm
		green		520	525	530	
Luminous intensity (光度(軸上))	IV	red	If=20mA	800×6	1000×6	1200×6	mcd
		green		2500×2	3000×2	3500×2	
Viewing angle (半値角)	2 θ 1/2	whole		110/45			degree

Notes: (注意事項)

1. θ 1/2 is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value

(θ 1/2 は光度が半値(1/2)の値になる角度です)

七, Package configuration & Internal circuit diagram: (外形図と内部回路図)



Material of Case (ケース材質) : P C

Notes: (注意事項)

- (1) All dimensions are in millimeters(inches). (すべての形状はミリメートル単位です)
- (2) Tolerance is $\pm 0.25(0.01$ ")unless otherwise noted (許容は明記しない限り $\pm 0.25(0.01$ ")です)
- (3) Attachment method (取付方法)
Please manage bolting torque by $49 \text{ N}\cdot\text{cm}\sim 69 \text{ N}\cdot\text{cm}$ ($5 \text{ Kgf}\cdot\text{cm}\sim 7 \text{ Kgf}\cdot\text{cm}$).
(締め付けトルクは、 $49 \text{ N}\cdot\text{cm}\sim 69 \text{ N}\cdot\text{cm}$ ($5 \text{ Kgf}\cdot\text{cm}\sim 7 \text{ Kgf}\cdot\text{cm}$)で管理して下さい。)
- (4) LED Inclination Management (LED 傾き管理)
The Inclination LED may be less than 2mm. (LED 倒れは 2mm 以内)
- (5) LED Float Management (LED 浮き管理)
Less than +0.5mm of case upper surfaces (ケース上面+0.5mm 以内)

八、LED 光电参数 Photoelectricity Parameter (LED 光学的特性)

(环境温度 Ambient temperature: 25°C 湿度 humidity: RH60%)

(周囲温度:25°C 湿度:RH60%)

1, Oval type LED lamp LWL-54P4AR-S00:

(高視野角 LED SL-LOD413UC-EX:)

Bin specification (ランク仕様)

Ultra RED (赤)									
Color	Brightness Bin code (光度ランク)	Range(mcd) (値(mcd))		Voltage Bin code (VF ランク)	Range(V) (値(V))		Wavelength Bin code (波長ランク)	Range(nm) (値(nm))	
		Min	Max		Min	Max		Min	Max
R	1	800	1000	1	2.0	2.1	1	620	626
	2	1000	1200	2	2.1	2.2	2	625	630
				3	2.2	2.3			

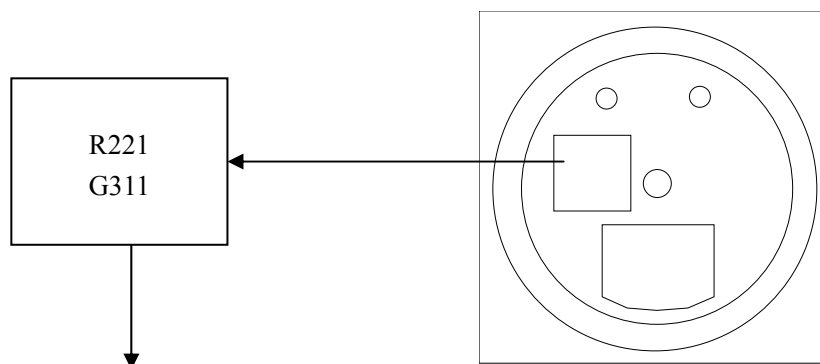
2, Oval type LED lamp LWL-54P4TF-S00:

(高視野角 LED SL-LOD414GC-EX:)

Bin specification (ランク仕様)

Ultra Pure Green (緑)									
Color	Brightness Bin code (光度ランク)	Range(mcd) (値(mcd))		Voltage Bin code (VF ランク)	Range(V) (値(V))		Wavelength Bin code (波長ランク)	Range(nm) (値(nm))	
		Min	Max		Min	Max		Min	Max
G	1	2500	2800	1	3.0	3.2	1	520	526
	2	2800	3100	2	3.2	3.4	2	525	530
	3	3100	3500	3	3.4	3.6			

Product rank display (製品ランク表示)



Luminescence color + Brightness Bin code + Voltage Bin code + Wavelength Bin code
(発光色 + 光度ランク + VFランク + 波長ランク)

3, Red (赤)

项目 Item (項目)	符号 Symbol (略号)	测试条件 Test condition (測定条件)	最小值 Min (最小値)	典型值 Type (標準値)	最大值 Max (最大値)	单位 Unit (単位)
正向电压 Forward voltage (順方向電圧降下)	VF	IF=20mA	1.85	—	2.2	V
反向电流 Reverse current (逆方向漏洩電流)	IR	VR=5V	—	—	5	μA
发光强度 Luminous intensity (光度(軸上))	IV	IF=20mA	800	—	1200	mcd
主波长 Dominant wavelength (主波長)	λ_d	IF=20mA	620	625	630	nm
光谱半宽度 Spectrum line half width (スペクトル半値幅)	$\Delta \lambda$	IF=20mA	—	28	—	nm
视角 Viewing Angle (半値角)	$2\theta_{1/2}$	IF=20mA		110		deg
静电解除极限 ESD Withstand limit (ESD 最大値)	ESD	—	—	—	600	V

4, Green (緑)

项目 Item (項目)	符号 Symbol (略号)	测试条件 Test condition (測定条件)	最小值 Min (最小値)	典型值 Type (標準値)	最大值 Max (最大値)	单位 Unit (単位)
正向电压 Forward voltage (順方向電圧降下)	VF	IF=20mA	3.0	—	3.4	V
反向电流 Reverse current (逆方向漏洩電流)	IR	VR=5V	—	—	5	μA
发光强度 Luminous intensity (光度(軸上))	IV	IF=20mA	2500	—	3500	mcd
主波长 Dominant wavelength (主波長)	λ_d	IF=20mA	520	525	530	nm
光谱半宽度 Spectrum line half width (スペクトル半値幅)	$\Delta \lambda$	IF=20mA	—	28	—	nm
视角 Viewing Angle (半値角)	$2\theta_{1/2}$	IF=20mA		110		deg
静电解除极限 ESD Withstand limit (ESD 最大値)	ESD	—	—	—	600	V

备注：亮度测试公差±15%、波长测试公差±1nm、正向电压测试公差±0.05V

Remark: The tolerance of intensity:±15%, The tolerance of wave length:±1nm, The tolerance of forwards voltage: ±0.05V. Only reference for above data when testing.

(注意：光度測定公差±15%、波長測定公差±1nm、順方向電圧降下測定公差±0.05V)

5、极限参数 Absolute Maximum Rating

(绝对最大定格)

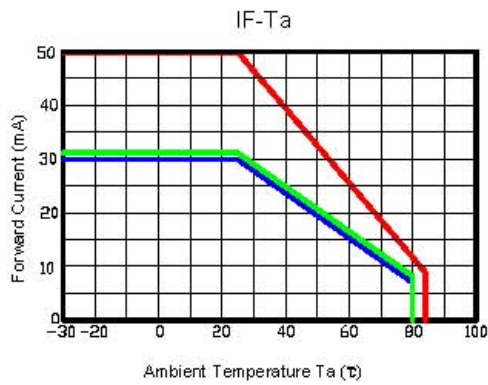
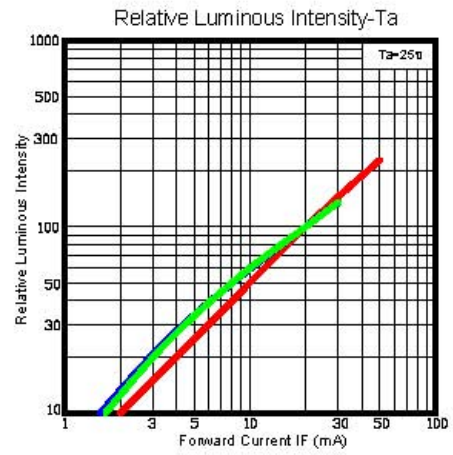
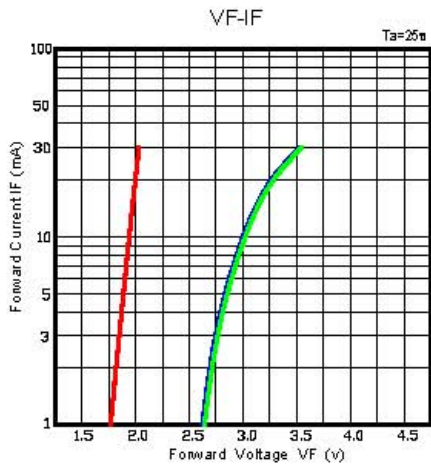
(环境温度 Ambient temperature: 25℃

湿度 humidity: RH60%)

项目 Item (項目)	符号 Symbol (略号)	数值 Value (数值)	单位 Unit (单位)	备注 Remark
正向电流 Forward Current (順方向電流)	IF	20	mA	---
正向峰值电流 Peck forward current (パルス順方向電流)	IFM	100	mA	F=1KHZ, 占空比 (duty cycle) 1/10 (F= 1 KHz duty 1 /10)
反向耐压 Reverse Voltage (逆方向電圧)	VRP	5	V	---
耗散功率 Power Dissipation (電力)	Pm	100	mW	---
工作环境温度 Operation temperature (動作温度)	Tamb	-25~+80	℃	---
贮藏温度 Storage temperature (保存温度)	Tstg	-40~+100	℃	---
焊接温度 Soldering temperature (はんだ付温度)	Tsol	260	℃	波峰焊, 离环氧体 4mm 处 ≤5S Wave soldering, 4mm out of physical body, ≤5S (噴流半田、底面より 4mm 以上、< 5S)

6, 典型光电特性曲线图

Typical photoelectricity characteristic curve chart (光学的/電気的特性曲线图)



— 紅光 (赤色)

— 綠光 (綠色)

7、可靠性实验项目 Reliability Test Project (信頼性試験結果)

描述 種類 Description	項目 項目 Item	測試標準 試験基準 Test criterion	測試條件 試験条件 Test condition	測試時間 試験時間 Test time	數量 数量 Qty	失效數量 失效数 Fail qty
壽命測試 壽命試験 Life test	常溫壽命測試 常溫連續動作壽命試験 Life test(room temperature)	JIS7021:B4	Ta=25°C±5°C, IF=30mA	1000Hrs	22	0
環境測試 環境試験 Ambience Test	高溫存儲 高溫保存 High temperature store	JIS7021:B10 MIL-STD-202:210A MIL-STD-750:2031	Ta=100°C±5°C	1000Hrs	100	0
	低溫存儲 低溫保存 Low temperature store	JIS7021:B12	Ta=-55°C±5°C	1000Hrs	100	0
	高溫高濕測試 高溫高濕放置試験 High temperature/ humidity test	JIS7021:B11 MIL-STD-202:103D	Ta=85°C±5°C RH=85-90%	1000Hrs	100	0
	冷熱沖擊測試 熱衝擊試験 Cold / Heat strike test	JIS7021:B4 MIL-STD-202:107D MIL-STD-750:1026	10sec -30°C±5°C←→100°C±5°C 5min 5min	100Cycles	100	0
	冷熱循環測試 溫度サイクル試験 Cold and heat cycle test	JIS7021:A3 MIL-STD-202:107D MIL-STD-705:105E	5min 5min 5min -40°C~25°C~100°C~25°C 30min 5min 30min 5min	100Cycles	100	0

8、判断标准 Judging criterion: (判断基準)

項目 項目 Item	符号 略号 Symbol	實驗條件 実験条件 Experiment condition	判斷標準 判断基準 Criteria	
			Min.	Max.
Forward Voltage (順方向電圧降下)	V _F	I _F =20mA	----	Initial Datex1.1 (初期値 110%)
Reverse Current (逆方向漏洩電流)	I _R	V _R =5V	----	5 μ A
Luminous Intensity (光度 (軸上))	I _V	I _F =20mA	Initial Datex0.7 (初期値 70%)	----

Reliability Guarantee Criterion (MIL-STD-19500H LTPD:15%)

(信頼性保証基準は、(MIL-STD-19500H LTPD:15%)です。)

九、 注意事项 Note (注意事项)

(一) 引脚成形方法 (リード成型方法) Led bracket forming method

(1) 必需离胶体 2 毫米才能折弯支架。

(必ず LED 樹脂より 2mm の間隔を持ってリード折り曲げを行う)

The pin of led can be bent where is at least 2mm out of led colloid.

(2) 支架成形必须用夹具或由专业人员来完成。

(リード成型は必ず取り付け具あるいは専門人員で完成する)

Must use fixture to deform the led bracket.

(3) 支架成形必须在焊接前完成。

(リード成型は必ずはんだ工程前に完成する)

Finishing the forming of led bracket must be before soldering.

(4) 支架成形需保证引脚和间距与线路板上一致。

(リード成型はリード 2 本間の距離と PCB フォームが一致することを保証しなければならない)

Guarantee the gap between two pin of led tallys with LED pads in PCB when forming.

(二) 烙铁焊接 (コテでの手半田) Manual soldering

烙铁 (最高 30W) 尖端温度不超过 260℃; 焊接时间不超过 5 秒;

焊接位置至少离胶体 5 毫米。

(こて [最高 30W] 先端温度は 260 度を超えず; はんだ時間は 5 秒を越えず;

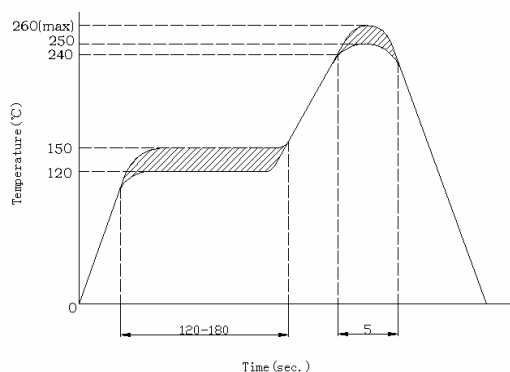
はんだ位置は少なくとも LED 樹脂より 5mm 離れていること)

The tip temperature of soldering iron don't exceed 260℃; soldering time don't exceed 5s and soldering position must be 5mm out of led colloid.

可靠性焊接温度 (A 图) Soldering temperature curve chart (figure A)

A 图波峰焊

(ディップ半田図)



(三) 防静电措施 (静电防止措置) ESD countermeasure

静电及高压会对 LED 造成损坏, 特别是晶片材质为 InGaN 的产品对静电防护要求更加严格, 要求在使用和检验产品时戴防静电手腕带或防静电手套, 焊接工具及设备外壳需可靠接地, 焊接条件遵循此份规格书中的条件。

(静电及び高圧は LED に対し損壊をもたらす、特にチップ材質が InGaN の製品は静电防止の要求が更に厳格になる、使用と製品検査時は静电キャップ又は静电手袋着用が要求される、はんだ工具及び設備の表面はアースが必要で、はんだ条件は規格書の条件を遵守する。)

Static electricity and high volt can damage led, The production whose Die material is InGaN must strictly required to prevent ESD, Must put on static glove and static fillet, Soldering tool and the cover of device must connect the ground, soldering condition follows the related stating of production specification manual.

(四) 过电流保护 (過電流保護) Protecting countermeasure when over current

为避免由于电压的变化引起大电流冲击而造成产品损坏, 需要加入保护电阻。

(電圧変動に引き起こされる大電流衝撃による製品の損壊を回避するため、保護抵抗を加えることが必要)

Need add the protecting resistor in circuit in order to avoid damaging led due to big current and voltage fluctuation.

(五) LED 安装方法 (LED 実装方法) LED installation method

1) 注意各类器件外线的排列以防极性装错, 器件不可与发热元件靠得太近, 工作条件不要超过其规定的极限。

(各種部材の線の配列に注意することで極性のさし間違いを防ぐ、電子部品と発熱体は近くにしてはならず、工作条件はその規定の極限を超えてはならない)

Pay attention to the led polarity and avoid installation wrong。Led can't be close to euthermic component, work condition should tally with it's specification。

2) 务必不要在引脚间距变形的情况下安装 LED。

(リードが変形した状態で決して実装してはならない)

Don't install the LED under the condition of the led pin deformation。

3) 当装配 LED 进入 PCB 或装配孔时, LED 支架不能承受任何压力。

(LED を PCB 上の孔に挿入した際、LED リードはどんなプレッシャーも受けてはならない)

The led bracket don't load any pressure when installing the led into PCB or fitting hole。

4) 在焊接温度回到正常以前, 必须避免使 LED 受到任何的震动或外力。

(はんだ温度が正常に戻る前、LED はどんな振動や外圧も受けてはならない)

Must avoid any strike and force on led before the soldering temperature return to room temperature。

十、包装 Packing (包装)

(1) 包装材料 Packing material: 防静电纸隔档 (防静电紙で包装を隔壁エリア化)

(2) 标识 remark: (標識)

(3) 每箱数量 (每箱数量) Qty/per bag: PCS (特殊情况可按要求而定 (特殊状況については要求に従って決めてよい) Can change the qty according to actual status)

(4) 外装纸箱 (外箱: 紙製) Packing box

注: 包装材料和外装纸箱根据客户下单实际情况定。

(包装材料と外箱は発注時の実際状況にて決定)

Remark: Decide detail packing box according to customer order or actual status。



DATA SHEET

1. Part No:

LWL-54P4AR-S00

Package Dimensions

2. Features

- High intensity LED lamp
- Oval shape
- UV resistant epoxy

3. Applications

- LED Screen
- Lumination

4. Absolute Maximum Ratings (Ta=25)

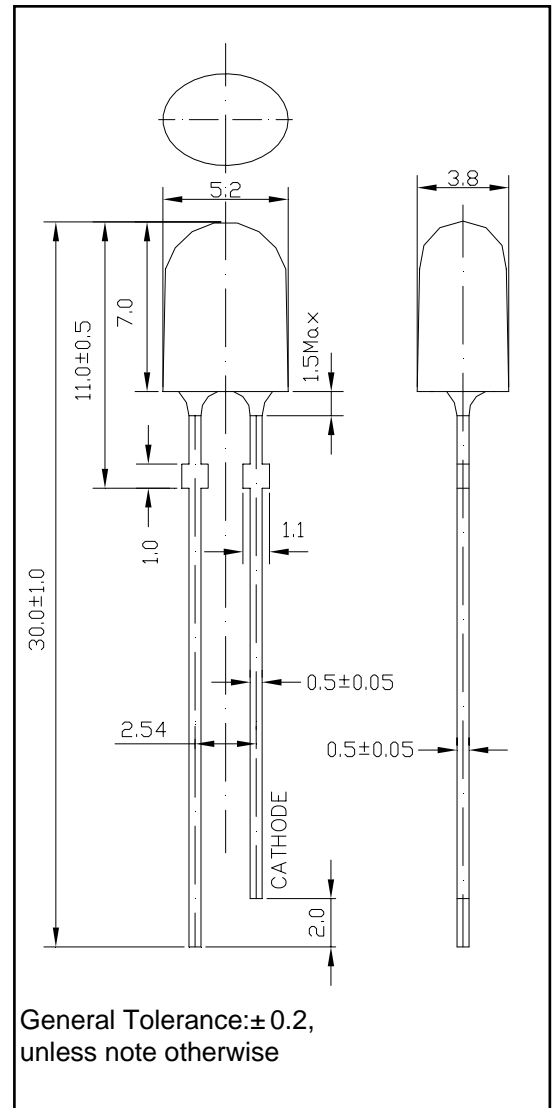
Parameter	Symbol	Max	Unit
Power Dissipation	P _D	100	mW
Peak Forward Current *	I _{FP}	100	mA
Continuous Forward Current	I _F	20	mA
Reverse Voltage	V _R	5	V
Operating Temperature	T _{opr}	-25 to +80	
Storage Temperature	T _{stg}	-40 to +100	
Soldering Temperature	T _{sol}	260	

* Duty ratio Max 1/10, Pulse Width Max 0.1ms;

At the position of 4mm from the bottom of the package within 5 seconds.

Recommended drive current as below to ensure its Life time

Red :15-16 mA Green:15-16mA Blue:12-13 mA



5. Electrical Optical Characteristics

(Ta=25 , @IF=20mA)

Part No.	Material	Lens	Emitting Color	Forward Voltage (v)		Luminous Intensity (mcd)		Dominant Wavelength (nm)		Viewing Angle (2 1/2°)
				Min	Max	Min	Max	Min	Max	
LWL-54P4AR-S00	AlGaInP	Red Diffuse	Red	1.8	2.4	720	--	620	630	110/50°



DATA SHEET

6. BIN Table : (Test at 20mA)

VF (v)	
Color	Range
Red	1.8-2.4

IV (mcd)	
Code	Range
H	720-970
H1	835-1120
J	970-1300
J1	1120-1500

Wd(nm)	
Code	Range
R2	620-625
R3	625-630

7. Reliability Test

Classification	Test Item	Test Conditions	Sample Size	Num of Damaged
Endurance Test	Operating Life	$I_f=30mA$, 1000Hrs	22	0
	High Temp. High Humidity Storage	60 ± 5 , 85-90% RH 1000Hrs	100	0
	Hi-Temp. Storage	85 ± 5 ,1000Hrs	100	0
Environmental Test	Temperature Cycling	-40 ± 5 30min Room Temp. 5min 100 ± 5 30min 100 Cycles	100	0
	Thermal Shock	-30 ± 5 3min 100 ± 5 3min 100 Cycles	100	0
	Solderability	230 ± 5 Dwell Time 5sec	22	0
	Solder Resistance	260 ± 5 , $10\pm1sec$	22	0

Criteria for Judging The Damage:

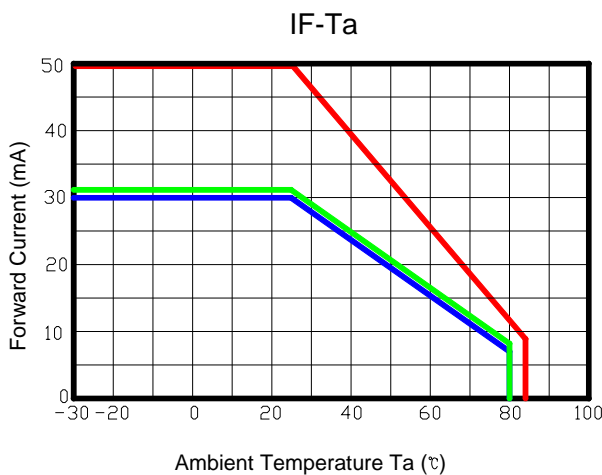
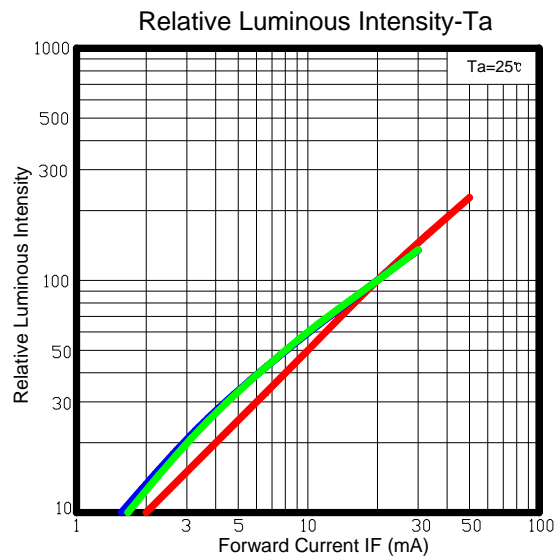
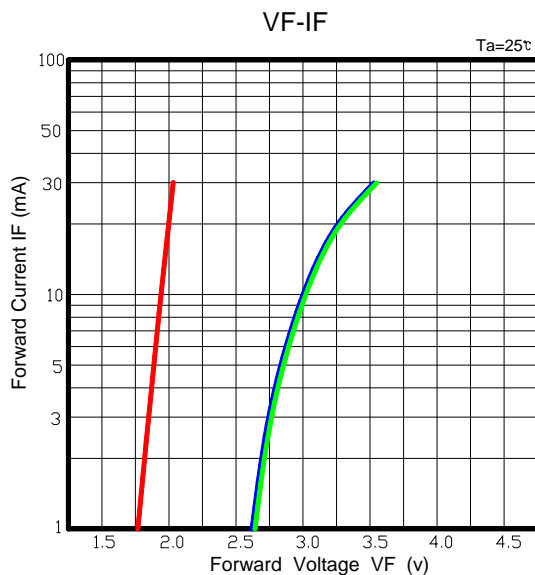
Item	Symbol	Test Conditions	Criteria for Judgment	
			Min	Max
Forward Voltage	I_f	$I_f=20mA$	-	U.S.L*1.1
Reverse Current	I_R	$V_R=5V$	-	U.S.L*2.0
Luminous Intensity	I_v	$I_f=20mA$	L.S.L*0.7	-



8. Caution in ESD :

- 8.1) Static Electricity and surge damages the LEDs. It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs. All devices、Equipment and machinery must be properly grounded.
- 8.2) When inspecting own final products on which LEDs were mounted, It is easy to find static-damaged LEDs by light emission test at lower current (below 1mA is recommended) .
- 8.3) Damaged LEDs will show some unusual characteristics such as leak current remarkably increases, starting forward voltage becomes lower, or the LEDs get unlighted at the low current.

9. Through-Hole LED Lamp Electronics-Optical Characteristics





DATA SHEET

1. Part No:

LWL-54P4TF-S00

Package Dimensions

2. Features

- High intensity LED lamp
- Oval shape
- UV resistant epoxy

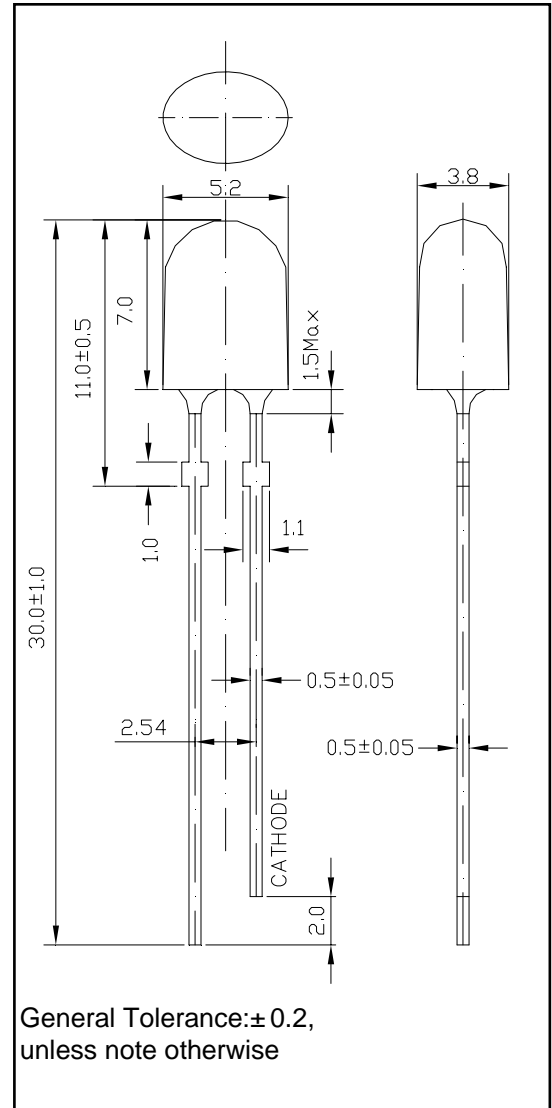
3. Applications

- LED Screen
- Lumination

4. Absolute Maximum Ratings (Ta=25)

Parameter	Symbol	Max	Unit
Power Dissipation	P _D	100	mW
Peak Forward Current *	I _{FP}	100	mA
Continuous Forward Current	I _F	20	mA
Reverse Voltage	V _R	5	V
Operating Temperature	T _{opr}	-25 to +80	
Storage Temperature	T _{stg}	-40 to +100	
Soldering Temperature	T _{sol}	260	

* Duty ratio Max 1/10, Pulse Width Max 0.1ms;
 At the position of 4mm from the bottom of the package within 5 seconds.
 Recommended drive current as below to ensure its Life time
 Red :15-16 mA Green:15-16mA Blue:12-13 mA



5. Electrical Optical Characteristics

(Ta=25 , @IF=20mA)

Part No.	Material	Lens	Emitting Color	Forward Voltage (v)		Luminous Intensity (mcd)		Dominant Wavelength (nm)		Viewing Angle (2 1/2)
				Min	Max	Min	Max	Min	Max	
LWL-54P4TF-S00	InGaN	Green Diffuse	Green	2.8	3.8	1750	--	520	530	110/50°



DATA SHEET

6. BIN Table : (Test at 20mA)

VF (v)	
Color	Range
Green	2.8-3.8

IV (mcd)	
Code	Range
L	1750-2300
L1	2000-2650
M	2300-3050

Wd(nm)	
Code	Range
F2	520-525
F3	525-530

7. Reliability Test

Classification	Test Item	Test Conditions	Sample Size	Num of Damaged
Endurance Test	Operating Life	$I_f=30mA$, 1000Hrs	22	0
	High Temp. High Humidity Storage	60 ± 5 , 85-90% RH 1000Hrs	100	0
	Hi-Temp. Storage	85 ± 5 ,1000Hrs	100	0
Environmental Test	Temperature Cycling	-40 ± 5 30min Room Temp. 5min 100 ± 5 30min 100 Cycles	100	0
	Thermal Shock	-30 ± 5 3min 100 ± 5 3min 100 Cycles	100	0
	Solderability	230 ± 5 Dwell Time 5sec	22	0
	Solder Resistance	260 ± 5 , $10\pm1sec$	22	0

Criteria for Judging The Damage:

Item	Symbol	Test Conditions	Criteria for Judgment	
			Min	Max
Forward Voltage	I_f	$I_f=20mA$	-	U.S.L*1.1
Reverse Current	I_r	$V_r=5V$	-	U.S.L*2.0
Luminous Intensity	I_v	$I_f=20mA$	L.S.L*0.7	-

PS: U.S.L.:Upper Standard Level L.S.L.:Lower Standard Level



8. Caution in ESD :

- 8.1) Static Electricity and surge damages the LEDs. It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs. All devices、Equipment and machinery must be properly grounded.
- 8.2) When inspecting own final products on which LEDs were mounted, It is easy to find static-damaged LEDs by light emission test at lower current (below 1mA is recommended) .
- 8.3) Damaged LEDs will show some unusual characteristics such as leak current remarkably increases, starting forward voltage becomes lower, or the LEDs get unlighted at the low current.

9. Through-Hole LED Lamp Electronics-Optical Characteristics

