

Sample Approval Sheet

产品类别(product type):LED		
产品名称(product name): 2MM red led		
产品编号(part No.):		
样品编号(Sample No.):		
承认书编号(Acknowledgement Numbers):		
签核 (Signatures)		
核准(Approved)	审核(Checked)	制定(Drawn)

客户 (Customer)		
公司名称(Corporation):		
物料编码(material No.):		
物料名称(Part No.):		
客户确认 (Customer Signatures)		

Selection Guide

Part No. (产品型号)	Emitted Color (发光颜色)	Resin color (胶体颜色)	Viewing Angle(1) (发光角度) $2\theta_{1/2}$
	red	diffused	120

Notes:

1. $\theta_{1/2}$ is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.

Absolute Maximum Ratings at Ta=25°C (极限参数)

Parameter	Symbol (符号)	Value (数值)	Unit (单位)
Power dissipation (功率消耗)	Pd	72	mW
DC Forward Current (直流电压)	If	30	mA
Peak Forward Current (1) (峰值电流)	Ifp	100	mA
Operating Temperature (操作温度)	Topr	-25to+85	°C
Storage Temperature (储存温度)	Tstg	-40to+100	°C
Lead Solder Temperature (2) (焊接温度)	Tsol	260	°C

Notes:

1.1/10 duty cycle,0.1ms pulse width

2.2mm below package base

Electrical/Optical Characteristics Ta=25°C

Parameter (参数)	Symbol (符号)	Condition (条件)	Value (数值)			Unit
			Min.	Typ.	Max.	
Forward voltage (正向电压)	Vf	If=20mA	1.7	1.8	2.0	v
Luminous intensity (发光强度)	Iv	If=20mA	15	23	---	Mcd
Reverse current (反向电流)	Ir	Vr=5V	---	---	10	uA
Dominant wavelength (主波长)	λ_d	If=20mA	640	645	650	Nm
Peak wavelength (峰值波长)	λ_p	If=20mA	---	660	---	nm
Spectral Line half-width (半波宽)	$\Delta\lambda$	If=20mA	---	20	---	nm

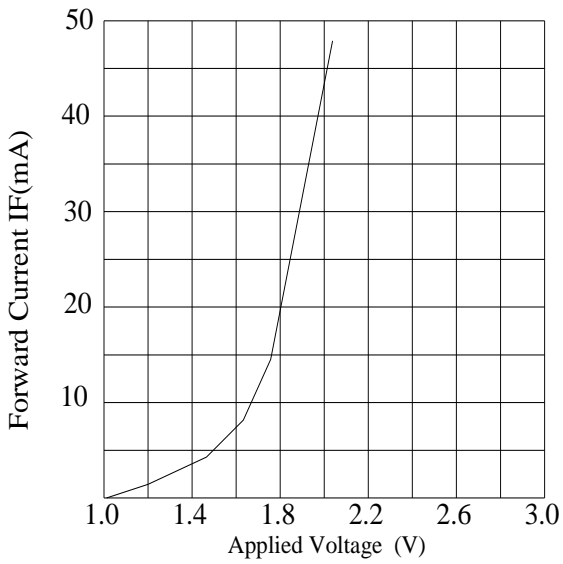
Notes:

1.forward voltage: $\pm 0.1V$

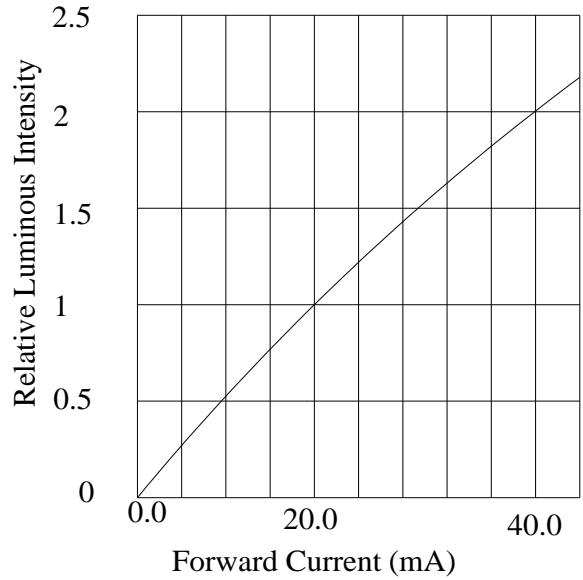
2.wavelength: $\pm 1nm$

3.luminous intensity/luminous flux: $\pm 10\%$

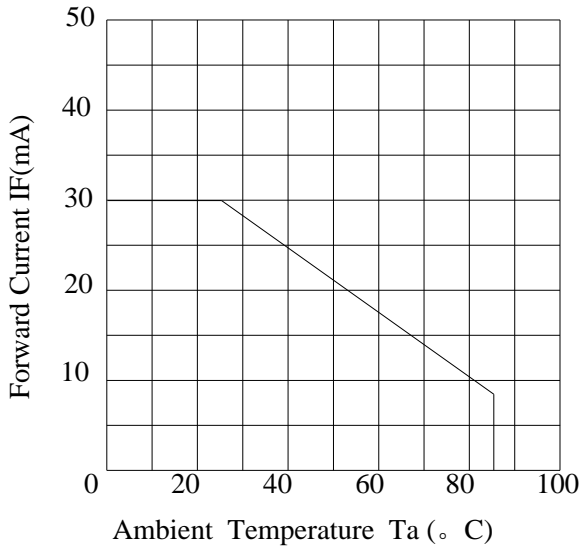
Typical Electrical / Optical Characteristics Curves
 典型电气/光学特性曲线



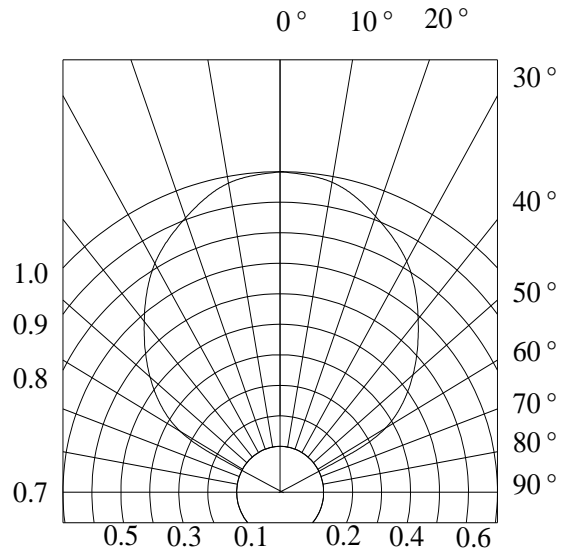
FORWARD CURRENT VS. APPLIED VOLTAGE
 电流与电压的关系图



FORWARD CURRENT VS. LUMINOUS INTENSITY
 电流与光强的关系图



AMBIENT TEMPERATURE VS. FORWARD CURRENT
 电流与温度的关系图



RADIATION DIAGRAM
 视角图

RELIABILITY(可靠性)

(1) TEST ITEMS AND RESULTS (测试项目及结果)

Test Item	Standard Test Method	Test Conditions	Note	Number of Damaged
Resistance to Soldering Heat (wave Soldering)	JEITA ED-4701 300 301	Tsld=260°C, 10sec. (Pre treatment 30°C, 70%, 168hrs)	2 times	0/50
Solderability (wave Soldering)	JEITA ED-4701 300 303	Tsld=215±5°C, 3sec. (Leader Solder)	1time over 95%	0/50
Thermal Shock	JEITA ED-4701 300 307	-40°C~100°C 5min. 5min.	100cycles	0/50
Temperature Cycle	JEITA ED-4701 100 105	-40°C~25°C~100°C~25°C 30min. 5min. 30min. 5min.	100cycles	0/50
Moisture Resistance Cycle	JEITA ED-4701 200 203	25°C~65°C~-10°C 90%RH 24hrs./1cycle	10 cycles	0/50
High Temperature Storage	JEITA ED-4701 200 201	Ta=100°C	1000 hrs	0/50
High Temperature High Humidity Storage	JEITA ED-4701 100 103	Ta=60°C, 90%RH	1000 hrs	0/50
Low Temperature Storage	JEITA ED-4701 200 202	Ta=-40°C	1000 hrs	0/50
Steady State Operating Life		Ta=25°C, IF=20MA	1000 hrs	0/50
Steady State Operating Life of High Temperature		Ta=85°C, IF=20mA	1000 hrs	0/50
Steady State Operating Life of High Humidity Heat		60°C, 90%RH, IF=15mA	500 hrs	0/50
Steady State Operating Life of Low Temperature		Ta=-30°C, IF=20MA	1000 hrs	0/50
Drop		H=75cm	3 cycles	0/50

(2) CRITERIA FOR JUDGING THE DAMAGE(损伤判断标准)

Item	Symbol	Test Conditions	Criteria for Judgement	
			Min.	Max.
Forward Voltage	VF	20MA	-	U.S.L.*)X1.1
Reverse Current	IR	VR=5V	-	U.S.L.*)X2.0
Luminous Intensity	IV	IF=20MA	L.S.L.***)X0.7	-

*) U.S.L.: Upper Standard Level

**) L.S.L.: Lower Standard Level

1.Storage (储存)

Under the storage conditions of 30°C or less and humidity less than 60%RH,the LEDs can be storage for 3months. Storage in a sealed container with moisture absorbent material can prolong the storage time to a certain extent bad storage conditions may cause the lealframes to corrode or degradation of LED characteristics. It is recommended that the LEDs be u7sed as soon as possible.

2. Static dlectricity (静电)

Static electricity of surge voltage damages the LED .Damaged LED will show some unusual chrematistics such As the for ward voltage becomes lower or the LED do not light at the low current even not light.

All devices ,equipment and machinery must be properly grounded. At the same time, it is recommended that wrist

Bands or anti-electrostatic gloves,anti-electrostatic containers be used when dealing with the LED

3. Design Consideration (设计建议)

When designing a circuit, the current through each LED must not exceed the absolute maximum rating specified for each LED .In the meanwhile , resistors for protection should be applied otherwise slight voltage shift will cause big current change, bum out may happen.

Thermal Design is paramount important ce because heat generation may result in the Characteristics decline, such as brightness decreased, Color changed and so on. Please consider the heat generation of the LED when making the system design.

4. Lead Forming (支架整形)

Any lead forming must be done before soldering, not during or after soldering. When forming leads. The leads should bent at a point at least 3mm from the base of the expose bulb. Bending at the same point twice or even more should be avoided.

Please use proper tools to hold and bent the leads, do not use the base of the lead frame as a fulcrum during lead forming .Bending stress to the base of the lead frame may cause characteristics change on LED or even break it.

Just for the same reason, when mounting the LED on to a printed circuit board, the holes on the circuit board should be exactly aligned with the leads of the LED.

5. Soldering (焊接)

Be careful because damages always caused during soldering. Please note that stress to the leads and expose bulb should be avoided during soldering particularly when heated. When soldering ,leave certain distance from soldering joint to base ,the distance is determined by different soldering techniques. It is recommended that soldering be performed based on the following conditions.

推荐焊接条件 Recommended Soldering Conditions:

波峰焊接 DIP Soldering		烙铁焊接 Hand Soldering	
预热 Pre-Heat	100°C Max.60 sec.MAX	焊接温度 Temperature	300°C Max
温度 Dipping Time	5 sec Max	焊接时间 Soldering Time	3 Sec. Max
焊接位置 Dipping Position	2mm ,Min 与树脂底部的距离 From soldering joint to base	焊接位置 Soldering Position	4mm ,Min 与树脂底部的距离 From soldering joint to base