

产品规格书

SPECIFICATION FOR APPROVAL

产品名称 Description	半导体激光器件 Semiconductor laser device
产品型号 Part No	DRS940-0005-07-1616E-PD
制作日期 Date	2024-02-04

制作 Producer	工程部 Engineering Dept.	业务部 Business department	批准 Approval
张均	谭尚军	欧阳松	陈明祥

客户承认结果 Customer acknowledges Results		

1、特点 Features

- 陶瓷封装，高亮度，高可靠性，
Ceramic Substrate package, High brightness, High efficiency
- 尺寸：1.6mm*1.6mm*0.66mm
Size: 1.6mm*1.6mm*0.66mm
- 通过 RoHS 认证
RoHS compliant
- 适于 SMT 贴片
Compatible with SMT
- 发光角度：21°
Viewing Angle : 21°
- 包装：最大 3000 颗/卷
Package: Max 3000pcs /reel

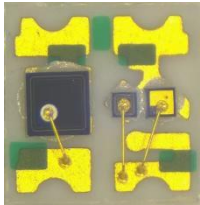
2、应用 Applications

传感和通讯应用

Sensor and communication

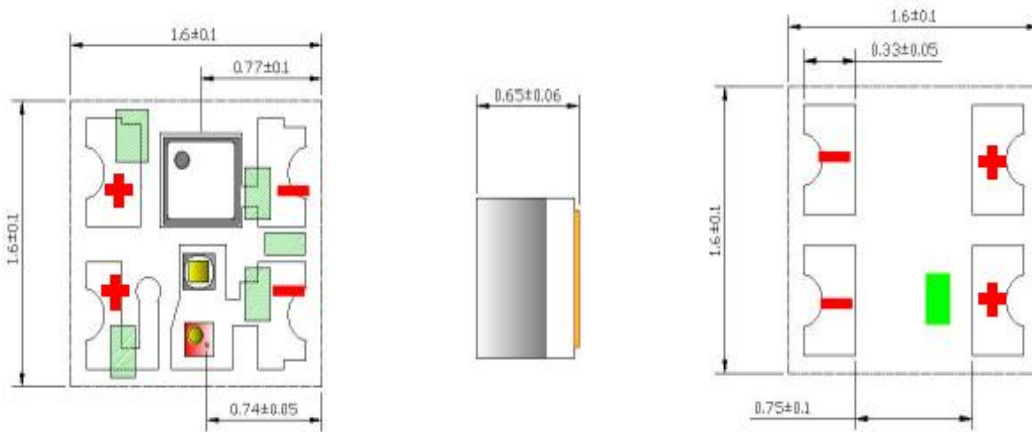
3、产品构造 Product conformation:

- 外观 Product appearance



- 封装：1616 封装
Packaging: 1616 encapsulation
- 发光波长：940nm
Wavelength: 940nm
- 芯片规格：7mil*7mil
Chip specification: 7mil*7mil
- 发光角度：21 °
Luminous Angle: 21 degrees
- 静电敏感材质
Electrostatic sensitive material

4、产品外形尺寸 Package outline dimensions:



5、产品性能 Product performance

1) 极限参数 Maximum Ratings

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
工作温度 Operating Temperature Range	T_{opr}	-20~85	° C
存储温度 Storage Temperature	T_{stg}	-40~100	° C
ESD (人体模式) ESD Human Body Mode HBM 8000V	HBM	8000	V
PD 最小反向电压 Min PD Reverse voltage	VR	35	V

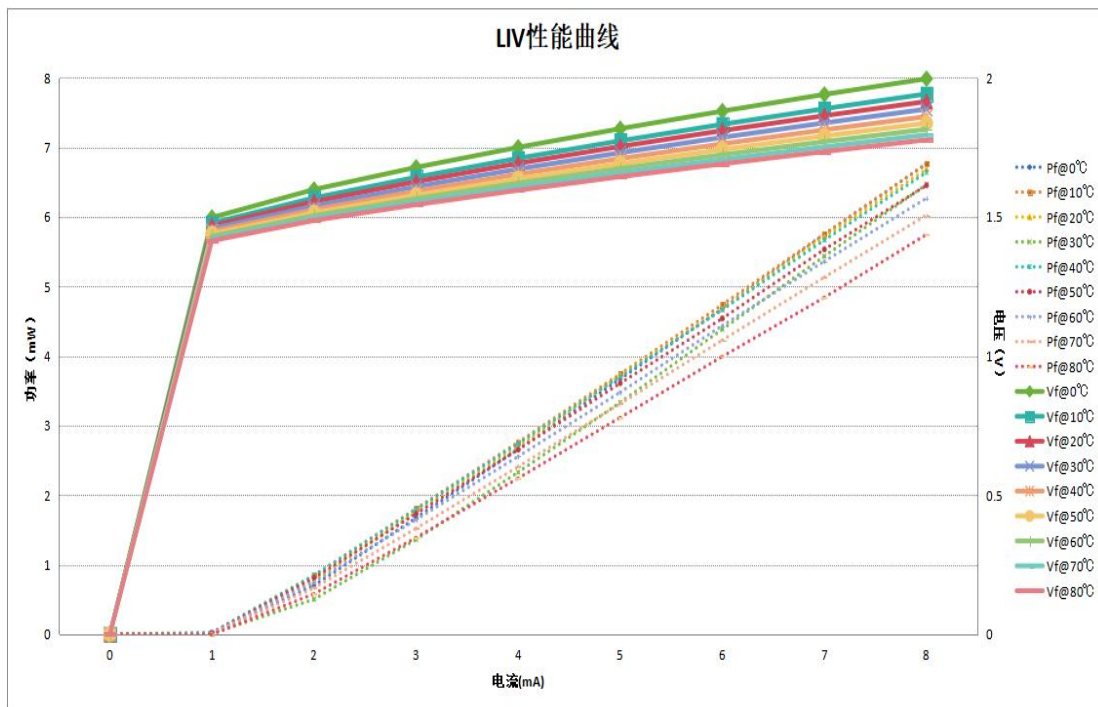
2) 光电特性 Electro-Optical Characteristics

项目 Item	符号 Symbol	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit
VCSEL					
工作电流	I_F	--	8	--	mA
出光功率Output Power	P	6	8	10	mW
正向电压Forward Voltage	V_F	1.7	1.8	2	V
峰值波长Dominant wavelength	WLP	930	940	950	nm
反向电流Reverse Current (V R=5V)	I_R	--	--	0.1	uA
视角Viewing Angle		--	21	25	°

Photodiode			
正向电压Forward Voltage	0.5	1.3	V
PD 反向暗电流PD Reverse Dark Current	2	10	nA
PD 亮电流PD Light Current	4.2		uA
ESD			
正向电压Forward Voltage	5.5	7	V
反向电压Reverse Voltage	5.5	6.8	V

3) L-I-V 性能曲线 The Photoelectric Characteristics Graph

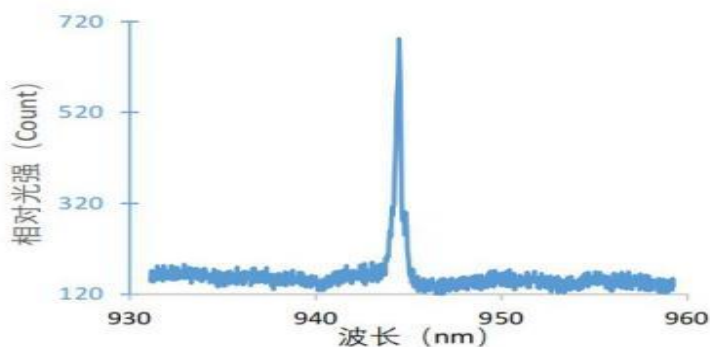
$I_F = 8\text{mA}$; $T_a = 0^\circ\text{C} - 80^\circ\text{C}$



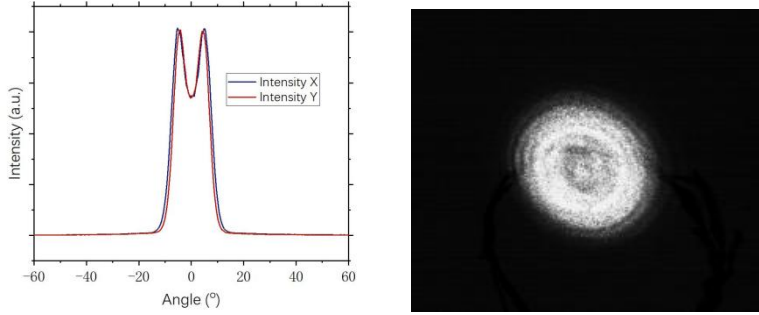
4) 光谱 Relative Spectral Power Distribution vs. Wavelength

$I_F = 8\text{mA}$; $T_a = 25^\circ\text{C}$

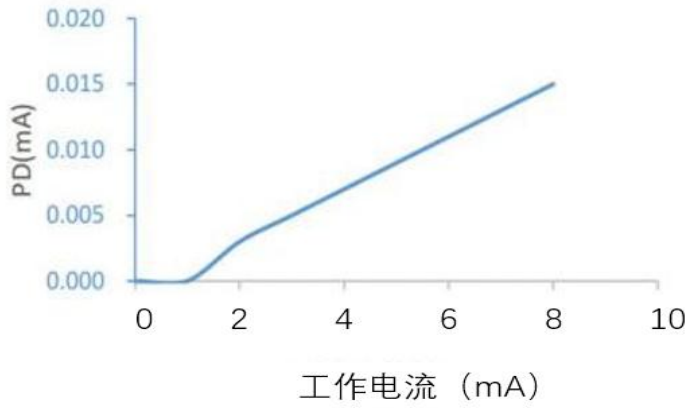
光谱曲线



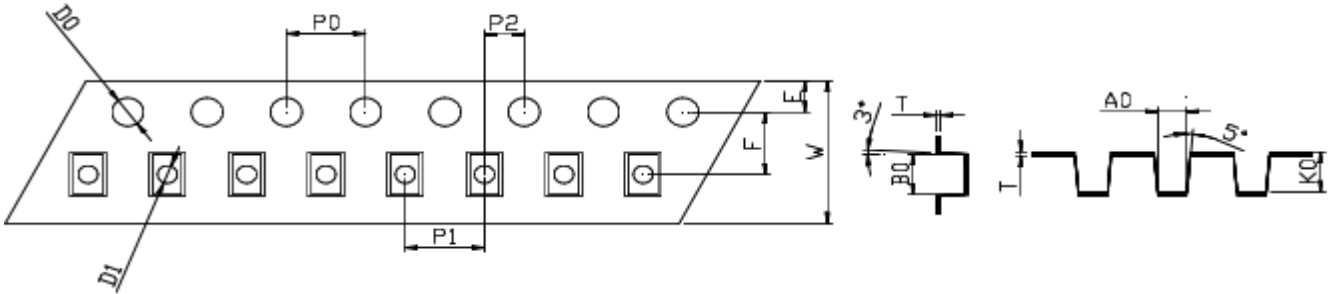
6) 光斑图案 Field Profiles



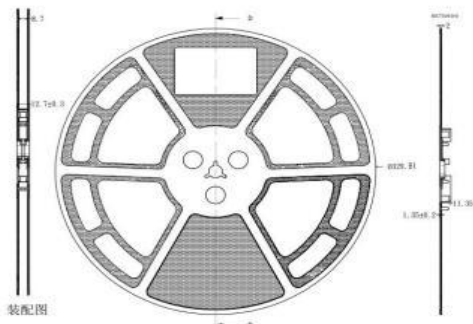
7) PD 电流曲线 PD Current curve $T_a = 25^\circ\text{C}$



6、卷轴尺寸 Reel Dimensions



W	8.00 ± 0.05	A0	1.82 ± 0.05	K0	0.75 ± 0.05
T	0.20 ± 0.02	B0	1.85 ± 0.05	D0	1.60 ± 0.10
A0	1.82 ± 0.05	D1	1.10 ± 0.10	P2	2.00 ± 0.10
B0	1.85 ± 0.05	P1	4.00 ± 0.10	P0	4.00 ± 0.10



未标注的公差均为±0.1mm，单位为mm。Tolerance unless mentioned is ±0.1mm, Unit = mm

卷轴包装: 3000pcs Reel:3000pcs.

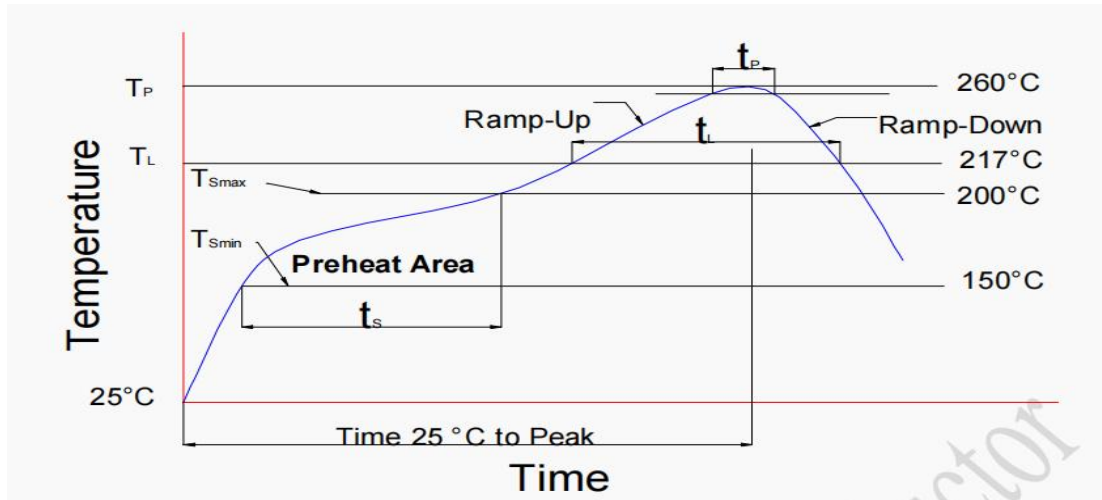
卷轴包装方法符合 IJSC0806 (连续胶带上的电子元件包装)

The tape packing method complies with IJSC0806(Packing of Electronic Components on Continuous Tapes)

当卷轴由于工作中断而重绕时，载带上压力不应超过 10N，否则 LD 可能会粘在盖带上

When the tape is rewound due to work interruptions, no more than 10N should be applied to the embossed carrier tape. The LD may stick to the cover tape.

7、回流焊特性 Reflow Soldering Characteristics



根据JEDEC-J-STD-020E 内容，参考以下内容。

Compatible with the JEDEC-J-STD-020E, using the parameters listed below.

特制参数 Profile Feature	无铅焊料 Lead-Free Solder
平均上升速率 (T _{Smax} 至 T _P) Average Ramp-Up Rate (T _{Smax} to T _P)	3 °C/sec max.
预热: 温度最小值 (T _{Smin}) Preheat: Temperature Min (T _{Smin})	150
预热: 最高温度 (T _{Smax}) Preheat: Temperature Max (T _{Smax})	200
预热: 时间 (t _{Smin} 到 t _{Smax}) Preheat: Time (t _{Smin} to t _{Smax})	60- 180 secs
回流温度 (T _L) Time Maintained Above: Temperature (T _L)	217°C
回流时间 (t _L) Time Maintained Above: Time (t _L)	60- 150 secs
峰值/分类温度 (T _P) Peak/Classification Temperature (T _P)	255±5°C
实际峰值温度 (t _p) 在 5°C 以内的时间 Time Within 5°C of Actual Peak Temperature (t _p)	20~40 secs
降低速率 Ramp-Down Rate	4°C/sec max.

8、应用注意事项 Application precautions

a) 存储 Storage

- 不要将芯片放在潮湿的地方，存放温度在 5℃~30℃之间，相对湿度在 30% 以下。
Do not place the chips in damp places, storage temperature between 5 °C and 30 °C, Relative humidity under 30%.
- 开包后建议在 24 小时内过完回流焊，车间条件≤30℃/60%RH。
After opening the package, it is recommended to finish the reflow within 24 hours. The workshop conditions are ≤30° C/60%RH
- 如果受潮，需将贴片卷盘放入 60℃烤箱烘烤 24 小时；打开后，LD 产品可重新密封在原始真空袋中。If it is wet, the patch reel should be baked in a 60 ° C oven for 24 hours; after opening, the LD light can be resealed in the original vacuum bag.
- 不要接触任何未知的液体，特别是丙酮。
Don't touch any unknown liquid, in particular, acetone.
- 防止静电死亡，手动操作需要戴橡胶手套并佩戴静电环。
Prevent electrostatic killed, manual operation is required to wear rubber gloves and wear electrostatic ring.

b) 清洗 Cleaning

- 通常，LD 不建议对部件进行湿式清洁处理，因为封装不是密封的。
In general, LD does not recommend a wet cleaning process for component as the package is not hermetically sealed.
- 由于采用开放式设计，所有类型的清洁液都可能渗透到封装中，导致 LD 退化或完全失效。Due to the open design, all kind of cleaning liquids can infiltrate the package and cause a degradation or a complete failure of the LD.

c) 操作注意 Handling precautions

- 在处理过程中，还应注意确保组件顶面没有压力。
During the handling, care should be taken as well to ensure no pressure on The top surface of component.
- 应避免使用所有类型的尖锐物体（例如镊子，指甲等），以防止对硅树脂造成压力，因为这会导致部件损坏。
All types of sharp objects(e.g. forceps, fingernail, etc) should be avoided in order to prevent stress to the silicone, since this can lead to damage of the component.