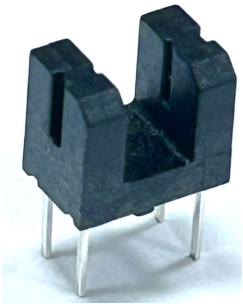
Photo Interrupter 8ITR645DH3SB0002 Datasheet

光遮断器（光电开关）



Features 产品特性

- Fast response time 快速响应
- High sensitivity 高灵敏度
- Thin and small package 封装尺寸小巧
- Pb free 无铅型
- This product itself will remain within RoHS compliant version 本产品符合 RoHS 标准
- Compliance with EU REACH 符合欧盟 REACH 法规

Description 产品介绍

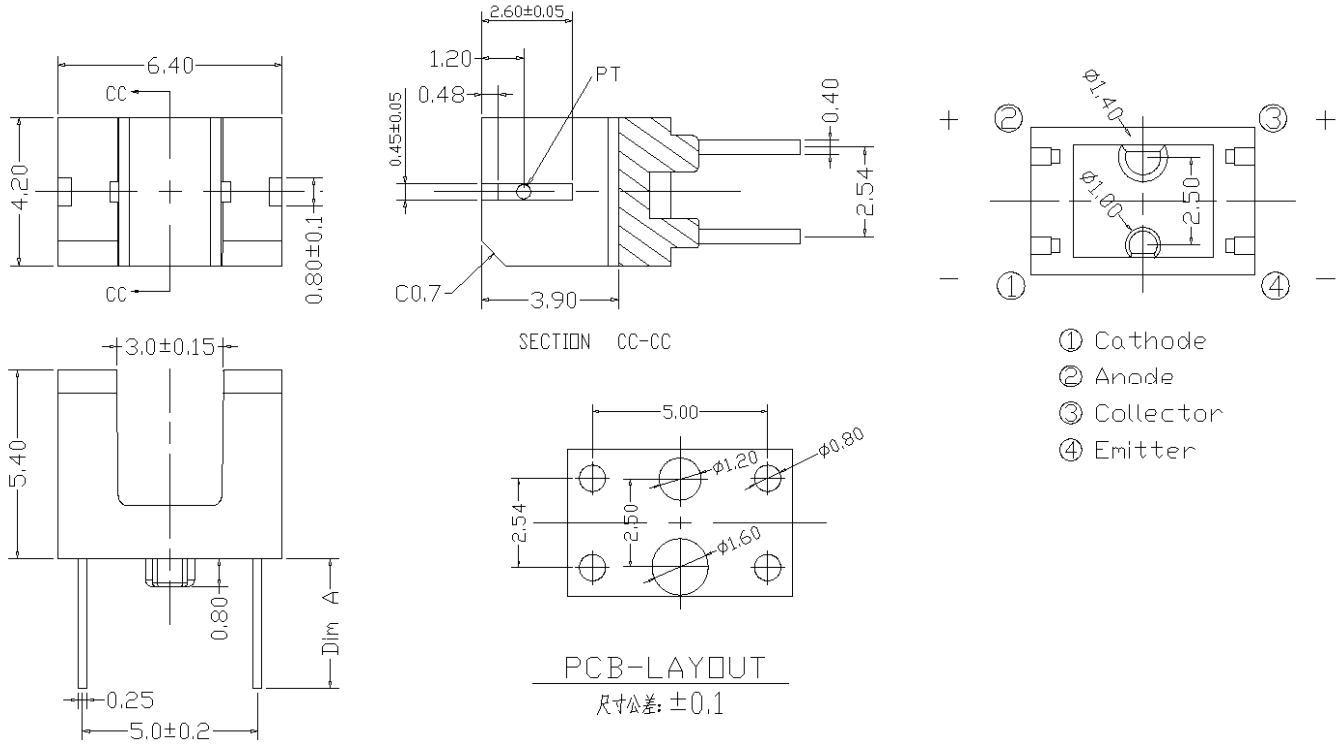
- The 8ITR645DH3SB0002 consists of an infrared light emitting diode and a silicon phototransistor encased in a black thermo-plastic housing.
  8ITR645DH3SB0002 由一个红外发光二极管和一个硅光电晶体管组成，封装在一个黑色的热塑性外壳中。
- Phototransistor receives radiation from the IR LED only, and avoids the noise from ambient light.
  光电晶体管只接收来自红外 LED 的辐射，并避免来自环境光的干擾

Product Application 产品应用

- Printer 打印机
- Copier 复印机
- Scanner 扫描仪器
- Opto-electronic switch 光电开关

Table of Contents 目录

Mechanical Dimensions 结构尺寸



Unit: mm

Notes:

1. All dimensions are in millimeters. 所有尺寸都以毫米为单位
2. General Tolerances：±0.25mm. 未标示尺寸公差 0.25 毫米
3. Lead spacing is measured where the lead emerge from the package.
   引线间距是在引线从封装出来的地方测量

Device Selection Guide 产品指南

Device No.	Chip Material芯片材质	Lens Color透镜颜色
IR	AlGaAs砷化镓铝	Light Pink淡红色
PT	Silicon硅	Black 黑色

Absolute Maximum Ratings (T_a=25℃) 最大额定值

Parameter 参数		Symbol 符号	Ratings 范围	Units 单位
Input输入	Power Dissipation at (or below) 25℃ Free Air Temperature消耗功率	Pd	65	mW
	Reverse Voltage反向电压	V_R	5	V
	Continuous Forward Current正向电流	I_F	50	mA
Output输出	Power Dissipation at (or below) 25℃ Free Air Temperature消耗功率	Pd	75	mW
	Collector Current集电极电流	I_C	20	mA
	Collector-Emitter Voltage集电极-发射极电压	BV_{CEO}	30	V
	Emitter-Collector Voltage发射极-集电极电压	BV_{ECO}	5	V
Operating Temperature 操作温度		Topr	-25~+80	℃
Storage Temperature 储存温度		Tstg	-40~+85	℃
Lead Soldering Temperature *1 (3mm from the package) 焊接温度（离胶体3mm距离）		Tsol	260	℃

Notes:

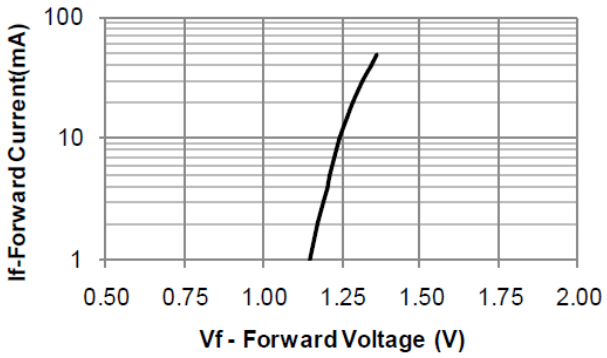
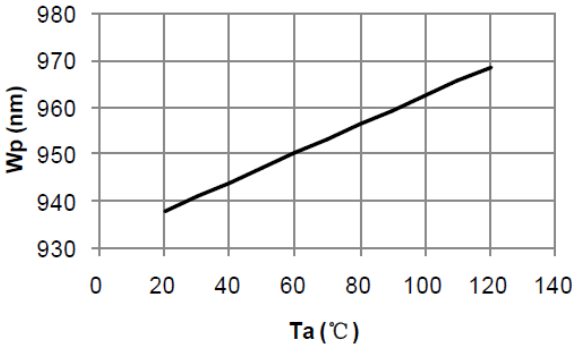
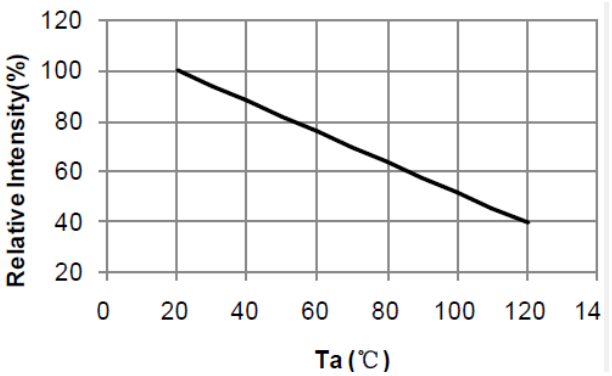
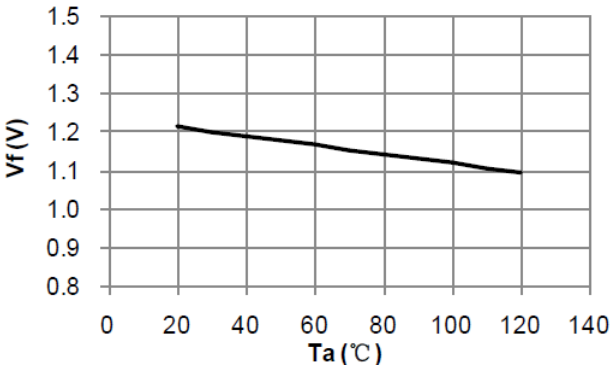
*1. Soldering time≦5 sec.

注意：焊接时间小于 5S

Electro-Optical Characteristics (T_a=25℃) 光电特性

Parameter 参数		Conditions 条件	Symbol 符号	Min. 最小值	Typ. 常规	Max. 最大值	Unit. 单位
Input 输入	Forward Voltage 顺向电压	I_F=20mA	V_F	---	1.27	1.6	V
	Reverse Current 逆向电流	V_R=5V	I_R	---	---	10	μA
	Peak Wavelength 峰值波長	I_F=20mA	λ_P	---	940	---	nm
Output 输出	Collector Dark Current 集电极暗电流	V_{CE}=20V Ee=0mW/cm^2	I_{CEO}	---	---	100	nA
	Collector-Emitter Saturation Voltage 集电极-发射极饱和电压	I_C=2mA Ee=1mW/cm^2	$V_{CE(sat)}$	---	---	0.4	V
Transfer Characteristics 传输特性	On State Collector Current 闭合状态集电极电流	V_{CE}=5V I_F=20mA	$I_{C(on)}$	0.5	---	6.0	mA
	Rise time上升时间	V_{CE}=5V I_C=1mA R_L=1K	t_r	---	15	---	μs
	Fall time下降时间		t_f	---	15	---	μs

Typical Electrical/Optical/Characteristics Curves for IR 光电特性图

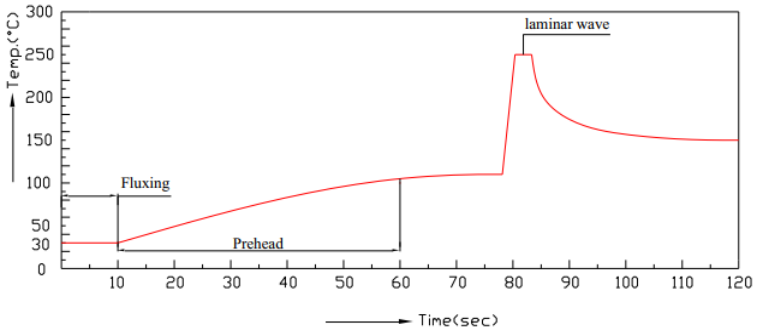
Forward Current vs. Forward Voltage	Peak Wavelength vs. Ambient Temperature
	
Relative Intensity vs. Ambient Temperature	**Forward Voltage vs. Ambient Temperature**
	

Welding and Precautions 焊接和注意事项

1. Careful attention should be paid during soldering. When soldering, leave more than 3mm from solder joint to epoxy bulb, and soldering beyond the base of the tie bar is recommended.
   焊接时应特别注意。焊接时，焊点与环氧胶体距离应大于 3mm 且焊接处要在支架 bar 以下
2. Recommended soldering conditions: 建议焊接条件

Hand Soldering手动焊接		DIP Soldering波峰焊	
Temp. at tip of iron 烙铁头温度	300°C Max. (30W Max.) 最高温300度	Preheat temp. 预热温度	100°C Max. (60 sec Max.) 最高温100度60秒
Soldering time 焊接时间	3 sec Max. 3秒	Bath temp. & time 浸锡温度和时间	260 Max., 5 sec Max 最高温 260度/5秒
Distance 距离	3mm Min.(From solder joint to epoxy bulb) 最少距离胶体3mm	Distance距离	3mm Min. (From solder joint to epoxy bulb) 最少距离胶体3mm

3. Recommended soldering profile 建议焊接曲线



4. Avoiding applying any stress to the lead frame while the Photo Interrupter are at high temperature particularly when soldering. 在高温焊接时，避免对引线框架施加任何压力
5. Dip and hand soldering should not be done more than one time 波峰焊和手焊接应该一次性完成
6. After soldering the Photo Interrupter, the epoxy bulb should be protected from mechanical shock or vibration until the Photo Interrupter return to room temperature.
   焊接完成后，在光电开关恢复常温前，避免受到外力冲击和振动
7. A rapid-rate process is not recommended for cooling the Photo Interrupter down from the peak temperature. 不得快速将光电开关从峰值温度冷却
8. Although the recommended soldering conditions are specified in the above table, dip or hand soldering at the lowest possible temperature is desirable for the Photo Interrupter.
   虽然在上表中已指定了推荐的焊接条件,但对于光电开关来说浸锡或手工焊接尽可能在最低温度下进行
9. Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.
   波峰焊参数必须根据建议的温度和波峰停留时间进行设置和保持。

Lead Forming 折脚

1. During lead frame bending, the lead frame should be bent at a distance more than 3mm from bottom of the epoxy. 引线框弯曲时，引线框弯曲距离环氧树脂底部应大于 3mm
   Note: Must fix lead frame and do not touch epoxy before bending to avoid Photo Interrupter broken.
   注：必须固定引线框架，弯曲前不得接触环氧树脂，以避免光电开关损坏。
2. Lead forming should be done before soldering.
   铅成型应在焊接前完成。
3. Avoid stressing the Photo Interrupter package during leads forming. The stress to the base may damage the characteristics of Photo Interrupter, or it may break the Photo Interrupter.
   在引线成型过程中避免对光电开关胶体施加压力。对底座的应力可能会破坏光电开关的特性，或者可能会破坏光电开关。
4. Cut the Photo Interrupter lead frame at room temperature. Cutting the lead frame at high temperatures may cause failure of the Photo Interrupter.
   应在室温下切断光电开关引线框，在高温下切割引线框可能会导致光电开关故障。
5. When mounting the Photo Interrupter onto a PCB, the PCB holes must be aligned exactly with the lead position of the Photo Interrupter. If the Photo Interrupter are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the Photo Interrupter.
   当将光电开关安装到 PCB 上时，PCB 孔必须与光电开关的引线位置完全对齐。如果在引线处安装有应力，则会导致环氧树脂的劣化，这将使光电开关劣化。

Cleaning 清洁

Do not clean the Photo Interrupter by the ultrasonic. 不要用超声波清洗光电开关

Heat Management 热管理

1. Heat management of Photo Interrupter must be taken into consideration during the design stage of Photo Interrupter application. The current should be de-rated appropriately by referring to the de-rating curve found in each product specification.
   在设计光电开关应用时，必须考虑光电开关的热管理。电流应根据每个产品规范中的降级曲线进行适当的降级
2. The temperature surrounding the Photo Interrupter in the application should be controlled.
   在应用过程中，应该控制光电开关周围的温度

Storage 存放方式

1. The Photo Interrupter should be stored at 10~30°C and 70%RH or less after being shipped from Edison and the storage life limits are 3 months. If the Photo Interrupter are stored for 3 months or more, they can be stored at 10°C~25°C and 20%RH~60%RH for a year in a sealed container with a nitrogen atmosphere. After opening the package, the devices must be stored at 10°C~25°C and 20%RH~60%RH, and suggested to be used within 24 hours or as soon as possible. Besides, suggest keeping devices sealed in the package bag.
   光电开关从艾笛森出货后后，应在 10~30℃、70%RH 或以下保存，保存期限为 3 个月。打开包装后，应在 10℃~25℃、20%RH~60%RH 条件下保存并建议在 24 小时内或尽快使用。同时建议剩余的材料应尽快密封包装
2. Please avoid rapid transitions in ambient temperature, especially in high humidity environments where condensation can occur.
   请避免环境温度的快速变化，特别是在高湿度的环境中，可能发生凝露

ESD 静电防护

1. The products are sensitive to static electricity or surge voltage. ESD can damage a die and its reliability. 产品对静电或浪涌电压敏感。静电放电会损坏材料及其可靠性。
2. When handling the products, the following measures against electrostatic discharge are strongly recommended:在操作产品时，强烈建议采取以下防静电措施

   Eliminating the charge 消除电荷

   Grounded wrist strap, ESD footwear, clothes and floors Grounded workstation equipment and tools ESD table/shelf mat made of conductive materials.

   接地腕带 静电鞋，静电服，工作站设备接地和由导电材料组成的静电防护工具
3. Proper grounding is required for all devices, equipment, and machinery used in product assembly. Surge protection should be considered when designing of commercial products.

   在产品装配过程中使用的所有组件、设备和机械都需要正确接地，在设计商用产品时应考虑电涌保护
4. If tools or equipment contain insulating materials such as glass or plastic, the following measures against electrostatic discharge are strongly recommended:

   如果工具或设备中含有玻璃、塑料等绝缘材料，强烈建议采取以下措施防止静电放电

   Dissipating static charge with conductive materials and preventing charge generation with moisture. Neutralizing the charge with ionizers.

   用导电材料驱散静电防止水分产生电荷用电离器中和电荷

Revision history 修订历史

Versions 版本	Description	Release Date
0.1	Preliminary 初定	2023/05/25

About Edison Opto 关于艾笛森

Edison Opto is a leading manufacturer of high power LED and a solution provider experienced in LDMS. LDMS is an integrated program derived from the four essential technologies in LED lighting applications- Thermal Management, Electrical Scheme, Mechanical Refinement, Optical Optimization, to provide customer with various LED components and modules. More Information about the company and our products can be found at www.edison-opto.com

www.edison-opto.com

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