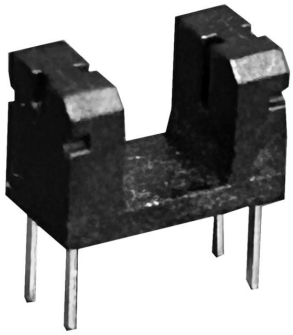
Photo Interrupter 8ITR845D04SB0001 Datasheet

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 8ITR845D04SB0001 consists of an infrared light emitting diode and a silicon phototransistor encased in a black thermo-plastic housing.
  8ITR845D04SB0001 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

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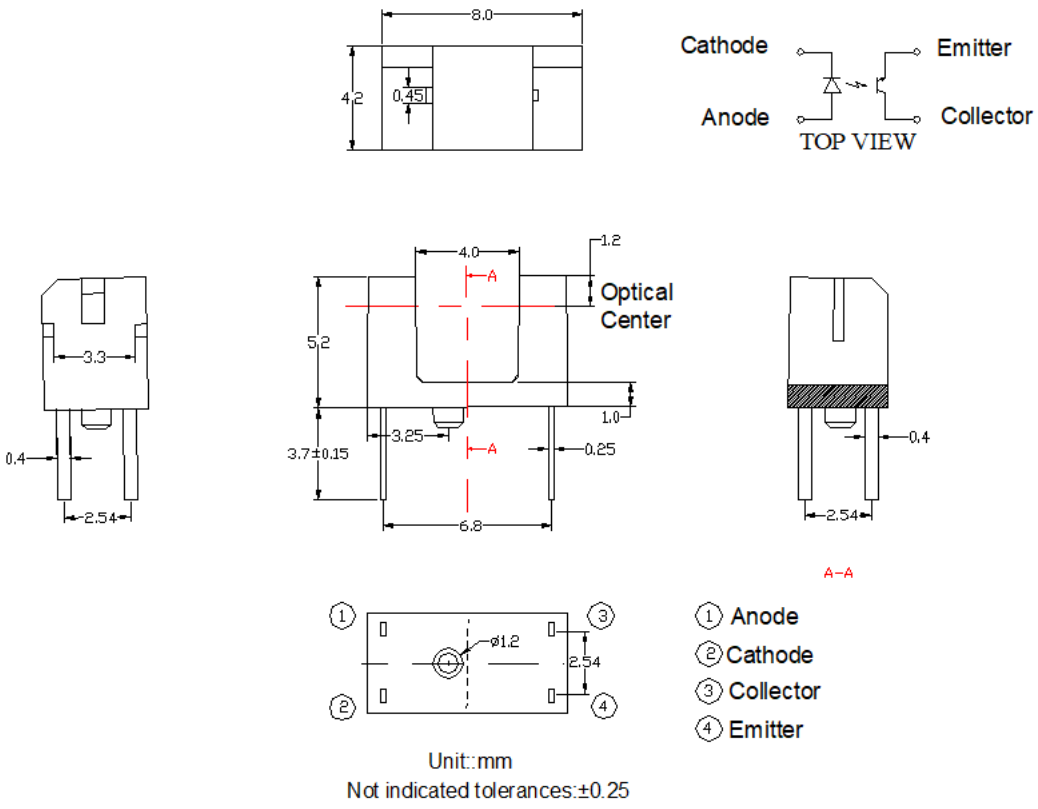
Mechanical Dimensions 结构尺寸



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	Clear 透明
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:

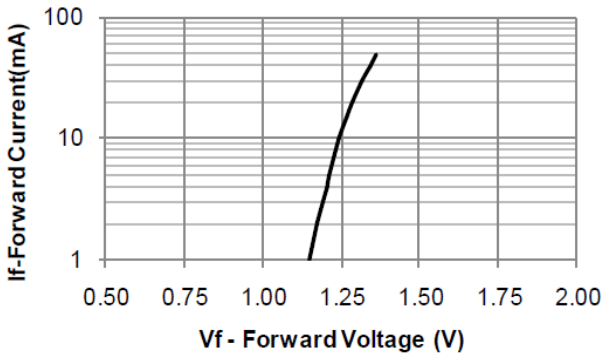
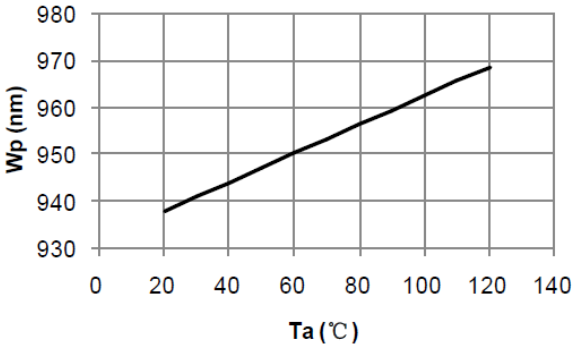
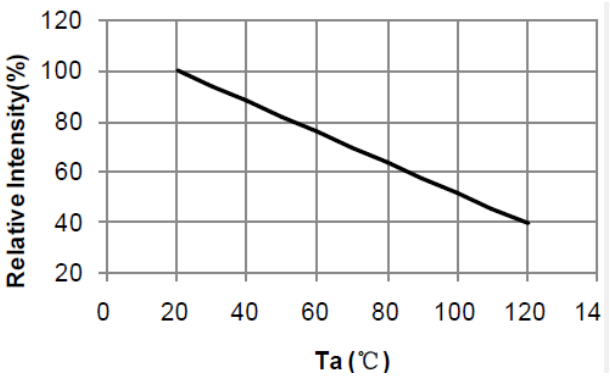
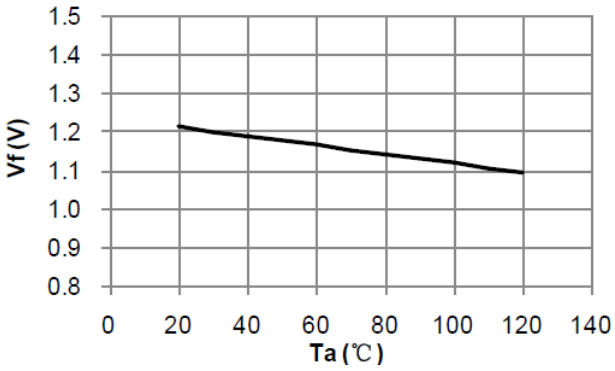
*1. Soldering time≦5 sec.

注意：焊接时间小于 5 秒

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	$I_{C(on)}$	0.2	---	2.5	mA
	Rise time上升时间	V_{CE}=5V I_C=1mA R_L=1KΩ	t_r	---	15	---	μs
	Fall time下降时间		t_f	---	15	---	μs

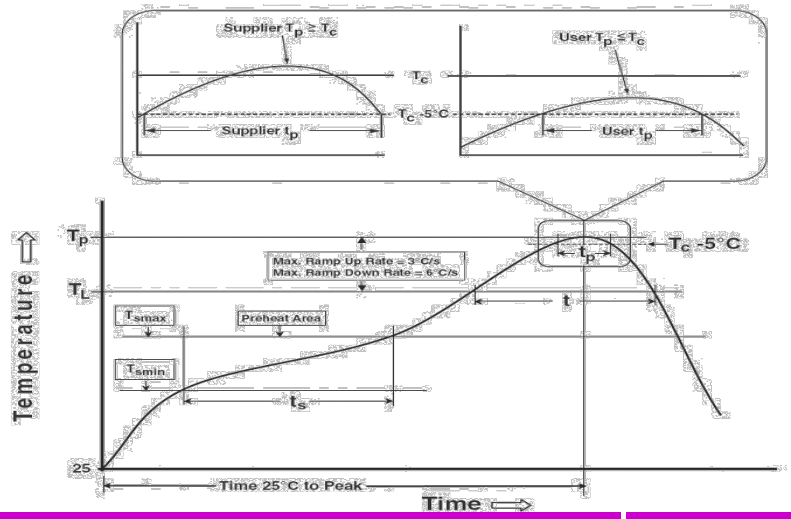
Typical Electrical/Optical/Characteristics Curves for IR 光电特性图

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

The following reflow profile is from IPC/JEDEC J-STD-020D which provided here for reference.

以下回流曲线来自 IPC/JEDEC J-STD-020D，此处提供参考。



Profile Feature 项目参数	Pb-Free Assembly 无铅制程
Preheat & Soak 预热和浸泡 Temperature min (Tsmin) Temperature 最低温度（Tsmin）温度 max (Tsmax) Time (Tsmin to Tsmax) (ts) 最大（Tsmax）时间（Tsmin 到 Tsmax）（ts）	150 °C 200 °C 60-120 seconds
Average ramp-up rate (Tsmax to Tp) 平均爬升率（Tsmax 到 Tp）	3 °C/second max.
Liquidous temperature (TL) 液相温度（TL） Time at liquidous (tL) 液化时间（tL）	217 °C 60-150 seconds
Peak package body temperature (Tp) 最高封装体温度（Tp）	255 °C ~260 °C
Classification temperature (Tc) 分级温度（Tc）	260 °C
Average ramp-down rate (Tp to Tsmax) 平均缓降率（Tp 至 Tsmax）	6°C/second max.
Time 25 °C to peak temperature 25°C 至峰值温度的时间	8 minutes max.

※Notice: Do not use hot plate to mount the package at the peak temperature (Tp) of 260°C over 5 seconds.

注意：不要在温度峰值 260 °C 的热板上焊接元件超过 5 秒

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	2024/04/19

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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