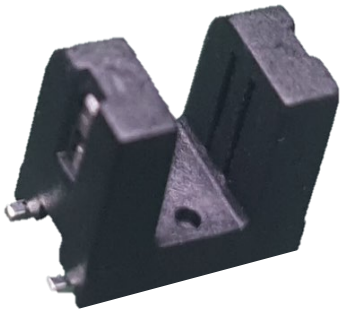
Photo Interrupter 8ITR745S23FB0002 Datasheet(Draft)

双通道光遮断器（光电开关）



Features 产品特性

- Package type: surface mount 封装类型:表面贴装
- Detector type: phototransistor 探测器类型:光电晶体管
- Thin and small package 封装尺寸小巧
- Gap (in mm):3 缝隙 3mm
- Aperture (in mm): 0.4. 孔径(mm)： 0.4。
- Emitter wavelength: 940 nm 发射器波长:940 nm
- Pb free 无铅型

Description 产品介绍

- The 8ITR745S23FB0002 is a compact transmissive sensor that includes an infrared emitter and two phototransistor detectors, located face-to-face in a surface mount package. 8ITR745S23FB0002 是一种紧凑的传输传感器，包括一个红外发射器和两个光电晶体管探测器，它们面对面安装在表面封装中。

Product Application 产品应用

- Automotive optical sensors 汽车光学传感器
- Accurate position sensor for encoder 编码器精确位置传感器
- Sensor for motion, speed and direction 运动、速度和方向传感器

Table of Contents 目录

Absolute Maximum Ratings 绝对最大额定值

(Tamb = 25 °C)

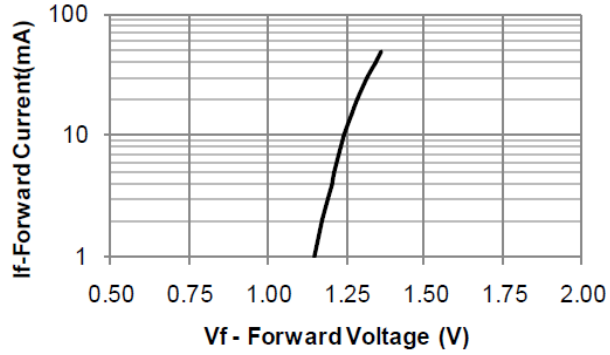
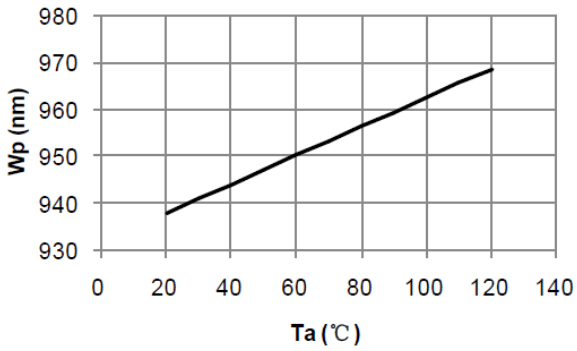
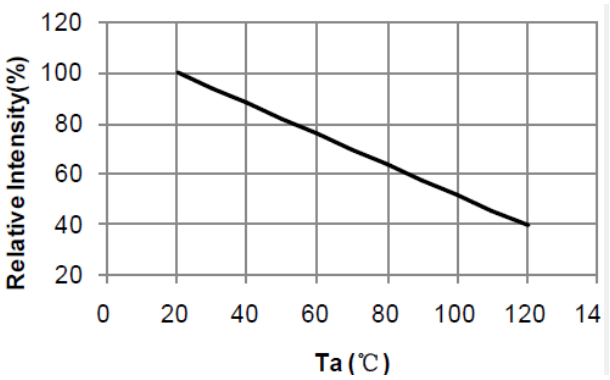
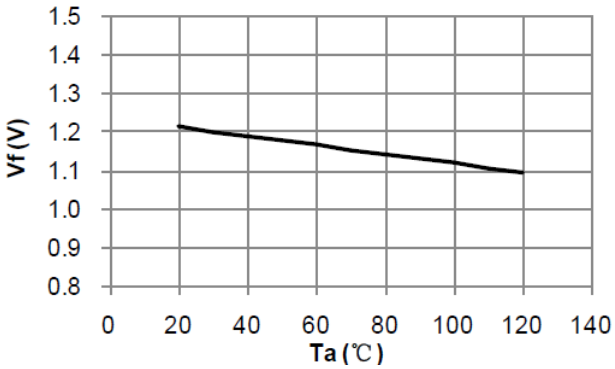
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
COUPLER				
Total power dissipation		Ptot	75	mW
Ambient temperature range		Tamb	- 40 to + 80	°C
Storage temperature range		Tstg	- 40 to + 85	°C
Soldering temperature		Tsd	260	°C
INPUT (EMITTER)				
Reverse voltage		VR	5	V
Forward current	Tamb= 85 °C	IF	20	mA
Forward surge current	tp ≤10 µs	IFSM	200	mA
Power dissipation		PV	65	mW
OUTPUT (DETECTOR)				
Collector emitter voltage		VCEO	20	V
Emitter collector voltage		VECO	7	V
Collector current		IC	20	mA
Collector dark current	Tamb = 85 °C, VCE = 5 V	ICEO	3.3	µA

Electrical Characteristics 电气特性

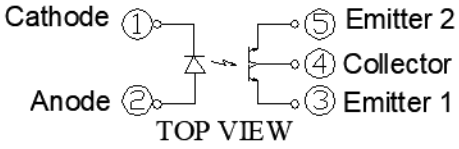
(Tamb = 25 °C)

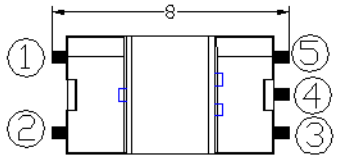
PARAMETER	TEST CONDITION	SYMBOL	MIN	TYP.	MAX.	UNIT
COUPLER						
Collector current per channel	VCE = 5 V, IF = 15 mA	IC	0.7	1.6		mA
Collector emitter saturation voltage	IF = 15 mA, IC = 0.2 mA	VCEsat			0.4	V
INPUT (EMITTER)						
Forward voltage	IF = 15 mA	VF	1	1.2	1.4	V
Reverse current	VR = 5 V	IR			10	μA
Junction capacitance	VR = 0 V, f = 1 MHz	Cj		25		pF
OUTPUT (DETECTOR)						
Collector emitter voltage IC	IC = 1 mA	VCEO	20			V
Emitter collector voltage	IE = 100 μA	VECO	7			V
Collector dark current	VCE = 25 V, IF = 0 A, E = 0 lx	ICEO		1	100	nA
SWITCHING CHARACTERISTICS						
Rise time	IC = 0.7 mA, VCE = 5 V, RL = 100Ω	tr		15	150	μs
Fall time	IC = 0.7 mA, VCE = 5 V, RL = 100Ω	tf		15	150	μs

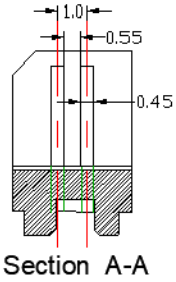
Typical Electrical/Optical/Characteristics Curves for IR 光电特性图

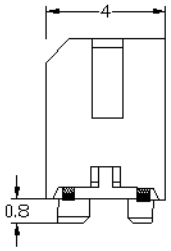
Forward Current vs. Forward Voltage	Peak Wavelength vs. Ambient Temperature
	
Relative Intensity vs. Ambient Temperature	**Forward Voltage vs. Ambient Temperature**
	

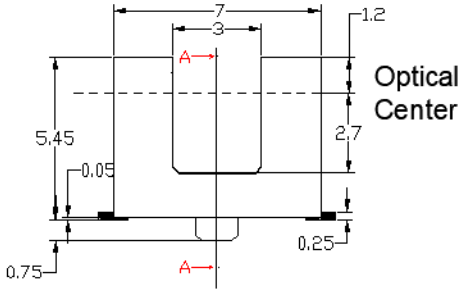
Package Dimensions 外形尺寸

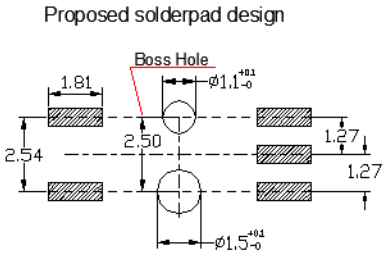


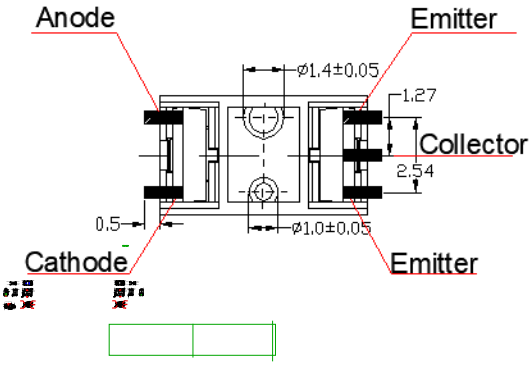












Unit: mm

PIN NO.	Configuration	Remark
1	Cathode	IRED Cathode
2	Anode	IRED Anode
3	Emitter1	PT Emitter1
4	Collector	PT Collector
5	Emitter2	PT Emitter2

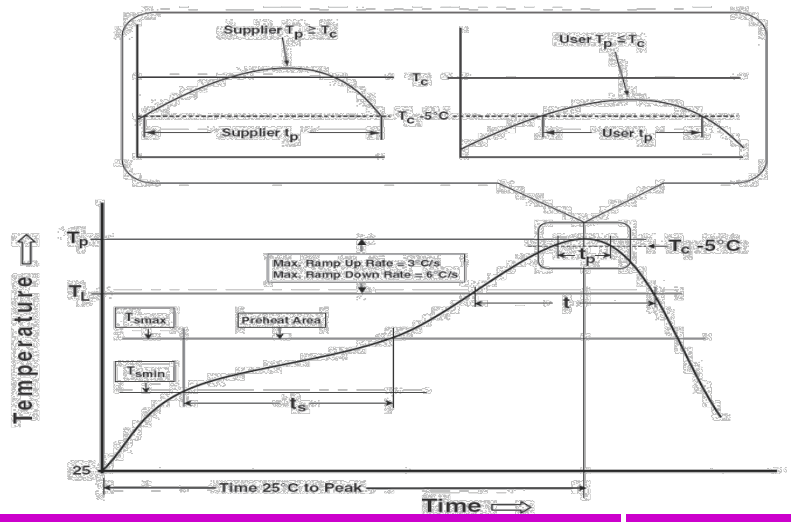
Notes:

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

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：不要在溫度峰值 260 °C 的熱板上焊接元件超過 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
1.0	Preliminary 初定	2022/09/01
2.0	Modify the exterior drawing修改外形圖	2023/09/13

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

For general assistance please contact:
service@edison-opto.com.tw

For technical assistance please contact:
LED.Detective@edison-opto.com.tw