OPTO INTERRUPTER

LA203-50

Features

▪Non-contact switching.

▪For direct PC board or dual-in-line socket mounting.

▪Fast switching speed.

Application

▪Scanner

▪Edge,Position Detections

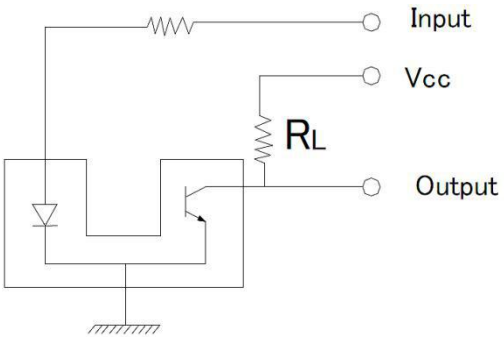
▪FAX machine

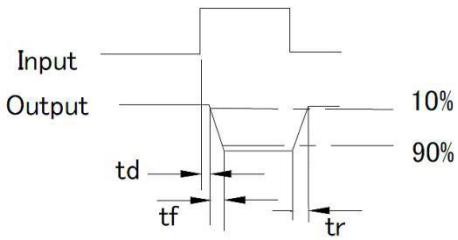
▪Counter

Description

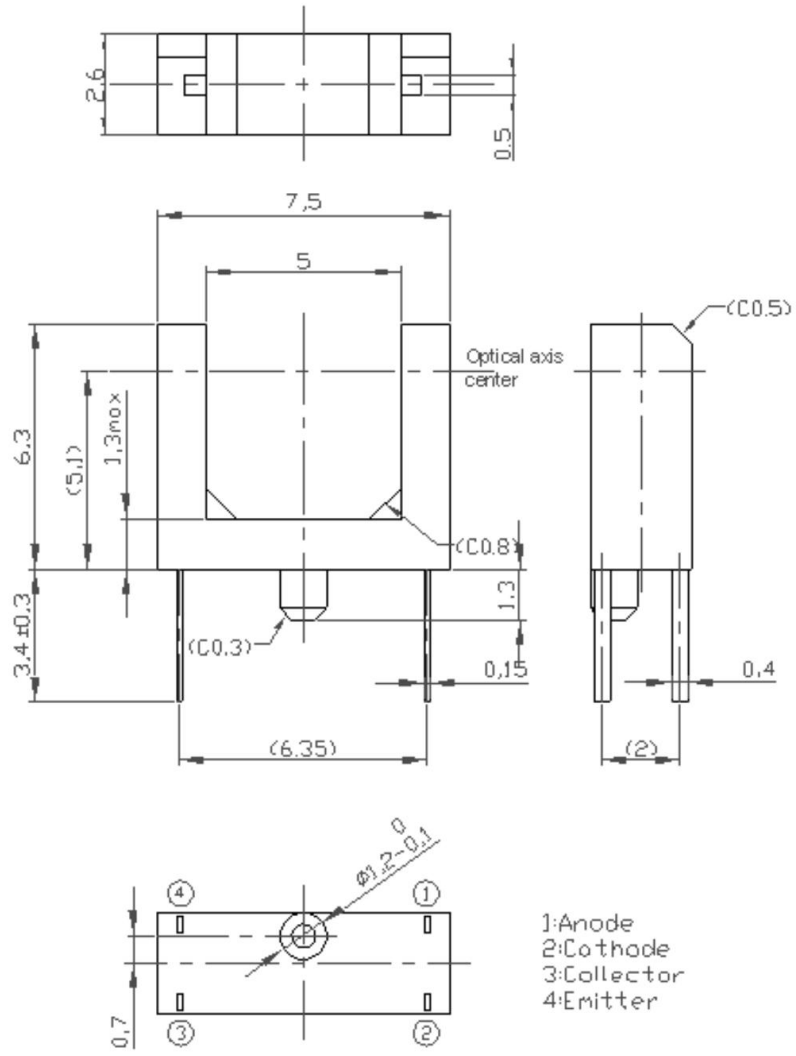
The LA203-50 series consist of Gallium Arsenide infrared emitting diode and a NPN sillicon phototransistor mounted in a black plastic housing. Phototransistor switching takes place whenever an opaque object passes through the slot. These series are designed for direct soldering into PC board or mounting in standard dual-in-line socket.

Switching time measurement circuit





PACKAGE DIMENSIONS



NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25mm(.010") unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.

ABSOLUTE MAXIMUM RATINGS AT TA =25℃

PARAMETER	MAXIMUM RATING	UNIT
IR Diode Continuous Forward Current	50	mA
IR Diode Reverse Voltage	5	V
Transistor Collector Currant	20	mA
Transistor Power Dissipation	100	mW
IR Diode Peak Power Currant	3	A
(Pulse Wide = 1μS, 300 pps)		
Diode Power Dissipation	175	mW
Phototransistor Collector-Emitter Voltage	30	V
Phototransistor Emitter-Collector Voltage	5	V
Operating Temperature Range	-40℃ to + 85℃	
Storage Temperature Range	-50℃ to +100℃	

ELECTRICAL OPTICAL CHARACTERISTICS AT TA=25℃

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
INPUT LED						
Forward Voltage Reverse Current	VF		1.2	1.35	V	IF = 20mA
Reverse Current	IR			100	μA	VR=5V
OUTPUT PHOTOTRANSISTOR						
Collector-Emitter Breakdown Voltage	V(BR)CEO	30			V	IC=1mA
Emitter-Collector Breakdown Voltage	V(BR)CEO	5			V	IE=0.1mA
Collector-Emitter Dark Current	ICEO			100	nA	VCE=10V
COUPLER						
Collector-Emitter Saturation Voltage	VCE(SAT)			0.4	V	IC=0.2mA IF=20mA
Current Transfer Ratio	Ic(on)	0.8			mA	VCE=5V IF=20mA

TYPICAL ELECTRICAL / OPTICAL CHARACTERISTICS CURVES

(25℃ Ambient Temperature Unless Otherwise Noted)

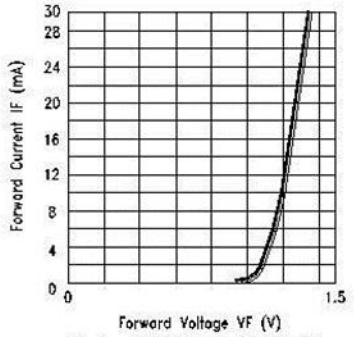


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

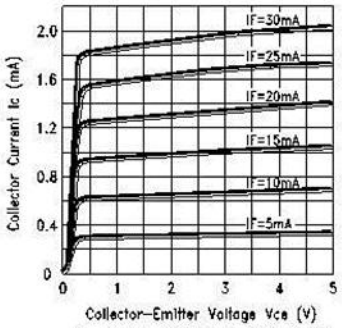


Fig.2 COLLECTOR CURRENT VS. COLLECTOR VOLTAGE

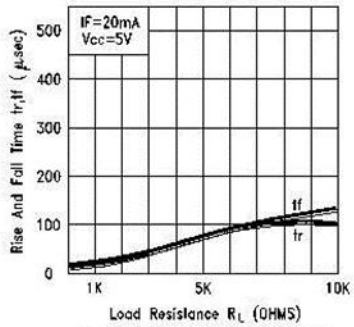


Fig.3 RISE AND FALL TIME VS. LOAD RESISTANCE

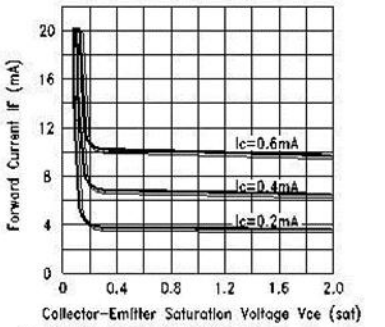


Fig.4 FORWARD CURRENT VS. Collector-Emitter Saturation Voltage

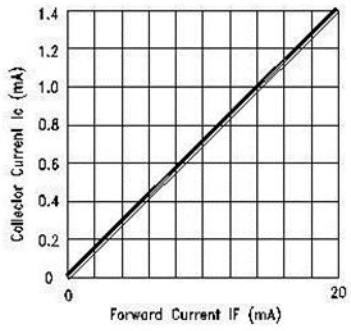


Fig.5 COLLECTOR CURRENT V.S FORWARD CURRENT

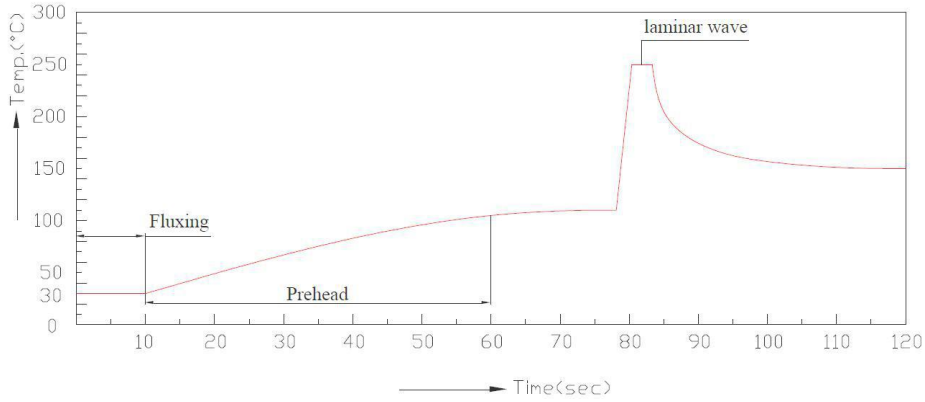
Soldering

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.

2. Recommended soldering conditions:

Hand Soldering		DIP Soldering	
Temp. at tip of iron	300°C Max. (30W Max.)	Preheat temp.	100°C Max. (60 sec Max.)
Soldering time	3 sec Max.	Bath temp. & time	260 Max., 5 sec Max
Distance	3mm Min.(From solder joint to epoxy bulb)	Distance	3mm Min. (From solder joint to epoxy bulb)

3. Recommended soldering profile



4. Avoiding applying any stress to the lead frame while the Photo Interrupter are at high temperature particularly when soldering.

5. Dip and hand soldering should not be done more than one time

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.

7. A rapid-rate process is not recommended for cooling the Photo Interrupter down from the peak temperature.

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.

9. Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

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