APDS-9104

Integrated Reflective Sensor



Data Sheet

Description

The APDS-9104 is a low cost, fully integrated module targeting at object sensing or non-contact switching applications. The module consists of an infrared LED and a phototransistor in a single integrated package. It is capable of supporting detection distance from near 0 to 12mm.

Application Support Information

The Application Engineering Group is available to assist you with the application design associated with APDS-9104. You can contact them through your local sales representatives for additional details

Ordering Information

Part Number	Package	Quantity
APDS-9104-L22	4-leads	2500

Features

- For Direct PC Board or dual-in-line socket mounting
- Fast switching speed
- Detection range of near 0 to 12mm
- Package size

Height - 5.6 mm

Width - 4.5 mm

Depth - 8.7 mm

- Operating temperature: -25°C to 85°C
- Lead-free and RoHS Compliant

Applications

APDS-9104 is widely suitable to provide a reflective high speed object detection or non-contact switching suitable for various applications in industrial, office automation, consumer and other applications.

- Industrial Automatic vending machines, amusement/ gaming machines, coin/bill validators etc
- Office automation Printers, Copiers etc
- Consumer Coffee machines, beverage dispensing machines etc

1

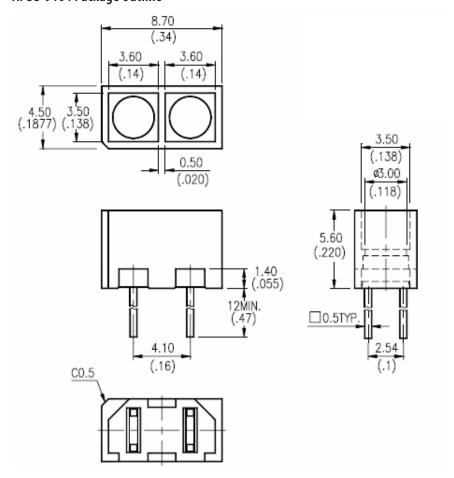
Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Max Rating	Unit
Input Diode			
Power Dissipation	PD	90	mW
Peak Forward Current (300pps, 10 μs pulse)	Іср	1	A
Continuous Forward Current	IF	60	mA
Reverse Voltage	V _R	5	V
Output Phototransistor			
Power Dissipation	PC	100	mW
Collector-Emitter Voltage	V _{CEO}	30	V
Emitter-Collector Voltage	V_{ECO}	5	V
Collector Current	lc	20	mA
Operating Temperature Range	T _{OP}		-25°C to +85°C
Storage Temperature Range	T _{STG}		-40°C to +100°C
Lead Soldering Termperature (1.6mm(0.063 ") Form Case)	Ts		260°C for 5 seconds

Electrical / Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Test Condition	
Input Diode							
Forward Voltage	V _F		1.2	1.6	V	I _F =20mA	
Reverse Current	I _R			100	μΑ	V _R = 5V	
Output Phototransistor							
Collector-Emitter Dark Current	I _{CEO}			100	nA	V _{CE} = 10V	
Coupler							
Collector-Emitter Saturation Voltage	V _{CE(SAT)}			0.4	V	I _C = 0.2mA, I _F = 20mA	
On State Collector Current	I _{C(ON)}	200		400	μΑ	V _{CE} = 5V	BIN A
	I _{C(ON)}	300		600	μΑ	I _F = 20mA	BIN B
	I _{C(ON)}	500		1000	μΑ	D = 3.5m (90% Reflective White Paper)	BINC
	I _{C(ON)}	800		1600	μА	(5070 Hericeare White Tuper)	BIN D

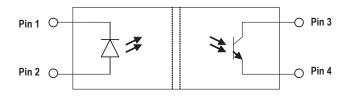
APDS-9104 Package Outline



NOTES:

- 1. All dimensions are in millimeters(inches)
- 2. Tolerance is \pm 0.25mm(0.010") unless otherwise noted
- 3. Lead spacing is measured where the leads emerge from the package

APDS-9104 Block Diagram



I/O Pins Configuration Table

The electrical pin assignments are depicted in the below table.

Pin	function	Description
1	Cathode	LED Cathode
2	Anode	LED Anode
3	Collector	Phototransistor Collector
4	Emitter	Phototransistor Emitter

APDS-9104 Performance Charts

Typical Electrical/Optical Characteristics Curves (Ta=25°C unless otherwise indicated)

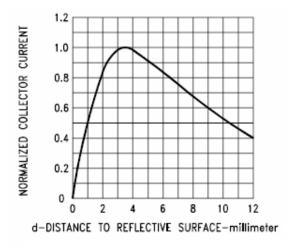


Figure 1. Normalized Collector Current vs. Object Distance

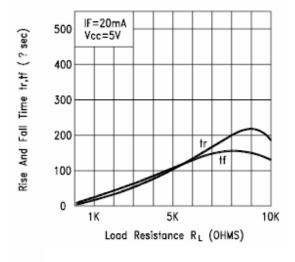


Figure 3. Rise and Fall time vs. Load Resistance

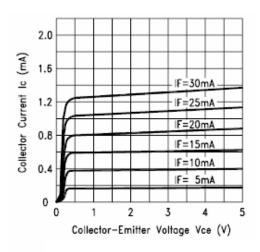


Figure 2. Collector Current vs. Collector Voltage

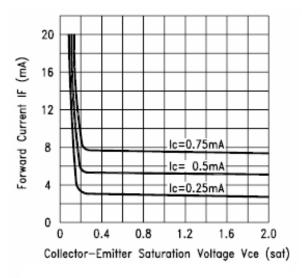


Figure 4. Forward Current vs. Collector-emitter Saturation Voltage

