

Data Sheet

Description

APDS-9101 is a low cost, integrated reflective sensor that is designed to provide high switching speed for object detection or proximity sensing applications. It is an integrated module that specially incorporates an infrared LED and a phototransistor in a single integrated module.

Application Support Information

The Application Engineering Group is available to assist you with the application design associated with APDS-9101. You can contact them through your local sales representatives for additional details

Ordering Information

Part Number	Packaging Type	Package	Quantity
APDS-9101-L21	Tape and Reel	4-pins SMD package	8000

Features

- Fast Switching Speed
- Detection distance from near zero to 12mm
- Low cost and 4 pin SMD package
 - Height – 6.3 mm
 - Width – 4.5 mm
 - Depth – 8.7 mm
- Operating temperature : -25°C to 85°C
- Lead-free and RoHS Compliant

Applications

APDS-9101 is widely suitable to provide reflective object/ position detection or high speed non-contact switching applications in industrial, consumer and other markets.

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

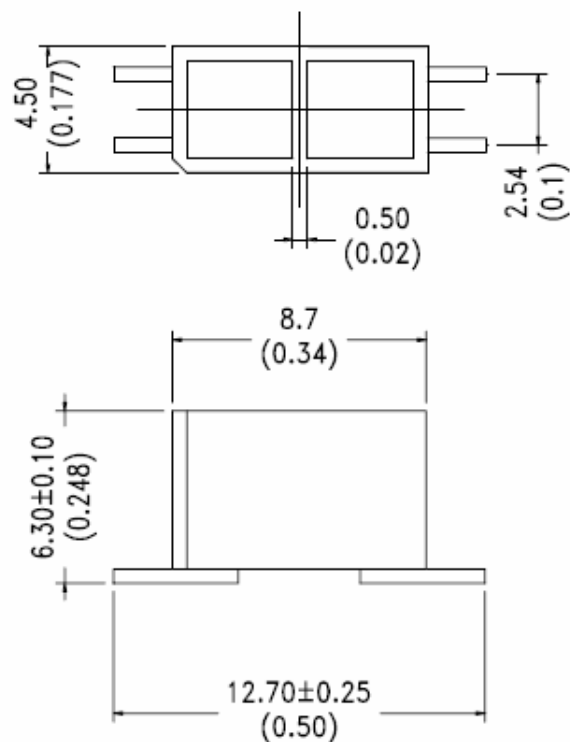
Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Max Rating	Unit
Input Diode			
Power Dissipation	P_D	90	mW
Peak Forward Current (300pps, 10 μ s pulse)	I_{CP}	1	A
Continuous Forward Current	I_F	60	mA
Reverse Voltage	V_R	5	V
Output Phototransistor			
Power Dissipation	P_C	100	mW
Collector-Emitter Voltage	V_{CE0}	30	V
Emitter-Collector Voltage	V_{ECO}	5	V
Collector Current	I_C	20	mA
Operating Temperature Range	T_{OP}		-25°C to +85°C
Storage Temperature Range	T_{STG}		-40°C to 100°C
Lead Soldering Temperature (1.6mm(0.063") Form Case)	T_S		260°C for 5 seconds

Electrical / Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Input Diode						
Forward Voltage	V_F		1.2	1.6	V	$I_F=20mA$
Reverse Current	I_R			100	μA	$V_R=5V$
Output Phototransistor						
Collector-Emitter Dark Current	I_{CEO}			100	nA	$V_{CE}=10V$
Coupler						
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$			0.4	V	$I_C=0.5mA$ $I_F=20mA$
On State Collector Current	$I_{C(ON)}$	750		1150	μA	$V_{CE}=5V, I_F=20mA$
	$I_{C(ON)}$	1090		1430	μA	$D=3.5mm$
	$I_{C(ON)}$	1370		1770	μA	(90% Reflective White Paper)
Response Time (Rise Time)	T_R		3	15	μs	$V_{CE}=5V, I_C=2mA$
Response Time(Fall Time)	T_F		4	20	μs	$R_L=100\Omega$

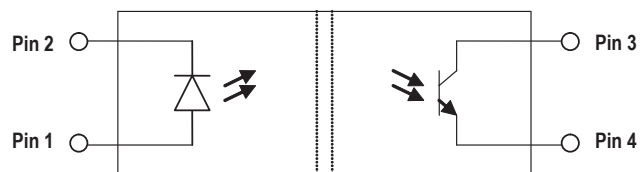
APDS-9101 Package Outline



NOTES:

1. All dimensions are in millimeters(inches)
2. Tolerance is $\pm 0.25\text{mm}(0.010")$ unless otherwise noted

APDS-9101 Block Diagram

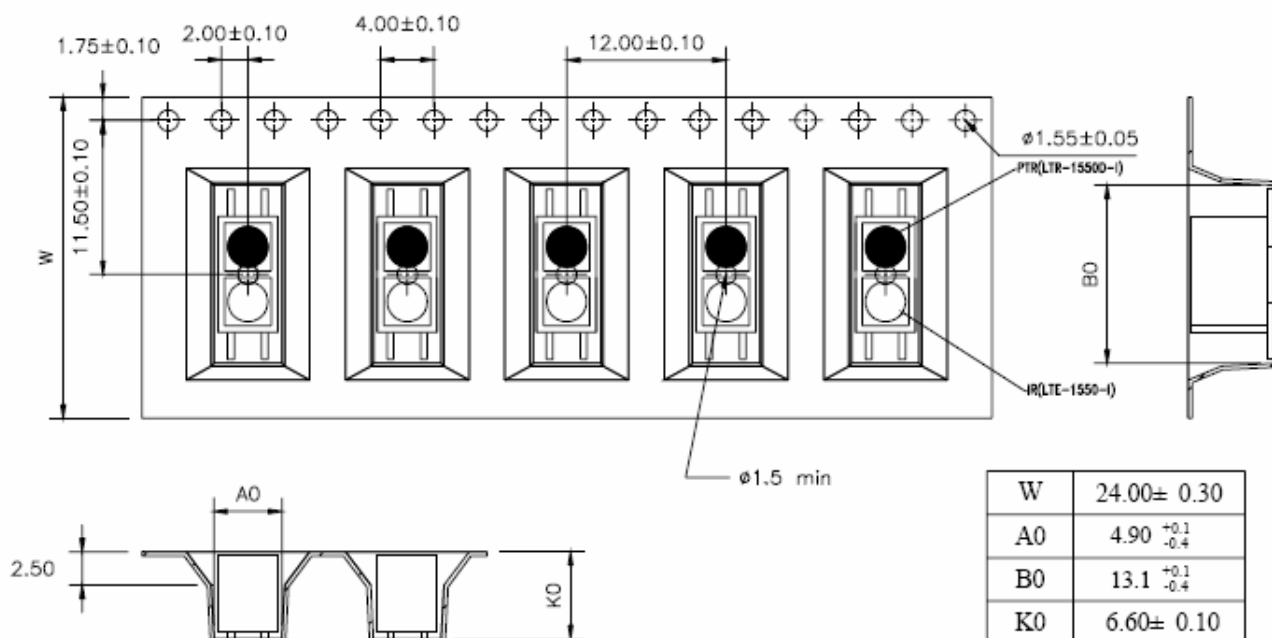


I/O Pins Configuration Table

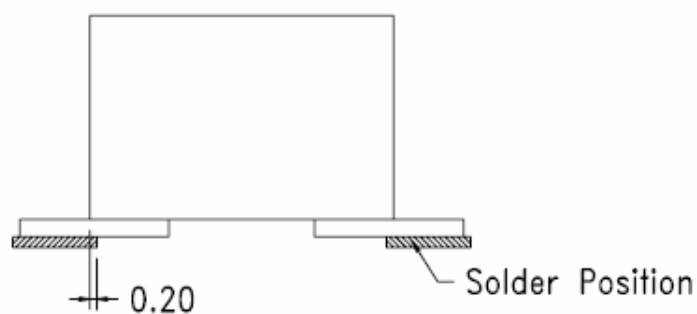
The electrical pin assignments are depicted in the below table.

Pin	Function	Description
1	Anode	Led Anode
2	Cathode	Led Cathode
3	Collector	Phototransistor Collector
4	Emitter	Phototransistor Emitter

APDS-9101 Taping Dimensions



Soldering Area



APDS-9101 Performance Charts

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

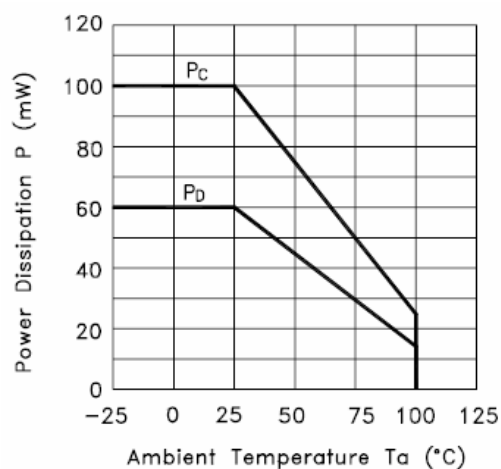


Figure 1. Power Dissipation vs. Ambient Temperature

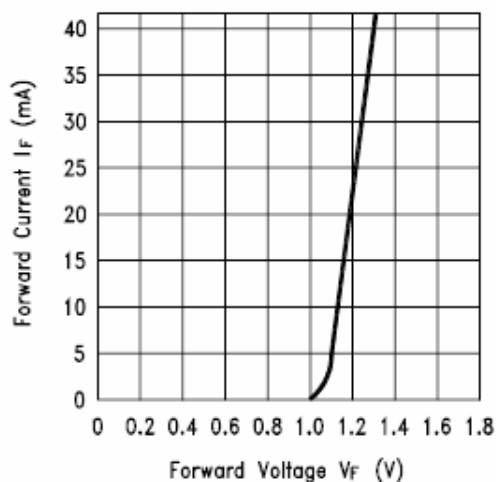


Figure 2. Forward Current vs. Forward Voltage

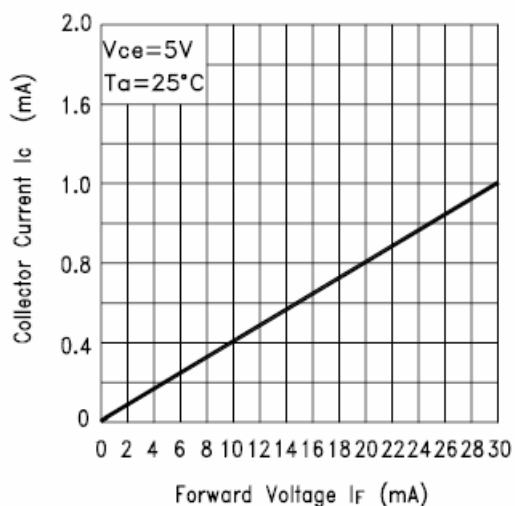


Figure 3. Collector Current vs. Forward Voltage

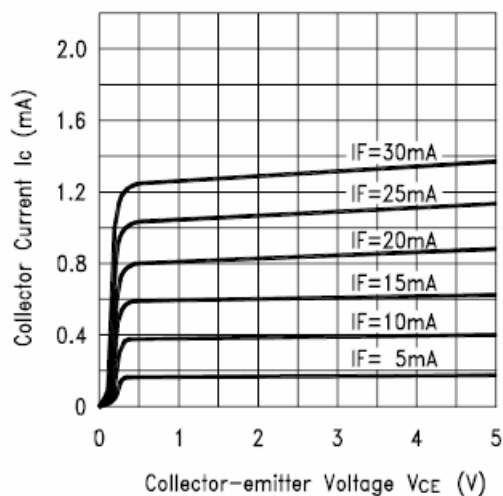


Figure 4. Collector Current vs. Collector-emitter Voltage

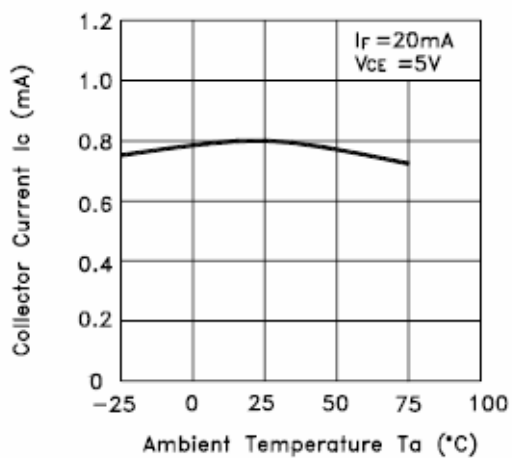


Figure 5. Collector Current vs. Ambient Temperature

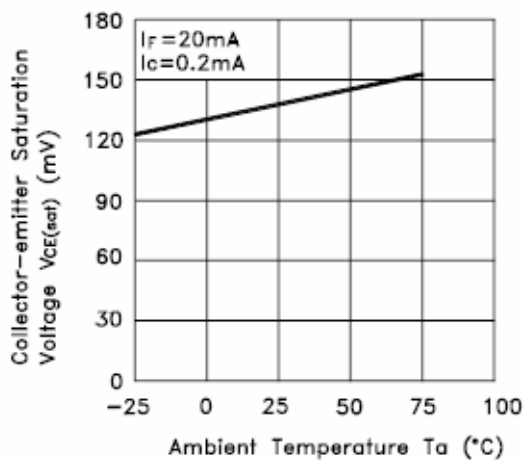


Figure 6. Collector-emitter Saturation Voltage vs. Ambient Temperature

For product information and a complete list of distributors, please go to our web site: www.avagotech.com

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