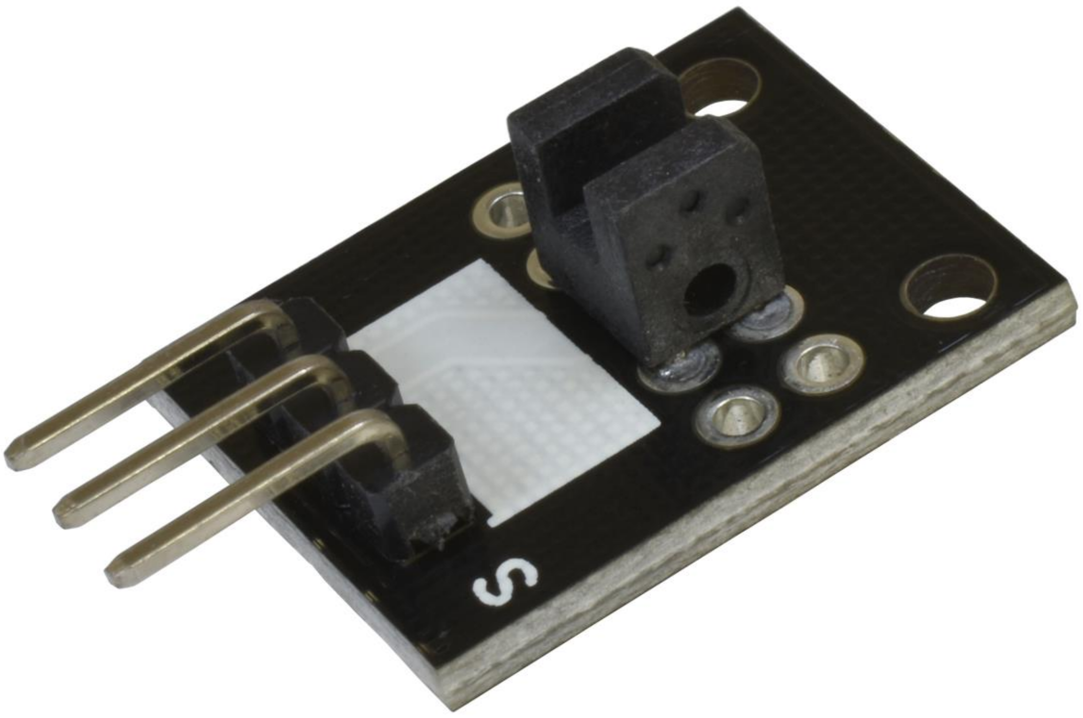
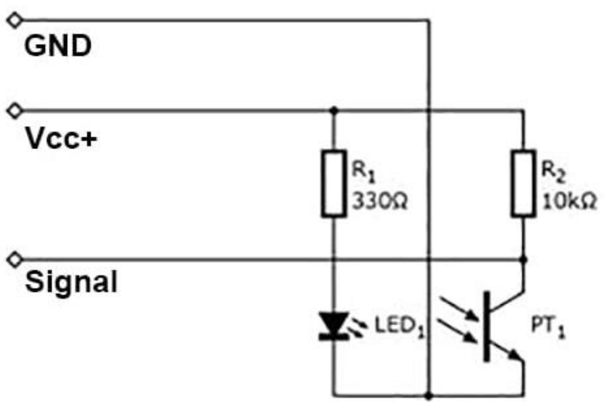
LIGHT SLOTTED OPTO COUPLER MODULE - HR0037



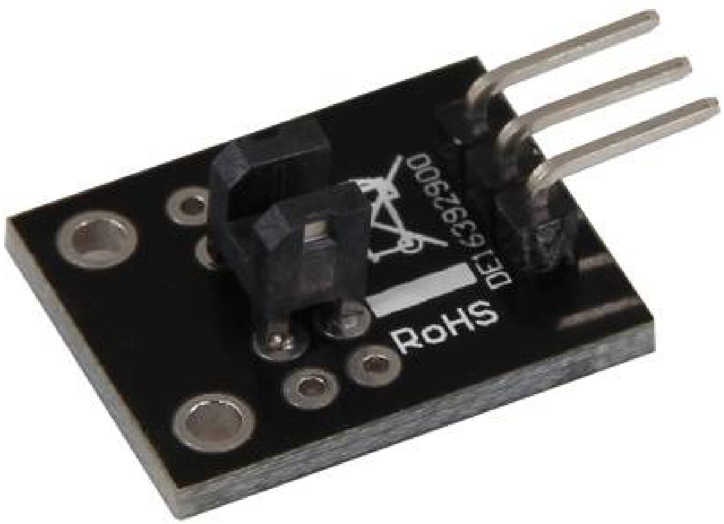
Specifications		
Function		Slotted Opto Coupler
Model		KY-010
Chip type		EE-SX1103
Operating Voltage		3.3 to 5V
Dimensions		19 x 15 mm



KY-010 Light barrier-module

Contents

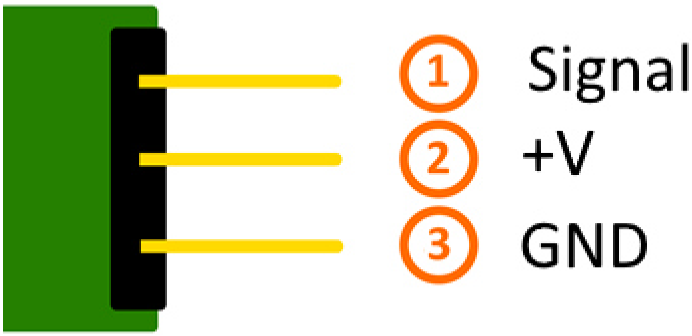
Picture



Technical data / Short description

The connection between both input pins will be interrupted if the optical barrier is beeing interrupted.

Pinout



Code example Arduino

In this program, a LED will flash up, if a signal was detected at the sensor. You can also use the modules KY-011, KY-016 or KY-029 as LEDs.

```
int Led = 13 ;// Declaration of the LED-output pin
int Sensor = 10; // Declaration of the Sensor-input pin
int val; // Temporary variable

void setup ()
{
  pinMode (Led, OUTPUT) ; // Initialization output pin
  pinMode (Sensor, INPUT) ; // Initialization sensorpin
}

void loop ()
{
  val = digitalRead (Sensor) ; // The current signal at the sensor will be read.

  if (val == HIGH) //The led will flash up, if a signal was detected.
  {
    digitalWrite (Led, HIGH);
  }
  else
  {
    digitalWrite (Led, LOW);
  }
}
```

Connections Arduino:

LED +	= [Pin 13]
LED -	= [Pin GND]
Sensor Signal	= [Pin 10]
Sensor +V	= [Pin 5V]
Sensor -	= [Pin GND]

Example program download

SensorTest_Arduino_inverted

Code example Raspberry Pi

```
# Needed modules will be imported and configured
import RPi.GPIO as GPIO
import time

GPIO.setmode(GPIO.BCM)

# The input pin which is connected with the sensor.
GPIO_PIN = 24
GPIO.setup(GPIO_PIN, GPIO.IN, pull_up_down = GPIO.PUD_DOWN)

print "Sensor-Test [press ctrl+c to end the test]"

# This outputFunction will be started at signal detection
def outputFunction(null):
        print("Signal detected")

# The outputFunction will be started at the moment of a signal detection (raising edge).
GPIO.add_event_detect(GPIO_PIN, GPIO.RISING, callback=outputFunction, bouncetime=100)

# Main program loop
try:
        while True:
                time.sleep(1)

# Scavenging work after the end of the program
except KeyboardInterrupt:
        GPIO.cleanup()
```

Connections Raspberry Pi:

Signal	=	GPIO24	[Pin 18]
+V	=	3,3V	[Pin 1]
GND	=	GND	[Pin 6]

Example program download

SensorTest_RPi_inverted

To start, enter the command:

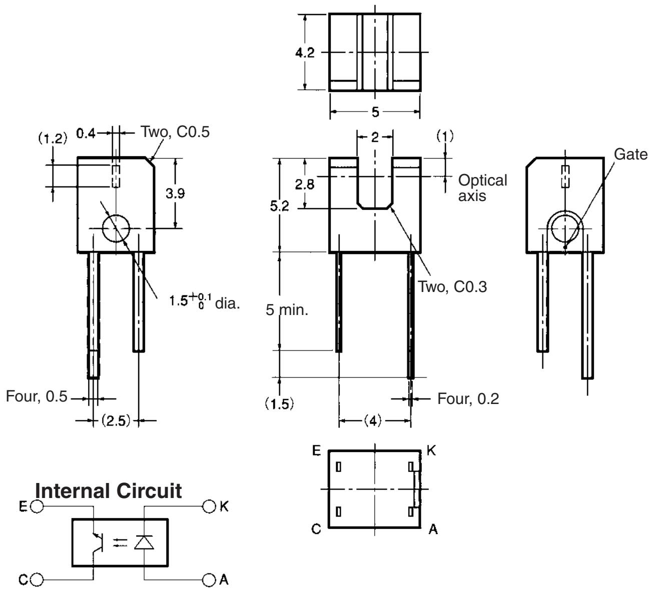
```
sudo python SensorTest_RPi_inverted.py
```


Photomicrosensor (Transmissive)
EE-SX1103

⚠ **Be sure to read *Precautions* on page 25.**

■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



Terminal No.	Name
A	Anode
K	Cathode
C	Collector
E	Emitter

Unless otherwise specified, the tolerances are ±0.2 mm.

■ Features

- Ultra-compact with a sensor width of 5 mm and a slot width of 2 mm.
- PCB mounting type.
- High resolution with a 0.4-mm-wide aperture.

■ Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Rated value
Emitter	**Forward current**	I_F	50 mA (see note 1)
	Pulse forward current	I_{FP}	---
	Reverse voltage	V_R	5 V
Detector	**Collector–Emitter voltage**	V_{CEO}	30 V
	Emitter–Collector voltage	V_{ECO}	4.5 V
	Collector current	I_C	30 mA
	Collector dissipation	P_C	80 mW (see note 1)
Ambient temperature	**Operating**	Topr	–25°C to 85°C
	Storage	Tstg	–30°C to 100°C
Soldering temperature		Tsol	260°C (see note 2)

Note: 1. Refer to the temperature rating chart if the ambient temperature exceeds 25°C.

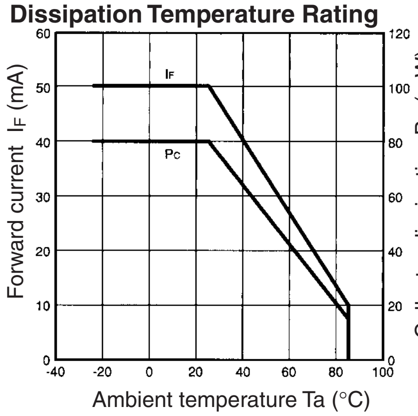
2. Complete soldering within 3 seconds.

■ Electrical and Optical Characteristics (Ta = 25°C)

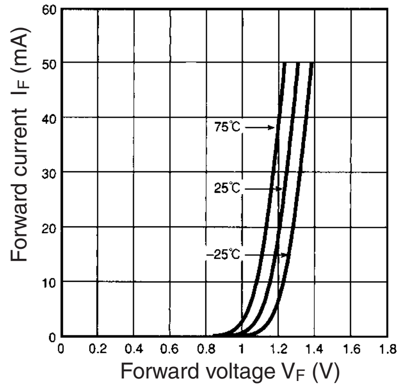
Item		Symbol	Value	Condition
Emitter	**Forward voltage**	V_F	1.3 V typ., 1.6 V max.	I_F = 50 mA
	Reverse current	I_R	10 μA max.	V_R = 5 V
	Peak emission wavelength	λ_P	950 nm typ.	I_F = 50 mA
Detector	**Light current**	I_L	0.5 mA min.	I_F = 20 mA, V_{CE} = 5 V
	Dark current	I_D	500 nA max.	V_{CE} = 10 V, 0 ℓx
	Leakage current	I_{LEAK}	---	---
	Collector–Emitter saturated voltage	V_{CE} (sat)	0.4 V max.	I_F = 20 mA, I_L = 0.3 mA
	Peak spectral sensitivity wavelength	λ_P	800 nm typ.	V_{CE} = 5 V
Rising time		tr	10 μs typ.	V_{CC} = 5 V, R_L = 100 Ω, I_F = 20 mA
Falling time		tf	10 μs typ.	V_{CC} = 5 V, R_L = 100 Ω, I_F = 20 mA

■ Engineering Data

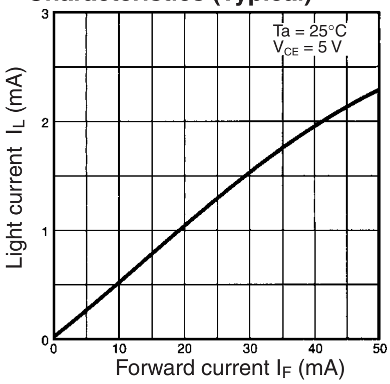
Forward Current vs. Collector Dissipation Temperature Rating



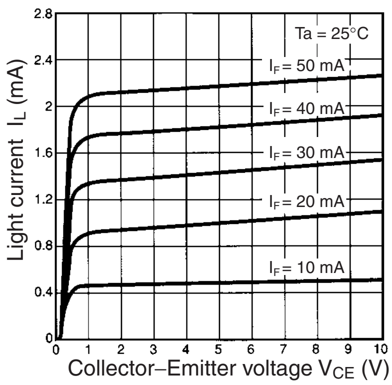
Forward Current vs. Forward Voltage Characteristics (Typical)



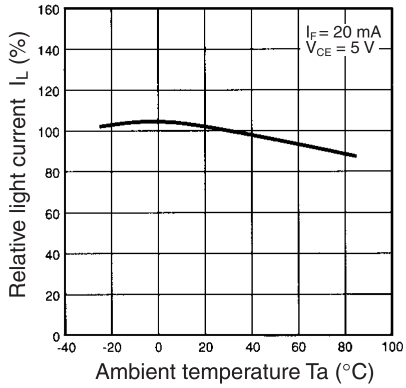
Light Current vs. Forward Current Characteristics (Typical)



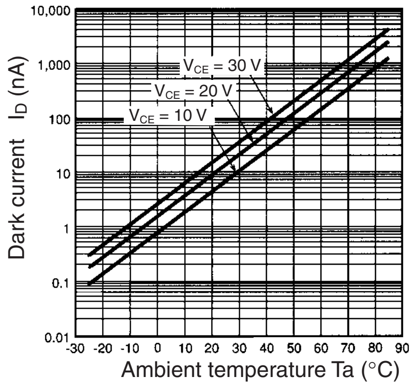
Light Current vs. Collector−Emitter Voltage Characteristics (Typical)



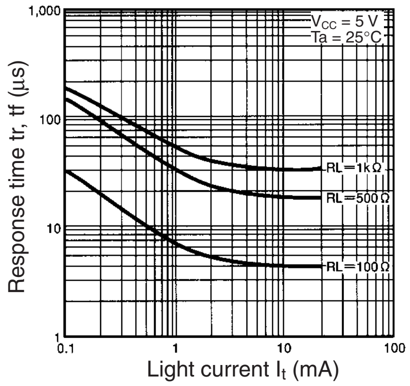
Relative Light Current vs. Ambient Temperature Characteristics (Typical)



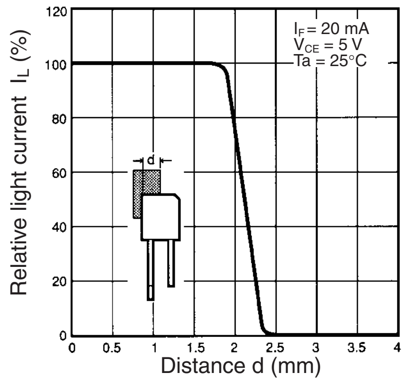
Dark Current vs. Ambient Temperature Characteristics (Typical)



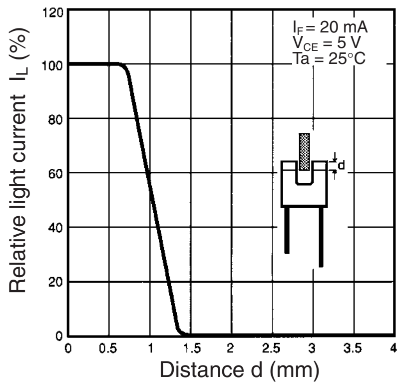
Response Time vs. Light Current Characteristics (Typical)



Sensing Position Characteristics (Typical)



Sensing Position Characteristics (Typical)



Response Time Measurement Circuit