# Photointerrupter, Ultraminiature type

## Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Input(LED)	Forward current	lF	50	mA
	Reverse voltage	VR	5	V
	Power dissipation	P□	80	mW
Output (photo- (transistor)	Collector-emitter voltage	VCEO	30	V
	Emitter-collector voltage	VECO	4.5	V
	Collector current	Ic	30	mA
	Collector power dissipation	Pc	80	mW
Operating temperature		Topr	-25 to +85	°C
	Storage temperature	Tstg	-40 to +100	°C

## Applications

Optical control equipment Cameras Floppy disk drives

#### Features

- 1) Ultra-small
- 2) Minimal influence from stray light.
- 3) Low collector-emitter saturation voltage.

## Electrical and optical characteristics (Ta=25°C)

Parameter		Symbol	Min.	Тур.	Max.	Unit	Conditions	
Input charac- teristics	Forward voltage	VF	-	1.3	1.6	V	I <sub>F</sub> = 50mA	
	Reverse current	lR	-	-	10	μΑ	V <sub>R</sub> = 5V	
Output charac- teristics	Dark current	ICEO	-	-	0.5	μΑ	VcE = 10V	
	Peak sensitivity wavelength	λр	_	800	_	nm	-	
Transfer charac- teristics	Collector current	Ic1	0.7	-	-	mA	V <sub>CE</sub> = 5V, I <sub>F</sub> = 20mA	
		Ic2	0.2	-	-	mA	VcE = 5V, IF = 5m	
	Collector-emitter saturation voltage	VCE(sat)	-	-	0.3	V	IF = 20mA, Ic = 0.3mA	
	Response time	tr • tf	_	10	-	μs	$Vcc = 5V$ , $I_F = 20mA$ , $R_L = 100\Omega$	
Infrared light emitter diode	Cut-off frequency	fc	-	1	-	MHz	I==50mA  * Non-coherent Infrared light emitting diode used.	
	Peak light emitting wavelength	λР	_	950	_	nm		
Photo transistor	Response time	tr • tf	-	10	-	μs	$\begin{array}{c} V_{CC}\!\!=\!\!5V,I_{C}\!\!=\!\!1\text{mA},R_{L}\!\!=\!\!100\Omega\\ *\text{This product is not designed to be protected against electromagnetic wave}. \end{array}$	
	Maximum sensitivity wavelength	λР	_	800	_	nm	-	

### Electrical and optical characteristics curves

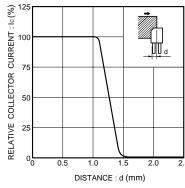


Fig.1 Relative output current vs. distance (I)

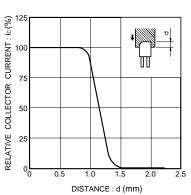


Fig.4 Relative output current vs. distance (II)

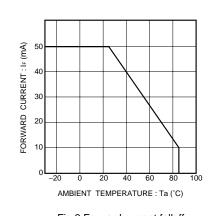


Fig.2 Forward current falloff

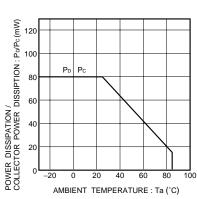


Fig.5 Power dissipation / collector power dissipation vs. ambient temperature

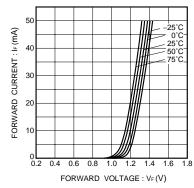


Fig.3 Forward current vs. forward voltage

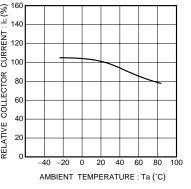
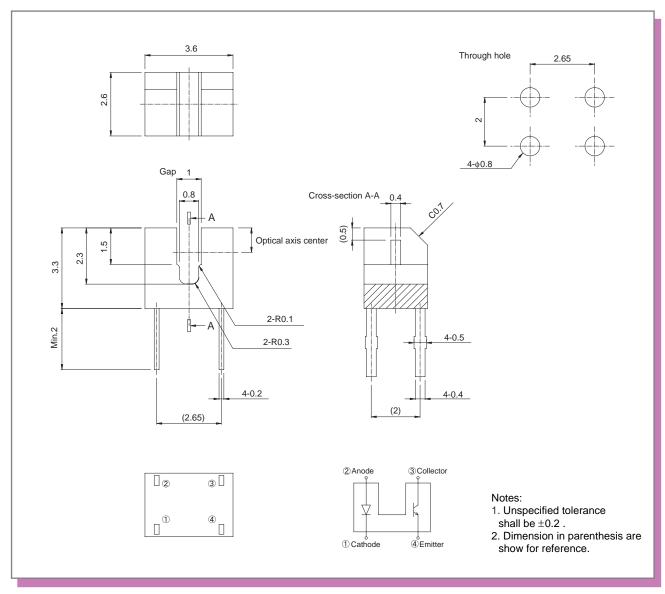
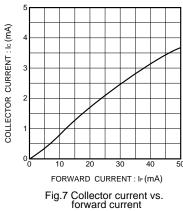
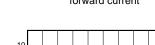


Fig.6 Relative output vs. ambient temperature

### External dimensions (Unit : mm)







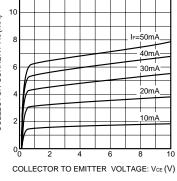


Fig.10 Output characteristics

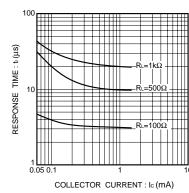


Fig.8 Response time vs. collector current



· Delay time

- tr :Rise time (time for output current to rise from 10% to 90% of peak current)
- tr : Fall time (time for output current to fall from 90% to 10% of peak current)

Fig.11 Response time measurement circuit

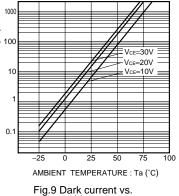


Fig.9 Dark current vs. ambient temperatur

#### **Notes**

- No technical content pages of this document may be reproduced in any form or transmitted by any
  means without prior permission of ROHM CO.,LTD.
- The contents described herein are subject to change without notice. The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard
  use and operation. Please pay careful attention to the peripheral conditions when designing circuits
  and deciding upon circuit constants in the set.
- Any data, including, but not limited to application circuit diagrams information, described herein are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO.,LTD. disclaims any warranty that any use of such devices shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes no liability of whatsoever nature in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices, other than for buyer's right to use such devices itself, resell or
  otherwise dispose of the same, no express or implied right or license to practice or commercially
  exploit any intellectual property rights or other proprietary rights owned or controlled by
- ROHM CO., LTD. is granted to any such buyer.
- Products listed in this document are no antiradiation design.

The products listed in this document are designed to be used with ordinary electronic equipment or devices (such as audio visual equipment, office-automation equipment, communications devices, electrical appliances and electronic toys).

Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of with would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

#### About Export Control Order in Japan

Products described herein are the objects of controlled goods in Annex 1 (Item 16) of Export Trade Control Order in Japan.

In case of export from Japan, please confirm if it applies to "objective" criteria or an "informed" (by MITI clause) on the basis of "catch all controls for Non-Proliferation of Weapons of Mass Destruction.

