Photo reflector

RPR-0730

Datasheet

●General Description

RPR-0730 is an analog optical sensor with infrared VCSEL (IrVCSEL) and phototransistor.
It detects the approach of a person or object by reflecting light emitted from the IrVCSEL onto the nearby object.

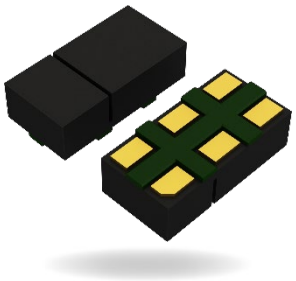
●Characteristics

- ・Extremely small / Surface mounting
  (2.0×1.0×0.55mm)
- ・Analog output
- ・Detection distance (～10mm)
- ・High detection accuracy
  (line width 0.1mm ※distance between reflective object and sensor is 1mm)
- ・Visible light cutoff
- ・Low light leakage inside the product using micro slit
- ・Built-in Zener DI

●Application

MFPs, Label printers, digital cameras, Industrial equipment, ect.

●Package



RPR-0730
(2.0mm × 1.0mm × 0.55mm)

© 2025 ROHM Co., Ltd. All rights reserved.

1. Absolute maximum ratings (Ta = 25℃)

Parameter	Symbol	Limits	Units
VCSEL Forward Current	I_F	5	mA
VCSEL Reverse Voltage	V_R	5	V
VCSEL Junction Temperature	Tj	110	℃
Collector - Emitter Voltage	Vceo	30	V
Emitter - Collector Voltage	Veco	5	V
Collector Current	I_C	20	mA
Storage Temperature	Tstg	-40 to 85	℃
Operating Temperature	Topr	-30 to 85	℃

2. Electrical and Optical Properties (Ta＝25℃)

1）Input characteristics (VCSEL Side)

Parameter	Symbol	Min.	Typ.	Max.	Units	Condition
Forward Voltage	V_F	1.55	1.80	2.15	V	I_F =4 mA
Threshold Current※1	I_{th}	–	–	2.5	mA	–
Peak Emission Wavelength	λ_P	–	940	–	nm	I_F =4 mA
Reverse Current	I_R	–	–	200	nA	V_R=5V

※1 Since laser oscillation does not occur below the threshold current, use the device at or above the threshold current.

2）Output characteristics (Phototransistor Side)

Parameter	Symbol	Min.	Typ.	Max.	Units	Condition
Dark current	I_{CEO}	–	–	0.1	μA	V_{CE} =10 V
Collector Saturation Voltage	V_{CE}(SAT)	–	–	0.5	V	I_F=5mA, I_C=0.1mA
Breakdown Voltage	BVECO	4.75	–	–	V	I_{EC}=50uA

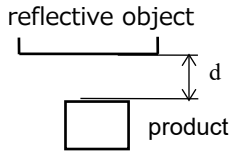
© 2025 ROHM Co., Ltd. All rights reserved.

3) Transfer characteristics

Parameter		Symbol	Min.	Typ.	Max.	Units	Condition
Collector Current 1		I_{c1}	0.69	1.17	1.79	mA	I_F = 4 mA V_{CE} = 5 V d = 10mm
Collector Current 2		I_{c2}	(3.1)	(5.7)	(11.5)	mA	I_F = 4 mA V_{CE} = 5 V d = 3mm
Leak Current		I_{Leak}	–	0.6	1.1	mA	I_F = 4 mA V_{CE} = 5 V Without reflective object
Response Time	Rise Time	t_r	–	10	–	μs	I_F = 4 mA V_{CE} = 5 V R_L = 100Ω
	Fall time	t_f	–	10	–	μs	

*Standard white sheet (90% reflectivity) is used as a reflective object.

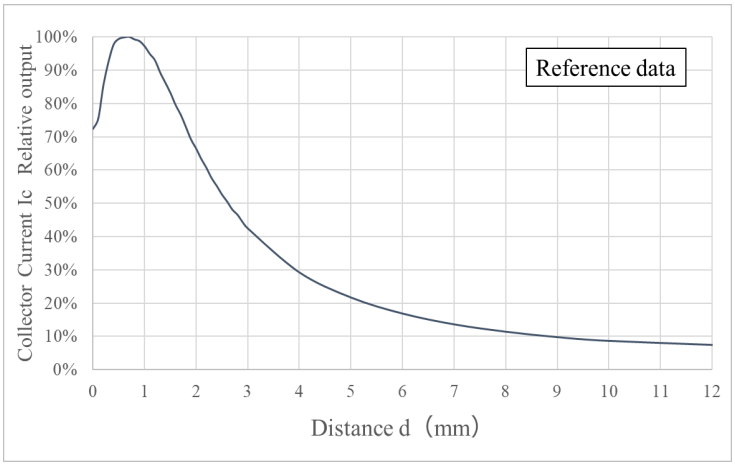
*The values in () are guaranteed design values.



Reflective object: 90% reflective white sheet (Kodak Gray Card Plus)

Distance between the reflective object and the product is d. No glass or apertures is above the product

4) Distance Characteristics (Reference data)



© 2025 ROHM Co., Ltd. All rights reserved.

3. Collector current 1 classification range（Ta＝25℃, IF=4mA, d=10mm ）

Symbol	Collector current classification range			
“A”	0.69	～	1.19	mA
“B”	0.92	～	1.59	mA
“C”	1.25	～	1.79	mA

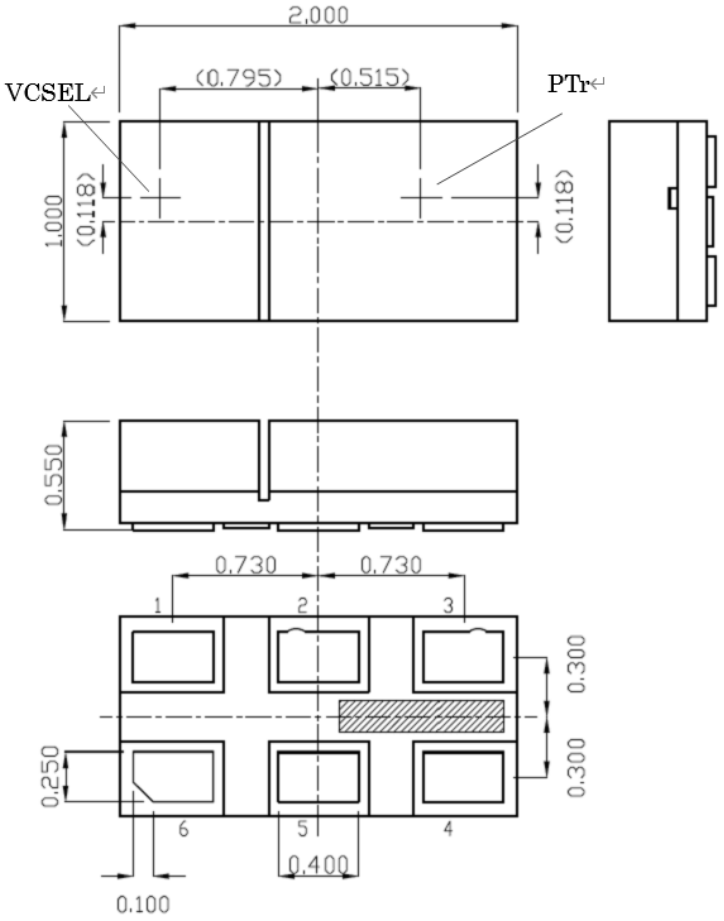
4. Weight　　About 2.4mg /pc

5. MSL　　Level 3

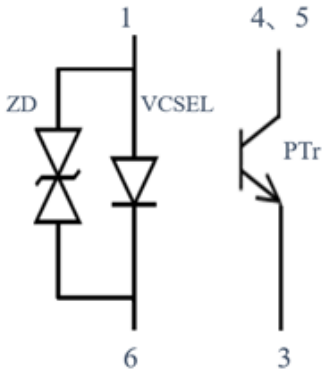
© 2025 ROHM Co., Ltd. All rights reserved.

6. Package outlines

1) Unit: mm
2) Tolerance shall be ±0.10mm unless otherwise noted.
3) The values in () are reference dimensions. (Not guaranteed)
4) Shaded area is marked with a dot marker. (for internal management)

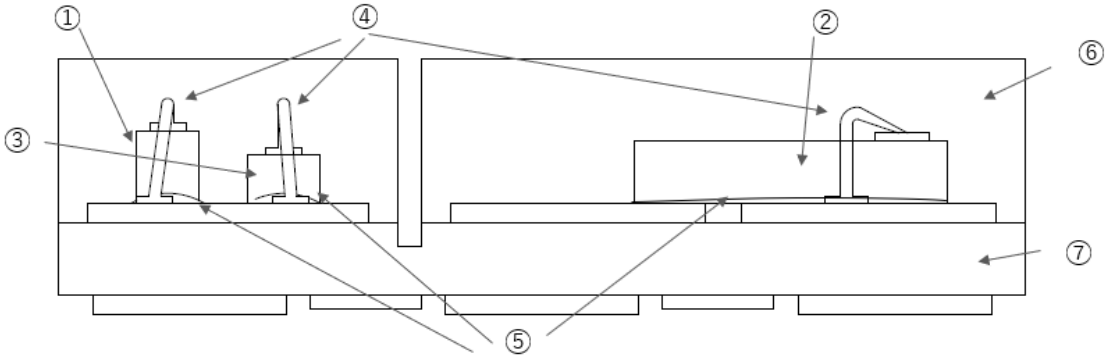


PIN Number	Symbol
1	VCSEL Anode
2	NC
3	Phototransistor Emitter
4	Phototransistor Collector
5	
6	VCSEL Cathode



© 2025 ROHM Co., Ltd. All rights reserved.

7. Structure figure

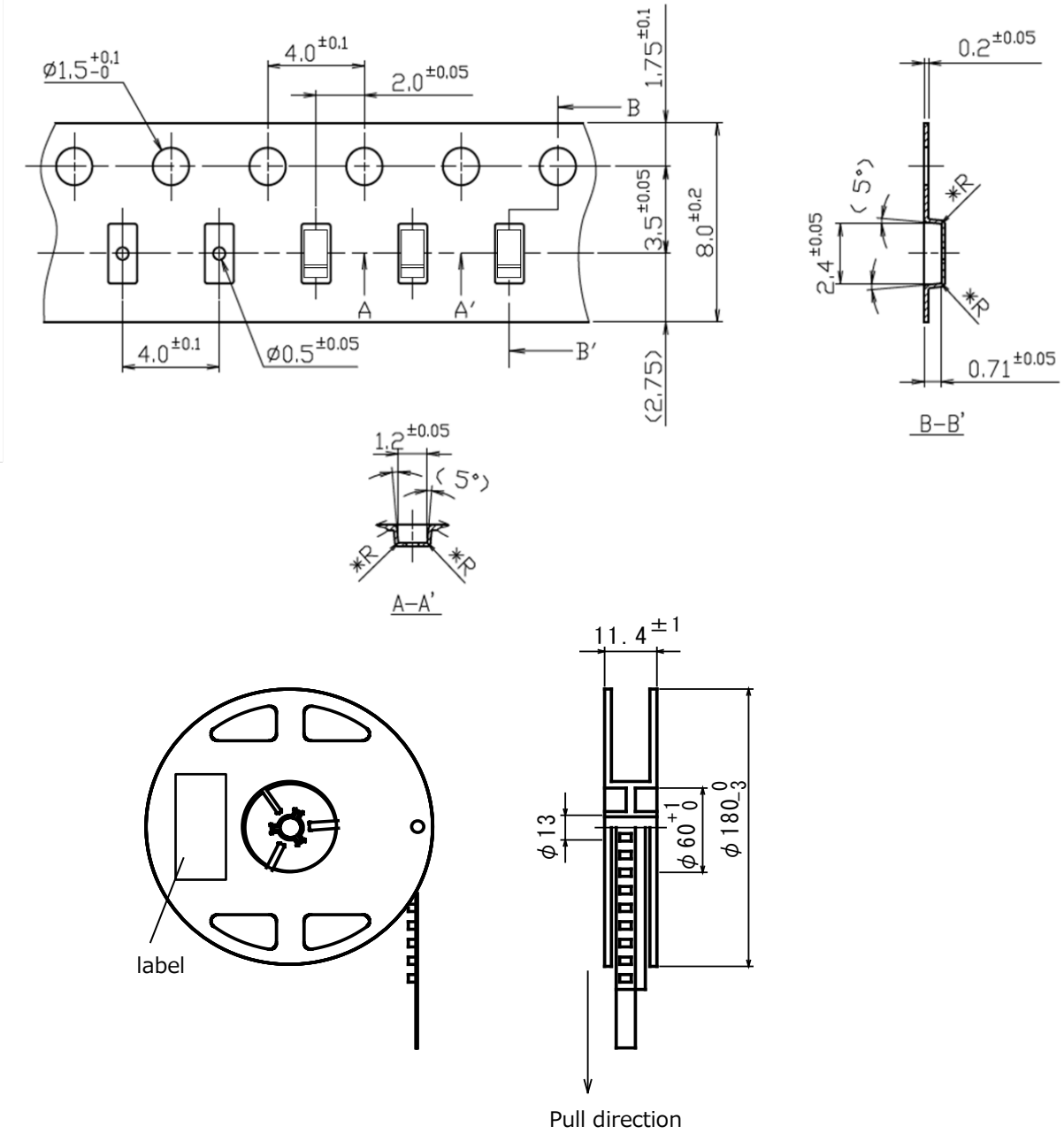


NO.	Name	Material
①	Ir VCSEL	GaAs
②	Phototransistor	Si
③	Zener diode	Si
④	Au wire	Au
⑤	Conductive bonding paste	Ag + Epoxy resin
⑥	Mold resin	Epoxy resin
⑦	PCB	Epoxy resin Cu, Ni, Au (Electrode)

© 2025 ROHM Co., Ltd. All rights reserved.

8. Taping specification

Note) Unspecified tolerance shall be ±0.2.
Unit : mm



packaging quantity : 4,000 pcs／reel

© 2025 ROHM Co., Ltd. All rights reserved.

9. Packaging requirements

1. Packaging

(1) Quantity per reel is 4,000 pcs

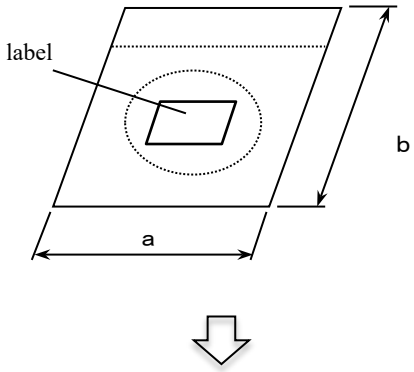
(2) Each reel is packed in an aluminum bag

The size of the aluminum bag is 240(a)×240(b)mm

Silicagel , Indicator card: included

(3) The aluminum bag is pressure sealed in all four directions

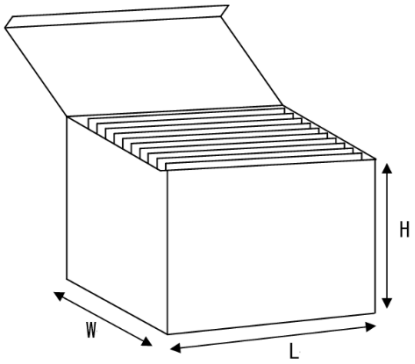
(4) Packing weight (1 reel): About 114 g



(5) Pack a maximum of 10 aluminum pouches into the outer carton.

The outer packaging box shall be 260 (L) × 195 (W) × 195 (H) mm.

※For shipments of fewer than 10 reels, this format may not be followed.

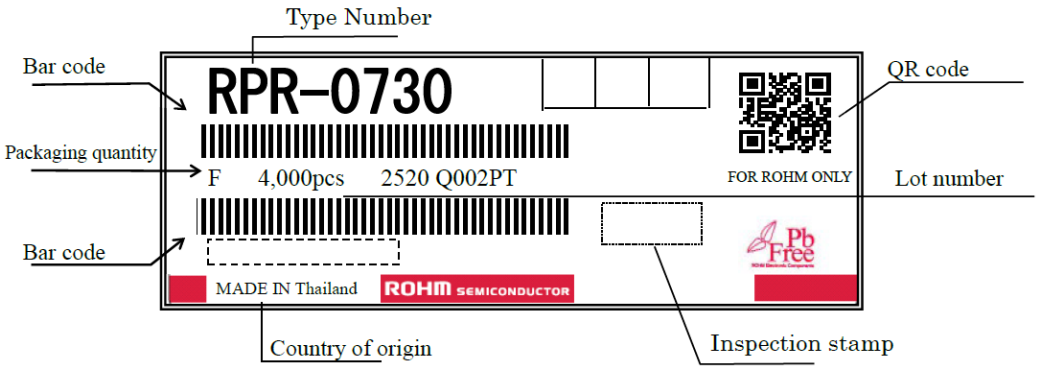


2. Label indication

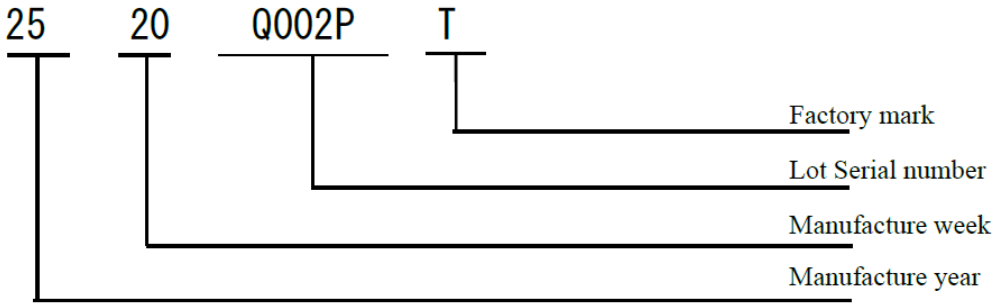
The following information is described on an aluminum bag and reel label:

ROHM type number, packaging quantity, lot number

[Example]



[Example of lot number marking]



Factory mark T: ROHM Integrated Systems (Thailand) Co., Ltd.

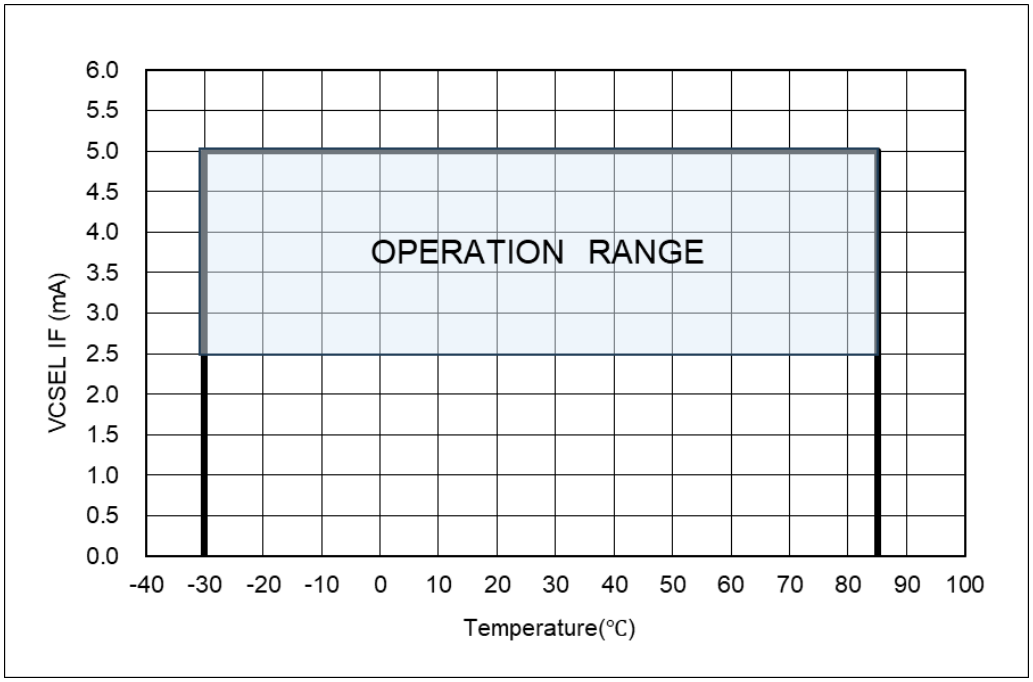
© 2025 ROHM Co., Ltd. All rights reserved.

10. Factory (Country of origin)

Pre-process : ROHM CO., LTD. (JAPAN) : VCSEL
ROHM APOLLO CO., LTD. (JAPAN) : phototransistor
Post-process : ROHM Integrated Systems (Thailand) Co., Ltd.

11. Derating Curve

The maximum usable VCSEL current for the ambient temperature is as shown in the derating curve below. Please use VCSELs with a threshold current of 2.5 mA or more and an absolute maximum rating of 5 mA or less over the temperature range.



© 2025 ROHM Co., Ltd. All rights reserved.

12. Attention points in handling

This product was developed as a surface mount photo reflector especially suitable for reflow soldering.
Please note the following points when using this device.

1. Storage

There will be a possibility that the moisture effects the reliability of this product during the reflow soldering process. Therefore, the packaging is Moisture-proof and complies with MSL3.
When using the product, please keep following conditions:

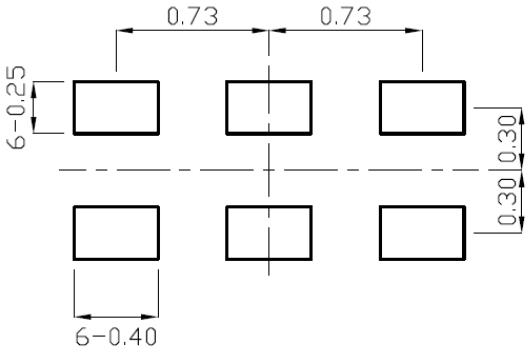
1. Storage condition ・・・・Storage Temperature : 5 ~ 30℃
Storage Humidity : less than 60%RH

2. Process after opening the bag ・・ Please storage the product at the temperature between 5 ~ 30℃ and the moisture less than 60% RH within 168 hours.

3. Baking (dry) process ・・・If the above conditions aren't kept, please apply the baking process.
The baking process should be executed under the reel condition at 60℃±5℃ for 12～24 hours.
During the baking process, the reel and emboss tape should be handled with care.

2. Designing of PCB

The below diagrams are the recommended solder pattern. However, it is affected by the customer's mounting conditions, reflow conditions, and board design.Please evaluate it in terms of actual patterns.



Unit:mm

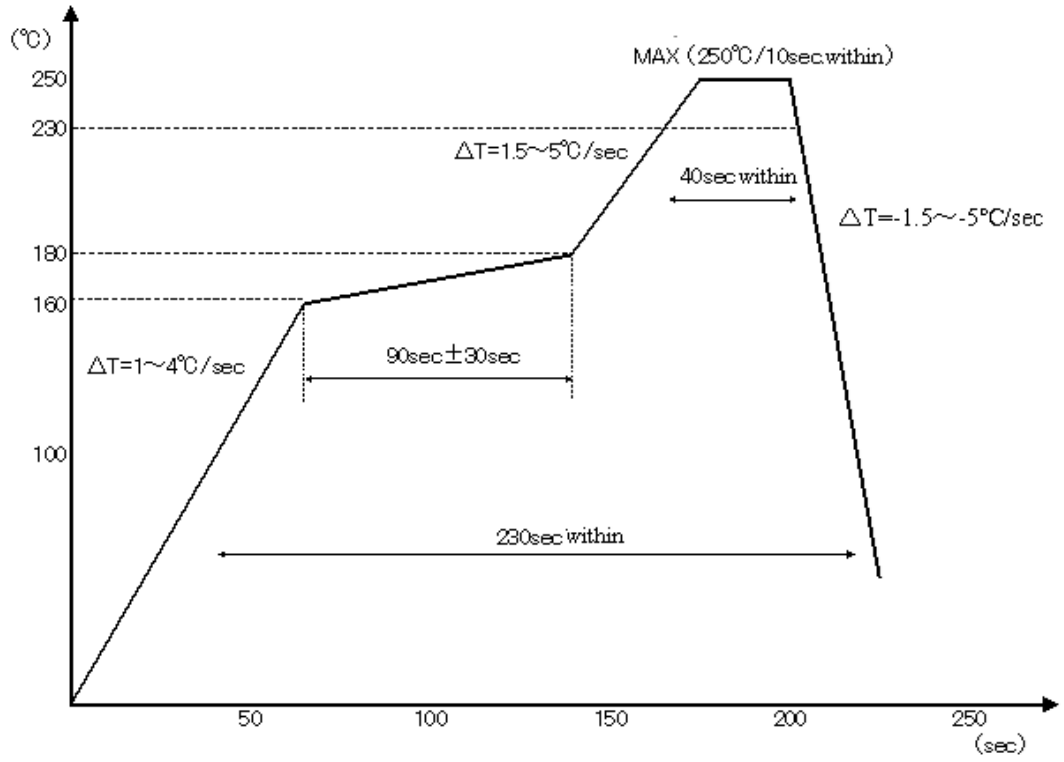
3. Reflow soldering

Number of reflow process shall be less than 2 times or less. If two reflow treatments are required, to prevent the absorption of moisture into the packaging resin,Shorten the time between the first and second processes. The package must cool to normal temperatures between the reflow processes.
The following temperature condition is recommended for the reflow soldering. It is recommended to evaluate the product under the actual reflow profile conditions due to the influence of the PCB size, resulting heat dissipation, and the influence of other nearby components.

© 2025 ROHM Co., Ltd. All rights reserved.

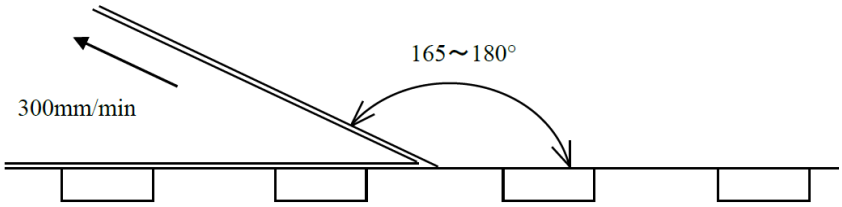
. Reflow temperature profile

Package surface temperature（℃）



13. Cover tape peeling strength (JIS C0806-3)

Cover tape peeling strength is 0.1-0.7N(108f-708f) at the peeling speed 300mm/min.



© 2025 ROHM Co., Ltd. All rights reserved.

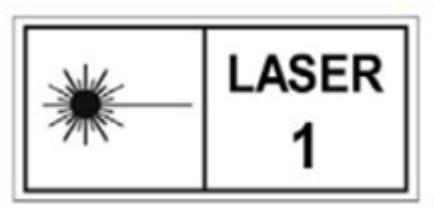
●Operational notes

1. Micro slit

If a foreign object adheres to the top of the package or a foreign object enters the micro slit (the slit processing part on the top of the package), It can affect the optical properties.

2. Laser eye safety

RPR-0730 is designed to meet the Class 1 laser safety limits in compliance with IEC/EN 60825-1:2014. In an end application system environment, the system may need to be tested to ensure it remains compliant. The system must not include any additional lens to concentrate the laser light or parameters set outside of the recommended operating conditions or any physical modification to the module could result in hazardous levels of radiation exposure.



3. precautions for x-ray analysis

Since RPR-0730 has a built-in phototransistor, exposure to X-rays may cause a decrease in output. When using X-rays, please evaluate it in a short period of time and under actual conditions.

© 2025 ROHM Co., Ltd. All rights reserved.

Notes

1) The information contained herein is subject to change without notice.

2) Before you use our Products, please contact our sales representative and verify the latest specifications.

3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.
Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Poducts beyond the rating specified by ROHM.

4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.

6) The Products are intended for use in general electronic equipment (i.e. AV/OA devices, communication, consumer systems, gaming/entertainment sets) as well as the applications indicated in this document.

7) The Products specified in this document are not designed to be radiation tolerant.

8) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.

9) Do not use our Products in applications requiring extremely high reliability, such as aerospace equipment, nuclear power control systems, and submarine repeaters.

10) ROHM shall have no responsibility for any damages or injury arising from non-compliance with the recommended usage conditions and specifications contained herein.

11) ROHM has used reasonable care to ensure the accuracy of the information contained in this document. However, ROHM does not warrants that such information is error-free, and ROHM shall have no responsibility for any damages arising from any inaccuracy or misprint of such information.

12) Please use the Products in accordance with any applicable environmental laws and regulations, such as the RoHS Directive. For more details, including RoHS compatibility, please contact a ROHM sales office. ROHM shall have no responsibility for any damages or losses resulting non-compliance with any applicable laws or regulations.

13) When providing our Products and technologies contained in this document to other countries, you must abide by the procedures and provisions stipulated in all applicable export laws and regulations, including without limitation the US Export Administration Regulations and the Foreign Exchange and Foreign Trade Act.

14) This document, in part or in whole, may not be reprinted or reproduced without prior consent of ROHM.

ROHM SEMICONDUCTOR

Thank you for your accessing to ROHM product informations.
More detail product informations and catalogs are available, please contact us.

ROHM Customer Support System

http://www.rohm.com/contact/

© 2015 ROHM Co., Ltd. All rights reserved.

General Precaution

1. Before you use our Products, you are requested to carefully read this document and fully understand its contents. ROHM shall not be in any way responsible or liable for failure, malfunction or accident arising from the use of any ROHM's Products against warning, caution or note contained in this document.

2. All information contained in this document is current as of the issuing date and subject to change without any prior notice. Before purchasing or using ROHM's Products, please confirm the latest information with a ROHM sales representative.

3. The information contained in this document is provided on an "as is" basis and ROHM does not warrant that all information contained in this document is accurate and/or error-free. ROHM shall not be in any way responsible or liable for any damages, expenses or losses incurred by you or third parties resulting from inaccuracy or errors of or concerning such information.

© 2015 ROHM Co., Ltd. All rights reserved.