

**TOSHIBA**

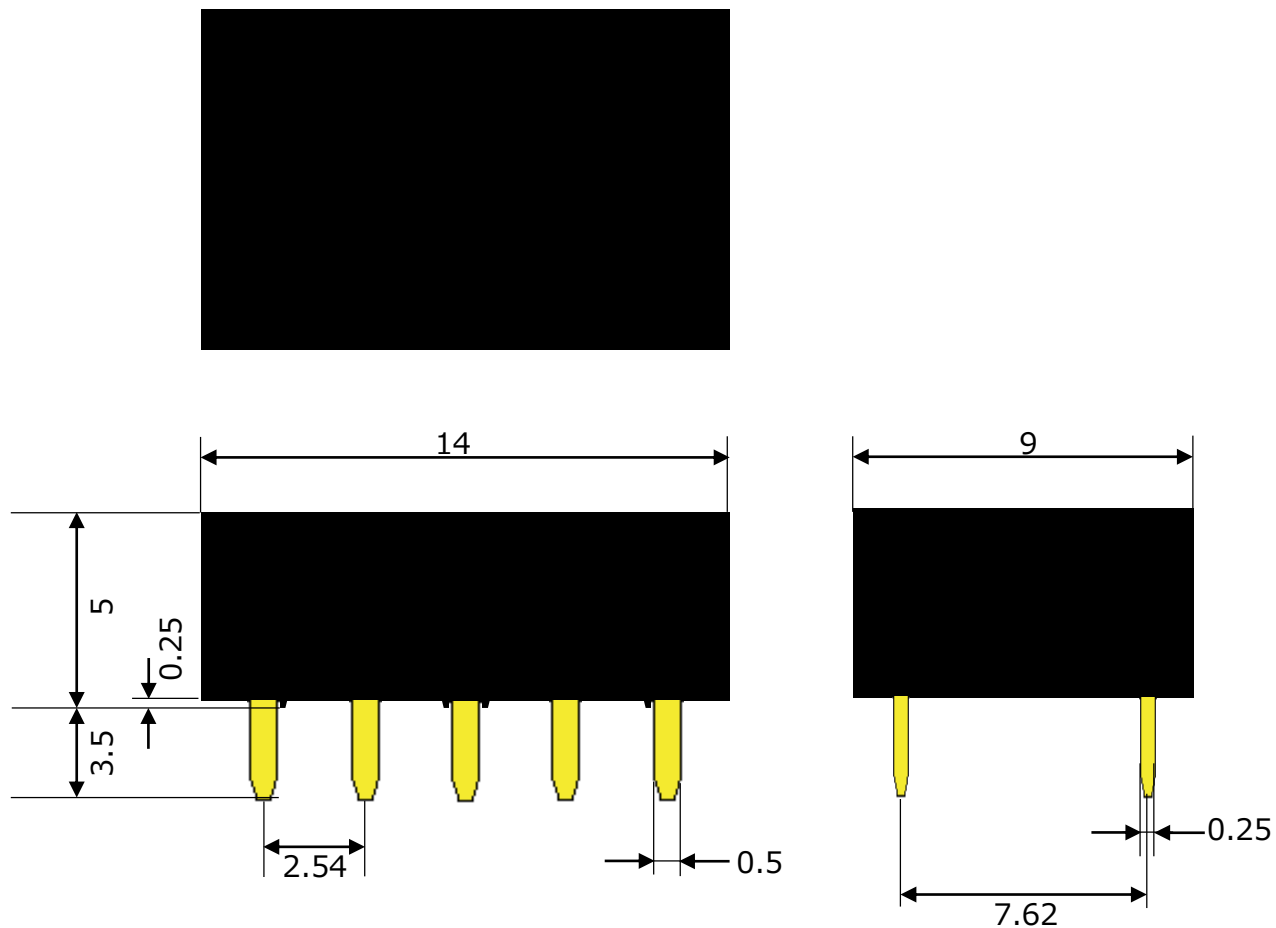
# **TOSHIBA Photorelay**

## Evaluation board guidance

2019-04  
Rev. 1.0

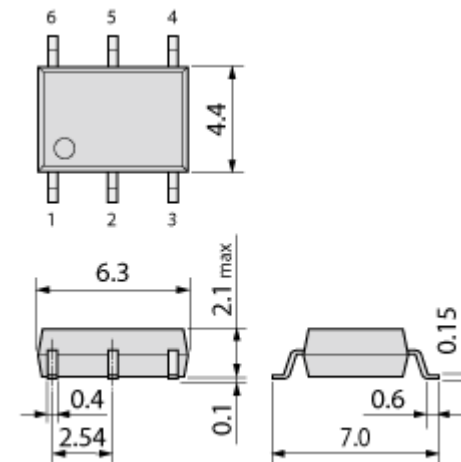
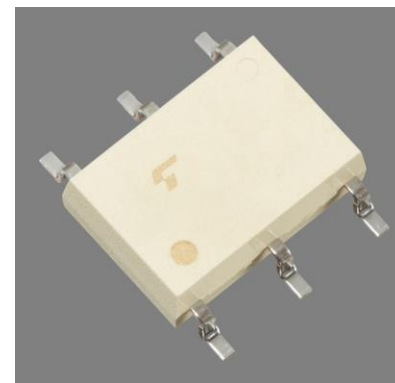
# Evaluation board for checking photorelay operation

【SIP package mechanical relay】



Mounting area : 126 mm<sup>2</sup> (typ)

【Toshiba SOP6 package photorelay】



Mounting area : 44 mm<sup>2</sup> (typ)

66% miniaturization of mounting area with photorelay

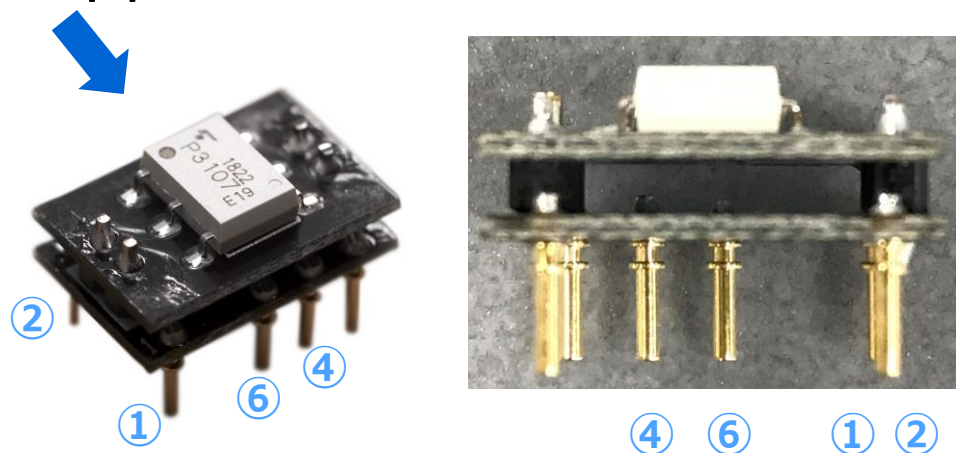
# Evaluation board for checking photorelay operation

Discover the benefits of replacing a mechanical relay with a Toshiba photorelay. This photorelay evaluation board replaces a mechanical relay by attaching directly to the mechanical relay mounting board (Refer to the diagram in Page 3 for the pin pattern of the compatible mechanical relay). The TLP3107 on-board is a high capacity type photorelay in a 2.54SOP6 package with VOFF 60 V / ION 3.3 A (@ Ta = 25 °C). For the detailed TLP3107 information, please download the product datasheet.

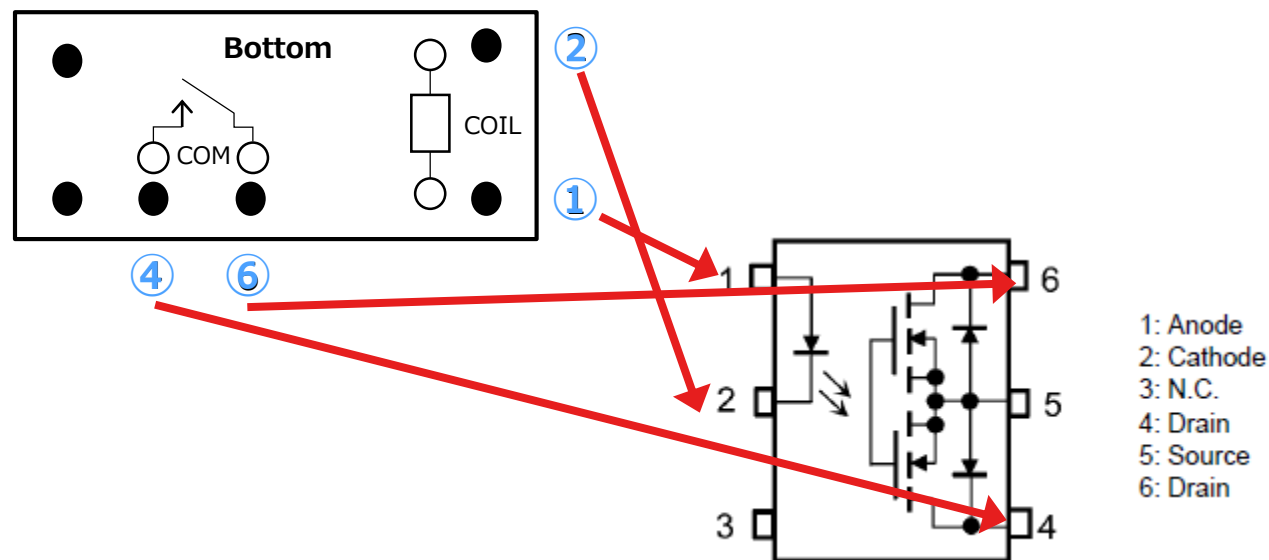
	Mechanical relay (Signal relay)	Photorelay TLP3107	Remarks (Feature of Photorelay)
Lifetime	(With contact limit)	(No contact limit)	Long life
Contact Voltage (OFF Voltage)	AC125 V、DC 60 V	AC 24~32 V DC 48~60 V	Notes : operating voltage condition is different with mechanical relay and photorelay.
Contact Capacity	2A@Ta = 25°C ~ 85°C	3.3A@Ta = 25°C 1.32A@Ta = 85°C	Notes : Photorelay need to consider degradation of on state current by temperature condition.
Contact Resistance (ON Resistance)	100 mΩ (Degraded by On/Off)	60 mΩ (Stable)	High reliability
Isolation Voltage	1.0 kVrms	1.5 kVrms	High isolation voltage
Operation / Release Time	5 ~ 10 ms	1 ~ 5 ms	High speed
Operation Sound	Exist	(no noise)	No noise
Miniaturization	126 mm <sup>2</sup>	44 mm <sup>2</sup>	Smaller size
Height	5 mm	2.1 mm	Smaller size
Input Power Consumption	(Coil)×100 mW~	(LED)around 0.5 mW~	Less power consumption

# Evaluation board for checking photorelay operation

## 【Appearance of board】



## 【Terminal sequence】



## 【Driving guidance】

- Please apply the driving voltage 5V, 12V, 24V to the input side (coil side) with (+) to the pin#1 (pin#1 in TLP3107) and (-) to the pin#2 (pin#2 in TLP3107)
- The output side (contact side) is 1a contact form (AC/DC parallel using). The rating of photo relay is off voltage (60V) and on current (3.3A) at (Ta=25°C). Driving voltage is standard up to 48V DC and 32Vrms AC. The drive current should be within the maximum rating 3.3A (Ta=25°C).

# RESTRICTIONS ON PRODUCT USE

Toshiba Corporation and its subsidiaries and affiliates are collectively referred to as "TOSHIBA". Hardware, software and systems described in this document are collectively referred to as "Product".

- TOSHIBA reserves the right to make changes to the information in this document and related Product without notice.
- This document and any information herein may not be reproduced without prior written permission from TOSHIBA. Even with TOSHIBA's written permission, reproduction is permissible only if reproduction is without alteration/omission.
- Though TOSHIBA works continually to improve Product's quality and reliability, Product can malfunction or fail. Customers are responsible for complying with safety standards and for providing adequate designs and safeguards for their hardware, software and systems which minimize risk and avoid situations in which a malfunction or failure of Product could cause loss of human life, bodily injury or damage to property, including data loss or corruption. Before customers use the Product, create designs including the Product, or incorporate the Product into their own applications, customers must also refer to and comply with (a) the latest versions of all relevant TOSHIBA information, including without limitation, this document, the specifications, the data sheets and application notes for Product and the precautions and conditions set forth in the "TOSHIBA Semiconductor Reliability Handbook" and (b) the instructions for the application with which the Product will be used with or for. Customers are solely responsible for all aspects of their own product design or applications, including but not limited to (a) determining the appropriateness of the use of this Product in such design or applications; (b) evaluating and determining the applicability of any information contained in this document, or in charts, diagrams, programs, algorithms, sample application circuits, or any other referenced documents; and (c) validating all operating parameters for such designs and applications. **TOSHIBA ASSUMES NO LIABILITY FOR CUSTOMERS' PRODUCT DESIGN OR APPLICATIONS.**
- **PRODUCT IS NEITHER INTENDED NOR WARRANTED FOR USE IN EQUIPMENTS OR SYSTEMS THAT REQUIRE EXTRAORDINARILY HIGH LEVELS OF QUALITY AND/OR RELIABILITY, AND/OR A MALFUNCTION OR FAILURE OF WHICH MAY CAUSE LOSS OF HUMAN LIFE, BODILY INJURY, SERIOUS PROPERTY DAMAGE AND/OR SERIOUS PUBLIC IMPACT ("UNINTENDED USE").** Except for specific applications as expressly stated in this document, Unintended Use includes, without limitation, equipment used in nuclear facilities, equipment used in the aerospace industry, lifesaving and/or life supporting medical equipment, equipment used for automobiles, trains, ships and other transportation, traffic signaling equipment, equipment used to control combustions or explosions, safety devices, elevators and escalators, and devices related to power plant. **IF YOU USE PRODUCT FOR UNINTENDED USE, TOSHIBA ASSUMES NO LIABILITY FOR PRODUCT.** For details, please contact your TOSHIBA sales representative or contact us via our website.
- Do not disassemble, analyze, reverse-engineer, alter, modify, translate or copy Product, whether in whole or in part.
- Product shall not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable laws or regulations.
- The information contained herein is presented only as guidance for Product use. No responsibility is assumed by TOSHIBA for any infringement of patents or any other intellectual property rights of third parties that may result from the use of Product. No license to any intellectual property right is granted by this document, whether express or implied, by estoppel or otherwise.
- **ABSENT A WRITTEN SIGNED AGREEMENT, EXCEPT AS PROVIDED IN THE RELEVANT TERMS AND CONDITIONS OF SALE FOR PRODUCT, AND TO THE MAXIMUM EXTENT ALLOWABLE BY LAW, TOSHIBA (1) ASSUMES NO LIABILITY WHATSOEVER, INCLUDING WITHOUT LIMITATION, INDIRECT, CONSEQUENTIAL, SPECIAL, OR INCIDENTAL DAMAGES OR LOSS, INCLUDING WITHOUT LIMITATION, LOSS OF PROFITS, LOSS OF OPPORTUNITIES, BUSINESS INTERRUPTION AND LOSS OF DATA, AND (2) DISCLAIMS ANY AND ALL EXPRESS OR IMPLIED WARRANTIES AND CONDITIONS RELATED TO SALE, USE OF PRODUCT, OR INFORMATION, INCLUDING WARRANTIES OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, ACCURACY OF INFORMATION, OR NONINFRINGEMENT.**
- Do not use or otherwise make available Product or related software or technology for any military purposes, including without limitation, for the design, development, use, stockpiling or manufacturing of nuclear, chemical, or biological weapons or missile technology products (mass destruction weapons). Product and related software and technology may be controlled under the applicable export laws and regulations including, without limitation, the Japanese Foreign Exchange and Foreign Trade Law and the U.S. Export Administration Regulations. Export and re-export of Product or related software or technology are strictly prohibited except in compliance with all applicable export laws and regulations.
- Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product. Please use Product in compliance with all applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive. **TOSHIBA ASSUMES NO LIABILITY FOR DAMAGES OR LOSSES OCCURRING AS A RESULT OF NONCOMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS.**

# Toshiba Electronic Devices & Storage Corporation

<https://toshiba.semicon-storage.com/jp/>

[Contact]

Discrete Semiconductor Application Engineering Center  
Optical Coupler Application Engineering Dept.