

## Photocouplers / Optocouplers

### Insulation Distances

#### Abstract

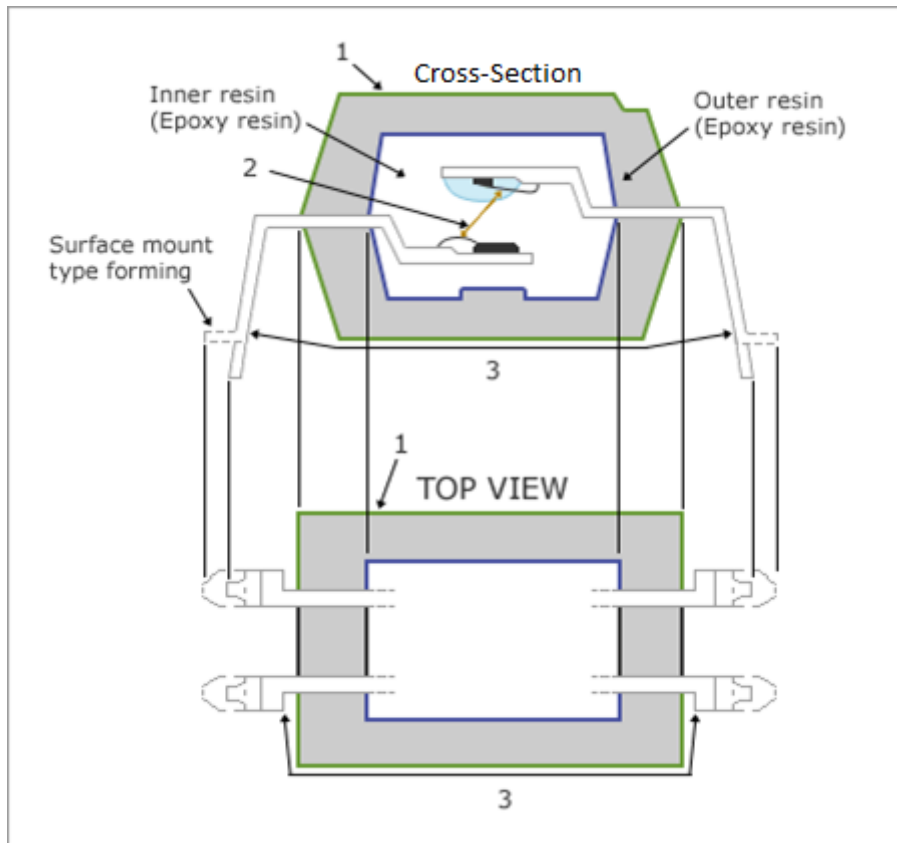
Our photocouplers use a double structure consisting of an inner resin with high optical transmittance between the light-emitting diode (LED) and the photo-diode, and an outer resin with high light shading effect on the outside.

As a result, both stable operation not influenced by external light and high sensitivity (small minimum operating input current) are achieved.

#### Contents

1. Overview .....	2
2. 16-pin DIP (DIP16, Dual Inline Package).....	3
3. 8-pin DIP (DIP8, Dual Inline Package).....	3
4. 4-pin DIP (DIP4, Dual Inline Package).....	4
5. 6-pin SDIP (SDIP6, Shrink Dual Inline Package).....	5
6. 8-pin SDIP (SDIP8, Shrink Dual Inline Package).....	6
7. 8-pin LSDIP (LSDIP8, Long Creepage Shrink Dual Inline Package).....	6
8. 16-pin SSOP (SSOP16, Shrink Small Outline Package).....	6
9. 16-pin SSOP (SO16, Shrink Small Outline Package) .....	7
10. 12-pin SSOP (SSOP12, Shrink Small Outline Package).....	7
11. 8-pin SSOP (SO8, Shrink Small Outline Package).....	7
12. 5-pin LSSO5 (LSSO5, Long Creepage Shrink Small Outline Package).....	7
13. 5-pin LSO5 (LSO5, Long Creepage Small Outline Package) .....	8
14. 5-pin SOP (SO5, Small Outline Package) .....	8
15. 4-pin SOP (SOP4, Small Outline Package).....	9
16. 4-pin LSSOP (LSSOP4, Long Creepage Shrink Small Outline Package).....	9
17. 4-pin LSOP (LSOP4, Long Creepage Small Outline Package) .....	9
18. 4-pin SSOP (SSOP4, Shrink Small Outline Package).....	10
19. 4-pin Mini Flat-Lead (Flat Lead, Ultra-Small Flat Lead Package).....	10
20. Revision History .....	10

## 1. Overview



No. / Name	Description
1. Creepage Distance	Shortest distance between the light emitting side pin and the light receiving side pin, along the package surface (green line in the figure above).
2. Isolation Distance	Shortest distance between the light emitting side and the light receiving side insulated with resin
3. Clearance (Air distance)	Space outside the resin that is the shortest distance between the light emitting side pin and the light receiving side pin. Depending on the pin shape, this distance may be the same as the creepage distance.

## 2. 16-pin DIP (DIP16, Dual Inline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS2501-4, PS2501L-4	5.0	7.0	0.3	7.0
PS2502-4, PS2502L-4	5.0	7.0	0.3	7.0
PS2505-4, PS2505L-4	5.0	7.0	0.3	7.0

## 3. 8-pin DIP (DIP8, Dual Inline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS8501, PS8501L3	5.0	7.0	0.4	7.0
PS8501L1, PS8501L2	5.0	8.0	0.4	8.0
PS8502, PS8502L3	5.0	7.0	0.4	7.0
PS8502L1, PS8502L2	5.0	8.0	0.4	8.0
PS9505, PS9505L3	5.0	7.0	0.4	7.0
PS9505L1, PS9505L2	5.0	8.0	0.4	8.0
PS9506, PS9506L3	5.0	7.0	0.4	7.0
PS9506L1, PS9506L2	5.0	8.0	0.4	8.0
PS9513, PS9513L3	5.0	7.0	0.4	7.0
PS9513L1, PS9513L2	5.0	8.0	0.4	8.0
PS9531, PS9531L3	5.0	7.0	0.4	7.0
PS9531L1, PS9531L2	5.0	8.0	0.4	8.0
PS9587, PS9587L3	5.0	7.0	0.4	7.0
PS9587L1, PS9587L2	5.0	8.0	0.4	8.0
PS8551AL4	5.0	8.0	0.4	8.0
PS9551AL4	5.0	8.0	0.4	8.0

## 4. 4-pin DIP (DIP4, Dual Inline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS2501-1, PS2501L-1	5.0	7.0	0.3	7.0
PS2501A-1, PS2501AL-1	5.0	7.0	0.3	7.0
PS2502-1, PS2502L-1	5.0	7.0	0.3	7.0
PS2503-1, PS2503L-1	5.0	7.0	0.3	7.0
PS2505-1, PS2505L-1	5.0	7.0	0.3	7.0
PS2506-1, PS2506L-1	5.0	7.0	0.3	7.0
PS2513-1, PS2513L-1	5.0	7.0	0.3	7.0
PS2514-1, PS2514L-1	5.0	7.0	0.3	7.0
PS2533-1, PS2533L-1	5.0	7.0	0.4	7.0
PS2535-1, PS2535L-1	5.0	7.0	0.4	7.0
PS2561-1, PS2561L-1	5.0	7.0	0.4	7.0
PS2561A-1, PS2561AL-1	5.0	7.0	0.4	7.0
PS2561B-1, PS2561BL-1	5.0	7.0	0.4	7.0
PS2561D-1, PS2561DL-1	5.0	7.0	0.4	7.0
PS2561F-1, PS2561FL-1	5.0	7.0	0.4	7.0
PS2562-1, PS2562L-1	5.0	7.0	0.4	7.0
PS2565-1, PS2565L-1	5.0	7.0	0.4	7.0

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS2561L1-1, PS2561L2-1	5.0	7.0	0.4	7.0
PS2561AL1-1, PS2561AL2-1	5.0	7.0	0.4	7.0
PS2561BL1-1, PS2561BL2-1	5.0	7.0	0.4	7.0
PS2561DL1-1, PS2561DL2-1	5.0	8.0	0.4	8.0
PS2562L1-1, PS2562L2-1	5.0	7.0	0.4	7.0
PS2565L1-1, PS2565L2-1	5.0	7.0	0.4	7.0
PS2581L1, PS2581L2	5.0	8.0	0.4	8.0
PS2581AL1, PS2581AL2	5.0	8.0	0.4	8.0

## 5. 6-pin SDIP (SDIP6, Shrink Dual Inline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS8302L	5.0	7.0	0.4	7.0
PS8302L2	5.0	8.0	0.4	8.0
PS9303L	5.0	7.0	0.4	7.0
PS9303L2	5.0	8.0	0.4	8.0
PS9306L	5.0	7.0	0.4	7.0
PS9306L2	5.0	8.0	0.4	8.0
PS9307L	5.0	7.0	0.4	7.0
PS9307L2	5.0	8.0	0.4	8.0
PS9307AL	5.0	7.0	0.4	7.0
PS9307AL2	5.0	8.0	0.4	8.0
PS9308L	5.0	7.0	0.4	7.0
PS9308L2	5.0	8.0	0.4	8.0
PS9309L	5.0	7.0	0.4	7.0
PS9309L2	5.0	8.0	0.4	8.0
PS9313L	5.0	7.0	0.4	7.0
PS9313L2	5.0	8.0	0.4	8.0
PS9317L	5.0	7.0	0.4	7.0
PS9317L2	5.0	8.0	0.4	8.0
PS9324L	5.0	7.0	0.4	7.0
PS9324L2	5.0	8.0	0.4	8.0
PS9331L	5.0	7.0	0.4	7.0
PS9331L2	5.0	8.0	0.4	8.0
PS9351L	5.0	7.0	0.4	7.0
PS9351L2	5.0	8.0	0.4	8.0

## 6. 8-pin SDIP (SDIP8, Shrink Dual Inline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS9305L	5.0	8.0	0.4	7.0
PS9305L2	5.0	8.0	0.4	8.0
PS9332L	5.0	7.0	0.4	7.0
PS9332L2	5.0	8.0	0.4	8.0
PS8352AL2	5.0	8.0	0.4	8.0
RV1S9353A	5.0	8.0	0.4	8.0

## 7. 8-pin LSDIP (LSDIP8, Long Creepage Shrink Dual Inline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS8902	7.5	15.0	0.4	14.5
PS9905	7.5	15.0	0.4	14.5
PS9924	7.5	15.0	0.4	14.5
RV1S9960A	7.5	15.0	0.4	14.5
RV1S2451A	7.5	15.0	0.15	14.5

## 8. 16-pin SSOP (SSOP16, Shrink Small Outline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS2801C-4	2.5	4.5	0.1	4.5
PS2802-4	2.5	4.5	0.1	4.5
PS2805C-4	2.5	4.5	0.1	4.5
PS2811-4	2.5	4.5	0.1	4.5
PS2815-4	2.5	4.5	0.1	4.5
PS2833-4	2.5	4.5	0.1	4.5

## 9. 16-pin SSOP (SO16, Shrink Small Outline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS9402	5.0	8.0	0.4	8.0

## 10. 12-pin SSOP (SSOP12, Shrink Small Outline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS2841-4A	1.5	4.0	0.4	4.0
PS2841-4B	1.5	4.0	0.4	4.0
PS2845-4A	1.5	4.0	0.4	4.0

## 11. 8-pin SSOP (SO8, Shrink Small Outline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS8802-1, PS8802-2	2.5	4.0	0.2	4.0
PS8821-1, PS8821-2	2.5	4.0	0.2	4.0
PS9817A-1, PS9817A-2	2.5	4.0	0.2	4.0
PS9821-1, PS9821-2	2.5	4.0	0.2	4.0
PS9822-1, PS9822-2	2.5	4.0	0.2	4.0
PS9851-1, PS9851-2	2.5	4.0	0.2	4.0

## 12. 5-pin LSSO5 (LSSO5, Long Creepage Shrink Small Outline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
RV1S9207A	5.0	8.2	0.15	8.2
RV1S9209A	5.0	8.2	0.15	8.2
RV1S9213A	5.0	8.2	0.15	8.2
RV1S9231A	5.0	8.2	0.15	8.2
RV1S9260A	5.0	8.2	0.15	8.2
RV1S9261A	5.0	8.2	0.15	8.2
RV1S9262A	5.0	8.2	0.15	8.2

### 13. 5-pin LSO5 (LSO5, Long Creepage Small Outline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS9001	5.0	8.0	0.15	8.0
PS9009	5.0	8.0	0.15	8.0
PS9013	5.0	8.0	0.15	8.0
PS9031	5.0	8.0	0.15	8.0
RV1S9060A	5.0	8.0	0.15	8.0
RV1S9061A	5.0	8.0	0.15	8.0
RV1S9062A	5.0	8.0	0.15	8.0

### 14. 5-pin SOP (SO5, Small Outline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS8101	3.75	4.2	0.2	4.2
PS9113	3.75	4.2	0.2	4.2
PS9117A	3.75	4.2	0.2	4.2
PS9121	3.75	4.2	0.2	4.2
PS9122	3.75	4.2	0.2	4.2
PS9123	3.75	4.2	0.2	4.2
PS9124	3.75	4.2	0.2	4.2
PS9151	3.75	4.2	0.2	4.2
RV1S9160A	3.75	4.2	0.2	4.2
RV1S9161A	3.75	4.2	0.2	4.2
RV1S9162A	3.75	4.2	0.2	4.2



## 15. 4-pin SOP (SOP4, Small Outline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS2701A-1	3.75	5.0	0.3	5.0
PS2702-1	3.75	5.0	0.3	5.0
PS2703-1	3.75	5.0	0.3	5.0
PS2705A-1	3.75	5.0	0.3	5.0
PS2706-1	3.75	5.0	0.3	5.0
PS2711-1	3.75	5.0	0.3	5.0
PS2715-1	3.75	5.0	0.3	5.0
PS2733-1	2.5	5.0	0.3	5.0
PS2761B-1	3.75	5.0	0.4	5.0

## 16. 4-pin LSSOP (LSSOP4, Long Creepage Shrink Small Outline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
RV1S2211A	5.0	8.2	0.15	8.2
RV1S2251A	5.0	8.2	0.15	8.2
RV1S2255A	5.0	8.2	0.15	8.2
RV1S2281A	5.0	8.2	0.15	8.2
RV1S2285A	5.0	8.2	0.15	8.2

## 17. 4-pin LSOP (LSOP4, Long Creepage Small Outline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS2381-1	5.0	8.0	0.4	8.0

## 18. 4-pin SSOP (SSOP4, Shrink Small Outline Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS2801C-1	2.5	4.5	0.1	4.5
PS2802-1	2.5	4.5	0.1	4.5
PS2805C-1	2.5	4.5	0.1	4.5
PS2811-1	2.5	4.5	0.1	4.5
PS2815-1	2.5	4.5	0.1	4.5
PS2833-1	2.5	4.5	0.1	4.5
PS2861B-1	3.75	5.0	0.4	5.0

## 19. 4-pin Mini Flat-Lead (Flat Lead, Ultra-Small Flat Lead Package)

Product Name	Isolation Voltage (kVr.m.s.)	1 - Creepage Distance (mm)	2 - Isolation Distance (mm)	3 - Clearance (mm)
PS2911-1	2.5	4.0	4.0	4.0
PS2913-1	2.5	4.0	4.0	4.0
PS2915-1	2.5	4.0	4.0	4.0
PS2933-1	2.5	4.0	4.0	4.0
RV1S2951A	2.5	4.0	0.15	4.0
RV1S2955A	2.5	4.0	0.15	4.0

## 20. Revision History

Revision	Date	Description
2.00	Jan 6, 2025	Completed numerous changes.
1.00	Oct 20, 2020	Initial release.

## IMPORTANT NOTICE AND DISCLAIMER

RENESAS ELECTRONICS CORPORATION AND ITS SUBSIDIARIES (“RENESAS”) PROVIDES TECHNICAL SPECIFICATIONS AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THIRD-PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for developers who are designing with Renesas products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. Renesas grants you permission to use these resources only to develop an application that uses Renesas products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Renesas intellectual property or to any third-party intellectual property. Renesas disclaims responsibility for, and you will fully indemnify Renesas and its representatives against, any claims, damages, costs, losses, or liabilities arising from your use of these resources. Renesas' products are provided only subject to Renesas' Terms and Conditions of Sale or other applicable terms agreed to in writing. No use of any Renesas resources expands or otherwise alters any applicable warranties or warranty disclaimers for these products.

(Disclaimer Rev.1.01)

### Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,  
Koto-ku, Tokyo 135-0061, Japan  
[www.renesas.com](http://www.renesas.com)

### Trademarks

Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.

### Contact Information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit [www.renesas.com/contact-us/](http://www.renesas.com/contact-us/).