



**THE DATASHEET OF
PS9821-2-A**



PHOTOCOUPPLERS SELCTION GUIDE



SUITABLE PRODUCT FOR EACH APPLICATIONS

Renesas offers an array of flexible products suitable for a wide range of applications.

| Application Field | Application Name | Motor Drive | | Current/ Voltage monitor | Communication | | Transistor Output |
|----------------------|---------------------------------------|-------------|-----------|--------------------------|----------------|---------------|-------------------|
| | | IGBT drive | IPM drive | | Communication | | |
| | | | | | Digital output | Analog output | |
| Industry | AC Servo | • | • | • | • | • | • |
| | NC machine tools | • | • | • | • | • | • |
| | GAS / Water / Electric power Meter | | | | • | • | • |
| | Smart meter | | | | • | • | • |
| | Service Robot | | | | | | • |
| | Industrial Robot | • | • | • | • | • | • |
| | Buttery system | • | • | • | • | • | • |
| | Solar power conditioner | • | • | • | • | • | • |
| | UPS | • | • | • | • | • | • |
| | Welding machine | • | • | • | • | • | • |
| | Semiconductor manufacturing equipment | | | | • | • | • |
| | Tester / measurement device | • | • | | • | • | • |
| | PLC | • | • | | • | • | • |
| | Network Camera | | | | • | | • |
| | Vending machine | • | | | | • | • |
| | Electric tools | • | • | | • | • | • |
| | Security sensor , camera | | • | | • | • | • |
| Industrial LED light | | | | | | • | |
| Communication | Server | | | | | | • |
| | Network Switch | | | | • | • | • |
| | Router | | | | • | | • |
| | Wireless base station | | | | • | | • |
| | Line-phone | | | | • | | • |
| | Infrastructure Switch | | • | | • | | • |
| | Broadcast apparatus | | | | | | • |
| Consumer | Video / Audio | | • | | • | • | • |
| | TB | | | | • | | • |
| | STB | | | | | | • |
| | Camera | | • | | • | • | • |
| | Game(Portable / Stationary) | | | | | | • |
| | Pachinko | | | | • | • | • |
| | Air Conditioner | • | • | | • | • | • |
| | Lightings | | | | • | • | • |
| | Washing machine | | • | | • | • | • |
| | Refrigerator | • | | | | | • |
| IH Cooker | • | | | • | • | • | |
| OA | Scanner | | | | | | • |
| | HDD | | | | | | • |
| | POS | | | | • | • | • |
| | PPC / Printer | | | | • | | • |
| | Server / Workstation / Super Comsuter | • | • | | • | • | • |
| | Desktop PC | | | | • | | • |
| | Mobile PC / Tablet | | | | • | | • |
| Monitor | | | | | | • | |

PHOTOCOUPLER LINE-UP

Renesas offers photocouplers targeted to specific applications, from high-speed products for motor drive and communication to general-purpose Tr. output products.

Visit our website.



<https://www.renesas.com/products/interface-connectivity/optoelectronics>

IC-Output

Creepage Isolation Voltage Pin pitch

Motor drive and control

Communication



| DIP8 7/8 mm 5 kV 2.54 mm | SDIP 7/8 mm 5 kV 1.27 mm | LSDIP8 15 mm 7.5 kV 1.27 mm | LSO5 8 mm 5 kV 1.27 mm | S05 4.2 mm 3.75 kV 1.27 mm | LSS05 8.2 mm 5 kV 0.65 mm | S08 4 mm 2.5 kV 1.27 mm | S016 8 mm 5 kV 1.27 mm |
|-----------------------------------|-----------------------------------|--------------------------------------|---------------------------------|-------------------------------------|------------------------------------|----------------------------------|---------------------------------|
| PS9531 | PS9331 PS9332 | PS9905 | PS9031 | | RV1S9231A | | PS9402 |
| PS9506 | PS9307A | | | | RV1S9207A | | |
| PS9513 | PS9313 | | PS9013 RV1S9062A | PS9113 RV1S9162A | RV1S9213A RV1S9262A | | |
| | PS9303 PS9309 | | PS9009 RV1S9061A | RV1S9161A | RV1S9209A RV1S9261A | | |
| PS8551A | PS8352A | | | | | | |
| PS9551A | | | | | | | |
| | RV1S9353A | | | | | | |
| | PS9351 | | | PS9151 | | PS9851-1 PS9851-2 | |
| | | RV1S9960A | RV1S9060A | RV1S9160A | RV1S9260A | | |
| | | | | PS9123 | | | |
| PS9587 | PS9317 | | PS9001 | PS9117A | | PS9817A-1 PS9817A-2 | |
| | PS9324 | PS9924 | | PS9124 | | PS9821-1 PS9821-2 | |
| | | | | | | PS9822-1 PS9822-2 | |
| PS8501 PS8502 | PS8302 | PS8902 | | PS8101 | | PS8802-1 PS8802-2 | |

Transistor-Output

Creepage Isolation Voltage Pin pitch



| DIP4 7/8 mm 5 kV 2.54 mm | LSOP 8 mm 5 kV 2.54 mm | SOP 5 mm 3.75 kV 2.54 mm | LSSOP 8.2 mm 5 kV 1.3 mm | SSOP 4/4.5/5 mm 1.5/2.5/3.75 kV 0.8/1.27 mm | Flat lead 4 mm 2.5 kV 1.27 mm |
|-----------------------------------|---------------------------------|-----------------------------------|-----------------------------------|--|--|
| | | PS2701A-1 | | PS2801C-1/4 | |
| PS2561D-1 PS2561F-1 | | PS2761B-1 | | PS2861B-1 | |
| | PS2381-1 | | RV1S2281A | | |
| | | PS2703-1 | | | PS2913-1 |
| | | PS2711-1 | RV1S2211A | PS2811-1/4 PS2841-4A/4B | PS2911-1 |
| PS2514-1 | | | | | |
| PS2562-1 | | PS2702-1 | | PS2802-1/4 | |
| PS2533-1 PS2535-1 | | PS2733-1 | | PS2833-1/4 | PS2933-1 |
| PS2565-1 | | PS2705A-1 | RV1S2285A | PS2805C-1/4 | |
| | | PS2715-1 | | PS2815-1/4 PS2845-4A | PS2915-1 |
| PS2506-1 | | PS2706-1 | | | |

PHOTOCOUPLER PRODUCTS

SELECTION GUIDE

IGBT Drive

| Function | Part No. | Output Peak Current [A] | Power Supply Voltage [V] | Package | | Isolation Voltage [Vr.m.s.] | Ta max. [°C] | Electrical Characteristics | | | | | Protection Functions | | |
|------------|-----------|-------------------------|--------------------------|---------------|------------------------|-----------------------------|--------------|----------------------------|----------------|-------------------|---------------|------------|----------------------|------|-------|
| | | | | Configuration | Creepage Distance [mm] | | | DC | SW | | | Protection | | | |
| | | | | | | | | | IFLH max. [mA] | tpHL,LH max. [ns] | PWD max. [ns] | PDD [ns] | CMR min. [kV/μs] | UVLO | Clamp |
| IGBT Drive | PS9307A | 0.6 | 10 to 30 | SDIP6 | L:7 L2:8 | 5000 | 125 | 5.0 | 150 | 50 | -80 to 80 | 50 | ○ | - | - |
| | RV1S9207A | | | LSS05 | 8.2 | 5000 | 125 | 5.0 | 150 | 50 | -80 to 80 | 50 | ○ | - | - |
| | PS9506 | | | DIP8 | -/L3:7 L1/L2:8 | 5000 | 110 | 7.0 | 400 | 250 | -300 to 300 | 25 | - | - | - |
| | PS9031 | 2.5 | 15 to 30 | LS05 | 8 | 5000 | 125 | 4.0 | 175 | 75 | -90 to 90 | 50 | ○ | - | - |
| | RV1S9231A | | | LSS05 | 8.2 | 5000 | 125 | 5.2 | 175 | 75 | -90 to 90 | 50 | ○ | - | - |
| | PS9331 | | | SDIP6 | L:7 L2:8 | 5000 | 125 | 4.0 | 175 | 75 | -90 to 90 | 50 | ○ | - | - |
| | PS9531 | | | DIP8 | -/L3:7 L1/L2:8 | 5000 | 125 | 4.0 | 175 | 75 | -90 to 90 | 50 | ○ | - | - |
| | PS9905 | | | LSDIP8 | 15 | 7500 | 110 | 6.0 | 150 | 75 | -100 to 100 | 25 | ○ | - | - |
| | PS9332 | 2 | 15 to 30 | SDIP8 | L:7 L2:8 | 5000 | 125 | 4.0 | 200 | 75 | -90 to 90 | 50 | ○ | ○ | - |
| | PS9402 | 2.5 | 15 to 30 | SO16 | 8 | 5000 | 110 | 5.0 | 200 | 100 | -100 to 100 | 25 | ○ | ○ | ○ |

IPM Drive

| Function | Part No. | Output Type | Logic | Package | | Recommended Operating Conditions | Absolute Maximum Ratings | | Electrical Characteristics | | | | | | |
|-----------|-----------|-------------|-------------------|----------------|------------------------|----------------------------------|--------------------------|-----------------------------|----------------------------|------------|-------------------|-------------------|---------------|------------------|---------------|
| | | | | Configuration | Creepage Distance [mm] | | Power Supply Voltage [V] | Isolation Voltage [Vr.m.s.] | Ta max. [°C] | DC | SW | | | CMR min. [kV/μs] | |
| | | | | | | | | | | | IFHL/LH max. [mA] | tpHL/LH max. [ns] | PWD max. [ns] | | PDD max. [ns] |
| IPM Drive | RV1S9161A | Totem Pole | Active High | S05 | 4.2 | 4.5 to 30 | 3750 | 125 | 3.0 | 60 | 20 | 25 | 100 | | |
| | PS9009 | | | LS05 | 8 | 4.5 to 20 | 5000 | 125 | 3.0 | 200 | 80 | 100 | 50 | | |
| | RV1S9061A | | | | | 4.5 to 30 | 5000 | 125 | 4.5 | 60 | 20 | 25 | 100 | | |
| | RV1S9209A | | | LSS05 | 8.2 | 4.5 to 20 | 5000 | 125 | 3.8 | 200 | 80 | 100 | 50 | | |
| | RV1S9261A | | | | | 4.5 to 30 | 5000 | 125 | 4.0 | 60 | 20 | 25 | 100 | | |
| | PS9309 | | | | | SDIP6 | L:7 L2:8 | 4.5 to 20 | 5000 | 110 | 3.0 | 200 | 80 | 80 | 15 |
| | PS9303 | | | SDIP6 | L:7 L2:8 | 4.5 to 20 | 5000 | 100 | 5.0 | 500 | 350 | - | 15 | | |
| | RV1S9162A | | | Open Collector | Active Low | S05 | 4.2 | 4.5 to 30 | 3750 | 125 | 3.0 | 60 | 20 | 25 | 100 |
| | RV1S9062A | | | | | LS05 | 8 | 4.5 to 30 | 5000 | 125 | 4.1 | 60 | 20 | 25 | 100 |
| | RV1S9262A | | | | | LSS05 | 8.2 | 4.5 to 30 | 5000 | 125 | 4.0 | 60 | 20 | 25 | 100 |
| | PS9513 | DIP8 | -/L3:7 L1/L2:8 | | | 4.5 to 20 | 5000 | 100 | 5.0 | 500 750 | 650 | 650 | 15 | | |
| | PS9013 | LS05 | 8 | | | 4.5 to 25 | 5000 | 125 | 5.0 | 500 750 | 650 | 650 | 50 | | |
| | RV1S9213A | LSS05 | 8.2 | | | 4.5 to 25 | 5000 | 125 | 5.0 | 500/750 | 650 | 650 | 50 | | |
| | PS9313 | SDIP6 | L:7 L2:8 | | | 4.5 to 20 | 5000 | 110 | 5.0 | 500 750 | 650 | 650 | 15 | | |
| | PS9113 | S05 | 4.2 | | | 4.5 to 20 | 3750 | 100 | 5.0 | 500 750 | 650 | 650 | 15 | | |
| | | | | | | | | | | | | | | | |

Isolation Amplifiers

| Function | Part No. | Output | Package | | Absolute Maximum Ratings | | Electrical Characteristics | | | | | | | |
|---------------------|----------|--------|---------------|------------------------|-----------------------------|--------------|------------------------------------|-----------------|---------------------|-------------|----------|------------------|---------------|--------------|
| | | | Configuration | Creepage Distance [mm] | Isolation Voltage [Vr.m.s.] | Ta max. [°C] | Input Voltage Linearity Range [mV] | Gain typ. [V/V] | Gain Error Max. [%] | NL typ. [%] | VDD2 [V] | CMR min. [kV/μs] | fc typ. [kHz] | Output Type |
| Isolation amplifier | PS8551A | Analog | DIP8 | 8 | 5000 | 105 | -200 to 200 | 8 | 1 | 0.014 | 5 | 10 | 100 | Differential |
| | PS8352A | | SDIP8 | 8 | 5000 | 110 | -200 to 200 | 8 | 1 | 0.014 | 5 | 10 | 100 | Differential |

Δ-Σ Modulators

| Function | Part No. | Output | Package | | Absolute Maximum Ratings | | Electrical Characteristics | | | | | | |
|----------------|-----------|---------|---------------|------------------------|-----------------------------|--------------|------------------------------------|---------------------|----------------|----------|------------------|------------------|-----------------|
| | | | Configuration | Creepage Distance [mm] | Isolation Voltage [Vr.m.s.] | Ta max. [°C] | Input Voltage Linearity Range [mV] | Gain Error Max. [%] | INL typ. [LSB] | VDD2 [V] | ENOB typ. [bits] | CMR min. [kV/μs] | fCLK typ. [MHz] |
| Δ-Σ Modulators | PS9551A | Digital | DIP8 | 8 | 5000 | 105 | -200 to 200 | 1 | 3 | 5 | 12 | 15 | 10 |
| | RV1S9353A | | SDIP8 | 8 | 5000 | 110 | -200 to 200 | 0.5 | 3 | 3.3/5 | 13.8 | 15 | 10 |

High-Speed Communication (Analog)

| Function | Part No. | Speed [bps] | Output Type | Absolute Maximum Rated Power Supply Voltage [V] | Package | | Isolation Voltage [Vr.m.s.] | Ta max. [°C] | Electrical Characteristics | | | | | | |
|-----------------------------------|-------------|-------------|----------------|---|---------------|------------------------|-----------------------------|--------------|----------------------------|--------------|----------------|----------------|-----------------------------------|-------------------|------------------|
| | | | | | Configuration | Creepage Distance [mm] | | | Detector | | | | Coupled | | |
| | | | | | | | | | IOH @Vcc30V max. [μA] | VOL max. [V] | ICCL typ. [μA] | ICCH max. [μA] | CTR@ IF 16mA Vcc 4.5V Vo 0.4V [%] | tpHL/LH max. [ns] | CMR min. [kV/μs] |
| High-Speed Communication (Analog) | PS8101 | 1M | Open Collector | 35 | S05 | 4.2 | 3750 | 100 | 100 | 0.4 | 50 | 2 | 15 to 35 | 800/1200 | 15 |
| | PS8802-1/-2 | | | | S08 | 4.0 | 2500 | 100 | 100 | 0.4 | 100/200 | 2/4 | 15 and Over | 800/1200 | 15 |
| | PS8302 | | | | SDIP6 | L:7 L2:8 | 5000 | 110 | 100 | 0.4 | 150 | 1 | 15 and Over | 800/800 | 15 |
| | PS8501 | | | | DIP8 | -L3:7 L1/L2:8 | 5000 | 100 | 100 | 0.4 | 150 | 1 | 15 and Over | 800/800 | - |
| | PS8502 | | | | | | | | 100 | 0.4 | 150 | 1 | 15 and Over | 800/800 | 15 |
| | PS8902 | | | | LSDIP8 | 15 | 7500 | 110 | 100 | 0.4 | 50 | 2 | 15 to 35 | 800/1200 | 15 |

High-Speed Communication (Digital)

| Function | Part No. | Speed [bps] | Output Type | Power Supply Voltage [V] | Package | | Isolation Voltage [Vr.m.s.] | Ta max. [°C] | DC | | | AC | | | | |
|------------------------------------|--------------|-------------|----------------|--------------------------|---------------|------------------------|-----------------------------|--------------|--------------|--------------|------------------|----------------|-------------------|---------------|----------------|------------------|
| | | | | | Configuration | Creepage Distance [mm] | | | VOL max. [V] | VOH min. [V] | ICCL/H max. [mA] | IFHL max. [mA] | tpHL/LH max. [ns] | PWD max. [ns] | tpsk max. [ns] | CMR min. [kV/μs] |
| High-Speed Communication (Digital) | PS9122 | 1M | Open Collector | N 2.7~3.6, L 4.5~5.5 | S05 | 4.2 | 3750 | 100 | 0.6 | - | 3.5/2.5 | 5.0 | 500/700 | 200 | - | 15 |
| | PS9822-1/-2 | | | | S08 | 4.0 | 2500 | 100 | 0.6 | - | 3.5/2.5 | 5.0 | 500/700 | 200 | - | - |
| | PS9124 | | | | S05 | 4.2 | 3750 | 110 | 0.6 | - | 10/7 | 3.0 | 100/100 | 35 | 40 | 10 |
| | PS9324 | 10M | Open Collector | 2.7~3.6 & 4.5~5.5 | SDIP6 | L:7 L2:8 | 5000 | 110 | 0.6 | - | 10/7 | 3.0 | 100/100 | 35 | 40 | 15 |
| | PS9924 | | | | LSDIP8 | 15 | 7500 | 110 | 0.6 | - | 10/7 | 5.0 | 100/100 | 35 | 40 | 15 |
| | PS9821-1/-2 | | | | S08 | 4.0 | 2500 | 85 | 0.6 | - | 10/7 | 5.0 | 100/100 | 35 | 40 | 15 |
| | PS9587 | | | | DIP8 | -L3:7 L1/L2:8 | 5000 | 85 | 0.6 | - | 11/8 | 5.0 | 100/100 | 50 | 60 | 15 |
| | PS9317 | | | | SDIP6 | L:7 L2:8 | 5000 | 85 | 0.6 | - | 10/7 | 5.0 | 75/75 | 35 | 40 | 15 |
| | PS9001 | | | | LS05 | 8.0 | 5000 | 125 | 0.6 | - | 2/2 | 4.0 | 100/100 | 50 | 60 | 50 |
| | PS9117A | S05 | 4.2 | 3750 | 85 | 0.6 | - | 10/7 | 5.0 | 100/100 | 35 | 40 | 15 | | | |
| | PS9817A-1/-2 | S08 | 4.0 | 2500 | 85 | 0.6 | - | 10/7 | 5.0 | 100/100 | 35 | 40 | 15 | | | |
| | PS9123 | 15M | Totem Pole | 4.5~5.5 | S05 | 4.2 | 3750 | 100 | 0.6 | 2.4 | 10/7 | 5.0 | 60/60 | 30 | - | 15 |
| | PS9151 | | | | S05 | 4.2 | 3750 | 100 | 0.1 | 4.0 | 5/5 | 5.0 | 60/60 | 30 | 40 | 15 |
| | RV1S9160A | | | | S05 | 4.2 | 3750 | 125 | 0.1 | VDD-0.1 | 2/2 | 2 | 60/60 | 20 | 25 | 50 |
| | PS9851-1/-2 | | | | S08 | 4.0 | 2500 | 100 | 0.1 | 4.0 | 5/5 | 6.0 | 60/60 | 30 | 40 | 10 |
| | RV1S9060A | | | | LS05 | 8 | 5000 | 125 | 0.1 | VDD-0.1 | 2/2 | 2.2 | 60/60 | 20 | 25 | 50 |
| | RV1S9260A | | | | LSS05 | 8.2 | 5000 | 125 | 0.1 | VDD-0.1 | 2/2 | 2.6 | 60/60 | 20 | 25 | 50 |
| PS9351 | SDIP6 | | | | L:7 L2:8 | 5000 | 100 | 0.1 | 4.0 | 5/5 | 5.0 | 60/60 | 30 | 40 | 15 | |
| RV1S9960A | LSDIP8 | 15 | 7500 | 110 | 0.1 | VDD-0.1 | 2/2 | 3.8 | 60/60 | 20 | 25 | 50 | | | | |

Transistor-Output (DC Input) Single

| Function | Part No. | Output Type | Package | | Absolute Maximum Ratings | | | | Electrical Characteristics | | | | |
|------------------------------|------------|-------------|---------------|------------------------|--------------------------|--------------|-----------------------------|--------------|----------------------------|--------------|--------------|---------------|----------------|
| | | | Configuration | Creepage Distance [mm] | VCEO max. [V] | IC max. [mA] | Isolation Voltage [Vr.m.s.] | Ta max. [°C] | DC | SW | | | |
| | | | | | | | | | CTR % | tr typ. [µs] | tf typ. [µs] | ton typ. [µs] | toff typ. [µs] |
| Transistor-Output (DC Input) | PS2561D-1 | Single | DIP4 | -/L:7 L1/L2:8 | 80 | 50 | 5000 | 110 | 50 to 400 | 3 | 5 | – | – |
| | PS2561F-1 | | DIP4 | 7 | 80 | 50 | 5000 | 110 | 300 to 600 | 5 | 7 | – | – |
| | PS2514-1 | | DIP4 | 7 | 40 | 20 | 5000 | 100 | 50 to 200 | – | – | 15 | 15 |
| | PS2381-1 | | LSOP4 | 8 | 80 | 50 | 5000 | 115 | 50 to 400 | 4 | 5 | – | – |
| | RV1S2281A | | LSSOP | 8.2 | 80 | 30 | 5000 | 115 | 50 to 400 | 4 | 5 | – | – |
| | PS2701A-1 | | SOP4 | 5 | 70 | 30 | 3750 | 100 | 50 to 300 | 5 | 7 | 8 | 10 |
| | PS2761B-1 | | SOP4 | 5 | 70 | 50 | 3750 | 110 | 50 to 400 | 4 | 5 | 8 | 5 |
| | PS2703-1 | | SOP4 | 5 | 120 | 30 | 3750 | 100 | 50 to 400 | 10 | 10 | 13 | 11 |
| | PS2711-1 | | SOP4 | 5 | 40 | 40 | 3750 | 100 | 100 to 400 | 4 | 5 | – | – |
| | PS2801C-1 | | SSOP4 | 4.5 | 80 | 30 | 2500 | 100 | 50 to 400 | 5 | 7 | 10 | 7 |
| | PS2801C-4 | | SSOP16 | 4.5 | 80 | 30 | 2500 | 100 | 50 to 400 | 5 | 7 | 10 | 7 |
| | PS2861B-1 | | SSOP4 | 5 | 70 | 50 | 3750 | 110 | 50 to 300 | 4 | 5 | 5 | 5 |
| | PS2811-1 | | SOP4 | 4.5 | 40 | 40 | 2500 | 100 | 100 to 400 | 4 | 5 | 7 | 5 |
| | PS2811-4 | | SSOP16 | 4.5 | 40 | 40 | 2500 | 100 | 100 to 400 | 4 | 5 | 7 | 5 |
| | RV1S2211A | | LSSOP | 8.2 | 40 | 40 | 5000 | 115 | 100 to 400 | 4 | 5 | – | – |
| | PS2841-4A | | SSOP12 | 4 | 70 | 20 | 1500 | 100 | 100 to 400 | – | – | 20 | 110 |
| | PS2841-4B | | SSOP12 | 4 | 70 | 20 | 1500 | 100 | 100 to 400 | – | – | 20 | 110 |
| | PS2911-1 | | Flat Leads | 4 | 40 | 40 | 2500 | 100 | 100 to 400 | 5 | 10 | 40 | 120 |
| PS2913-1 | Flat Leads | 4 | 120 | 30 | 2500 | 100 | 50 to 200 | 10 | 10 | 80 | 50 | | |

Transistor-Output (DC Input) Darlington

| Function | Part No. | Output Type | Absolute Maximum Ratings | | Package | | Isolation Voltage [Vr.m.s.] | Ta max. [°C] | Electrical Characteristics | | | | | | |
|------------------------------|----------|-------------|--------------------------|------------|---------------|------------------------|-----------------------------|--------------|----------------------------|--------------|--------------|---------------|----------------|----|----|
| | | | VCEO [V] | IC [mA/ch] | Configuration | Creepage Distance [mm] | | | DC | | | SW | | | |
| | | | | | | | CTR min. [%] | CTR max. [%] | VCE SAT [V] | tr typ. [µs] | tf typ. [µs] | ton typ. [µs] | toff typ. [µs] | | |
| Transistor-Output (DC Input) | PS2802-1 | Darlington | 40 | 90 | SSOP4 | 4.5 | 2500 | 100 | 200 | – | 1.0 | 200 | 200 | – | – |
| | PS2802-4 | | | 100 | SSOP16 | 4.5 | 2500 | 100 | 200 | – | 1.0 | 200 | 200 | – | – |
| | PS2562-1 | | | 200 | DIP4 | 7 | 5000 | 100 | 200 | – | 1.0 | 100 | 100 | – | – |
| | PS2702-1 | | | 200 | SOP4 | 5 | 3750 | 100 | 200 | – | 1.0 | 70 | 60 | 90 | 60 |
| | PS2833-1 | | 350 | 60 | SSOP4 | 4.5 | 2500 | 100 | 400 | 4500 | 1.0 | 20 | 5 | – | – |
| | PS2833-4 | | | 60 | SSOP16 | 4.5 | 2500 | 100 | 400 | 4500 | 1.0 | 20 | 5 | – | – |
| | PS2535-1 | | | 120 | DIP4 | 7 | 5000 | 100 | 400 | 5500 | 1.0 | 18 | 5 | – | – |
| | PS2533-1 | | | 150 | DIP4 | 7 | 5000 | 100 | 1500 | 6500 | 1.0 | 100 | 100 | – | – |
| | PS2733-1 | | | 150 | SOP4 | 5 | 2500 | 100 | 1500 | – | 1.0 | 100 | 100 | – | – |
| | PS2933-1 | | | 60 | Flat Leads | 4 | 2500 | 100 | 400 | 4500 | 1.0 | 20 | 5 | – | – |

Transistor-Output (AC Input)

| Function | Part No. | Output Type | Package | | Absolute Maximum Ratings | | | | Electrical Characteristics | | | | |
|------------------------------|-----------|-------------|---------------|------------------------|--------------------------|--------------|-----------------------------|--------------|----------------------------|--------------|--------------|---------------|----------------|
| | | | Configuration | Creepage Distance [mm] | VCEO max. [V] | IC max. [mA] | Isolation Voltage [Vr.m.s.] | Ta max. [°C] | DC | SW | | | |
| | | | | | | | | | CTR % | tr typ. [µs] | tf typ. [µs] | ton typ. [µs] | toff typ. [µs] |
| Transistor-Output (AC Input) | PS2565-1 | Single | DIP4 | 7 | 80 | 50 | 5000 | 100 | 80 to 400 | 3 | 5 | – | – |
| | PS2705A-1 | | SOP4 | 5 | 70 | 30 | 3750 | 100 | 50 to 300 | 5 | 7 | 8 | 10 |
| | PS2715-1 | | SOP4 | 5 | 40 | 40 | 3750 | 100 | 100 to 400 | 4 | 5 | – | – |
| | PS2805C-1 | | SSOP4 | 4.5 | 80 | 30 | 2500 | 100 | 50 to 400 | 5 | 7 | 10 | 7 |
| | PS2805C-4 | | SSOP16 | 4.5 | 80 | 30 | 2500 | 100 | 50 to 400 | 5 | 7 | 10 | 7 |
| | PS2815-1 | | SSOP4 | 4.5 | 40 | 40 | 2500 | 100 | 100 to 400 | 4 | 5 | 7 | 5 |
| | PS2815-4 | | SSOP16 | 4.5 | 40 | 40 | 2500 | 100 | 100 to 400 | 4 | 5 | 7 | 5 |
| | RV1S2285A | | LSSOP | 8.2 | 80 | 30 | 5000 | 115 | 50 to 400 | 4 | 5 | – | – |
| | PS2845-4A | | SSOP12 | 4 | 70 | 20 | 1500 | 100 | 100 to 400 | – | – | 20 | 110 |
| | PS2915-1 | | Flat Leads | 4 | 40 | 40 | 2500 | 100 | 100 to 400 | 5 | 10 | 40 | 120 |
| | PS2506-1 | | Darlington | DIP4 | 7 | 40 | 200 | 5000 | 100 | 200 min. | 100 | 100 | – |
| | PS2706-1 | SOP4 | | 5 | 40 | 200 | 3750 | 100 | 200 min. | 200 | 200 | – | – |

PACKAGE DIMENSIONS 1

Unit : mm

| LS05 | DIP8 | SDIP6 (L) |
|-----------|-----------|------------|
| | | |
| LSDIP8 | DIP8 (L1) | SDIP6 (L2) |
| | | |
| S016 | DIP8 (L3) | SDIP8 (L) |
| | | |
| DIP8 (L4) | DIP8 (L2) | SDIP8 (L2) |
| | | |

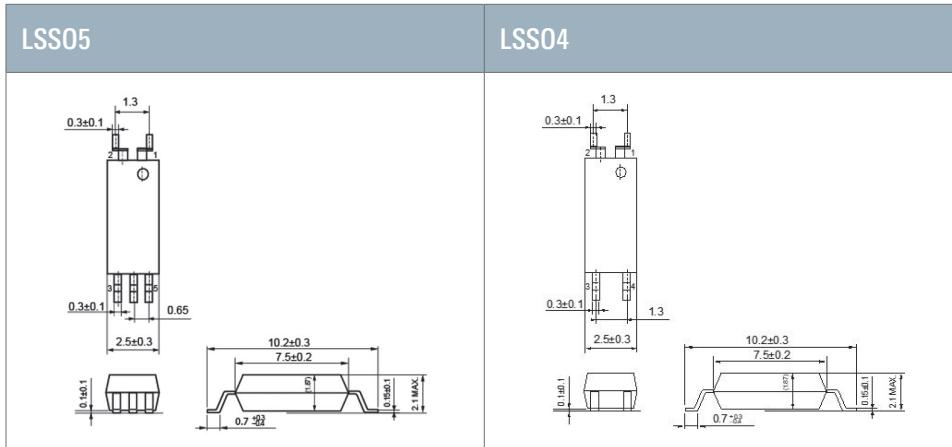
PACKAGE DIMENSIONS 2

Unit : mm

| S05 | DIP4 | SSOP4 |
|------|-----------|-----------|
| | | |
| S08 | DIP4 (L) | SSOP16 |
| | | |
| SOP | DIP4 (L1) | SSOP12 |
| | | |
| LSOP | DIP4 (L2) | Flat lead |
| | | |

PACKAGE DIMENSIONS 3

Unit : mm



PACKAGE MARKING

| LS05 | S05 |
|--|---|
|  <p>R : An initial of "Renesas" 9031 : Part Number N340 : Assembly Lot No.</p> <p>N 3 40 Weekly Serial Code Last one-digit of assembled year Rank Code</p> <p>○ : No.1 pin mark</p> |  <p>9124 : Part Number N231 : Assembly Lot No.</p> <p>N 2 31 Weekly Serial Code Last one-digit of assembled year Rank Code</p> <p>Ⓜ : Pb free Ⓞ : No.1 pin mark An initial of "Renesas" (Carved marking)</p> |
| LSDIP8 | SDIP6 |
|  <p>R : An initial of "Renesas" 9905 : Part Number N131 : Assembly Lot No.</p> <p>N 1 31 Weekly Serial Code Last one-digit of assembled year Rank Code</p> <p>○ : No.1 pin mark</p> |  <p>R : An initial of "Renesas" 9331 : Part Number N320 : Assembly Lot No.</p> <p>N 3 20 Weekly Serial Code Last one-digit of assembled year Rank Code</p> <p>○ : No.1 pin mark</p> |
| S08 | S016 |
|  <p>9817A-1 : Part Number NT131 : Assembly Lot No.</p> <p>N T 1 31 Weekly Serial Code Last one-digit of assembled year Internal Symbol (T:Pb free, Ni/Pd/Au plating on the electrode) Rank Code</p> <p>Ⓞ : No.1 pin mark An initial of "Renesas" (Carved marking)</p> |  <p>R : An initial of "Renesas" 9402 : Part Number NT231 : Assembly Lot No.</p> <p>N T 2 31 Weekly Serial Code Last one-digit of assembled year Internal Symbol (T:Pb free) Rank Code</p> <p>○ : No.1 pin mark</p> |
| SDIP8 | DIP8 |
|  <p>R : An initial of "Renesas" 9332 : Part Number N340 : Assembly Lot No.</p> <p>N 3 04 Weekly Serial Code Last one-digit of assembled year Rank Code</p> <p>○ : No.1 pin mark</p> |  <p>R : An initial of "Renesas" 9531 : Part Number NT331 : Assembly Lot No.</p> <p>N T 3 31 Weekly Serial Code Last one-digit of assembled year Internal Symbol (T:Pb free) Rank Code</p> <p>○ : No.1 pin mark</p> |

DIP4 SOP



R : An initial of "Renesas"
 2561D : Part Number as excluding "PS2"
 NR031 : Assembly Lot No.
 N R 0 31
 Weekly Serial Code
 Last one-digit of assembled year
 Internal Symbol
 (R : Assembly in Japan, Y: Assembly in TAIWAN)
 Rank Code
 ○ : No.1 pin mark



R : An initial of "Renesas"
 701A : Part Number as excluding "PS2"
 N301 : Assembly Lot No.
 N 3 01
 Weekly Serial Code
 Last one-digit of assembled year
 Rank Code
 ○ : No.1 pin mark

| | | | | |
|-------------------|--------|--------|-------|-------|
| Assembled Country | TAIWAN | TAIWAN | JAPAN | JAPAN |
| Halogen Free | | ○ | | ○ |
| *1, *2: Marking | | | | |

SSOP4 SSOP16



R1C : An initial of "Renesas" and Part Number
 R 1C
 Last 2 digits of Part Number (*1)
 *1: When the second digit from bottom of Part Number is "0", only marked last 1 digit.
 An initial of "Renesas"
 301 : Assembly Lot No.
 3 01
 Weekly Serial Code
 Last one-digit of assembled year

| | | | | |
|-------------------|--------|--------|-------|-------|
| Assembled Country | TAIWAN | TAIWAN | JAPAN | JAPAN |
| Halogen Free | | ○ | | ○ |
| *2: Marking | | | | |



R : An initial of "Renesas"
 PS2801C-4 : Part Number
 NL301 : Assembly Lot No.
 N 3 01
 Weekly Serial Code
 Last one-digit of assembled year
 Internal Symbol
 L: Pb Free
 Rank Code
 ○ : No.1 pin mark
 □ : Assembled Country

LSOP Flat lead



R : An initial of "Renesas"
 2381 : Part Number as excluding "PS"
 N031 : Assembly Lot No.
 N 0 31
 Weekly Serial Code
 Last one-digit of assembled year
 Rank Code
 ○ : No.1 pin mark



R : An initial of "Renesas"
 11 : Part Number as excluding "PS29"
 ex) PS2911 -> 11
 601 : Assembly Lot No.
 6 01
 Weekly Serial Code
 Last one-digit of assembled year
 = : Pb free

SSOP12 LSSOP / LSS05



R : An initial of "Renesas"
 2841A : Part Number as underlined of PA2841-4A
 NL601 : Assembly Lot No.
 N L 6 01
 Weekly Serial Code
 Last one-digit of assembled year
 Internal Symbol
 L: Pb Free
 Rank Code
 ○ : No.1 pin mark



R : An initial of "Renesas"
 2281 : Part Number
 9261 : Part Number
 N744 : Assembly Lot No.
 N 7 44
 Weekly Serial Code
 Last one-digit of assembled year
 Rank Code
 ○ : No.1 pin mark

PACKAGE STRUCTURE 1

| Package | | LSDIP8 | LS05 | S05 | S016 | DIP8 (L4) | SDIP8 (L2) | |
|--------------------|--------------|---|---|--|--------|------------------------|--------------------------|--|
| Structure | | | | | | | | |
| Package | | LSDIP8 | LS05 | S05 | S016 | DIP8 (L4) | SDIP8 (L2) | |
| Air Distance | [mm] | 14.5 | 8 | 4.2 | 8 | 8 | 8 | |
| Creepage | [mm] | 14.5 | 8 | 4.2 | 8 | 8 | 8 | |
| Isolation Distance | [mm] | 0.4 | 0.15 | 0.2 | 0.4 | 0.4 | 0.4 | |
| CTI | [-] | 175 | 400 | 175 | 175 | 175 | 175 | |
| Isolation Voltage | [Vr.m.s.] | 7500 | 5000 | 3750 | 5000 | 5000 | 5000 | |
| VIORM | [Vpeak] | 1600 | 1130 | 707 | 1130 | 1130 | 1130 / 1500 * | |
| VIOTM | [Vpeak] | 12000 | 8000 | 6000 | 8000 | 8000 | 8000 | |
| Part Number | VDE (Option) | PS9905 PS9924 PS8902 RV1S9960A | PS9031 PS9009 PS9013 PS9001 RV1S9060A RV1S9061A RV1S9062A | PS9113 PS9151 PS9123 PS9117A PS9124 PS9122 PS8101 RV1S9160A RV1S9161A RV1S9162A | PS9402 | PS8551AL4 PS9551AL4 | PS8352AL2 * RV1S9353A | |

| Package | | DIP8 | DIP8 (L1) | DIP8 (L3) | DIP8 (L2) | SDIP6 (L) | SDIP6 (L2) | SDIP8 (L) | SDIP8 (L2) | S08 |
|--------------------|--------------|--|--|--|--|--|---|-----------|------------|--|
| Structure | | | | | | | | | | |
| Package | | DIP8 | DIP8 (L1) | DIP8 (L3) | DIP8 (L2) | SDIP6 (L) | SDIP6 (L2) | SDIP8 (L) | SDIP8 (L2) | S08 |
| Air Distance | [mm] | 7 | 8 | 7 | 8 | 7 | 8 | 7 | 8 | 4 |
| Creepage | [mm] | 7 | 8 | 7 | 8 | 7 | 8 | 7 | 8 | 4 |
| Isolation Distance | [mm] | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.2 |
| CTI | [-] | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 |
| Isolation Voltage | [Vr.m.s.] | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 2500 |
| VIORM | [Vpeak] | 1130 | 1130 | 1130 | 1130 | 1130 | 1130 | 1130 | 1130 | 566 |
| VIOTM | [Vpeak] | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 4000 |
| Part Number | VDE (Option) | PS9531 PS9506 PS9513 PS9587 PS8501 PS8502 | PS9531L1 PS9506L1 PS9513L1 PS9587L1 PS8501L1 PS8502L1 | PS9531L3 PS9506L3 PS9513L3 PS9587L3 PS8501L3 PS8502L3 | PS9531L2 PS9506L2 PS9513L2 PS9587L2 PS8501L2 PS8502L2 | PS9307AL PS9331L PS9317L PS9313L PS9303L PS9309L PS9351L PS9324L PS8302L | PS9307AL2 PS9331L2 PS9317L2 PS9313L2 PS9303L2 PS9309L2 PS9351L2 PS9324L2 PS8302L2 | PS9332L | PS9332L2 | PS9817A-1 PS9817A-2 PS9851-1 PS9851-2 PS9821-1 PS9821-2 PS9822-1 PS9822-2 |

| Package | | DIP4 | | | DIP4 (L1) | | DIP4 (L) | | | DIP4 (L2) | | LSOP | |
|--------------------|---------------|---|----------|----------|-------------|--------------------------|---|-----------|-----------|-------------|--------------------------|----------|--|
| Structure | | | | | | | | | | | | | |
| Package | | DIP4 | | | DIP4 (L1) | | DIP4 (L) | | | DIP4 (L2) | | LSOP | |
| Air Distance | [mm] | 7 | 7 | 7 | 8 | 7 | 7 | 7 | 7 | 8 | 7 | 8 | |
| Creepage | [mm] | 7 | 7 | 7 | 8 | 7 | 7 | 7 | 7 | 8 | 7 | 8 | |
| Isolation Distance | [mm] | 0.4 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | |
| CTI | [-] | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 | |
| Isolation Voltage | [Vr.m.s.] | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | |
| VIORM | [Vpeak] | 890 | 890 | — | 1130 | 890 | 890 | 890 | — | 1130 | 890 | 1130 | |
| VIOTM | [Vpeak] | 8000 | 8000 | — | 8000 | 8000 | 8000 | 8000 | — | 8000 | 8000 | 8000 | |
| Part Number | VDE (Option) | PS2561D-1 PS2533-1 PS2535-1 PS2565-1 | PS2514-1 | | PS2561DL1-1 | PS2562L1-1 PS2565L1-1 | PS2561DL-1 PS2533L-1 PS2535L-1 PS2565L-1 | PS2514L-1 | | PS2561DL2-1 | PS2562L2-1 PS2565L2-1 | PS2381-1 | |
| | No VDE Option | PS2561F-1 | | PS2506-1 | | | PS2561FL-1 | | PS2506L-1 | | | | |

| Package | | SOP | | | SSOP4 | | SSOP16 | SSOP12 | | Flat lead | |
|--------------------|---------------|--|----------|-----------|---|-----------|---|-------------------------------------|--|--|--|
| Structure | | | | | | | | | | | |
| Package | | SOP | | | SSOP4 | | SSOP16 | SSOP12 | | Flat lead | |
| Air Distance | [mm] | 5 | 5 | 5 | 4.5 | 5 | 4.5 | 4 | | 4 | |
| Creepage | [mm] | 5 | 5 | 5 | 4.5 | 5 | 4.5 | 4 | | 4 | |
| Isolation Distance | [mm] | 0.3 | 0.3 | 0.4 | 0.1 | 0.4 | 0.1 | 0.4 | | 0.4 | |
| CTI | [-] | 175 | 175 | 175 | 175 | 175 | 175 | 175 | | 175 | |
| Isolation Voltage | [Vr.m.s.] | 3750 | 2500 | 3750 | 2500 | 3750 | 2500 | 1500 | | 2500 | |
| VIORM | [Vpeak] | 707 | 707 | 707 | 705 | 710 | 705 | — | | 570 | |
| VIOTM | [Vpeak] | 6000 | 4000 | 6000 | 6000 | 6000 | 6000 | — | | 4000 | |
| Part Number | VDE (Option) | PS2701A-1 PS2703-1 PS2702-1 PS2705A-1 PS2706-1 PS2711-1 PS2715-1 | PS2733-1 | PS2761B-1 | PS2801C-1 PS2811-1 PS2833-1 PS2802-1 PS2805C-1 PS2815C-1 | PS2861B-1 | PS2801C-4 PS2811-4 PS2833-4 PS2802-4 PS2805C-4 PS2815C-4 | | | PS2911-1 PS2913-1 PS2915-1 PS2933-1 | |
| | No VDE Option | | | | | | | PS2841-4A PS2841-4B PS2845-4A | | | |

PACKAGE STRUCTURE 2

| Package | | LSS05 | LSSOP |
|--------------------|--------------|---|-------------------------------------|
| Structure | | | |
| Package | | LSS05 | LSSOP |
| Air Distance | [mm] | 8.2 | 8.2 |
| Creepage | [mm] | 8.2 | 8.2 |
| Isolation Distance | [mm] | 0.15 | 0.15 |
| CTI | [-] | 400 | 400 |
| Isolation Voltage | [Vr.m.s.] | 5000 | 5000 |
| VIORM | [Vpeak] | 1075 | 1100 |
| VIORM | [Vpeak] | 8000 | 8000 |
| Part Number | VDE (Option) | RV1S9207A RV1S9209A RV1S9213A RV1S9231A RV1S9260A RV1S9261A RV1S9262A | RV1S2211A RV1S2281A RV1S2285A |

SAFETY STANDARD APPROVAL LIST 1

Visit our website.



1. ●: certified, R: reinforced insulation, S: supplementary insulation, B: basic insulation
2. A special ordering number is required for VDE-conformant products.

<https://www.renesas.com/products/interface-connectivity/optoelectronics/photocouplers-optocouplers-safety-standards-classification-chart-ul-csa-bsi-vde-approval>

| Part Number | Safety Standards | | | | | | | | | |
|---|------------------------------------|--------|----------------------|-----------------------|---|-----------------------|----------------------|-----------------------|--|-----------------------|
| | UL | | | | CSA | | BSI | | VDE | |
| | UL1577 Single/Double Protection | | | | CAN/CSA C22.2 62368-1 IEC 62368-1 | | BS EN 62368-1 | | DIN EN 60747-5-5 DIN EN IEC 60747-5-5 | |
| | Single | Double | Assembly in JAPAN | Assembly in TAIWAN | Assembly in JAPAN | Assembly in TAIWAN | Assembly in JAPAN | Assembly in TAIWAN | Assembly in JAPAN | Assembly in TAIWAN |
| RV1S2211A | ● | ● | ● | — | ●R | — | — | — | ● | — |
| RV1S2281A | ● | ● | ● | — | ●R | — | — | — | ● | — |
| RV1S2285A | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS2381-1 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS2506-1, PS2506L-1 | ● | ● | ● | — | — | — | — | — | — | — |
| PS2514-1, PS2514L-1 | ● | ● | ● | ● | ●B/R | ●B/R | — | — | ● | ● |
| PS2533-1, PS2533L-1 | ● | ● | ● | — | ●R | — | ●R | — | ● | — |
| PS2535-1, PS2535L-1 | ● | ● | ● | — | — | — | ●R | — | ● | — |
| PS2561D-1, PS2561DL-1 PS2561DL1-1, PS2561DL2-1 | ● | ● | ● | ● | ●R | ●R | ●R | ●R | ● | ● |
| PS2561F-1, PS2561FL-1 | ● | ● | ● | ● | — | — | — | — | — | — |
| PS2562-1, PS2562L-1 PS2562L1-1, PS2562L2-1 | ● | ● | ● | — | ●R | — | ●R | — | ● | — |
| PS2565-1, PS2565L-1 PS2565L1-1, PS2565L2-1 | ● | ● | ● | ● | ●R | ●R | ●R | ●R | ● | ● |
| PS2701A-1 | ● | — | ● | ● | ●B/S | ●B/S | ●B/S | ●B/S | ● | ● |
| PS2702-1 | ● | — | ● | ● | ●B/S | ●B/S | ●B/S | ●B/S | ● | ● |
| PS2703-1 | ● | — | ● | ● | ●B/S | ●B/S | ●B/S | ●B/S | ● | ● |
| PS2705A-1 | ● | — | ● | ● | ●B/S | ●B/S | — | — | ● | ● |
| PS2706-1 | ● | — | ● | — | ●B/S | — | ●B/S | — | ● | — |
| PS2711-1 | ● | — | ● | — | ●B/S | — | — | — | ● | — |
| PS2715-1 | ● | — | ● | — | ●B/S | — | — | — | ● | — |
| PS2733-1 | ● | — | ● | — | ●B/S | — | ●B/S | — | ● | — |
| PS2761B-1 | ● | ● | ● | ● | ●R | ●R | ●R | ●R | ● | ● |
| PS2801C-1 | ● | — | ● | ● | ●B | ●B | ●B/S | ●B/S | ● | ● |
| PS2801C-4 | ● | — | ● | — | ●B | — | — | — | ● | — |
| PS2802-1, -4 | ● | — | ● | — | ●B | — | ●B/S | — | ● | — |
| PS2805C-1 | ● | — | ● | ● | ●B | ●B | ●B/S | ●B/S | ● | ● |
| PS2805C-4 | ● | — | ● | — | ●B | — | — | — | ● | — |
| PS2811-1 | ● | — | ● | ● | ●B | ●B | — | — | ● | ● |
| PS2811-4 | ● | — | ● | — | ●B | — | — | — | ● | — |
| PS2815-1 | ● | — | ● | ● | ●B | ●B | — | — | ● | ● |
| PS2815-4 | ● | — | ● | — | ●B | — | — | — | ● | — |
| PS2833-1 | ● | — | ● | — | ●B | — | — | — | ● | — |
| PS2833-4 | ● | — | ● | — | ●B | — | — | — | ● | — |
| PS2841-4A, -4B | ● | — | ● | — | — | — | — | — | — | — |
| PS2845-4A | ● | — | ● | — | — | — | — | — | — | — |
| PS2861B-1 | ● | — | ● | ● | ●R | ●R | ●R | ●R | ● | ● |
| PS2911-1 | ● | — | ● | — | — | — | ●S | — | ● | — |
| PS2913-1 | ● | — | ● | — | — | — | ●S | — | ● | — |
| PS2915-1 | ● | — | ● | — | — | — | ●S | — | ● | — |
| PS2933-1 | ● | — | ● | — | — | — | ●S | — | ● | — |
| PS8101 | ● | — | ● | — | ●B | — | — | — | ● | — |
| PS8302L, PS8302L2 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS8352AL2 | ● | ● | ● | — | ●R | — | — | — | ● | — |

SAFETY STANDARD APPROVAL LIST 2

1. ●: certified, R: reinforced insulation, S: supplementary insulation, B: basic insulation

2. A special ordering number is required for VDE-conformant products.

| Part Number | Safety Standards | | | | | | | | | |
|--|------------------------------------|--------|----------------------|-----------------------|---|-----------------------|----------------------|-----------------------|---------------------------------------|-----------------------|
| | UL | | | | CSA | | BSI | | VDE | |
| | UL1577 Single/Double Protection | | | | CAN/CSA C22.2 62368-1 IEC 62368-1 | | BS EN 62368-1 | | DIN EN 60747-5-5 DIN IEC 60747-5-5 | |
| | Single | Double | Assembly in JAPAN | Assembly in TAIWAN | Assembly in JAPAN | Assembly in TAIWAN | Assembly in JAPAN | Assembly in TAIWAN | Assembly in JAPAN | Assembly in TAIWAN |
| PS8501, PS8501L1 PS8501L2, PS8501L3 | ● | ● | ● | — | ●R | — | ●R | — | ● | — |
| PS8502, PS8502L1 PS8502L2, PS8502L3 | ● | ● | ● | — | ●R | — | ●R | — | ● | — |
| PS8551AL4 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS8802-1, -2 | ● | — | ● | — | ●B | — | — | — | ● | — |
| PS8902 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9001 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9009 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9013 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9031 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| RV1S9060A | ● | ● | ● | — | ●R | — | — | — | ● | — |
| RV1S9061A | ● | ● | ● | — | ●R | — | — | — | ● | — |
| RV1S9062A | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9113 | ● | — | ● | — | ●B | — | — | — | ● | — |
| PS9117A | ● | — | ● | — | ●B | — | — | — | ● | — |
| PS9122 | ● | — | ● | — | — | — | — | — | ● | — |
| PS9123 | ● | — | ● | — | ●B | — | — | — | ● | — |
| PS9124 | ● | — | ● | — | ●B | — | — | — | ● | — |
| PS9151 | ● | — | ● | — | — | — | — | — | ● | — |
| RV1S9160A | ● | ● | ● | — | ●B | — | — | — | ● | — |
| RV1S9161A | ● | ● | ● | — | ●B | — | — | — | ● | — |
| RV1S9162A | ● | ● | ● | — | ●B | — | — | — | ● | — |
| RV1S9207A | ● | ● | ● | — | ●R | — | — | — | ● | — |
| RV1S9209A | ● | ● | ● | — | ●R | — | — | — | ● | — |
| RV1S9213A | ● | ● | ● | — | ●R | — | — | — | ● | — |
| RV1S9231A | ● | ● | ● | — | ●R | — | — | — | ● | — |
| RV1S9260A | ● | ● | ● | — | ●R | — | — | — | ● | — |
| RV1S9261A | ● | ● | ● | — | ●R | — | — | — | ● | — |
| RV1S9262A | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9303L, PS9303L2 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9307AL, PS9307AL2 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9309L, PS9309L2 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9313L, PS9313L2 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9317L, PS9317L2 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9324L, PS9324L2 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9331L, PS9331L2 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9332L, PS9332L2 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9351L, PS9351L2 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9352AL2 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| RV1S9353A | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9402 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9506, PS9506L1 PS9506L2, PS9506L3 | ● | ● | ● | — | ●R | — | — | — | ● | — |
| PS9513, PS9513L1 PS9513L2, PS9513L3 | ● | ● | ● | — | ●R | — | ●R | — | ● | — |

SAFETY STANDARD APPROVAL LIST 3

Visit our website.



<https://www.renesas.com/products/interface-connectivity/optoelectronics/photocouplers-optocouplers-safety-standards-classification-chart-ul-csa-bsi-vde-approval>

| Part Number | Safety Standards | | | | | | | | | |
|--|------------------------------------|--------|----------------------|-----------------------|---|-----------------------|----------------------|-----------------------|--|-----------------------|
| | UL | | | | CSA | | BSI | | VDE | |
| | UL1577 Single/Double Protection | | | | CAN/CSA C22.2 62368-1 IEC 62368-1 | | BS EN 62368-1 | | DIN EN 60747-5-5 DIN EN IEC 60747-5-5 | |
| | Single | Double | Assembly in JAPAN | Assembly in TAIWAN | Assembly in JAPAN | Assembly in TAIWAN | Assembly in JAPAN | Assembly in TAIWAN | Assembly in JAPAN | Assembly in TAIWAN |
| PS9531, PS9531L1 PS9531L2, PS9531L3 | • | • | • | – | •R | – | – | – | • | – |
| PS9551AL4 | • | • | • | – | •R | – | – | – | • | – |
| PS9587, PS9587L1 PS9587L2, PS9587L3 | • | • | • | – | •R | – | •R | – | • | – |
| PS9817A-1, -2 | • | – | • | – | •B | – | – | – | • | – |
| PS9821-1, -2 | • | – | • | – | •B | – | – | – | • | – |
| PS9822-1, -2 | • | – | • | – | – | – | – | – | • | – |
| PS9851-1, -2 | • | – | • | – | – | – | – | – | • | – |
| PS9905 | • | • | • | – | •R | – | – | – | • | – |
| PS9924 | • | • | • | – | •R | – | – | – | • | – |
| RV1S9960A | • | • | • | – | •R | – | – | – | • | – |

RECOMMENDED LAND PATTERN

Unit : mm

| LS05 | DIP4 (L) | SDIP6 |
|-----------|-----------|------------|
| | | |
| LSDIP8 | DIP4 (L2) | SDIP6 (L2) |
| | | |
| S016 | DIP8 (L3) | SDIP8 (L) |
| | | |
| DIP8 (L4) | DIP8 (L2) | SDIP8 (L2) |
| | | |

Unit : mm

| S05 | SSOP4 | LSS05 |
|---|---|--|
| <p>Mechanical drawing of S05 package showing dimensions: 1.27, 0.8, 1.45, 6.25, 2.54.</p> | <p>Mechanical drawing of SSOP4 package showing dimensions: 0.8, 1.45, 6.25, 1.27.</p> | <p>Mechanical drawing of LSS05 package showing dimensions: 0.65, 0.35, 1.3, 9.5, 1.3, 0.4.</p> |
| S08 | SSOP16 | LSSOP |
| <p>Mechanical drawing of S08 package showing dimensions: 1.27, 0.8, 1.45, 5.25.</p> | <p>Mechanical drawing of SSOP16 package showing dimensions: 1.27, 0.8, 1.45, 6.25.</p> | <p>Mechanical drawing of LSSOP package showing dimensions: 0.4, 1.3, 9.5, 1.3.</p> |
| SOP | SSOP12 | |
| <p>Mechanical drawing of SOP package showing dimensions: 0.8, 1.45, 6.25, 2.54.</p> | <p>Mechanical drawing of SSOP12 package showing dimensions: 0.80, 0.5, 1.45, 6.25.</p> | |
| LSOP | Flat lead | |
| <p>Mechanical drawing of LSOP package showing dimensions: 0.8, 1.3, 9.5, 2.54.</p> | <p>Mechanical drawing of Flat lead package showing dimensions: 0.8, 0.6, 1.27, 0.35, 4.14, 1.3, 5.7, 24-R0.1.</p> | |

TAPING & REEL SPECIFICATIONS



Direction of Product Inserted in Tape

| LS05 | S05 | S08 | S016 |
|------------|--------------|--------------|-----------------|
| | | | |
| LSDIP | SDIP6 (L,L2) | SDIP8 (L,L2) | DIP8 (L2,L3,L4) |
| | | | |
| DIP (L,L2) | SOP | LSOP | Flat lead |
| | | | |
| SSOP4 | SSOP16 | SSOP12 | LSS05 / LSSOP |
| | | | |

| Reel Dimensions | | | | | |
|------------------------------------|------|----------------|-----------|-----------|------------|
| Symbol | Unit | Tape Width (W) | | | |
| | | 12 mm | 16 mm | 16 mm | 24 mm |
| A | mm | Ø330±2.0 | Ø330±2.0 | Ø330±2.0 | Ø330±2.0 |
| W1 | mm | 13.4±1.0 | 17.4±1.0 | 17.4±1.0 | 25.4±1.0 |
| W2 | mm | 17.4±1.0 | 21.4±1.0 | 21.4±1.0 | 29.4±1.0 |
| B | mm | Ø100±1.0 | Ø100±1.0 | Ø80±1.0 | Ø100±1.0 |
| C | mm | Ø13.0±0.2 | Ø13.0±0.2 | Ø13.0±0.2 | Ø13.0±0.2 |
| D | mm | Ø21.0±0.8 | Ø21.0±0.8 | Ø21.0±0.8 | Ø21.0±0.8 |
| E | mm | 2.0±0.5 | 2.0±0.5 | 2.0±0.5 | 2.0±0.5 |
| Package (IC output coupler) | | S05 | DIP8 (L3) | | DIP8 (L2) |
| | | S08 | DIP8 (L4) | | SDIP6 (L2) |
| | | | SDIP6 (L) | | SDIP8 (L2) |
| | | | SDIP8 (L) | | LSDIP8 |
| | | | LS05 | | SO16 |
| Package (Tr. output coupler) | | SOP | DIP4 (L) | | DIP4 (L2) |
| | | Flat leads | LSOP | | |
| | | | LSSOP | | |
| | | SSOP12 | SSOP4 | SSOP16 | |

| Tape Dimensions (IC Output Coupler) | | | | | | | | | | | | | | |
|-------------------------------------|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Symbol | Unit | S05 | S08 | DIP8 (L3) | DIP8 (L4) | SDIP6 (L) | SDIP8 (L) | LS05 | LSS05 | DIP8 (L2) | SDIP6 (L2) | SDIP8 (L2) | LSDIP8 | SO16 |
| A0 | mm | 3.9±0.1 | 6.4±0.1 | 10.3±0.1 | 9.95±0.1 | 5.08±0.1 | 6.35±0.1 | 4.3±0.1 | 2.85±0.1 | 10.4±0.1 | 5.08±0.1 | 6.35±0.1 | 7.2±0.1 | 10.9±0.1 |
| B0 | mm | 7.4±0.1 | 5.56±0.1 | 10.4±0.1 | 10.55±0.1 | 10.2±0.1 | 10.2±0.1 | 10.7±0.1 | 10.7±0.1 | 12.5±0.1 | 12.0±0.1 | 12.0±0.1 | 17.2±0.1 | 10.8±0.1 |
| K0 | mm | 3.0±0.1 | 3.6±0.1 | 4.75±0.1 | 4.2±0.1 | 4.05±0.1 | 4.05±0.1 | 2.3±0.1 | 2.1±0.1 | 4.1±0.1 | 4.05±0.1 | 4.05±0.1 | 4.05±0.1 | 3.8±0.1 |
| P1 | mm | 8.0±0.1 | 8.0±0.1 | 12.0±0.1 | 12.0±0.1 | 8.0±0.1 | 8.0±0.1 | 8.0±0.1 | 4.0±0.1 | 12.0±0.1 | 8.0±0.1 | 8.0±0.1 | 12.0±0.1 | 16.0±0.1 |
| D1 | mm | Ø1.55±0.1 | Ø1.7±0.1 | Ø1.55±0.1 | Ø1.55±0.1 | Ø1.55±0.1 | Ø1.55±0.1 | Ø1.55±0.1 | Ø1.55±0.1 | Ø2.05±0.05 | Ø2.05±0.1 | Ø2.05±0.1 | Ø2.0±0.2 | Ø1.55±0.1 |
| J | mm | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 |
| H | mm | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 |
| E | mm | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 |
| G | mm | 2.0±0.05 | 2.0±0.05 | 2.0±0.1 | 2.0±0.1 | 2.0±0.1 | 2.0±0.1 | 2.0±0.1 | 2.0±0.1 | 2.0±0.1 | 2.0±0.1 | 2.0±0.1 | 2.0±0.1 | 2.0±0.1 |
| F | mm | 5.5±0.1 | 5.5±0.1 | 7.5±0.1 | 7.5±0.1 | 7.5±0.1 | 7.5±0.1 | 7.5±0.1 | 7.5±0.1 | 11.5±0.1 | 11.5±0.1 | 11.5±0.1 | 11.5±0.1 | 11.5±0.1 |
| W | mm | 12.0±0.2 | 12.0±0.2 | 16.0±0.3 | 16.0±0.3 | 16.0±0.3 | 16.0±0.3 | 16.0±0.3 | 16.0±0.3 | 24.0±0.3 | 24.0±0.3 | 24.0±0.3 | 24.0±0.3 | 24.0±0.3 |
| t | mm | 0.3±0.05 | 0.3 | 0.35 | 0.3 | 0.35 | 0.35 | 0.3 | 0.3 | 0.3±0.05 | 0.35 | 0.35 | 0.35 | 0.4 |
| x | pcs | 2500 | 1500 | 1000 | 1000 | 2000 | 2000 | 3000 | 3500 | 1000 | 2000 | 2000 | 1000 | 850 |

| Tape Dimensions (Tr. Output Coupler) | | | | | | | | | | |
|--------------------------------------|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Symbol | Unit | SOP | Flat Leads | SSOP12 | DIP4 (L) | LSOP | LSSOP | SSOP4 | SSOP16 | DIP4 (L2) |
| A0 | mm | 4.4±0.1 | 2.9±0.1 | 6.0±0.1 | 5.3±0.1 | 4.3±0.1 | 2.85±0.1 | 2.85±0.1 | 8.3±0.1 | 5.3±0.1 |
| B0 | mm | 7.4±0.1 | 5.3±0.1 | 7.4±0.1 | 10.3±0.1 | 10.7±0.1 | 10.7±0.1 | 7.55±0.1 | 10.7±0.1 | 12.5±0.1 |
| K0 | mm | 2.4±0.1 | 2.4±0.1 | 2.85±0.1 | 4.0±0.1 | 2.3±0.1 | 2.1±0.1 | 2.3±0.1 | 2.3±0.1 | 4.05±0.1 |
| P1 | mm | 8.0±0.1 | 4.0±0.1 | 8.0±0.1 | 8.0±0.1 | 8.0±0.1 | 4.0±0.1 | 4.0±0.1 | 12.0±0.1 | 8.0±0.1 |
| D1 | mm | Ø1.55±0.1 | Ø1.55±0.05 | Ø1.55±0.1 | Ø1.55±0.1 | Ø1.55±0.1 | Ø1.55±0.1 | Ø1.55±0.1 | Ø1.55±0.1 | Ø2.05±0.1 |
| J | mm | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 | Ø1.5+0.1/-0 |
| H | mm | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 | 4.0±0.1 |
| E | mm | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 |
| G | mm | 2.0±0.05 | 2.0±0.05 | 2.0±0.05 | 2.0±0.1 | 2.0±0.1 | 2.0±0.1 | 2.0±0.1 | 2.0±0.1 | 2.0±0.1 |
| F | mm | 5.5±0.05 | 5.5±0.05 | 5.5±0.1 | 7.5±0.1 | 7.5±0.1 | 7.5±0.1 | 7.5±0.1 | 7.5±0.1 | 11.5±0.1 |
| W | mm | 12.0±0.2 | 12.0±0.2 | 12.0±0.2 | 16.0±0.3 | 16.0±0.3 | 16.0±0.3 | 16.0±0.3 | 16.0±0.3 | 24.0±0.3 |
| t | mm | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.25 | 0.4 |
| x | pcs | 3500 | 3500 | 2500 | 2000 | 3000 | 3500 | 3500 | 2500 | 1000 |

LABEL PRINT EXAMPLES

| OUTER PACKING BOX | REAL |
|---|---|
|  <p style="text-align: center;">LABEL</p> |  <p style="text-align: center;">LABEL</p> |
| LABEL on OUTER PACKING BOX | LABEL on TAPING REEL |
| <p>Assembly in JAPAN</p> <p style="text-align: right;">Marking of Safety Standards</p>  <p>Pb-Free T. RENESAS</p> <p>D/N PS2861B1YVF3A/0118B/R2 MC:JPJP SPN PS2861B-1Y-V-F3-A 002G116NR2 MADE IN JAPAN CTR rank</p> <hr/> <p>PN PS2861B-1-V-F3 2014/01/10 PID 124446105V-001 QTY 7000 Quantity (ex. 2reels) PCD 0000184865 T/C 1402 123QA4567 S.LOT YL2209K801</p>  | <p>Assembly in JAPAN</p>  <p>(2P)P/N:PS2861B-1-V-F3 bsi. Pb-Free T. RENESAS MC:JPJP L-179V2 (P)INTP:PS2861B-1Y-V-F3-A (S)BOX ID:L2K9005FB</p> <p>(1P)INTS:PS2861B-1Y-V-F3-A ZIS/NO:NR2 (Q)QTY:3500 CTR rank Quantity</p> <p>(1T)LOT:123QA4567</p>  <p style="text-align: right;">Marking of Safety Standards</p> |
| <p>Assembly in TAIWAN</p> <p style="text-align: right;">Marking of Safety Standards</p>  <p>Pb-Free T. RENESAS</p> <p>D/N PS2861B1YVF3A/0118B/R2 MC:JPTWTW SPN PS2861B-1Y-V-F3-A 002G116NR2 ASSEMBLED IN TAIWAN FROM WAFERS OF JAPAN CTR rank</p> <hr/> <p>PN PS2861B-1-V-F3 2014/01/10 PID 124446105V-001 QTY 7000 Quantity (ex. 2reels) PCD 0000184865 T/C 1402 123WB4567 S.LOT YL2209K801</p>  | <p>Assembly in TAIWAN</p>  <p>(2P)P/N:PS2861B-1-V-F3 bsi. Pb-Free T. RENESAS MC:JPJP L-179V2 (P)INTP:PS2861B-1Y-V-F3-A (S)BOX ID:L2K9005FB</p> <p>(1P)INTS:PS2861B-1Y-V-F3-A ZIS/NO:NY2 (Q)QTY:3500 CTR rank Quantity</p> <p>(1T)LOT:123QA4567</p>  <p style="text-align: right;">Marking of Safety Standards</p> |

PART NUMBER GUIDE

Part number guide = P/N starting with "RV1S" =



*) P/N with "Q" at "Version" indicates products for automotive use. In this case, there are digits that do not follow the definition on this page.

Part number guide = P/N starting with "PS" =



Notice

- Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation or any other use of the circuits, software, and information in the design of your product or system. Renesas Electronics disclaims any and all liability for any losses and damages incurred by you or third parties arising from the use of these circuits, software, or information.
 - Renesas Electronics hereby expressly disclaims any warranties against and liability for infringement or any other claims involving patents, copyrights, or other intellectual property rights of third parties, by or arising from the use of Renesas Electronics products or technical information described in this document, including but not limited to, the product data, drawings, charts, programs, algorithms, and application examples.
 - No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
 - You shall be responsible for determining what licenses are required from any third parties, and obtaining such licenses for the lawful import, export, manufacture, sales, utilization, distribution or other disposal of any products incorporating Renesas Electronics products, if required.
 - You shall not alter, modify, copy, or reverse engineer any Renesas Electronics product, whether in whole or in part. Renesas Electronics disclaims any and all liability for any losses or damages incurred by you or third parties arising from such alteration, modification, copying or reverse engineering.
 - Renesas Electronics products are classified according to the following two quality grades: "Standard" and "High Quality". The intended applications for each Renesas Electronics product depends on the product's quality grade, as indicated below.
 - "Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; industrial robots; etc.
 - "High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control (traffic lights); large-scale communication equipment; key financial terminal systems; safety control equipment; etc.
 Unless expressly designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not intended or authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems; surgical implantations; etc.), or may cause serious property damage (space system; undersea repeaters; nuclear power control systems; aircraft control systems; key plant systems; military equipment; etc.). Renesas Electronics disclaims any and all liability for any damages or losses incurred by you or any third parties arising from the use of any Renesas Electronics product that is inconsistent with any Renesas Electronics data sheet, user's manual or other Renesas Electronics document.
 - No semiconductor product is absolutely secure. Notwithstanding any security measures or features that may be implemented in Renesas Electronics hardware or software products, Renesas Electronics shall have absolutely no liability arising out of any vulnerability or security breach, including but not limited to any unauthorized access to or use of a Renesas Electronics product or a system that uses a Renesas Electronics product. RENESAS ELECTRONICS DOES NOT WARRANT OR GUARANTEE THAT RENESAS ELECTRONICS PRODUCTS, OR ANY SYSTEMS CREATED USING RENESAS ELECTRONICS PRODUCTS WILL BE INVULNERABLE OR FREE FROM CORRUPTION, ATTACK, VIRUSES, INTERFERENCE, HACKING, DATA LOSS OR THEFT, OR OTHER SECURITY INTRUSION ("Vulnerability Issues"). RENESAS ELECTRONICS DISCLAIMS ANY AND ALL RESPONSIBILITY OR LIABILITY ARISING FROM OR RELATED TO ANY VULNERABILITY ISSUES. FURTHERMORE, TO THE EXTENT PERMITTED BY APPLICABLE LAW, RENESAS ELECTRONICS DISCLAIMS ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THIS DOCUMENT AND ANY RELATED OR ACCOMPANYING SOFTWARE OR HARDWARE, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE.
 - When using Renesas Electronics products, refer to the latest product information (data sheets, user's manuals, application notes, "General Notes for Handling and Using Semiconductor Devices" in the reliability handbook, etc.), and ensure that usage conditions are within the ranges specified by Renesas Electronics with respect to maximum ratings, operating power supply voltage range, heat dissipation characteristics, installation, etc. Renesas Electronics disclaims any and all liability for any malfunctions, failure or accident arising out of the use of Renesas Electronics products outside of such specified ranges.
 - Although Renesas Electronics endeavors to improve the quality and reliability of Renesas Electronics products, semiconductor products have specific characteristics, such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Unless designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not subject to radiation resistance design. You are responsible for implementing safety measures to guard against the possibility of bodily injury, injury or damage caused by fire, and/or danger to the public in the event of a failure or malfunction of Renesas Electronics products, such as safety design for hardware and software, including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult and impractical, you are responsible for evaluating the safety of the final products or systems manufactured by you.
 - Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. You are responsible for carefully and sufficiently investigating applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive, and using Renesas Electronics products in compliance with all these applicable laws and regulations. Renesas Electronics disclaims any and all liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
 - Renesas Electronics products and technologies shall not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations. You shall comply with any applicable export control laws and regulations promulgated and administered by the governments of any countries asserting jurisdiction over the parties or transactions.
 - It is the responsibility of the buyer or distributor of Renesas Electronics products, or any other party who distributes, disposes of, or otherwise sells or transfers the product to a third party, to notify such third party in advance of the contents and conditions set forth in this document.
 - This document shall not be reprinted, reproduced or duplicated in any form, in whole or in part, without prior written consent of Renesas Electronics.
 - Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products.
- (Note 1) "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its directly or indirectly controlled subsidiaries.
- (Note 2) "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics.

(Rev.5.0-1 October 2020)

SALES OFFICES

Refer to "<http://www.renesas.com/>" for the latest and detailed information.

Renesas Electronics Corporation

TOYOSU FORESIA, 3-2-24 Toyosu, Koto-ku, Tokyo 135-0061, Japan

Renesas Electronics America Inc. Milpitas Campus

1001 Murphy Ranch Road, Milpitas, CA 95035, U.S.A.
Tel: +1-408-432-8888, Fax: +1-408-434-5351

Renesas Electronics America Inc. San Jose Campus

6024 Silver Creek Valley Road, San Jose, CA 95138, USA
Tel: +1-408-284-8200, Fax: +1-408-284-2775

Renesas Electronics Canada Limited

603 March Road, Ottawa, ON K2K 2M5, Canada
Tel: +1-613-595-6300, Fax: +1-613-595-6329

Renesas Electronics Europe GmbH

Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-6503-0, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.

Room 101-T01, Floor 1, Building 7, Yard No. 7, 8th Street, Shangdi, Haidian District, Beijing 100085, China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.

Unit 301, Tower A, Central Towers, 555 Langao Road, Putuo District, Shanghai 200333, China
Tel: +86-21-2226-0888, Fax: +86-21-2226-0999

Renesas Electronics Hong Kong Limited

Unit 3501-03, 35/F, One Kowloon, 1 Wang Yuen Street, Kowloon Bay, Hong Kong
Tel: +852-2265-6688, Fax: +852-2886-9022

Renesas Electronics Taiwan Co., Ltd.

13F, No. 363, Fu Shing North Road, Taipei 10543, Taiwan
Tel: +886-2-8175-9600, Fax: +886-2-8175-9670

Renesas Electronics Singapore Pte. Ltd.

80 Bendemeer Road, #06-02 Singapore 339949
Tel: +65-6213-0200, Fax: +65-6213-0300

Renesas Electronics Malaysia Sdn.Bhd.

Unit No 3A-1 Level 3A Tower 8 UOA Business Park, No 1 Jalan Pengaturcara U1/51A, Seksyen U1, 40150 Shah Alam, Selangor, Malaysia
Tel: +60-3-5022-1288, Fax: +60-3-5022-1290

Renesas Electronics India Pvt. Ltd.



Bagmane Tech Park, Municipal No. 66/1-4, Lakeview Block, Block B, Ground Floor, Krishnappa Garden, CV Raman Nagar, Bengaluru, Karnataka 560 093, India
Tel: +91-80-67208700

Renesas Electronics Korea Co., Ltd.

7F, Hae-seong 2nd building, 508, Teheran-ro, Gangnam-gu, Seoul, Korea 06178
Tel: +82-2-558-3737, Fax: +82-2-558-5338

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View PS9821-2-A on WIN SOURCE](#)
-  [CEL Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management