

PHOTOCOUPPLERS SELECTION GUIDE



NEW PRODUCT DIGEST

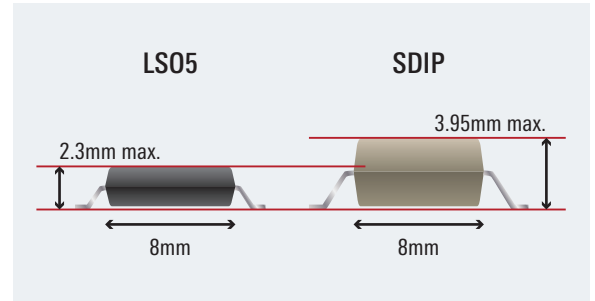
New Package Types

LS05

New mainstream package reduces mounting area

(Narrow & thin package with 8mm creepage distance for using high ambient temperature)

- Features
 - Small footprint : 25% smaller than SDIP
 - Low height : 2.3mm max.
 - High operational temperature : $T_a=125^{\circ}\text{C}$
 - High grade resin : CTI=400
- Contribution
 - To reduce mounting area
 - To get a layout flexibility
- Line up
 - IGBT/MOS FET driver : PS9031
 - IPM driver
 - Buffer logic : PS9009
 - Inverter logic : PS9013
 - 10Mbps digital output : PS9001

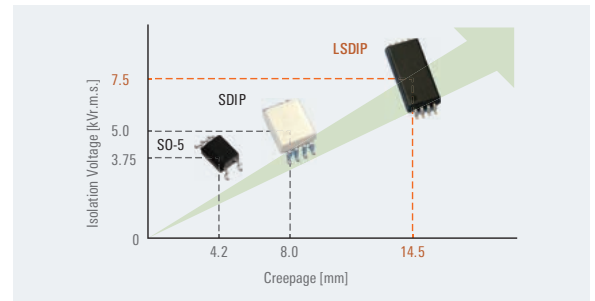


LSDIP

Advanced long creepage package isolates high voltage systems easily

(Long creepage distance of 14.5mm)

- Features
 - Long creepage : 14.5mm
 - High isolation voltage : 7.5kV r.m.s.
 - High transient over voltage tolerant : 12kV
- Contribution
 - To reduce PCB area for isolation
 - Simplification of feedback loop in power supply
- Line up
 - IGBT/MOSFET driver PS9905
 - 10Mbps digital output PS9924
 - 1Mbps analog output PS8902



High Function Products

IGBT driver with protection function : PS9402

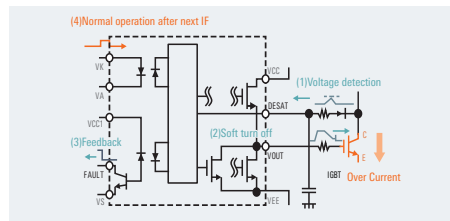
The included protection function simplifies circuit design

(IGBT gate driver with protection function)

- Features
 - PS9402 has 2 functions for IGBT protection
 - DESAT (Detecting desaturation)
 - Active miller clamp
- Contribution
 - To reduce BOM cost by reducing devices for protection

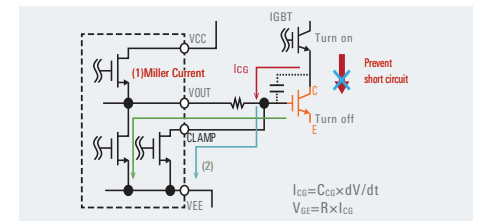
DESAT : Prevent from over current destruction caused by load-short-circuit

- (1) Detection of collector voltage rising
- (2) Turn off IGBT gate (V_{out}) softly
- (3) Output a fault signal (Feedback)
- (4) Return to normal operation after next IF



Active miller clamp : Prevent from unintentional turn on caused by discharge in parasitic capacitance

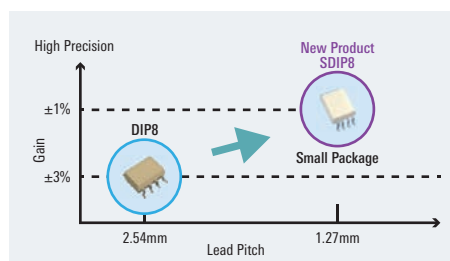
To make the lower-arm IGBT always off by sinking discharge current during the upper-arm turning on



Isolation Amplifier PS8352A Delta-Sigma Modulator PS9352A

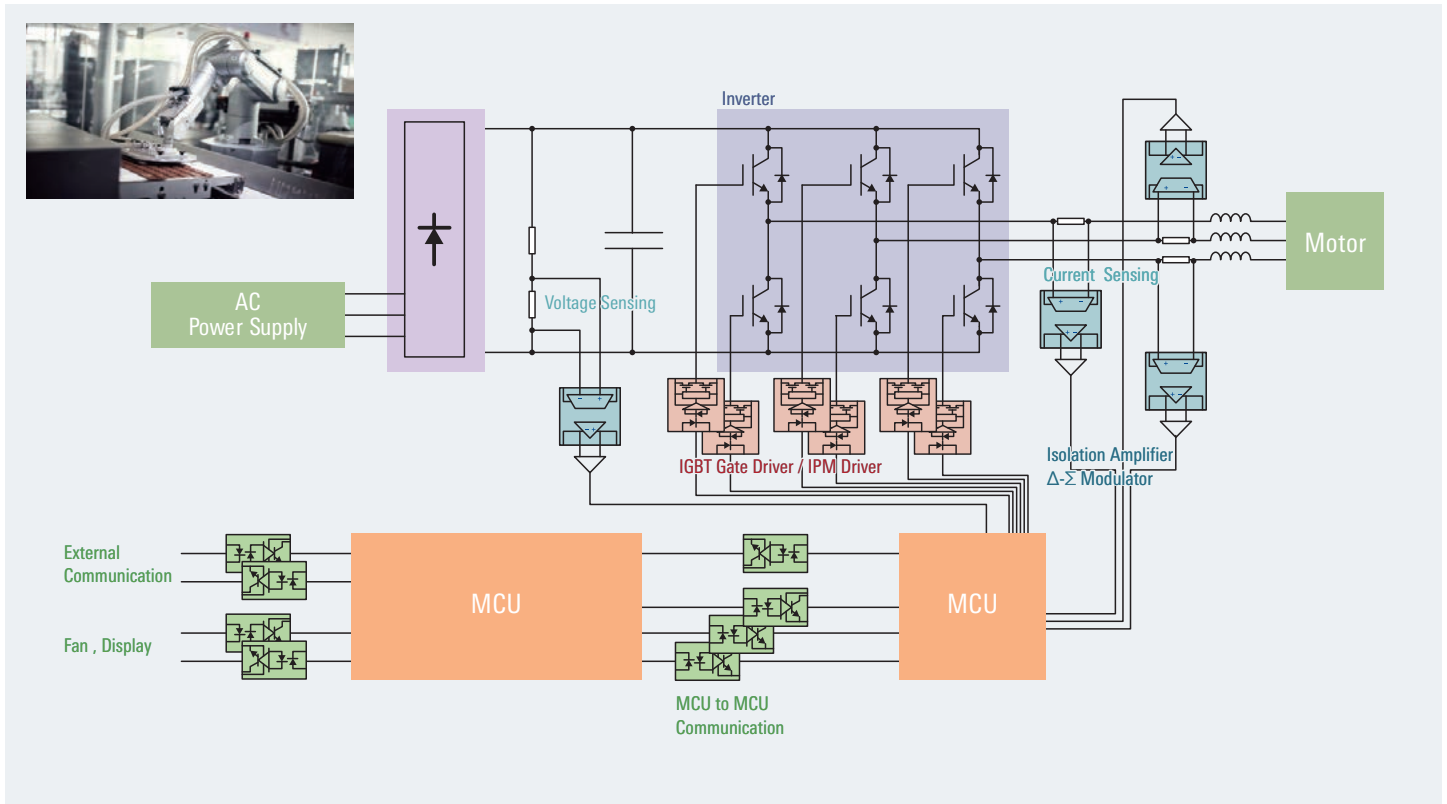
High precision isolation amplifier and delta-sigma modulator for motor drive

- Features
 - High precision : Gain $\pm 1\%$
 - High input resistance : 450k Ω
 - Small footprint : 44% smaller than DIP8
- Contribution
 - High-precision current/voltage feedback to reduce mounting area

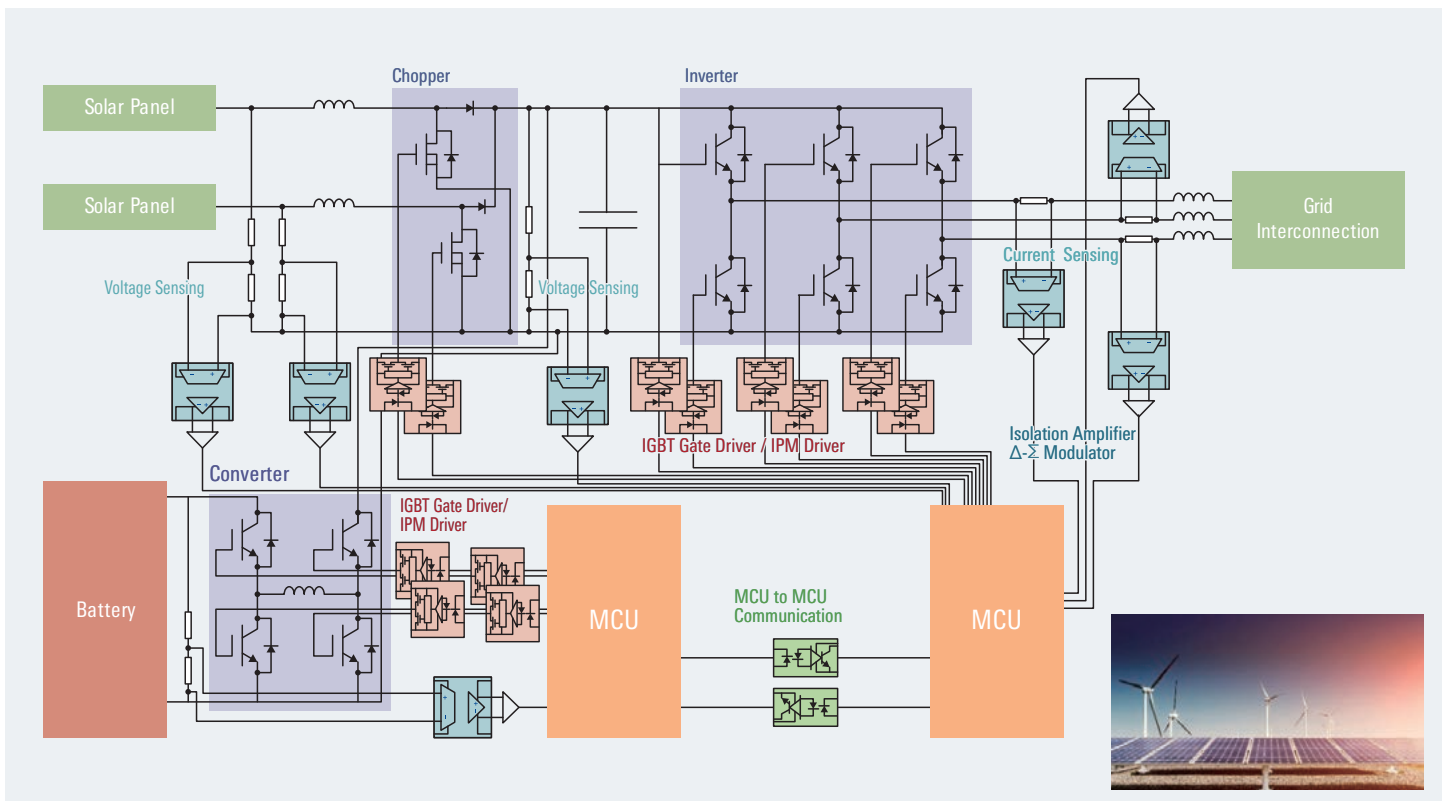


USAGE EXAMPLES IN TYPICAL APPLICATIONS

General-Purpose Inverters And AC Servos



Solar Power Conditioner And Battery System



SUITABLE PRODUCT FOR EACH APPLICATIONS

Application Field	Application Name	Motor Drive		Communication			Transistor Output
		IGBT drive	IPM drive	Current/ Voltage monitor	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

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IC Output

 Upper : Package Name
 Lower : Creepage

	Function	Output	Vcc/Vdd	DIP8 7/8mm	SDIP6/8 7/8mm	LSDIP8 14.5mm	LS05 8mm	S05 4.2mm	S016 8mm
Motor Drive	IGBT Gate Driver	Digital	35V, $\geq 2.0A$	PS9531	PS9331	PS9905	PS9031		
			35V, 0.6A	PS9506	PS9307A				
			with Protection Function		PS9332				PS9402
Current /Voltage Sensing	IPM Driver	Digital	>20V	PS9513	PS9313 PS9303 PS9309		PS9013 PS9009	PS9113	
	Isolation Amplifier	Analog	5V	PS8551A	PS8352A				S08 4mm
High Speed Communication	$\Delta-\Sigma$ Modulator	Digital	5V	PS9551A	PS9352A				
	15 Mbps	CMOS	5V		PS9351			PS9151	PS9851-1 PS9851-2
		Totem Pole	5V					PS9123	
	10 Mbps	Open Collector	5V	PS9587	PS9317		PS9001	PS9117A	PS9817A-1 PS9817A-2
			3.3V/5V		PS9324	PS9924		PS9124	PS9821-1 PS9821-2
	1 Mbps	Digital	3.3V/5V					PS9122	PS9822-1 PS9822-2
		Analog	35V	PS8501 PS8502	PS8302	PS8902		PS8101	

Tr. Output

 Upper : Package Name
 Lower : Creepage

Input	Output	Function	DIP4 7/8mm	LSOP 8mm	SOP 5mm	SSOP 4.5/5mm	SSOP Common-lead 4mm	Flat-lead 4mm
DC	Single	Standard			PS2701A-1	PS2801C-1 PS2801C-4		
		High operation temperature 110, 115°C	PS2561D-1 PS2561F-1	PS2381-1	PS2761B-1	PS2861B-1		
		High breakdown Voltage 120V			PS2703-1			
		Low input current			PS2711-1	PS2811-1 PS2811-4	PS2841-4A PS2841-4B	PS2911-1 PS2913-1
		High speed (20kbps)	PS2514-1					
	Darlington	Standard	PS2562-1		PS2702-1	PS2802-1 PS2802-4		
AC	Single	High breakdown Voltage (350V)	PS2533-1 PS2535-1		PS2733-1	PS2833-1 PS2833-4		
		standard	PS2565-1		PS2705A-1	PS2805C-1 PS2805C-4		
	Darlington	Low current input			PS2715-1	PS2815-1 PS2815-4	PS2845-4A	PS2915-1
		Standard	PS2506-1		PS2706-1			

SELECTION GUIDE



<https://www.renesas.com/us/en/products/optoelectronics.html>

Product Category	Part Number	Peak Output Current [A]	Total Output Supply Voltage [V]	Package		Isolation Voltage [Vr.m.s.]	Ta Max	Electrical Characteristics					Protect Function		
								DC	SW				Protection		
				IFLH Max [mA]	tpHL,LH Max [ns]				PWD Max [ns]	PDD [ns]	CMR Min [kV / us]	UVLO	Clamp	Desat	
IGBT Gate Driver	PS9307A	0.6	10 to 30	SDIP6	L:7 L2:8	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	LSO5	8	5000	125	4.0	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	14.5	7500	110	6.0	150	75	-100 to 100	25	○	—	—
	PS9332	2.0	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	○	○	○

[illegible]



Product Category	Part Number	Output	Package		Absolute Maximum Ratings		Electrical Characteristics						
			Code	Outer Creepage [mm]	Isolation Voltage [Vr.m.s]	Ta Max [°C]	Input Voltage Linear Region [mV]	Gain Typ. [-]	Gain Deviation Max [%]	NL Typ [%]	VDD2 [V]	CMR Min [kV/us]	fc Typ [kHz]
Isolation Amplifier	PS8551A	Analog (differential)	DIP8	8	5000	105	-200 to 200	8	1	0.014	4.5 to 5.5	10	100
	PS8352A		SDIP8	8	5000	110	-200 to 200	8	1	0.014	4.5 to 5.5	10	100

Product Category	Part Number	Output	Package		Absolute Maximum Ratings		Electrical Characteristics						
			Code	Outer Creepage [mm]	Isolation Voltage [Vr.m.s]	Ta Max [°C]	Input Voltage Linear Region [mV]	Gain Deviation Max [%]	INL Max [LSB]	VDD2 [V]	ENOB Typ [bits]	CMR Min [kV/us]	fCLK Typ [MHz]
Delta-Sigma Modulator	PS9551A	Digital	DIP8	8	5000	105	-200 to 200	1	3	4.5 to 5.5	12	15	10
	PS9352A		SDIP8	8	5000	110	-200 to 200	1	3	4.5 to 5.5	12	15	10

Product Category	Part Number	Function	Output	Absolute Maximum Ratings	Package		Isolation Voltage [Vr.m.s]	Ta Max. [°C]	Electrical Characteristics						
									DC				CTR IF 16mA Vcc 4.5V Vo 0.4V [%]	AC	
				Supply Voltage [V]	Code	Outer Creepage [mm]	IOH @Vcc30V Max. [uA]	VOL Max. [V]	ICCL Typ. [uA]	ICCH Max. [uA]	tpHL / LH Max [ns]	CMR Min. [kV / us]			
High Speed Communication (Analog output)	PS8101	1Mbps	Open Collector	35	S05	4.2	3750	100	100	0.4	50	2	15 to 35	800 / 1200	15
	PS8302				SDIP6	L:7 L2:8	5000	110	100	0.4	150	1	15~	800 / 800	15
	PS8501				DIP8	- / L3:7 L1 / L2:8	5000	100	100	0.4	150	1	15~	800 / 800	—
	PS8502								100	0.4	150	1	15~	800 / 800	15
	PS8902				LSDIP4	14.5	7500	110	100	0.4	50	2	15 to 35	800 / 1200	15

Product Category	Part Number	Function	Output	Supply Voltage [V]	Package		Isolation Voltage [Vr.m.s]	Ta Max [°C]	DC			AC				
					Code	Outer Creepage [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 / us]
High Speed Communication (Digital output)	PS9122	1Mbps	Open Collector	N 2.7 to 3.6 L 4.5 to 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	10Mbps	Open Collector	2.7 to 3.6 & 4.5 to 5.5	S05	4.2	3750	110	0.6	—	10 / 7	3.0	100 / 100	35	40	10
	PS9324				SDIP6	L:7 L2:8	5000	110	0.6	—	10 / 7	3.0	100 / 100	35	40	15
	PS9924				LSDIP8	14.5	7500	110	0.6	—	10 / 7	5.0	100 / 100	35	40	15
	PS9821-1 / -2			2.7 to 3.6	S08	4.0	2500	85	0.6	—	10 / 7	5.0	100 / 100	35	40	15
	PS9587			4.5 to 5.5	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	20
	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	15Mbps	Totem Pole	4.5 to 5.5	S05	4.2	3750	100	0.6	2.4	10 / 7	5.0	60 / 60	30	—	15
	PS9151		CMOS	4.5 to 5.5	S05	4.2	3750	100	0.1	4.0	5 / 5	5.0	60 / 60	30	40	15
	PS9851				S08	4.0	2500	100	0.1	4.0	5 / 5	6.0	60 / 60	30	40	10
	PS9351				SDIP6	L:7 L2:8	5000	100	0.1	4.0	5 / 5	5.0	60 / 60	30	40	15

PHOTOCOUPLER PRODUCTS

SELECTION GUIDE



<https://www.renesas.com/us/en/products/optoelectronics.html>

Product Category	Part Number	Output	Package		Absolute Maximum Ratings				Electrical Characteristics				
			Code	Outer Creepage [mm]	VCEO Max[V]	IC Max [mA]	Isolation Voltage [Vr.m.s]	Ta Max [°C]	DC	SW			
									CTR [%]	tr Typ. [us]	tf Typ [us]	ton Typ. [us]	toff Typ. [us]
Transistor Output (DC Input)	PS2561D-1	Single	DIP4	-/L:7 L1/L2:8	80	50	5000	110	50 to 400	3	5	—	—
	PS2561F-1			7	80	50	5000	110	300 to 600	5	7	—	—
	PS2514-1			7	40	20	5000	100	50 to 200	—	—	15	15
	PS2381-1		LSOP4	8	80	50	5000	115	50 to 400	4	5	—	—
	PS2701A-1		SOP4	5	70	30	3750	100	50 to 300	5	7	8	10
	PS2761B-1			5	70	50	3750	110	50 to 400	4	5	8	5
	PS2703-1			5	120	30	3750	100	50 to 400	10	10	13	11
	PS2711-1		SSOP4	5	40	40	3750	100	100 to 400	4	5	—	—
	PS2801C-1			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			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
	PS2841-4A		SSOP Common lead	4	70	20	1500	100	100 to 400	—	—	20	110
	PS2841-4B			4	70	20	1500	100	100 to 400	—	—	20	110
	PS2911-1		Flat lead	4	40	40	2500	100	100 to 400	5	10	40	120
	PS2913-1			4	120	30	2500	100	50 to 200	10	10	80	50

Product Category	Part Number	Output	Package		Absolute Maximum Ratings		Isolation Voltage [Vr.m.s]	Ta Max [°C]	Electrical Characteristics						
									DC			SW			
			Code	Outer Creepage [mm]	VCEO [V]	IC [mA/ch]			CTR min. [%]	CTR max. [%]	VCE SAT [V]	tr Typ [us]	tf Typ [us]	ton Typ [us]	toff Typ [us]
Transistor Output (DC Input)	PS2802-1	Darlington	SSOP4	4.5	40	90	2500	100	200	—	1.0	200	200	—	—
	PS2802-4		SSOP16	4.5		100	2500	100	200	—	1.0	200	200	—	—
	PS2562-1		DIP4	7		200	5000	100	200	—	1.0	100	100	—	—
	PS2702-1		SOP4	5		200	3750	100	200	—	1.0	70	60	90	60
	PS2833-1		SSOP4	4.5	350	60	2500	100	400	4500	1.0	20	5	—	—
	PS2833-4		SSOP16	4.5		60	2500	100	400	4500	1.0	20	5	—	—
	PS2535-1		DIP4	7		120	5000	100	400	5500	1.0	18	5	—	—
	PS2533-1			7		150	5000	100	1500	6500	1.0	100	100	—	—
	PS2733-1		SOP4	5		150	2500	100	1500	—	1.0	100	100	—	—

Product Category	Part Number	Output	Package		Absolute Maximum Ratings				Electrical Characteristics				
			Code	Outer Creepage [mm]	VCEO Max [V]	IC Max [mA]	Isolation Voltage [Vr.m.s]	Ta Max [°C]	DC	SW			
									CTR [%]	tr Typ [us]	tf Typ [us]	ton Typ [us]	toff Typ [us]
Transistor Output (DC 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			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
	PS2845-4A		SSOP Common lead	4	70	20	1500	100	100 to 400	—	—	20	110
	PS2915-1		Flat lead	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	—	—

CTR RANK CODE AND SPECIFICATIONS

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<https://www.renesas.com/us/en/products/optoelectronics/photocouplers-optocouplers/ctr-rank.html>

Part Number	Rank Code	IF [mA]	MIN. [%]	MAX. [%]
PS2381	W	5	130	260
	L	5	100	300
	M	5	50	150
	N	5	50	400
PS2561D	L	5	200	400
	W	5	130	260
	Q	5	100	200
	H	5	80	160
	N	5	50	400
PS2761B	K	5	200	400
	L	5	100	300
	M	5	50	150
	N	5	50	400
PS2861B	L	5	100	300
	M	5	50	150
	N	5	50	300
PS2561F	K	5	300	600
PS2501-4	N	5	80	600
PS2513	N	5	50	200
PS2514	N	5	50	200
PS2701A	P	5	150	300
	L	5	100	300
	M	5	50	150
	N	5	50	300
PS2703	K	5	200	400
	L	5	100	300
	M	5	50	150
	N	5	50	400
PS2801C	P	5	150	300
	L	5	100	300
	M	5	100	400
	N	5	50	400
PS2801C-4	M	5	100	400
	N	5	50	400

Part Number	Rank Code	IF [mA]	MIN. [%]	MAX. [%]
PS2711	K	1	200	400
	L	1	150	300
	M	1	100	200
	N	1	100	400
PS2811	K	1	200	400
	L	1	150	300
	M	1	100	200
	N	1	100	400
PS2811-4	N	1	100	400
PS2841-4A	N	1	100	400
PS2841-4B	N	1	100	400
PS2911	K	1	200	400
	L	1	150	300
	M	1	100	200
	N	1	100	400
PS2913	K	1	100	200
	L	1	75	150
	M	1	50	100
	N	1	50	200

Part Number	Rank Code	IF [mA]	MIN. [%]	MAX. [%]
PS2562	K	1	2000	—
	L	1	700	3400
	M	1	200	1000
PS2702	K	1	2000	—
	L	1	700	3400
	M	1	200	1000
	N	1	200	—
PS2802	K	1	2000	—
	L	1	700	3400
	M	1	200	1000
	N	1	200	—
PS2802-4	N	1	200	—
PS2533	N	1	1500	6500
PS2535	L	1	1500	5500
	N	1	400	5500
PS2733	N	1	1500	—
PS2833	N	1	400	4500
PS2833-4	N	1	400	4500

SAFETY STANDARD APPROVAL LIST

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	
	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
PS2381-1	●	●	●	—	●R	—	—	—	●	—
PS2501-4,PS2501L-4	●	●	●	●	—	—	—	—	—	—
PS2501A-1,PS2501AL-1	●	●	●	●	—	—	—	—	—	—
PS2502-1,-4 PS2502L-1,-4	●	●	●	●	—	—	—	—	—	—
PS2503-1,PS2503L-1	●	—	●	—	●B / R	—	—	—	—	—
PS2505-1,-4 PS2505L-1,-4	●	●	●	●	—	—	—	—	—	—
PS2506-1,PS2506L-1	●	●	●	—	—	—	—	—	—	—
PS2513-1,PS2513L-1	●	●	●	—	—	—	—	—	●	—
PS2514-1,PS2514L-1	●	●	●	●	●B / R	●B / R	—	—	●	●
PS2521-1,PS2521L-1	●	●	●	—	●R	●R	—	—	—	—
PS2525-1,PS2525L-1	●	●	●	—	●R	●R	—	—	—	—
PS2533-1,PS2533L-1	●	●	●	—	●R	—	●R	—	●	—
PS2535-1,PS2535L-1	●	●	●	—	—	—	●R	—	●	—
PS2561-1,PS2561L-1 PS2561L1-1,PS2561L2-1	●	●	●	●	●R	●R	●R	●R	●	●
PS2561A-1,PS2561AL-1 PS2561AL1-1,PS2561AL2-1	●	●	●	●	●R	●R	●R	●R	●	●
PS2561B-1,PS2561BL-1 PS2561BL1-1,PS2561BL2-1	●	●	●	●	●R	●R	●R	●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	●	●
PS2571-1,PS2571L1-1	●	●	●	●	●R	—	●R	—	●	—
PS2581L1,PS2581L2	●	●	●	●	●R	●R	●R	●R	●	●
PS2581AL1,PS2581AL2	●	●	●	●	●R	●R	●R	●R	●	●
PS2701-1	●	—	●	●	●B / S	—	●B / S	●B / S	●	●
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	●	●
PS2705-1	●	—	●	●	●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	●	●
PS2801-1,-4	●	—	●	●	●B	●B	●B / S	●B / S	●	●
PS2801A-1,-4	●	—	●	●	●B	—	—	—	●	●
PS2801C-1	●	—	●	●	●B	●B	●B / S	●B / S	●	●
PS2801C-4	●	—	●	—	●B	—	—	—	●	—
PS2802-1,-4	●	—	●	—	●B	—	●B / S	—	●	—
PS2805-1,-4	●	—	●	●	●B	●B	●B / S	●B / S	●	●
PS2805A-1,-4	●	—	●	—	●B	—	—	—	●	—
PS2805C-1	●	—	●	●	●B	●B	●B / S	●B / S	●	●
PS2805C-4	●	—	●	—	●B	—	—	—	●	—
PS2806-1,-4	●	—	●	—	●B	—	●B / S	—	●	—
PS2811-1	●	—	●	●	●B	●B	—	—	●	●
PS2811-4	●	—	●	—	●B	—	—	—	●	—
PS2815-1	●	—	●	●	●B	●B	—	—	●	●
PS2815-4	●	—	●	—	●B	—	—	—	●	—
PS2833-4	●	—	●	—	●B	—	—	—	—	—
PS2841-4A,-4B	●	—	●	—	—	—	—	—	—	—
PS2845-4A	●	—	●	—	—	—	—	—	—	—
PS2861B-1	●	—	●	●	●R	●R	●R	●R	●	●
PS2911-1	●	—	●	—	—	—	●S	—	●	—
PS2913-1	●	—	●	—	—	—	●S	—	●	—
PS2915-1	●	—	●	—	—	—	●S	—	●	—


<https://www.renesas.com/us/en/products/optoelectronics/photocouplers-optocouplers/safety-p1.html>

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	
	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
PS2933-1	•	—	•	—	—	—	•S	—	•	—
PS8101	•	—	•	—	•B	—	—	—	•	—
PS8302L,PS8302L2	•	•	•	—	•R	—	—	—	•	—
PS8352AL2	•	•	•	—	•R	—	—	—	•	—
PS8501,PS8501L1 PS8501L2,PS8501L3	•	•	•	—	•R	—	•R	—	•	—
PS8502,PS8502L1 PS8502L2,PS8502L3	•	•	•	—	•R	—	•R	—	•	—
PS8551L4	•	•	•	—	•R	—	•R	—	•	—
PS8551AL4	•	•	•	—	•R	—	—	—	•	—
PS8802-1,-2	•	—	•	—	•B	—	—	—	•	—
PS8821-1,-2	•	—	•	—	—	—	—	—	—	—
PS8902	•	•	•	—	•R	—	—	—	•	—
PS9001	•	•	•	—	•R	—	—	—	•	—
PS9009	•	•	•	—	•R	—	—	—	•	—
PS9013	•	•	•	—	•R	—	—	—	•	—
PS9031	•	•	•	—	•R	—	—	—	•	—
PS9113	•	—	•	—	•B	—	—	—	•	—
PS9117A	•	—	•	—	•B	—	—	—	•	—
PS9121	•	—	•	—	•B	—	—	—	•	—
PS9122	•	—	•	—	—	—	—	—	•	—
PS9123	•	—	•	—	•B	—	—	—	•	—
PS9124	•	—	•	—	•B	—	—	—	•	—
PS9151	•	—	•	—	—	—	—	—	•	—
PS9303L,PS9303L2	•	•	•	—	•R	—	—	—	•	—
PS9305L,PS9305L2	•	•	•	—	•R	—	—	—	•	—
PS9306L,PS9306L2	•	•	•	—	•R	—	—	—	•	—
PS9307L,PS9307L2	•	•	•	—	•R	—	—	—	•	—
PS9307AL,PS9307AL2	•	•	•	—	•R	—	—	—	•	—
PS9308L,PS9308L2	•	•	•	—	•R	—	—	—	•	—
PS9309L,PS9309L2	•	•	•	—	•R	—	—	—	•	—
PS9313L,PS9313L2	•	•	•	—	•R	—	—	—	•	—
PS9317L,PS9317L2	•	•	•	—	•R	—	—	—	•	—
PS9324L,PS9324L2	•	•	•	—	•R	—	—	—	•	—
PS9331L,PS9331L2	•	•	•	—	•R	—	—	—	•	—
PS9332L,PS9332L2	•	•	•	—	•R	—	—	—	•	—
PS9351L,PS9351L2	•	•	•	—	•R	—	—	—	•	—
PS9352AL2	•	•	•	—	•R	—	—	—	•	—
PS9402	•	•	•	—	•R	—	—	—	•	—
PS9505,PS9505L1 PS9505L2,PS9505L3	•	•	•	—	•R	—	—	—	•	—
PS9506,PS9506L1 PS9506L2,PS9506L3	•	•	•	—	•R	—	—	—	•	—
PS9513,PS9513L1 PS9513L2,PS9513L3	•	•	•	—	•R	—	•R	—	•	—
PS9531,PS9531L1 PS9531L2,PS9531L3	•	•	•	—	•R	—	—	—	•	—
PS9551L4	•	•	•	—	•R	—	—	—	•	—
PS9551AL4	•	•	•	—	•R	—	—	—	•	—
PS9552,PS9552L1 PS9552L2,PS9552L3	•	•	•	—	•R	—	•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	—	—	—	•	—

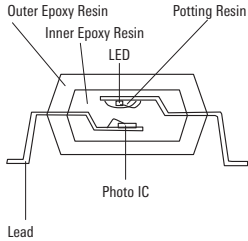
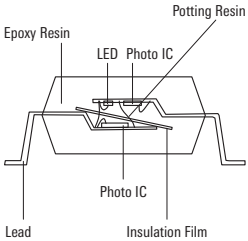
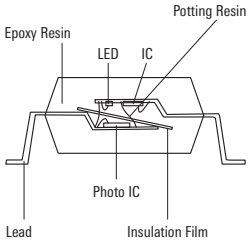
B : Basic Insulation S : Supplementary Insulation, R : Reinforced insulation

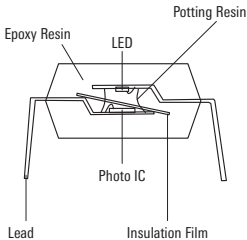
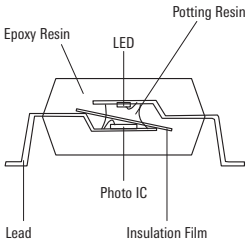

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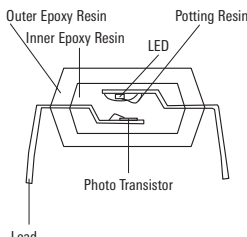
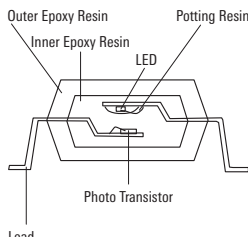
Part Number	Safety Standards									
	SEMKO		NEMKO		DEMKO		FIMKO		CQC	
	EN 62368-1, IEC 62368-1		EN 62368-1		EN 62368-1		EN 62368-1		GB8898:2011 (IEC 60065:2001+A1:2005), GB4943.1-2011 (IEC 60950-1:2005)	
	Assembly in JAPAN	Assembly in TAIWAN	Assembly in JAPAN	Assembly in TAIWAN	Assembly in JAPAN	Assembly in TAIWAN	Assembly in JAPAN	Assembly in TAIWAN	Assembly in JAPAN	Assembly in TAIWAN
PS2915-1	—	—	—	—	—	—	—	—	—	—
PS2933-1	—	—	—	—	—	—	—	—	—	—
PS8101	—	—	—	—	—	—	—	—	—	—
PS8302L,PS8302L2	•R	—	—	—	—	—	—	—	—	—
PS8501,PS8501L1 PS8501L2,PS8501L3	•R	—	•R	—	•R	—	•R	—	—	—
PS8502,PS8502L1 PS8502L2,PS8502L3	•R	—	•R	—	•R	—	•R	—	—	—
PS8551L4	•R	—	•R	—	•R	—	•R	—	—	—
PS8551AL4	•R	—	—	—	—	—	—	—	—	—
PS8802-1,-2	—	—	—	—	—	—	—	—	—	—
PS8821-1,-2	—	—	—	—	—	—	—	—	—	—
PS9113	—	—	—	—	—	—	—	—	—	—
PS9117A	—	—	—	—	—	—	—	—	—	—
PS9121	—	—	—	—	—	—	—	—	—	—
PS9122	—	—	—	—	—	—	—	—	—	—
PS9123	—	—	—	—	—	—	—	—	—	—
PS9124	—	—	—	—	—	—	—	—	—	—
PS9151	—	—	—	—	—	—	—	—	—	—
PS9303L,PS9303L2	—	—	—	—	—	—	—	—	—	—
PS9305L,PS9305L2	•R	—	—	—	—	—	—	—	—	—
PS9306L,PS9306L2	•R	—	—	—	—	—	—	—	—	—
PS9307L,PS9307L2	•R	—	—	—	—	—	—	—	—	—
PS9307AL,PS9307AL2	•R	—	—	—	—	—	—	—	—	—
PS9308L,PS9308L2	•R	—	—	—	—	—	—	—	—	—
PS9309L,PS9309L2	•R	—	—	—	—	—	—	—	—	—
PS9313L,PS9313L2	•R	—	—	—	—	—	—	—	—	—
PS9317L,PS9317L2	•R	—	—	—	—	—	—	—	—	—
PS9324L,PS9324L2	•R	—	—	—	—	—	—	—	—	—
PS9331L,PS9331L2	•R	—	—	—	—	—	—	—	—	—
PS9332L,PS9332L2	•R	—	—	—	—	—	—	—	—	—
PS9351L,PS9351L2	—	—	—	—	—	—	—	—	—	—
PS9402	—	—	—	—	—	—	—	—	—	—
PS9505,PS9505L1 PS9505L2,PS9505L3	•R	—	—	—	—	—	—	—	—	—
PS9506,PS9506L1 PS9506L2,PS9506L3	•R	—	—	—	—	—	—	—	—	—
PS9513,PS9513L1 PS9513L2,PS9513L3	•R	—	•R	—	•R	—	•R	—	—	—
PS9531,PS9531L1 PS9531L2,PS9531L3	•R	—	—	—	—	—	—	—	—	—
PS9551L4	•R	—	•R	—	•R	—	•R	—	—	—
PS9551AL4	•R	—	—	—	—	—	—	—	—	—
PS9552,PS9552L1 PS9552L2,PS9552L3	•R	—	•R	—	•R	—	•R	—	—	—
PS9587,PS9587L1 PS9587L2,PS9587L3	•R	—	•R	—	•R	—	•R	—	—	—
PS9817A-1,-2	—	—	—	—	—	—	—	—	—	—
PS9821-1,-2	—	—	—	—	—	—	—	—	—	—
PS9822-1,-2	—	—	—	—	—	—	—	—	—	—
PS9851-1,-2	—	—	—	—	—	—	—	—	—	—
PS9905	•R	—	—	—	—	—	—	—	—	—
PS9924	•R	—	—	—	—	—	—	—	—	—

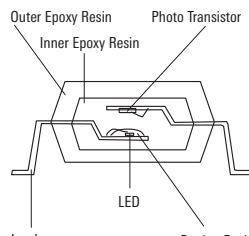
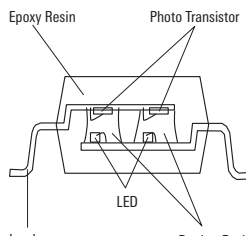
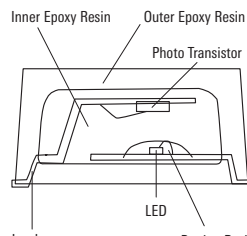
B : Basic Insulation S : Supplementary Insulation, R : Reinforced insulation

PACKAGE STRUCTURE

Package		LSDIP	LS05	S0-5	S0-16	DIP8 (L4)	SDIP8 (L2)
Structure							
Package		LSDIP	LS05	S0-5	S0-16	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
Uorm	[Vpeak]	1600	1130	707	1130	1130	1130
Uiotm	[Vpeak]	12000	8000	6000	8000	8000	8000
Part Number	VDE (Option)	PS9905 PS9924 PS8902	PS9031 PS9009 PS9013 PS9001	PS9113 PS9151 PS9123 PS9117A PS9124 PS9122 PS8101	PS9402	PS8551AL4 PS9551AL4	PS8352AL2 PS9352AL2

Package		DIP8	DIP8 (L1)	DIP8 (L3)	DIP8 (L2)	SDIP6	SDIP6 (L2)	SDIP8 (L)	SDIP8 (L2)	S0-8
Structure										
Package		DIP8	DIP8 (L1)	DIP8 (L3)	DIP8 (L2)	SDIP6	SDIP6 (L2)	SDIP8 (L)	SDIP8 (L2)	S0-8
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
Uorm	[Vpeak]	1130	1130	1130	1130	1130	1130	1130	1130	566
Uiotm	[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	PS9307A PS9331 PS9317 PS9313 PS9303 PS9309 PS9351 PS9324 PS8302	PS9307AL2 PS9331L2 PS9317L2 PS9313L2 PS9303L2 PS9309L2 PS9351L2 PS9324L2 PS8302L2	PS9332	PS9332L2	PS9817A-1 PS9817A-2 PS9851-1 PS9851-2 PS9821-1 PS9821-2 PS9822-1 PS9822-2

Package		DIP			DIP (L1)		DIP (L)			DIP (L2)		LSOP
Structure												
Package		DIP			DIP (L1)		DIP (L)			DIP (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
Uorm	[Vpeak]	890	890	—	1130	890	890	890	—	1130	890	1130
Uiotm	[Vpeak]	8000	8000	—	8000	8000	8000	8000	—	8000	8000	8000
Part Number	VDE (Option)	PS2561D PS2533 PS2535 PS2565	PS2514		PS2561DL1	PS2562L1 PS2565L1	PS2561DL PS2533L PS2535L PS2565L	PS2514L		PS2561DL2	PS2562L2 PS2565L2	PS2381
	No VDE Option	PS2561F		PS2506			PS2561FL		PS2506L			

Package		SOP			SSOP 1ch		SSOP 4ch	SSOP Common lead	Flat lead
Structure									
Package		SOP			SSOP 1ch		SSOP 4ch	SSOP Common lead	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
Uiorm	[Vpeak]	707	707	707	705	710	705	—	570
Uiotm	[Vpeak]	6000	4000	6000	6000	6000	6000	—	4000
Part Number	VDE (Option)	PS2701A PS2703 PS2702 PS2705A PS2706 PS2711 PS2715	PS2733	PS2761B	PS2801C-1 PS2811-1 PS2833-1 PS2802-1 PS2805C-1 PS2815C-1	PS2861B	PS2801C-4 PS2811-4 PS2833-4 PS2802-4 PS2805C-4 PS2815C-4		PS2911 PS2913 PS2915
	No VDE Option							PS2841-4A PS2841-4B PS2845-4A	

PACKAGE DIMENSIONS

Unit : mm

LS05	DIP8	SDIP6
LSDIP	DIP8 (L1)	SDIP6 (L2)
S0-16	DIP8 (L3)	SDIP8 (L)
DIP8 (L4)	DIP8 (L2)	SDIP8 (L2)

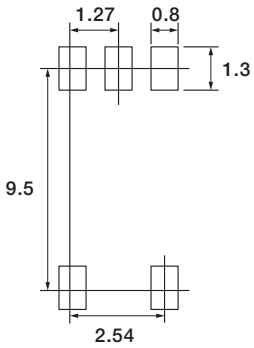
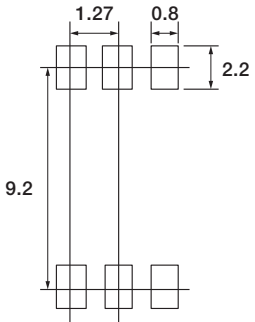
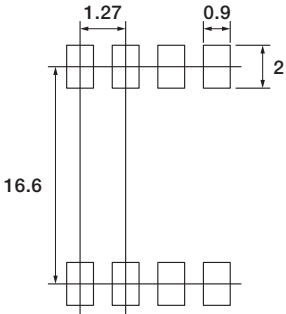
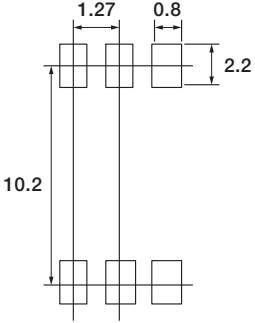
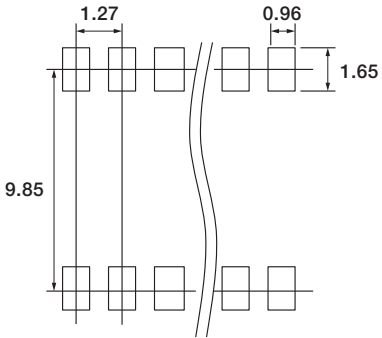
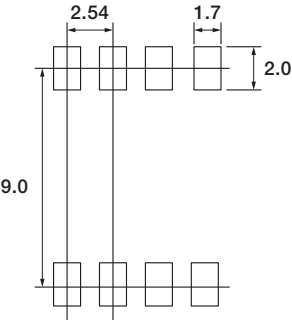
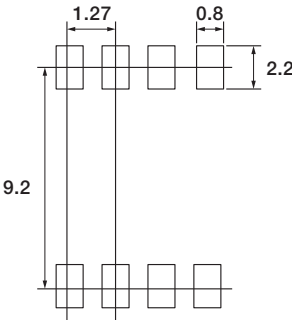
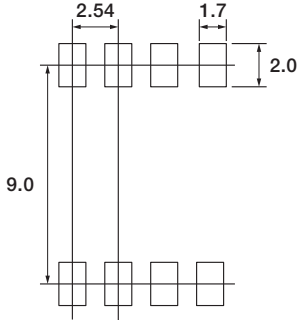
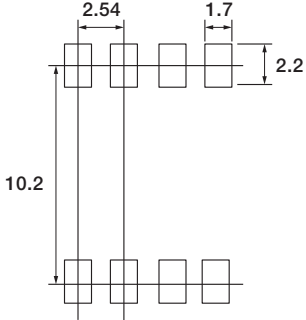
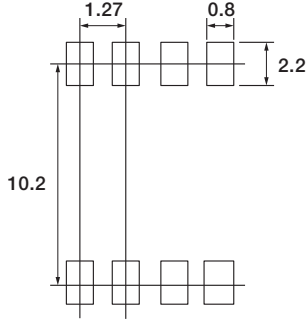

<https://www.renesas.com/us/en/products/optoelectronics/photocouplers-optocouplers/package-packing.html>

Unit : mm

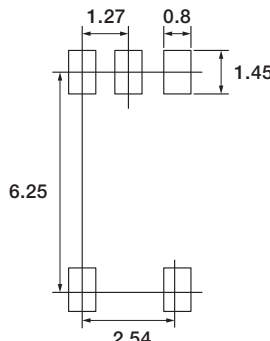
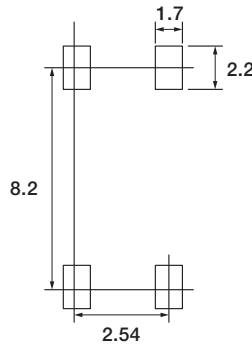
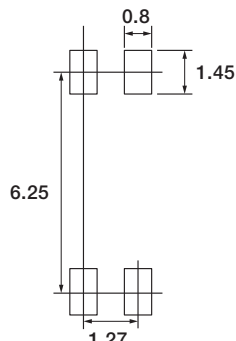
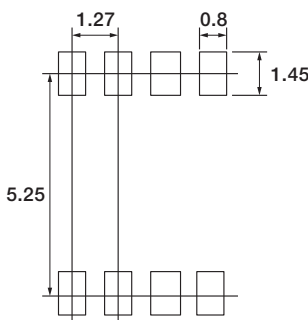
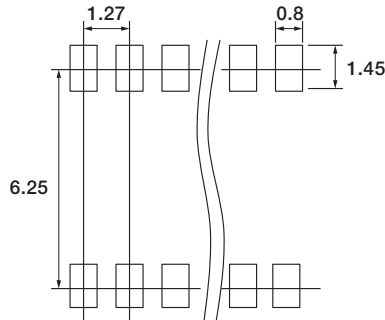
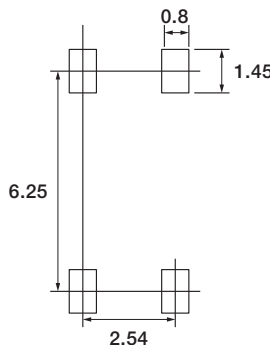
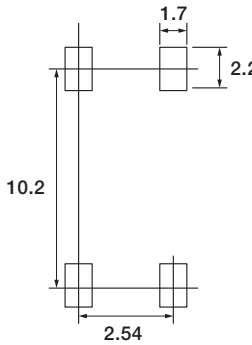
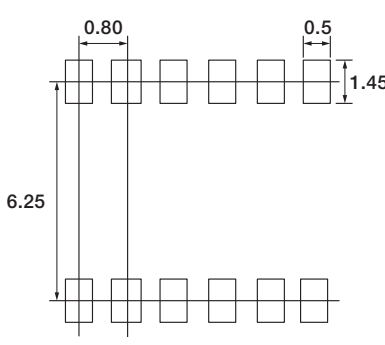
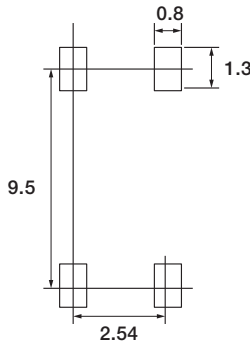
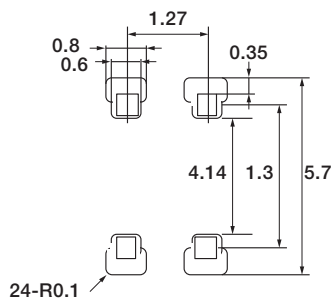
SO-5	DIP	SSOP 1ch
SO-8	DIP (L)	SSOP 4ch
SOP	DIP(L1)	SSOP Common lead
LSOP	DIP(L2)	Flat lead

RECOMMENDED LAND PATTERN

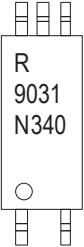
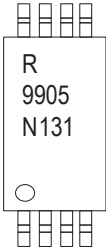
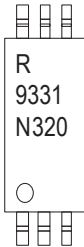
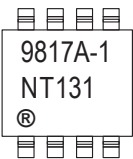
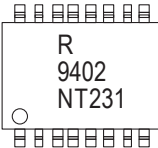
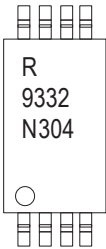
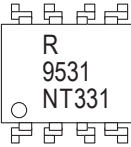
Unit : mm

LS05	DIP8	SDIP6
		
LSDIP	DIP8 (L1)	SDIP6 (L2)
		
S0-16	DIP8 (L3)	SDIP8 (L)
		
DIP8 (L4)	DIP8 (L2)	SDIP8 (L2)
		

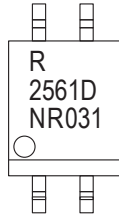
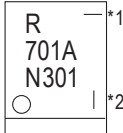
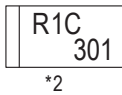
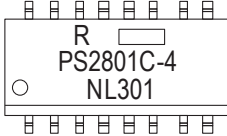
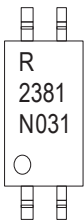
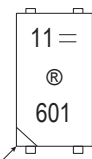
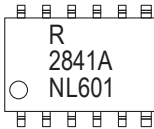
Unit : mm

SO-5	DIP	SSOP 1ch
		
SO-8		SSOP 4ch
		
SOP	DIP(L1)	SSOP Common lead
		
LSOP		Flat lead
		

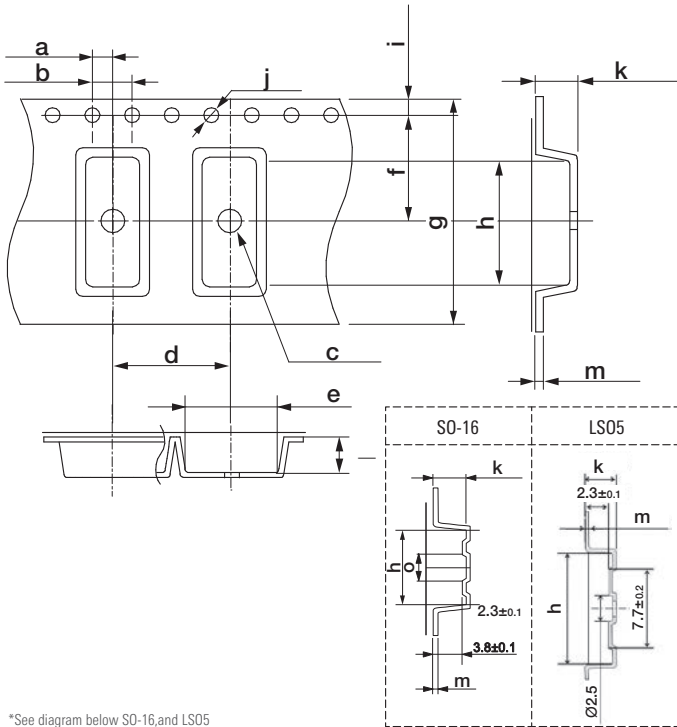
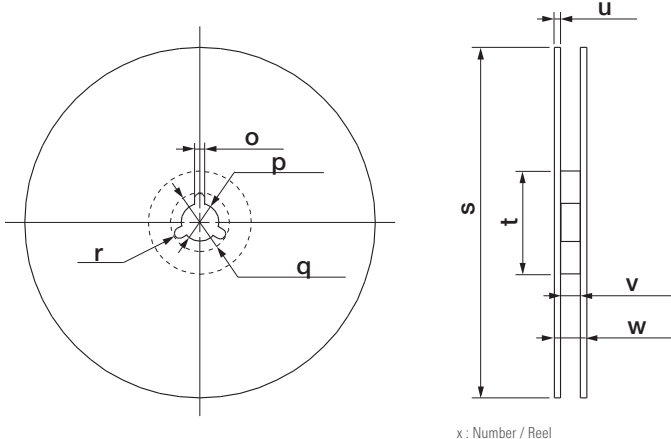
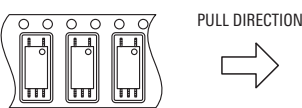
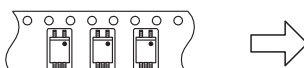
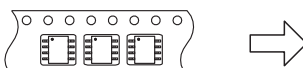
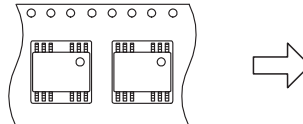
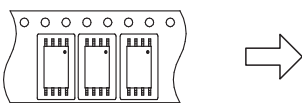
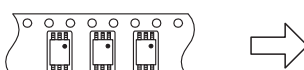
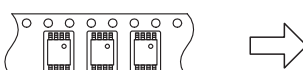
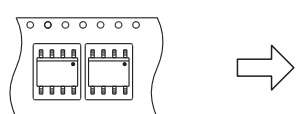
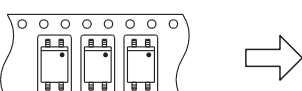
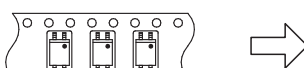
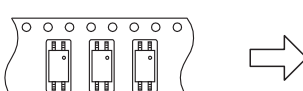
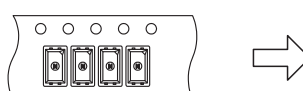
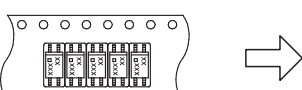
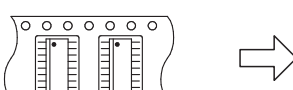
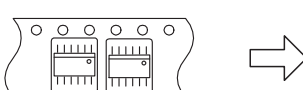
PACKAGE MARKING

LS05  R : An initial of "Renesas" 9031 : Part Number N340 : Assembly Lot No. N 3 40 Weekly Serial Code Last one-digit of assembled year Rank Code ○ : No.1 pin mark	SO-5  9124 : Part Number N231 : Assembly Lot No. N 2 31 Weekly Serial Code Last one-digit of assembled year Rank Code "—" : Pb free Ⓡ : No.1 pin mark An initial of "Renesas" (Carved marking)
LSDIP  R : An initial of "Renesas" 9905 : Part Number N131 : Assembly Lot No. N 1 31 Weekly Serial Code Last one-digit of assembled year Rank Code ○ : No.1 pin mark	SDIP6  R : An initial of "Renesas" 9331 : Part Number N320 : Assembly Lot No. N 3 20 Weekly Serial Code Last one-digit of assembled year Rank Code ○ : No.1 pin mark
SO-8  9817A-1 : Part Number NT131 : Assembly Lot No. N 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 Ⓡ : No.1 pin mark An initial of "Renesas" (Carved marking)	SO-16  R : An initial of "Renesas" 9402 : Part Number NT231 : Assembly Lot No. N 2 31 Weekly Serial Code Last one-digit of assembled year Internal Symbol (T:Pb free) Rank Code ○ : No.1 pin mark
SDIP8  R : An initial of "Renesas" 9332 : Part Number N340 : Assembly Lot No. N 3 04 Weekly Serial Code Last one-digit of assembled year Rank Code ○ : No.1 pin mark	DIP8  R : An initial of "Renesas" 9531 : Part Number NT331 : Assembly Lot No. N 3 31 Weekly Serial Code Last one-digit of assembled year Internal Symbol (T:Pb free) Rank Code ○ : No.1 pin mark



DIP	SOP															
 R : An initial of "Renesas" 2561D : Part Number 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 <table><tr><th>Assembled Country</th><th>TAIWAN</th><th>TAIWAN</th><th>JAPAN</th><th>JAPAN</th></tr><tr><td>Halogen Free</td><td></td><td>○</td><td></td><td>○</td></tr><tr><td>*1, *2:Marking</td><td></td><td></td><td></td><td></td></tr></table>	Assembled Country	TAIWAN	TAIWAN	JAPAN	JAPAN	Halogen Free		○		○	*1, *2:Marking				
Assembled Country	TAIWAN	TAIWAN	JAPAN	JAPAN												
Halogen Free		○		○												
*1, *2:Marking																
SSOP 1ch	SSOP 4ch															
 R1C : An initial of "Renesas" and Part Number 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 <table><tr><th>Assembled Country</th><th>TAIWAN</th><th>TAIWAN</th><th>JAPAN</th><th>JAPAN</th></tr><tr><td>Halogen Free</td><td></td><td>○</td><td></td><td>○</td></tr><tr><td>*2:Marking</td><td></td><td></td><td></td><td></td></tr></table>	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
Assembled Country	TAIWAN	TAIWAN	JAPAN	JAPAN												
Halogen Free		○		○												
*2:Marking																
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															
Common lead																
 R : An initial of "Renesas" 2841A : Part Number as underlined of PA<u>2841</u>-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																

TAPING & REEL SPECIFICATIONS

TAPING		REEL	
 *See diagram below SO-16, and LS05		 x : Number / Reel	
DIRECTION OF PRODUCT INSERTED IN TAPE			
LS05	SO-5	SO-8	SO-16
			
LSDIP	SDIP6 (L,L2)	SDIP8 (L,L2)	DIP8 (L2,L3,L4)
			
DIP (L,L2)	SOP	LSOP	IFlat ead
			
SSOP 1ch	SSOP 4ch	Common lead	
			


<https://www.renesas.com/us/en/products/optoelectronics/photocouplers-optocouplers/package-packing.html>

TAPING DIMENSION SPECIFICATIONS

Symbol	Unit	DIP (L)	DIP (L2)	SOP	LSOP	Flat lead	SSOP 1ch	SSOP 4ch	SSOP Common lead				
a	mm	2.0±0.1	2.0±0.1	2.0±0.05	2.0±0.1	2.0±0.05	2.0±0.1	2.0±0.1	2.0±0.05				
b	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				
c	mm	Ø1.55±0.1	Ø2.05±0.1	Ø1.55±0.1	Ø1.5±0.1/-0	Ø1.55±0.05	Ø1.55±0.1	Ø1.55±0.1	Ø1.55±0.05				
d	mm	8.00±0.1	8.00±0.1	8.00±0.1	8.00±0.1	4.00±0.1	4.00±0.1	12.00±0.1	8.00±0.1				
e	mm	5.3±0.1	5.3	4.6±0.1	4.3±0.1	2.9±0.1	2.85±0.1	8.3±0.1	6.0±0.1				
f	mm	7.5±0.1	11.5±0.1	5.5±0.05	7.5±0.1	5.5±0.05	7.5±0.1	7.5±0.1	5.5±0.05				
g	mm	16.0±0.3	24.0±0.3	12.0±0.2	16.0±0.3	12.0±0.2	16.0±0.3	16.0±0.3	12.0±0.2				
h	mm	10.3±0.1	12.5	7.4±0.1	10.7±0.1	5.3±0.1	7.55±0.1	10.7±0.1	7.4±0.1				
i	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				
j	mm	Ø1.5±0.1/-0	Ø1.55±0.1	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				
k	mm	4.5 MAX.	4.6 MAX.	2.9 MAX.	3.0±0.2	2.9 MAX.	2.8 MAX.	2.8 MAX.	3.05 MAX.				
l	mm	4.0±0.1	-	2.4±0.1	2.3±0.1	2.4±0.1	2.3±0.1	2.3±0.1	2.85±0.1				
m	mm	0.4	0.4	0.3	0.3±0.05	0.3	0.3	0.3	0.3				
Symbol	Unit	LSDIP	LS05	SO-16	SDIP6 (L1)	SDIP6 (L2)	SDIP8 (L1)	SDIP8 (L2)	DIP8 (L3)	DIP8 (L2)	DIP8 (L4)	SO-5	SO-8
a	mm	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±0.05	2.0±0.05
b	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
c	mm	Ø2.0±0.2	Ø1.5±0.1/-0	Ø1.55±0.1	Ø1.5±0.1/-0	Ø2.0±0.1/-0	Ø1.5±0.1/-0	Ø2.0±0.2	Ø1.55±0.1	Ø2.05±0.05	Ø1.55±0.1	Ø1.55±0.1	Ø1.7±0.1
d	mm	12.00±0.1	8.00±0.1	16.00±0.1	8.00±0.1	8.00±0.1	8.00±0.1	8.00±0.1	12.00±0.1	12.00±0.1	12.00±0.1	8.0±0.1	8.0±0.1
e	mm	(7.2)	4.3±0.1	10.9±0.1	5.08±0.1	5.08±0.1	6.35±0.1	6.35±0.1	10.3±0.1	10.7±0.1	9.95±0.1	3.9±0.1	6.4±0.1
f	mm	11.5±0.1	7.5±0.1	11.5±0.1	7.5±0.1	11.5±0.1	7.5±0.1	11.5±0.1	7.5±0.1	11.5±0.1	7.5±0.1	5.5±0.1	5.5±0.1
g	mm	24.0±0.3	16.0±0.3	24.0±0.3	16.0±0.3	24.0±0.3	16.0±0.3	24.0±0.3/-0.1	16.0±0.3	24.0±0.3	16.0±0.3	12.0±0.2	12.0±0.2
h	mm	(17.2)	10.7±0.1	10.8±0.1	10.2±0.1	12.0±0.1	10.2±0.1	12.0±0.1	10.4±0.1	12.8±0.1	10.55±0.1	7.4±0.1	5.56±0.1
i	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
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
k	mm	4.5 MAX.	3.0±0.2	4.5±0.1	4.5 MAX.	4.5 MAX.	4.5 MAX.	4.5 MAX.	5.3 MAX.	4.5 MAX.	4.65 MAX.	3.45 MAX.	4.05 MAX.
l	mm	(4.05)	2.3±0.1	4.5±0.1	4.05±0.1	4.05±0.1	4.05±0.1	4.05±0.1	4.75±0.1	4.1±0.1	4.2±0.1	3.0±0.1	3.6±0.1
m	mm	(0.3)	0.3±0.05	0.35	0.35	0.35	0.35	0.35	0.35±0.05	0.3±0.05	0.3±0.05	0.3±0.05	0.3±0.05

REEL DIMENSION SPECIFICATIONS

Symbol	Unit	DIP (L)	DIP (L2)	SOP	LSOP	Flat lead	SSOP 1ch	SSOP 4ch	SSOP Common lead				
o	mm	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5				
p	mm	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2				
q	mm	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8				
r	mm	R 1.0	R 1.0	R 1.0	R 1.0	-	R 1.0	R 1.0	R 1.0				
s	mm	Ø330±2.0	Ø330±2.0	Ø330±2.0	Ø330±2.0	Ø330±2.0	Ø330±2.0	Ø330±2.0	Ø330±2.0				
t	mm	Ø100±1.0	Ø100±1.0	Ø100±1.0	Ø100±1.0	Ø100±1.0	Ø100±1.0	Ø100±1.0	Ø100±1.0				
u	mm	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5				
v	mm	17.5±1.0	25.5±1.0	13.5±1.0	17.5±1.0	13.5±1.0	17.5±1.0	17.5±1.0	13.5±1.0				
w	mm	21.5±1.0	29.5±1.0	17.5±1.0	21.5±1.0	-	21.5±1.0	21.5±1.0	17.5±1.0				
x	pcs	2000	2000	3500	3000	3500	3500	2500	2500				
Symbol	Unit	LSDIP	LS05	SO-16	SDIP6 (L1)	SDIP6 (L2)	SDIP8 (L1)	SDIP8 (L2)	DIP8 (L3)	DIP8 (L2)	DIP8 (L4)	SO-5	SO-8
o	mm	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5
p	mm	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2	Ø13.0±0.2
q	mm	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8	Ø21.0±0.8
r	mm	R 1.0	R 1.0	R 1.0	R 1.0	R 1.0	R 1.0	R 1.0	R 1.0	R 1.0	R 1.0	R 1.0	R 1.0
s	mm	Ø330±2.0	Ø330±2.0	Ø330±2.0	Ø330±2.0	Ø330±2.0	Ø330±2.0	Ø330±2.0	Ø330±2.0	Ø330±2.0	Ø330±2.0	Ø330±2.0	Ø330±2.0
t	mm	Ø100±1.0	Ø100±1.0	Ø100±1.0	Ø100±1.0	Ø100±1.0	Ø100±1.0	Ø100±1.0	Ø100±1.0	Ø100±1.0	Ø100±1.0	Ø100±1.0	Ø100±1.0
u	mm	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5	2.0±0.5
v	mm	25.5±1.0	17.5±1.0	17.5±1.0	25.5±1.0	17.5±1.0	25.5±1.0	17.5±1.0	17.5±1.0	25.5±1.0	17.5±1.0	13.5±1.0	13.5±1.0
w	mm	29.5±1.0	21.5±1.0	21.5±1.0	29.5±1.0	21.5±1.0	29.5±1.0	21.5±1.0	21.5±1.0	29.5±1.0	21.5±1.0	17.5±1.0	17.5±1.0
x	pcs	1000	3000	850	2000	2000	2000	2000	1000	1000	1000	2500	1500

LABEL PRINT EXAMPLES

OUTER PACKING BOX

LABEL

LABEL on OUTER PACKING BOX

Assembly in JAPAN

Marking of Safety Standards

REAL

LABEL

LABEL on TAPING REEL

Assembly in JAPAN

Assembly in TAIWAN

Marking of Safety Standards

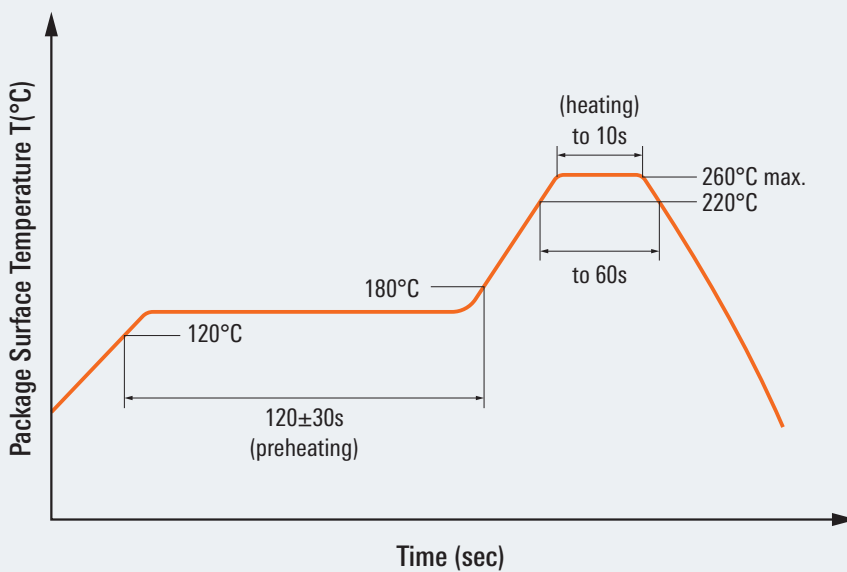
Assembly in TAIWAN

RECOMMENDED SOLDERING CONDITIONS

(1) Infrared Reflow Soldering

• Peak reflow temperature	260°C or below (package surface temperature)
• Time of peak reflow temperature	10 seconds or less
• Time of temperature higher than 220°C	60 seconds or less
• Time to preheat temperature from 120 to 180°C	120±30 s
• Number of reflows	Three
• Flux	Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.)

Recommended Temperature Profile of Infrared Reflow



(2) Wave Soldering

• Temperature	260°C or below (molten solder temperature)
• Time	10 seconds or less
• Preheating conditions	120°C or below (package surface temperature)
• Number of times	One (Allowed to be dipped in solder including plastic mold portion.)
• Flux	Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.)

(3) Soldering by Soldering Iron

• Peak temperature (lead part temperature)	350°C or below
• Time (each pins)	3 seconds or less
• Flux	Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.)

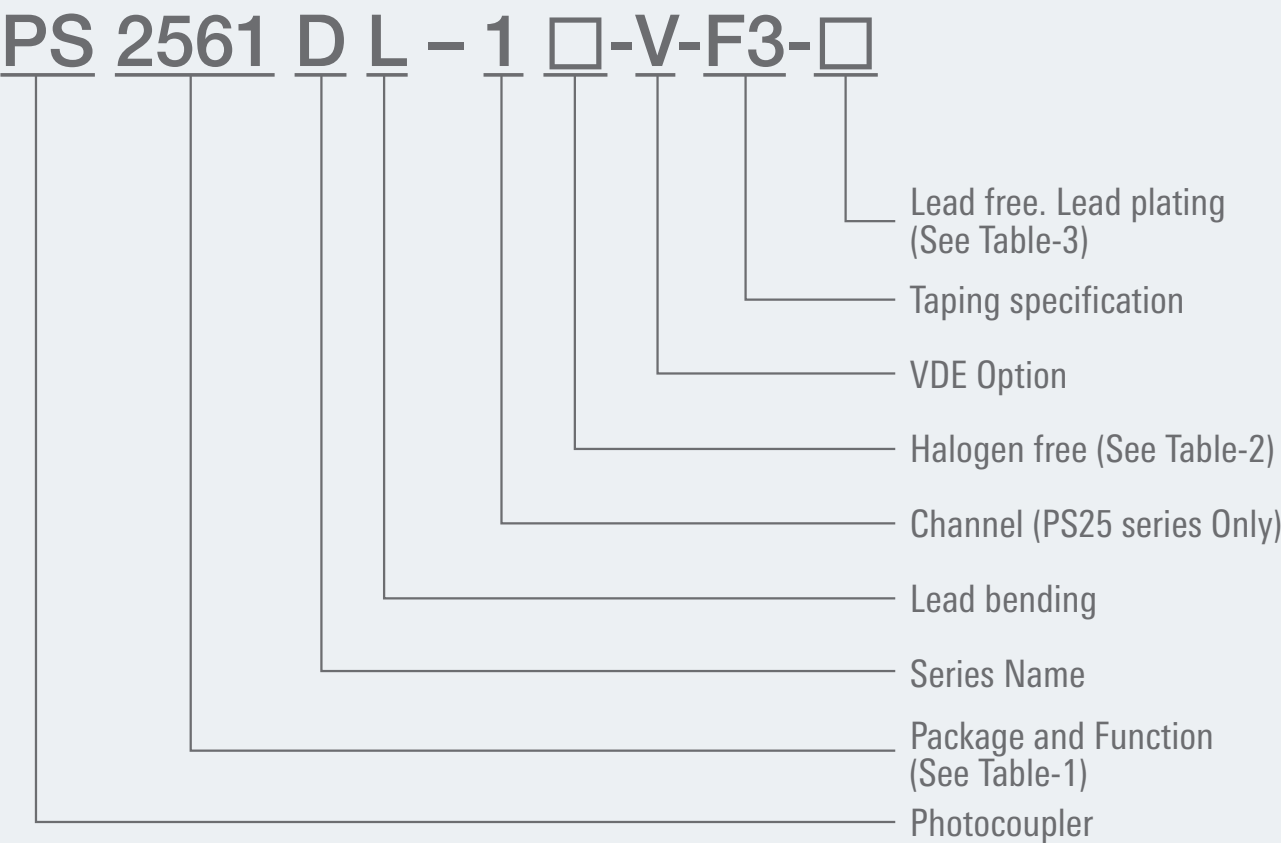
(a) Soldering of leads should be made at the point 1.5 to 2.0 mm from the root of the lead

(4) Cautions

- Fluxes
Avoid removing the residual flux with freon-based and chlorine-based cleaning solvent.

PART NUMBER GUIDE

Products : PS25 series / PS83 series / PS93 series / PS85 series / PS95 series



■Table-1. Package and Function

25xx	DIP	Tr. output
8xxx	DIP, SDIP	Analog
9xxx	SSOP	Digital

Transistor output:

25 : 4-pin DIP

Analog output (high speed):

83 : 6-pin SDIP

85 : 8-pin DIP

Digital output (high speed):

93 : 6-pin / 8-pin SDIP

95 : 8-pin DIP

■Table-2. Halogen free

Blank	Including Halogen
Y	Halogen free

■Table-3. Lead free, Lead plating

A	Pb free(Sn-Bi)
AX	Pb free (Ni/Pd/Au)

Products : PS23 series / PS27 series / PS28 series / PS29 series
 PS90 series / PS81 series / PS891 series / PS94 series
 PS88 series / PS89series / PS99 series /

PS 2861 B – 1 □ -V-F3-□

Lead free. Lead plating
(See Table-3)

Taping specification

VDE Option

Halogen free (See Table-2)

Channel
(PS27xx, PS28xx, PS29xx ,
PS98xx only)

Series Name

Package and Function
(See Table-1)

Photocoupler

■ Table-1. Package and Function

23xx	LSOP	Tr. output
27xx	SOP	Tr. output
28xx	SSOP	Tr. output
29xx	Min Flat-lead	Tr. output
8xxx	SOP or SSOP	Analog
9xxx		Digital

Transistor output:

23 : 4-pin LSOP
 27 : 4-pin SOP
 28 : 4-pin / 16-pin SSOP
 29 : 4-pin Flat lead package

Analog output (high speed):

81 : 5-pin SOP
 88 : S08 (=8-pin SOP)
 89 : 8-pin (LSDIP)

Digital output (high speed):

90 : 5-pin LSOP
 91 : 5-pin SOP
 94 : S016 (=16-pin SOP)
 99 : 8-pin LSDIP

■ Table-2. Halogen free

Blank	Including Halogen
Y	Halogen free

■ Table-3. Lead free, Lead plating

A	Pb free(Sn-Bi)
AX	Pb free (Ni/Pd/Au)

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This product uses gallium arsenide (GaAs),
GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points.

- Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below.
 1. Commission a disposal company able to (with a license to collect, transport and dispose of materials that contain arsenic and other such industrial waste materials.
 2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal.
- Do not burn, destroy, cut, crush, or chemically dissolve the product.
- Do not lick the product or in any way allow it to enter the mouth.