

PHOTOCOUPPLERS SELECTION GUIDE



NEW PRODUCT DIGEST

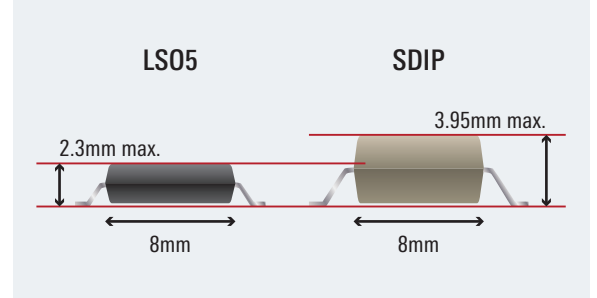
New Package Types

LSO5

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 : Ta=125°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

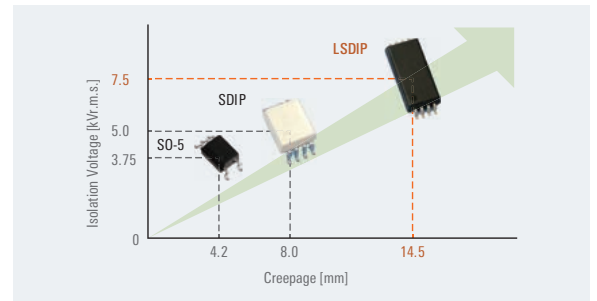


LSDIP

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

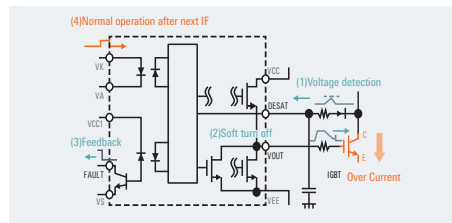
The included protection function simplifies circuit design

(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

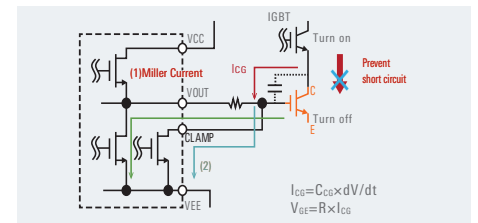
DESAT : Prevent from over current destruction caused by load-short-circuit

- (1)Detection of collector voltage rising
- (2)Turn off IGBT gate(Vout) 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

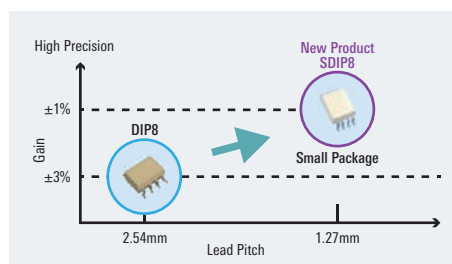
To make the lower-arm IGBT always off by sinking discharge current during the upper-arm turning on



Isolation Amplifier PS8352A Delta-Sigma Modulator PS9352A

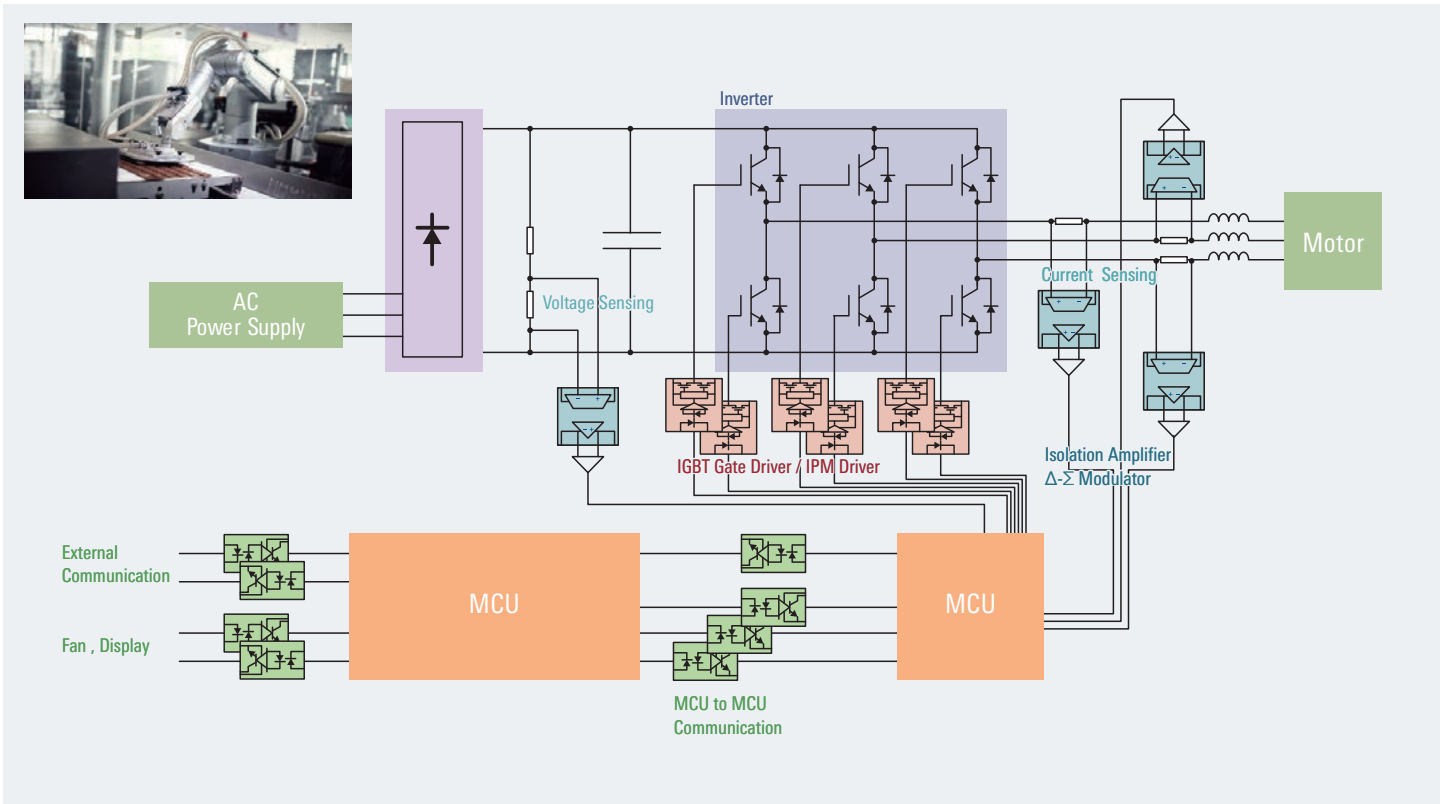
High precision isolation amplifier and delta-sigma modulator for motor drive

- Features
 - High precision : Gain ±1%
 - High input resistance : 450kΩ
 - Small footprint : 44% smaller than DIP8
- Contribution
 - High-precision current/voltage feedback to reduce mounting area

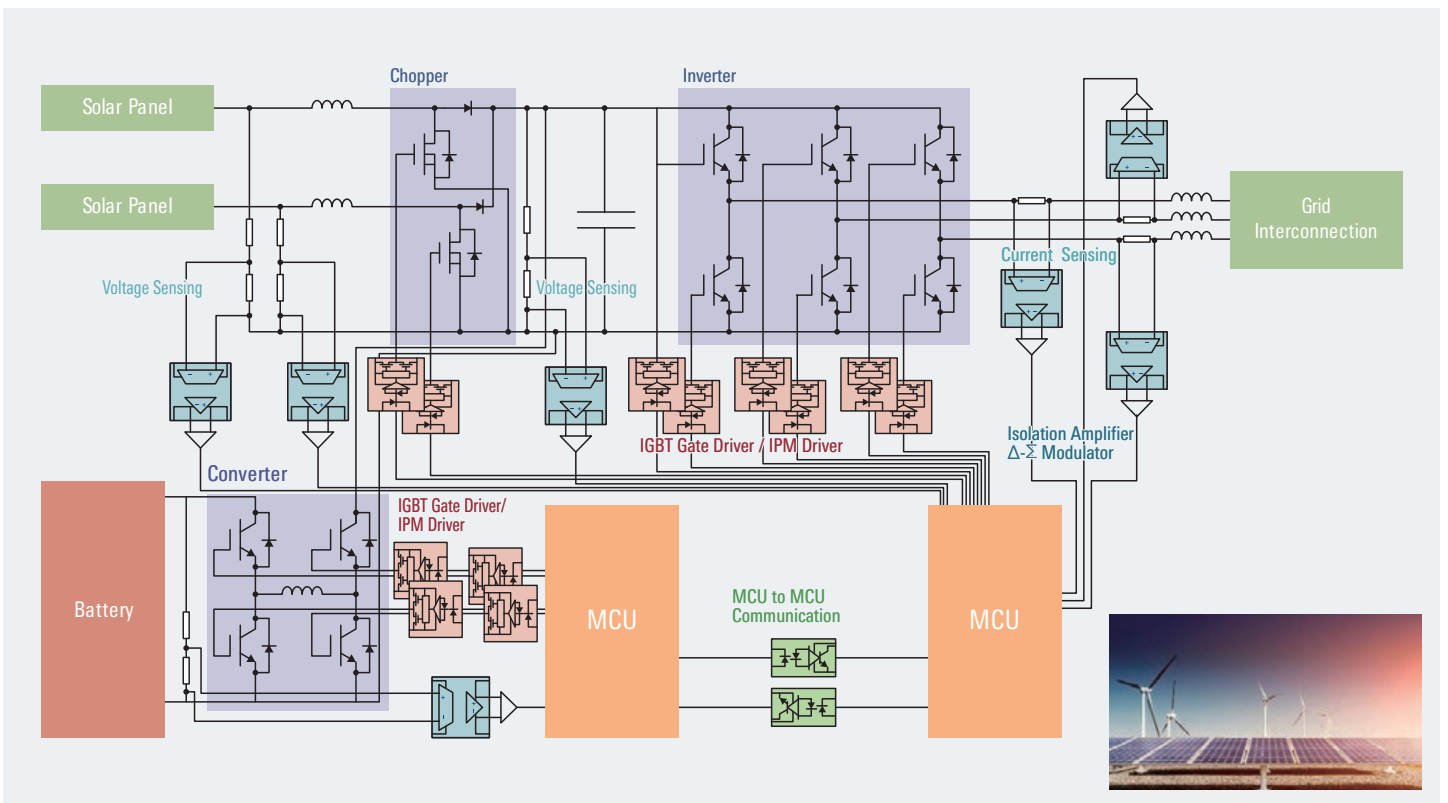


USAGE EXAMPLES IN TYPICAL APPLICATIONS

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

Visit our website.






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

IC Output

				Upper : Package Name Lower : Creepage					
				DIP8 7/8mm	SDIP6/8 7/8mm	LSDIP8 14.5mm	LS05 8mm	S05 4.2mm	S016 8mm
	Function	Output	Vcc/VDD						
Motor Drive	IGBT Gate Driver	Digital	35V, ≥ 2.0A	PS9531	PS9331	PS9905	PS9031		
			35V, 0.6A	PS9506	PS9307A				
with Protection Function			PS9332				PS9402		
	IPM Driver	Digital	>20V	PS9513	PS9313 PS9303 PS9309		PS9013 PS9009	PS9113	
Current /Voltage Sensing	Isolation Amplifier	Analog	5V	PS8551A	PS8352A				
	Δ-Σ Modulator	Digital	5V	PS9551A	PS9352A				
High Speed Communication	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		
		High breakdown Voltage (350V)	PS2533-1 PS2535-1		PS2733-1	PS2833-1 PS2833-4		
AC	Single	standard	PS2565-1		PS2705A-1	PS2805C-1 PS2805C-4		
		Low current input			PS2715-1	PS2815-1 PS2815-4	PS2845-4A	PS2915-1
	Darlington	Standard	PS2506-1		PS2706-1			

PHOTOCOUPLER PRODUCTS

SELECTION GUIDE

Visit our website.



<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		
				Code	Outer Creepage [mm]			DC	SW				Protection		
									IFLH Max [mA]	tpHL, LH Max [ns]	PWD Max [ns]	PDD [ns]	CMR Min [kV / us]	UVLO	Clamp
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	LS05	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	S016	8	5000	110	5.0	200	100	-100 to 100	25	○	○	○

Product Category	Part Number	Output	Output Logic	Package		Recommended Condition	Absolute Maximum Ratings		Electrical Characteristics					
				Code	Outer Creepage [mm]		Supply Voltage [V]	Isolation Voltage [Vr.m.s.]	Ta Max [°C]	DC	SW			
											IFHL / LH Max [mA]	tpHL / LH Max [ns]	PWD Max [ns]	PDD Max [ns]
IGBT Gate Driver	PS9009	Totem Pole	Active High	LS05	8	4.5 to 20	5000	125	3.0	200	80	100	15	
	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	
	PS9513	Open Collector	Active Low	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	15	
	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	



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							
					Supply Voltage [V]	Code			Outer Creepage [mm]	DC				CTR IF 16mA Vcc 4.5V Vo 0.4V [%]	AC	
										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				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
	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
	PS9151	S05	4.2	3750				100	0.1	4.0	5 / 5	5.0	60 / 60	30	40	15
	PS9851	CMOS	4.5 to 5.5	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

Visit our website.



<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			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			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						
			Code	Outer Creepage [mm]	VCEO [V]	IC [mA/ch]			DC			SW			
									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		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
	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

Visit our website.


<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
PS2801C	N	5	50	400
	P	5	150	300
	L	5	100	300
PS2801C-4	M	5	100	400
	N	5	50	400
	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
PS2913	N	1	100	400
	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



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	

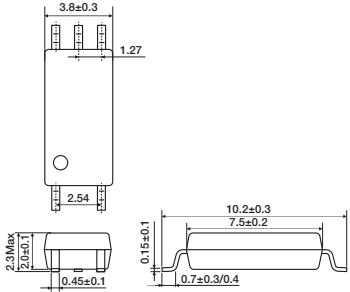
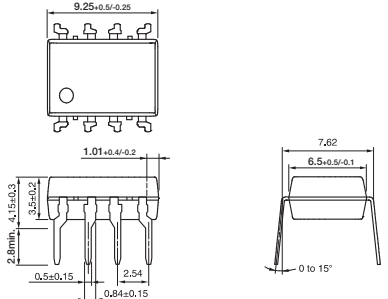
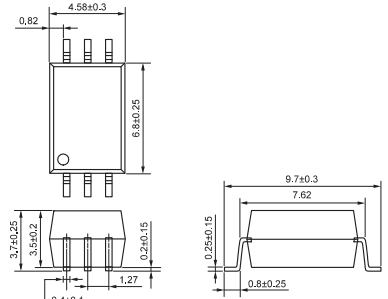
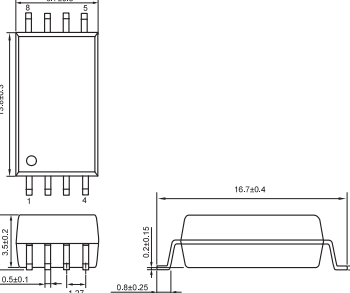
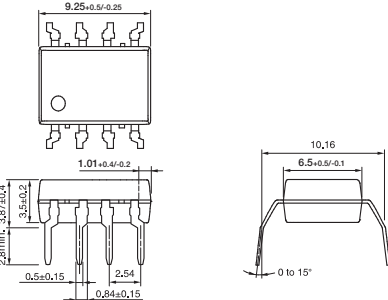
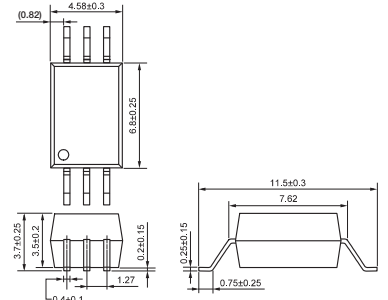
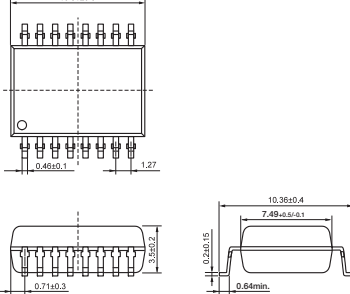
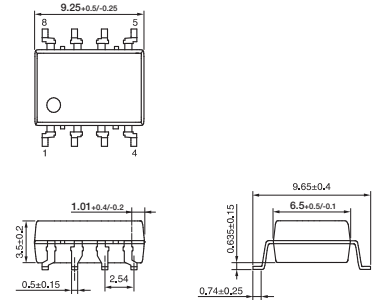
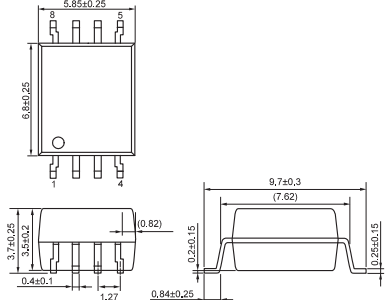
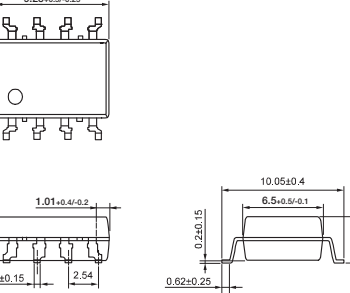
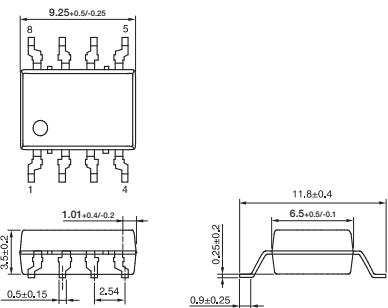
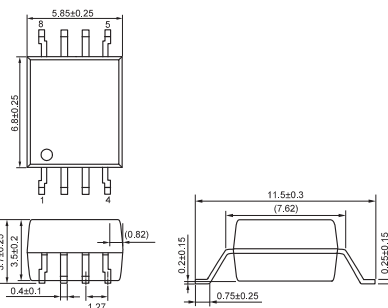
Package		DIP8	DIP8 (L1)	DIP8 (L3)	DIP8 (L2)	SDIP6	SDIP6 (L2)	SDIP8 (L)	SDIP8 (L2)	S0-8
Structure										
Package		DIP8	DIP8 (L1)	DIP8 (L3)	DIP8 (L2)	SDIP6	SDIP6 (L2)	SDIP8 (L)	SDIP8 (L2)	S0-8
Air Distance	[mm]	7	8	7	8	7	8	7	8	4
Creepage	[mm]	7	8	7	8	7	8	7	8	4
Isolation Distance	[mm]	0.4	0.4	0.4	0.4	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
Uiom	[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	
Uiom	[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)
		



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

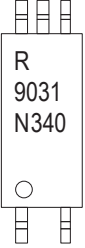
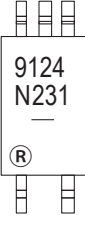
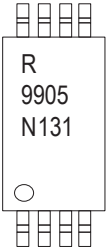
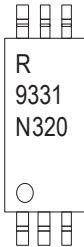
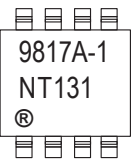
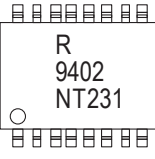
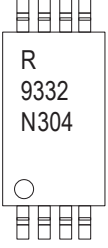
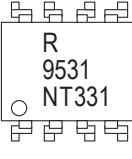
Unit : mm

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

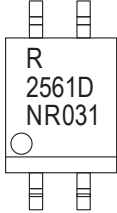
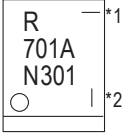
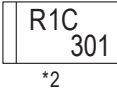

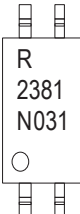
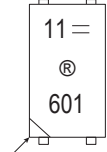

Unit : mm

SO-5	DIP	SSOP 1ch
<p>SO-5 package dimensions: 1.27, 0.8, 1.45, 6.25, 2.54</p>	/	<p>SSOP 1ch package dimensions: 0.8, 1.45, 6.25, 1.27</p>
SO-8	DIP (L)	SSOP 4ch
<p>SO-8 package dimensions: 1.27, 0.8, 1.45, 5.25</p>	<p>DIP (L) package dimensions: 1.7, 2.2, 8.2, 2.54</p>	<p>SSOP 4ch package dimensions: 1.27, 0.8, 1.45, 6.25</p>
SOP	DIP(L1)	SSOP Common lead
<p>SOP package dimensions: 0.8, 1.45, 6.25, 2.54</p>	/	<p>SSOP Common lead package dimensions: 0.80, 0.5, 1.45, 6.25</p>
LSOP	DIP(L2)	Flat lead
<p>LSOP package dimensions: 0.8, 1.3, 9.5, 2.54</p>	<p>DIP(L2) package dimensions: 1.7, 2.2, 10.2, 2.54</p>	<p>Flat lead package dimensions: 0.8, 0.6, 1.27, 0.35, 4.14, 1.3, 5.7, 24-R0.1</p>

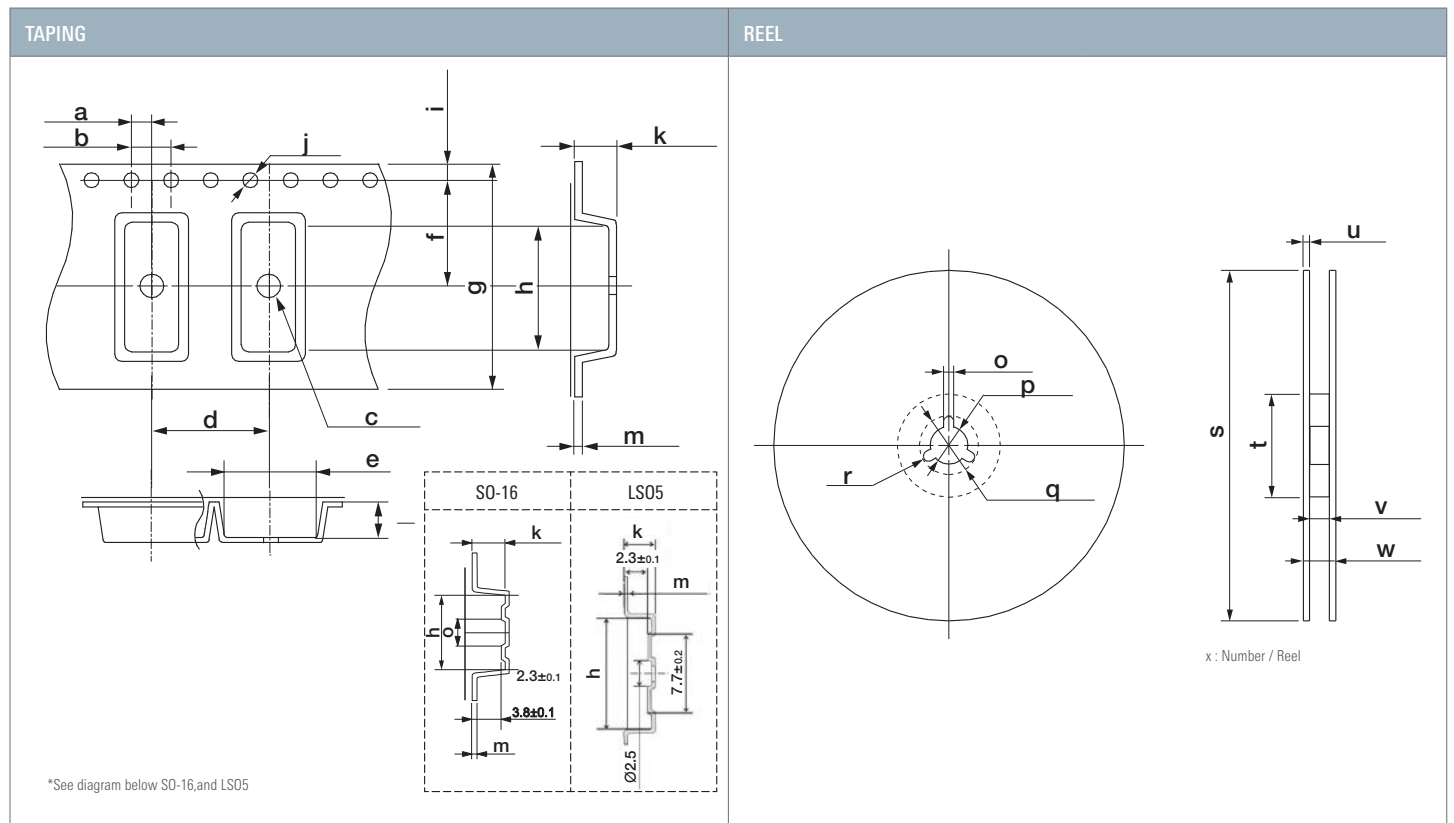
PACKAGE MARKING

LS05	SO-5
 <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>
LSDIP	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>
SO-8	SO-16
 <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>



DIP	SOP															
 <p>R : An initial of "Renesas" 2561D : Part Number NR031 : Assembly Lot No.</p> <p>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</p> <p>○ : No.1 pin mark</p>	 <p>R : An initial of "Renesas" 701A : Part Number as excluding "PS2" N301 : Assembly Lot No.</p> <p>N 3 01 Weekly Serial Code Last one-digit of assembled year Rank Code</p> <p>○ : No.1 pin mark</p> <table border="1" data-bbox="943 562 1366 667"> <tr> <td>Assembled Country</td> <td>TAIWAN</td> <td>TAIWAN</td> <td>JAPAN</td> <td>JAPAN</td> </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															
 <p>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.</p> <p>N 3 01 Weekly Serial Code Last one-digit of assembled year</p> <table border="1" data-bbox="215 1048 655 1144"> <tr> <td>Assembled Country</td> <td>TAIWAN</td> <td>TAIWAN</td> <td>JAPAN</td> <td>JAPAN</td> </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					 <p>R : An initial of "Renesas" PS2801C-4 : Part Number NL301 : Assembly Lot No.</p> <p>N 3 01 Weekly Serial Code Last one-digit of assembled year Internal Symbol L:Pb Free Rank Code</p> <p>○ : No.1 pin mark □ : Assembled Country</p>
Assembled Country	TAIWAN	TAIWAN	JAPAN	JAPAN												
Halogen Free		○		○												
*2:Marking																
LSOP	Flat lead															
 <p>R : An initial of "Renesas" 2381 : Part Number as excluding "PS" N031 : Assembly Lot No.</p> <p>N 0 31 Weekly Serial Code Last one-digit of assembled year Rank Code</p> <p>○ : No.1 pin mark</p>	 <p>No.1 pin mark</p> <p>R : An initial of "Renesas" 11 : Part Number as excluding "PS29" ex) PS2911 -> 11 601 : Assembly Lot No.</p> <p>N 6 01 Weekly Serial Code Last one-digit of assembled year</p> <p>= : Pb free</p>															
Common lead																
 <p>R : An initial of "Renesas" 2841A : Part Number as underlined of PA2841-4A NL601 : Assembly Lot No.</p> <p>N L 6 01 Weekly Serial Code Last one-digit of assembled year Internal Symbol L:Pb Free Rank Code</p> <p>○ : No.1 pin mark</p>																

TAPING & REEL SPECIFICATIONS






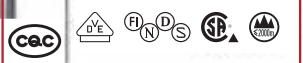

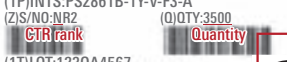







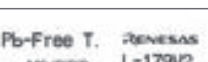
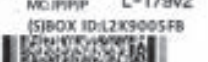






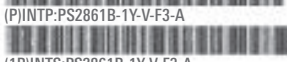
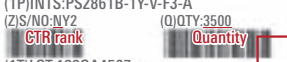








DIRECTION OF PRODUCT INSERTED IN TAPE

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	



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

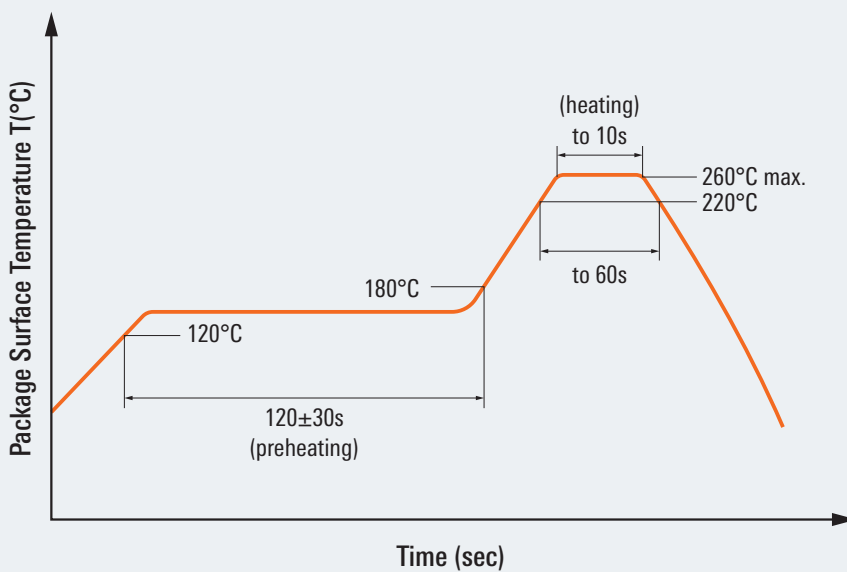
OUTER PACKING BOX	REAL
 <p style="text-align: center;">LABEL</p>	 <p style="text-align: center;">LABEL</p>
LABEL on OUTER PACKING BOX	LABEL on TAPING REEL
<p>Assembly in JAPAN</p> <p style="text-align: right;">Marking of Safety Standards</p>  <p>Pb-Free T. RENESAS</p> <p>D/N PS2861B1YVF3A/0118B/R2 MC:JPJP 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>Pb-Free T. RENESAS</p> <p>(2P)P/N:PS2861B-1-V-F3 (P)INTP:PS2861B-1Y-V-F3-A (1P)INTS:PS2861B-1Y-V-F3-A Z/S/NO:NR2 (Q)QTY:3500 CTR rank Quantity (1T)LOT:123QA4567</p> <p>bsi. Pb-Free T. RENESAS MC:JPJP L-179V2 (S)BOX ID:L2K9005FB</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 CTR rank FROM WAFERS OF JAPAN</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>Pb-Free T. RENESAS</p> <p>(2P)P/N:PS2861B-1-V-F3 (P)INTP:PS2861B-1Y-V-F3-A (1P)INTS:PS2861B-1Y-V-F3-A Z/S/NO:NY2 (Q)QTY:3500 CTR rank Quantity (1T)LOT:123QA4567</p> <p>bsi. Pb-Free T. RENESAS MC:JPJP L-179V2 (S)BOX ID:L2K9005FB</p>               <p style="text-align: right;">Marking of Safety Standards</p>

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

PS 2561 D L - 1 □ - V - F3 - □

- Lead free. Lead plating (See Table-3)
- Taping specification
- VDE Option
- Halogen free (See Table-2)
- Channel (PS25 series Only)
- Lead bending
- Series Name
- Package and Function (See Table-1)
- Photocoupler

■ 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 : SO8 (=8-pin SOP)
 89 : 8-pin (LSDIP)

Digital output (high speed):
 90 : 5-pin LSOP
 91 : 5-pin SOP
 94 : SO16 (=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)

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 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.
 - 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.4.0-1 November 2017)

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.

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

Renesas Electronics Canada Limited

9251 Yonge Street, Suite 8309 Richmond Hill, Ontario Canada L4C 9T3
 Tel: +1-905-237-2004

Renesas Electronics Europe Limited

Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
 Tel: +44-1628-651-700

Renesas Electronics Europe GmbH

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

Renesas Electronics (China) Co., Ltd.

Room 1709 Quantum Plaza, No.27 ZhichunLu, Haidian District, Beijing, 100191 P. R. 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 P. R. China
 Tel: +86-21-2226-0888, Fax: +86-21-2226-0999

Renesas Electronics Hong Kong Limited

Unit 1601-1611, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, 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, Unit #06-02 Hyflux Innovation Centre, Singapore 339949
 Tel: +65-6213-0200, Fax: +65-6213-0300

Renesas Electronics Malaysia Sdn.Bhd.

Unit 1207, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
 Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics India Pvt. Ltd.

No.777C, 100 Feet Road, HAL 2nd Stage, Indiranagar, Bangalore 560 038, India
 Tel: +91-80-67208700, Fax: +91-80-67208777

Renesas Electronics Korea Co., Ltd.

17F, KAMCO Yangjae Tower, 262, Gangnam-daero, Gangnam-gu, Seoul, 06265 Korea
 Tel: +82-2-558-3737, Fax: +82-2-558-5338

<p>Caution GaAs Products</p>	<p>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.</p> <ul style="list-style-type: none"> 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. <ol style="list-style-type: none"> 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). 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.
-------------------------------------	---