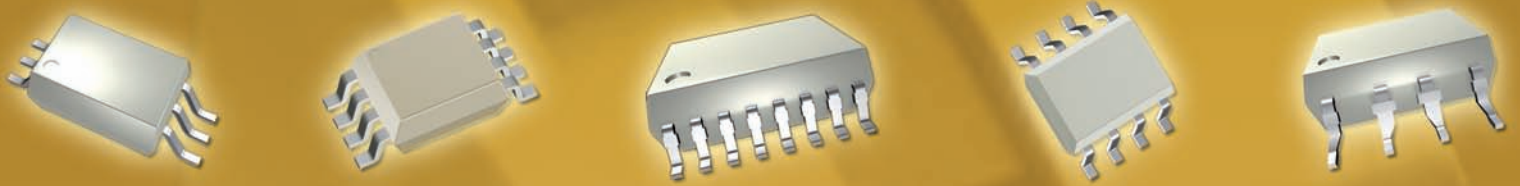


Optocoupler Selection Guide



PDF.Support

Introduction

Renesas offers a leading portfolio of high performance optocouplers. Key features enabling customers to develop market leading products include 5KV isolation voltage, minimum CMR of 25KV/us and wide package creepage distances.

Dedicated applications support in Europe allows our experienced engineers to oversee complex designs from concept through to mass production.

With in excess of 500 different optocouplers, Renesas is a market leader in many multimarket applications including industrial, consumer, communication and medical.

Quality and reliability are fundamental elements for the complete Renesas optocoupler product family. Products comply with international safety regulatory agencies including UL, VDE, CSA, BSI, SEMKO, NEMKO, FIMKO and DEMKO.

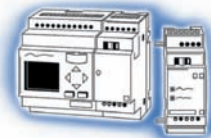
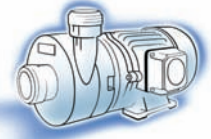
Complementary to the optocouplers, Renesas has a long experience in the design and manufacture of high efficiency IGBT's. A broad portfolio is offered for applications such as induction heating, motor control and solar inverters. The IGBT's consist of optimized Vce(sat) for low static losses. Highly robust designs can be achieved due to fast recovery diode. Current ratings from 10A to 90A are available. The designer can take advantage of the optocoupler and IGBT solution from one source, Renesas.

To complement this optocoupler selection guide more detailed technical documentation including a full opto-isolation selector tool can be found at: www.renesas.eu/opto

Samples can be obtained using the following email address: Sampleorder_Opto-eu@lm.renesas.com



- ▶ **Worlds number one for standard optocouplers***
- ▶ **High quality and reliability – less than 1 ppm**
- ▶ **Large production capacity (>200 Mch/month)**
- ▶ **In-house technologies: Bipolar, CMOS and Bi-CMOS**
- ▶ **No.1 supplier in SSOP and flat lead packages**
- ▶ **World's smallest optocouplers**
- ▶ **Think Renesas for optocouplers!**



* CY2009 market share, source Renesas

Optocoupler Quick Guide

Series	Package	Pin-to-pin distance in mm	Outer creepage/air distance in mm	Internal isolation thickness in mm	Isolation working voltage in V_{IORM}	Isolation voltage in V_{RMS}	
PS95xxL2	DIP (8-pin)	2.54	8	0.4	1130	5000	High-speed optocoupler
PS95xxL3			7				
PS85xxL2			8				
PS85xxL3			7				
PS93xxL2	SDIP (6-pin)	1.27	8	0.4	1130	5000	
PS93xxL			7				
PS83xxL2			8				
PS83xxL			7				
PS91xx	SOP (5-pin)	1.27	4.2	0.2	707	3750	
PS81xx							
PS98xx	SO8 (8-pin)	1.27	4	0.2	566	2500	
PS88xx							
PS95xxL2	DIP (8-pin)	2.54	8	0.4	1130	5000	IGBT-/IPM-drive / Isolation amplifier
PS95xxL3			7				
PS8551L4			8				
PS9302L	SDIP (8-pin) SDIP (6-pin)	1.27	8/7	0.4	1130	5000	
PS93xxL2			8				
PS93xxL			7				
PS9451	SO16 (16-pin)	1.27	8	0.4	1130	5000	
PS9402		1.27	8	0.4	1130	5000	
PS91xx	SOP (5-pin)	1.27	4.2	0.2	707	3750	
PS2381	LSOP	2.54	8	0.4		5000	
PS2581	DIP	2.54	8	0.4		5000	
PS256x				0.4		5000	
PS253x		2.54	7	0.4			
PS251x				0.2			
PS250x				0.3			
PS276x				0.4			
PS273x	SOP	2.54	5	0.3	3750		
PS271x				0.3			
PS270x				0.3			
PS286x						0.4	3750
PS283x	SSOP	1.27	4.5	0.1	2500		
PS281x				0.1	2500		
PS280x				0.1	2500		
PS284x	Ultra SSOP	0.8	4	0.4	1500		
PS29xx	Flat lead	1.27	4	0.4	2500		
PS256x	DIP	2.54	7	0.4	5000		
PS250x				0.3			
PS271x	SOP	2.54	5	0.3	3750		
PS270x							
PS281x	SSOP	1.27	4.5	0.1	2500		
PS280x							
PS284x	Ultra SSOP	0.8	4	0.4	1500		
PS29xx	Flat lead	1.27	4	0.4	2500		
PS256x	DIP	2.54	7	0.4	5000		
PS250x				0.3			
PS271x	SOP	2.54	5	0.3	3750		
PS270x							
PS281x	SSOP	1.27	4.5	0.1	2500		
PS280x							
PS284x	Ultra SSOP	0.8	4	0.4	1500		
PS29xx	Flat lead	1.27	4	0.4	2500		

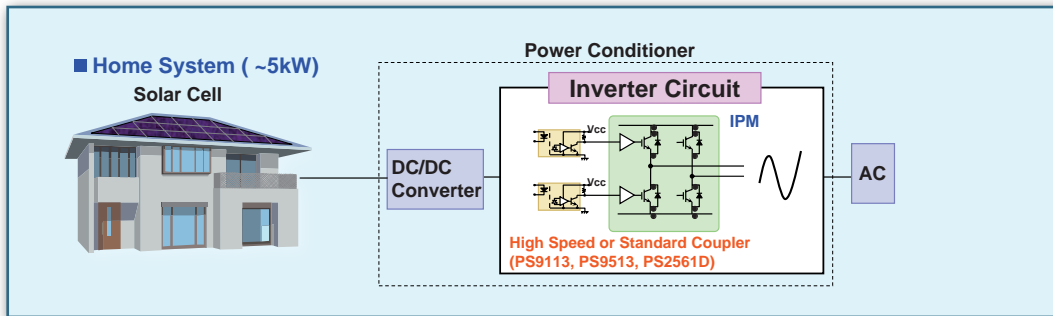
Applications Guide

	Isolated Drive	
	IGBT	IPM
A.T.E		
Air Conditioning	PS930X, PS950X	PS9113, PS9313, PS9303, PS9513
Alarm Panels		
Board CPU		
CAN Isolation		
Elevator		
E.P.O.S		
Fitness Equipment	PS930X, PS950X	PS9113, PS9313
Heating Controls		
Induction Cooker	PS930X, PS950X	
Instrumentation		
Lighting (Including LED Lighting)		
Lighting (Fluorescent)		
M.R.I	PS930X, PS950X	
Metering (Including Smart Metering)		
Motor Control (Industrial)	PS930X, PS950X	PS9113, PS9313, PS9303, PS9513
Motor Control (Home Appliances)	PS930X, PS9506	PS9113, PS9313, PS9303, PS9513
MW oven		PS9113, PS9313, PS9303, PS9513
Networking (consumer)		
Networking (industrial)		
Color PDP		
P.O.E		
Power Distribution System	PS930X, PS950X	PS9113, PS9313, PS9303, PS9513
Power Supplies		
UPS		PS9113, PS9313, PS9513
Programmable Logic Controller		
Refrigerator		PS9113, PS9313, PS9303
Robot	PS930X, PS950X	PS9113, PS9313, PS9303, PS9513
Security Panels		
Sewing Machine	PS930X, PS950X	PS9113, PS9313, PS9303, PS9513
Power Inverter (Including Solar Applications)	PS930X, PS950X	
Telephone Switching/ Terminals		
Test & Measurement Equipment		
Welding	PS930X, PS950X	PS9313, PS9513

High Speed Communication	Current & Voltage Sensing	General Purpose Isolation
		PS2501A, PS2561D
		PS2533, PS2535, PS2733
PS9X17A, PS9X21, PS9X51		
PS9115, PS9X17A, PS9X51		
PS9317, PS9587		PS2561D
PS8101, PS8802, PS9X17A, PS9X21, PS9X51		PS29XX
		PS25xx, PS27xx
		PS2381X, PS2501, PS2561D,
		PS25X1, PS27X1
PS9X17A, PS9X21		PS25XX, PS27XX
		PS2381, PS2561D, PS27XX, PS28XX
		PS2381, PS2561D
PS91XX, PS98XX		
PS8XX, PS9X17A		PS2381, PS2501, PS2561, PS2581, PS2701
PS8302, PS85XX, PS9X17A, PS9317, PS9587	PS8551, PS9551	PS25XX, PS27XX, PS28XX
	PS8551, PS9551	PS27X1, PS28X1
		PS27X1, PS28X1
PS8X21, PS9X21, PS9X17A, PS9X51		PS2X11, PS2XX5
PS9X21, PS9X51, PS9X17A		
PS9115, PS9X17A, PS9X51		
PS8802, PS9122, PS9822		PS27X1, PS28X1
PS9X17A, PS9X51		PS2381, PS25X1, PS2X61B
PS9317, PS9587		PS2X61B, PS27X1, PS28X1, PS29XX
		PS2561X, PS2561D
PS9117A, PS9817A		PS2701, PS28XX-1, PS28XX-4
PS8101, PS9117A	PS8551, PS9551	PS27X1, PS28X1
PS8XXX, PS9X17A, PS9X51	PS8551, PS9551	PS25XX, PS27XX, PS28XX, PS29XX
		PS2535, PS2X33
	PS8551, PS9551	
PS8302, PS85XX, PS9317, PS9587		
		PS27X1, PS28X1, PS29X1
PS9X17A, PS9X21, PS9X51		PS25XX, PS27XX, PS28XX, PS29XX
	PS8551, PS9551	

Industrial Application Examples

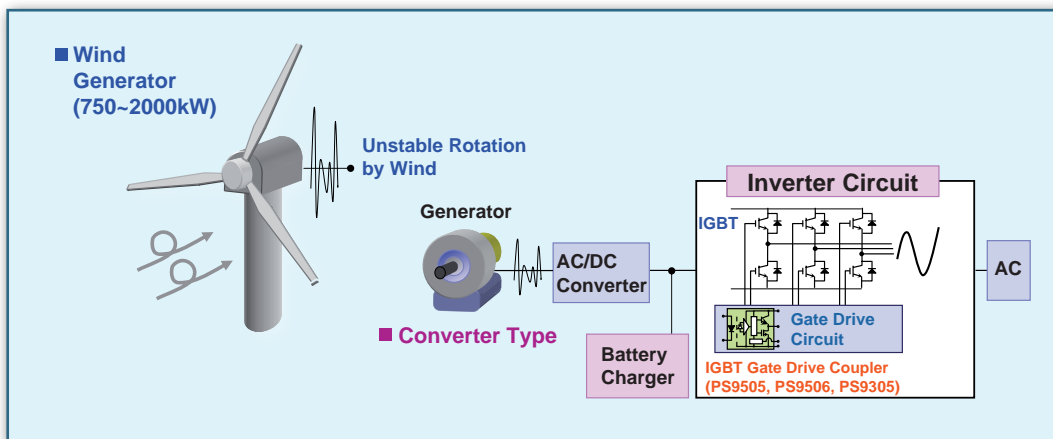
Solar Inverter using Renesas high-speed/standard couplers



PS9X13

- 1 Mbit/s IPM Drive
- High Output Voltage (35 V)
- High Isolation (upto 5 KV)

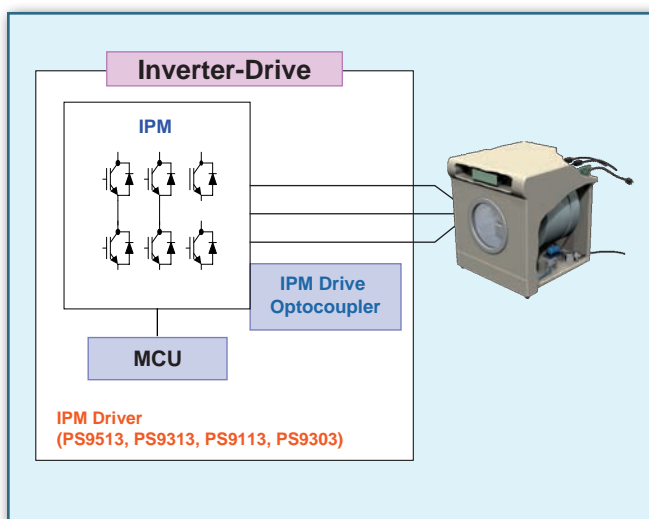
Wind Turbine using Renesas IGBT couplers



PS950X

- IGBT High Speed Gate Drive
- High Isolation (upto 5 KV)
- Creepage distance upto 8 mm

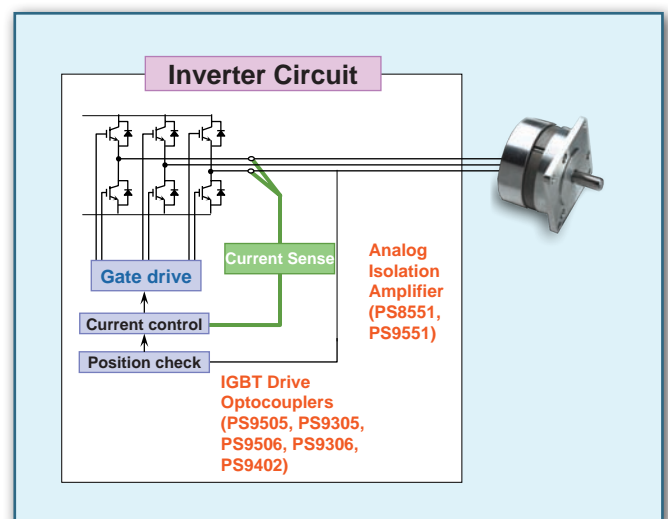
Washing Machine using Renesas IPM driver



PS9XX3

- IPM Driver
- Totem Pole Output
- High Isolation

Industrial Motor using Renesas high-speed couplers



PSX551

- Analog Isolation Amplifier
- High Linearity
- High Accuracy

Glossary

BV	Isolation Voltage	t_{off}	Turn-off Time
CM_H	Common Mode Transient Immunity at High Level Output	t_{PHL}	Propagation Delay Time (H → L)
CM_L	Common Mode Transient Immunity at Low Level Output	t_{PLH}	Propagation Delay Time (L → H)
CTR	Current Transfer Ratio	$ t_{PHL} - t_{PLH} $	Pulse Width Distortion (PWD)
I_C	Collector Current	V_{CC}	Supply Voltage
I_F	LED forward Current	$V_{CC} - V_{EE}$	Supply Voltage (IGBT-Drive Optocoupler)
I_{FHL}	Threshold Input Current	V_{CE}	Collector to Emitter Voltage
I_O	Output Current per channel	V_{CEO}	Collector to Emitter Voltage
R_L	Load Resistance	V_{DD}	Supply Voltage (CMOS Output Type Optocoupler)
T_A	Operating Ambient Temperature	V_O	Output Voltage
t_d	Delay Time	V_{IORM}	Isolation Working Voltage (with DIN EN60747-5-2 option)
t_r	Rise Time		
t_{on}	Turn-on Time		
t_s	Storage Time		
t_f	Fall Time		

Optocoupler Compass

← The Optocoupler Compass is available via the Attachment area (bottom left-hand corner of the pdf screen)

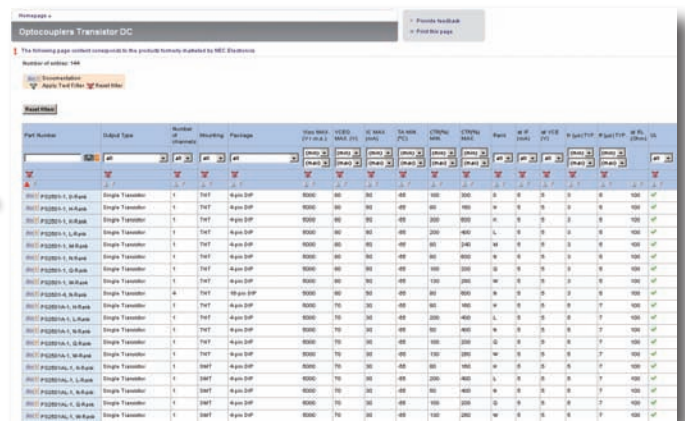
Optocoupler Selection Guide

More information available at: www.renesas.eu/opto

Optocoupler samples: Sampleorder_Opto-eu@lm.renesas.com

Online parametric search

- Providing an easy, interactive approach to optocoupler selection
- Search by Transistor or IC Output couplers
- Selection by key parameters including channel number, CTR, IC



Before purchasing or using any Renesas Electronics products listed herein, please refer to the latest product manual and/or data sheet in advance.

