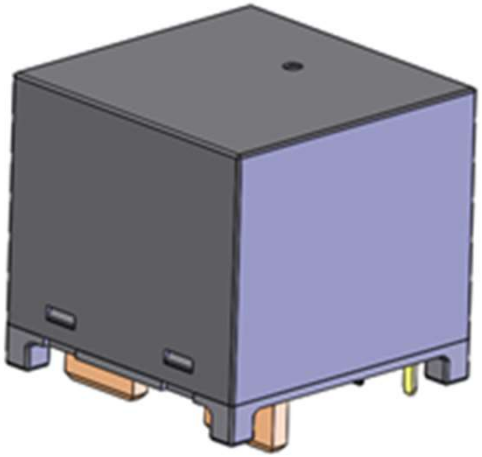
Product Overview

Coming Soon

Compact High Power PCB Relay

G9KA

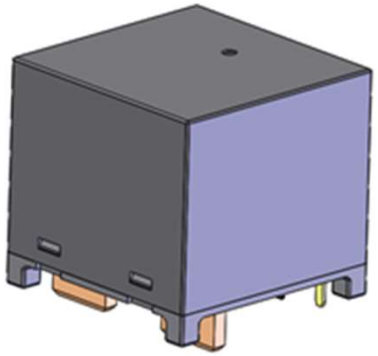


OMRON

What's new?

- High power PCB relay: G9KA is developed for high voltage / current applications in energy market such as consumer & industry PV inverter.

- 800VAC, 200A high-current switching capability.



- Omron original low-heat generating design with class-leading low contact resistance of *0.2 m ohm.

*As an initial value.

- Super compact and low-profile package (50mm X 50mm X 46mm)

Advantages for customers

1. Compared with conventional PCB relays;

(1) Reduces the design cost for heat dissipation such as heatsink, a fan, etc.

(2) Helps miniaturize end products with a simple heat dissipation design.

2. Replacing from contactors;

(1) Reduces man-hours and wiring mistakes by PC board connection.

(2) Helps design more compact and lighter end products.

(3) Reduces switching device costs without sacrificing necessary specifications.

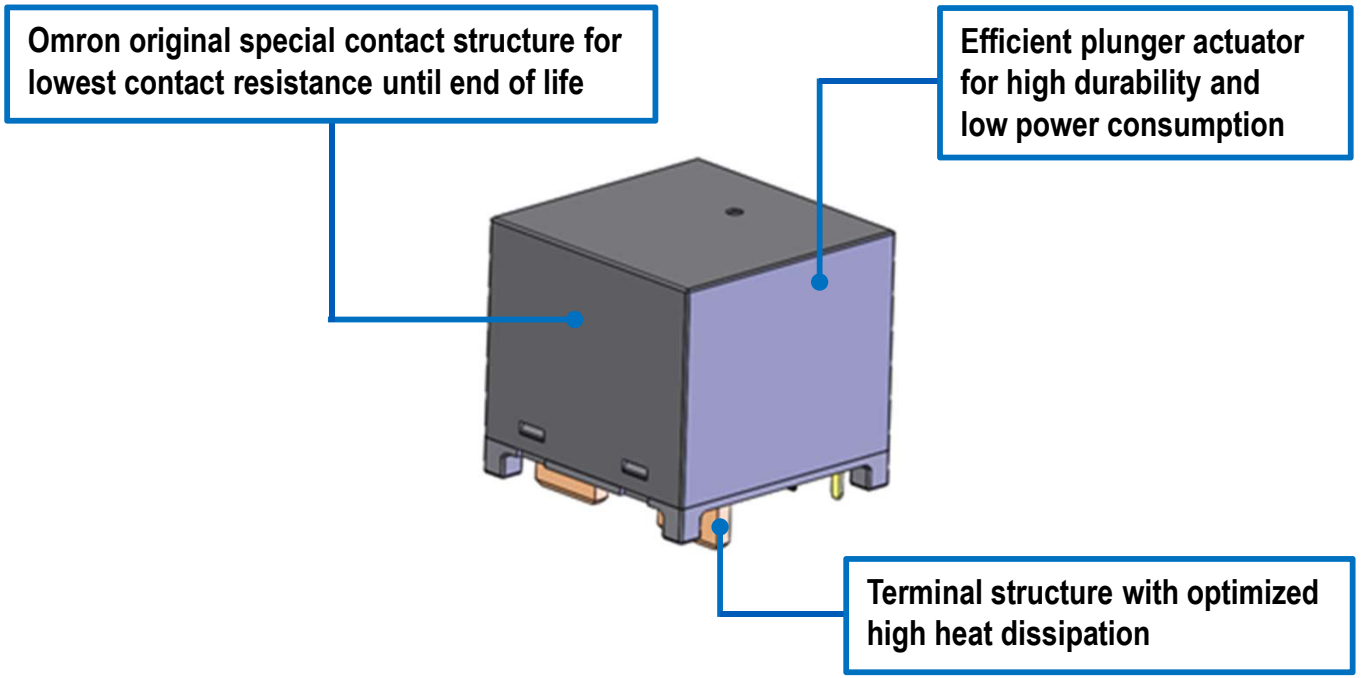
* For more details, please see pages 9 and 10.

Under development

Omron advanced technologies

Compact high power PCB relay: G9KA for high current equipment in energy market.

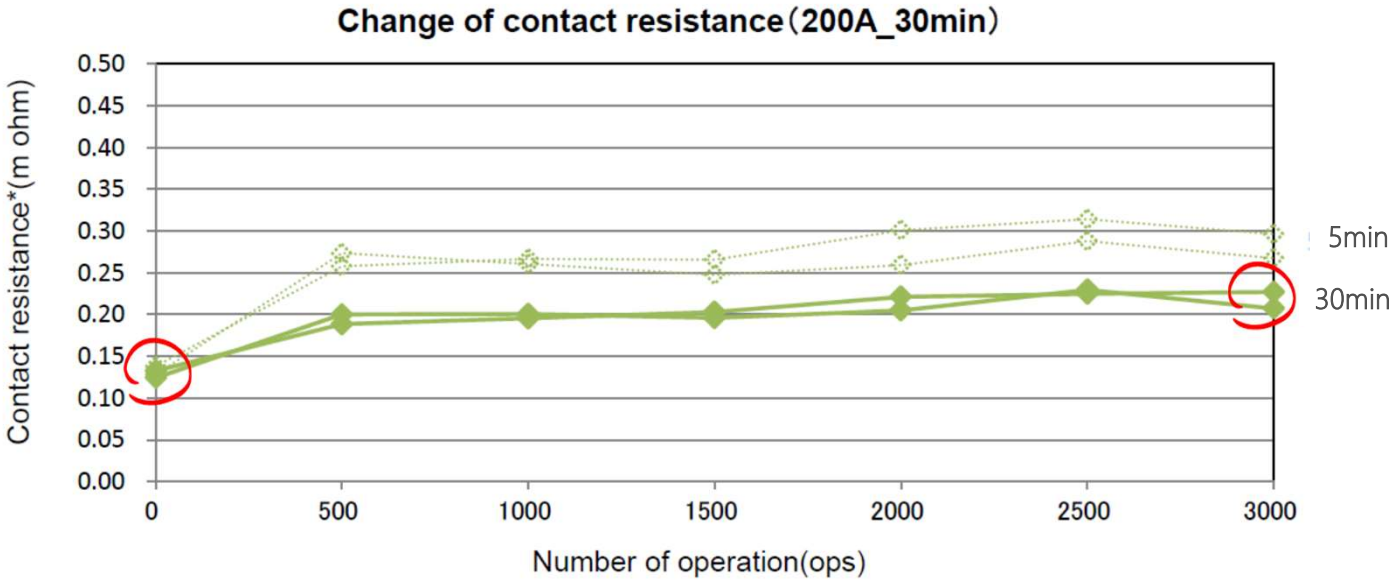
- Class-leading low-heat performance:
  Contact resistance is dramatically reduced. ➔ **0.2 m ohm or less** as an initial value.
- Super compact and low-profile package.



Under development

Performance details: Contact resistance

Our proven development and manufacturing competences in structures, materials, and production methods realize low CR until end of life.



<Test Conditions>

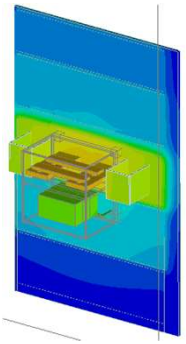
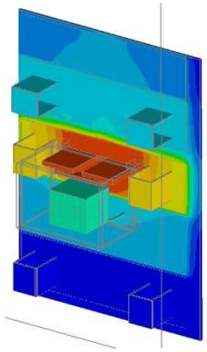
- Resistive load: 800 VAC, Making 50A, Carrying 50A, Breaking 50A
- Applied coil voltage: 12 V (100%) ➔ 6 V (Holding 50%)
- Ambient temperature: 23 deg.C
- Contact resistance: Measured at conditions of 200A, 30minutes

※Due to the product development stage, above data will be updated at mass production samples.

Under development

Performance details: Low-heat generation

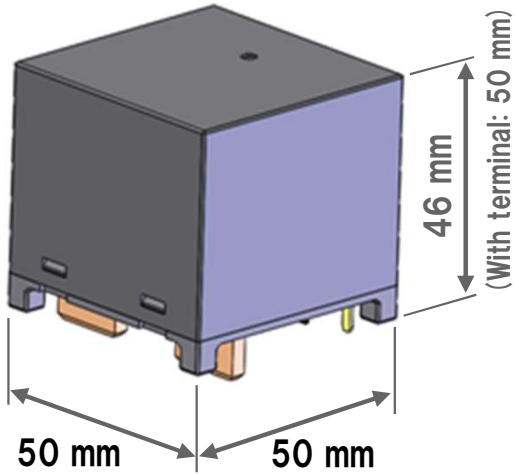
Omron's low-heat generation design with low contact resistance improves reliability of your high current equipment.
The following table shows the results of temperature rise simulation.

		G9KA	Company A Equivalent relay	Differences in temperature
Contact resistance *Initial reference values		0.18mΩ	0.70mΩ	
Temperature rise simulation results (under 480 VAC/145A)	Fixed contact	118.7 deg.C	161.0 deg.C	-42.3 deg.C
	Fixed Terminal	117.2 deg.C	155.3 deg.C	-38.1 deg.C
	Temperature Distribution *Reference values			

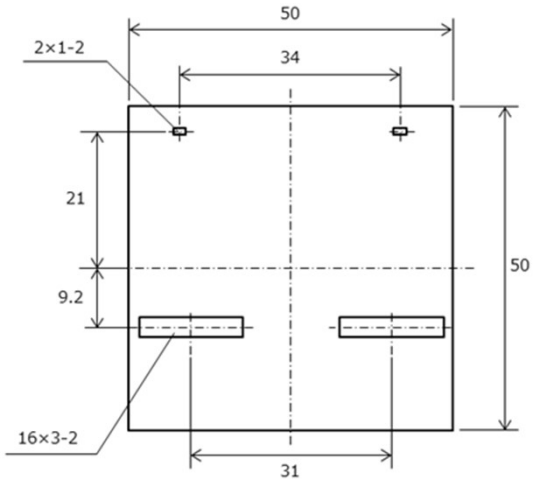
Under development

Preliminary product specifications

Outline dimensions



Terminal layout



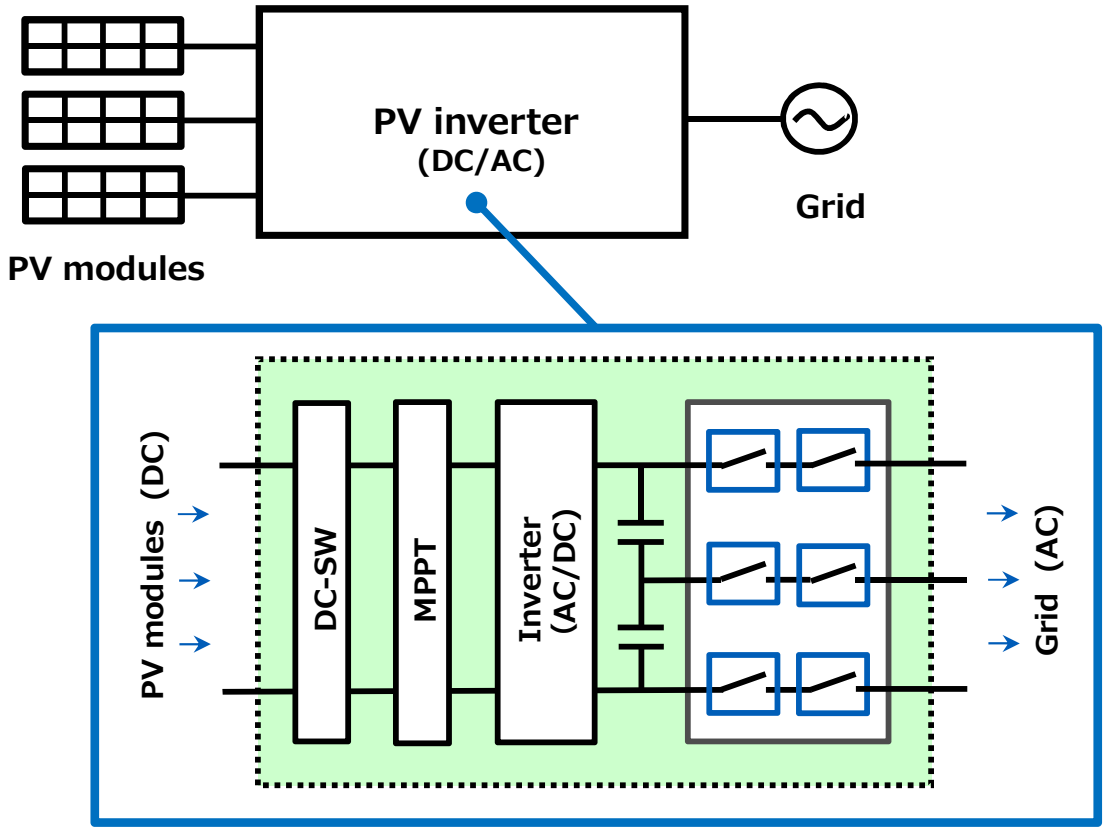
Item		G9KA Specifications
Coil	Coil voltage	12 VDC, 24 VDC
	Coil power Consumption	**5.0 W** (**1.25W** at holding voltage of 50%)
Contact	Rated load	**800 VAC / 200A** (resistive load)
	Contact resistance	**0.2m ohm or less** at 200A *At initial, measured after 5 minutes
	Contact gap	4.0 mm
Endurance	Mechanical	100,000 times
	Electrical *1sec.ON / 9sec.OFF at 85 deg.C	800 VAC / 200A (Break) 10 cycles
		800 VAC **Make 50A, Carry 200A, Break 50A** **30,000 cycles** at 85 deg.C
Ambient operating temperature		-40 to 85 deg.C
Terminal type		For PC board
Safety standard		TUV, UL

Note: The specified values may be changed before the release date.

Application example

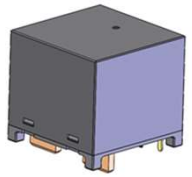
Grid interconnection for consumer & industry PV inverters

- Advancement of larger capacity in PV inverter.
  - ➔ Low contact resistance feature is required to avoid rise in temperature caused by high current.



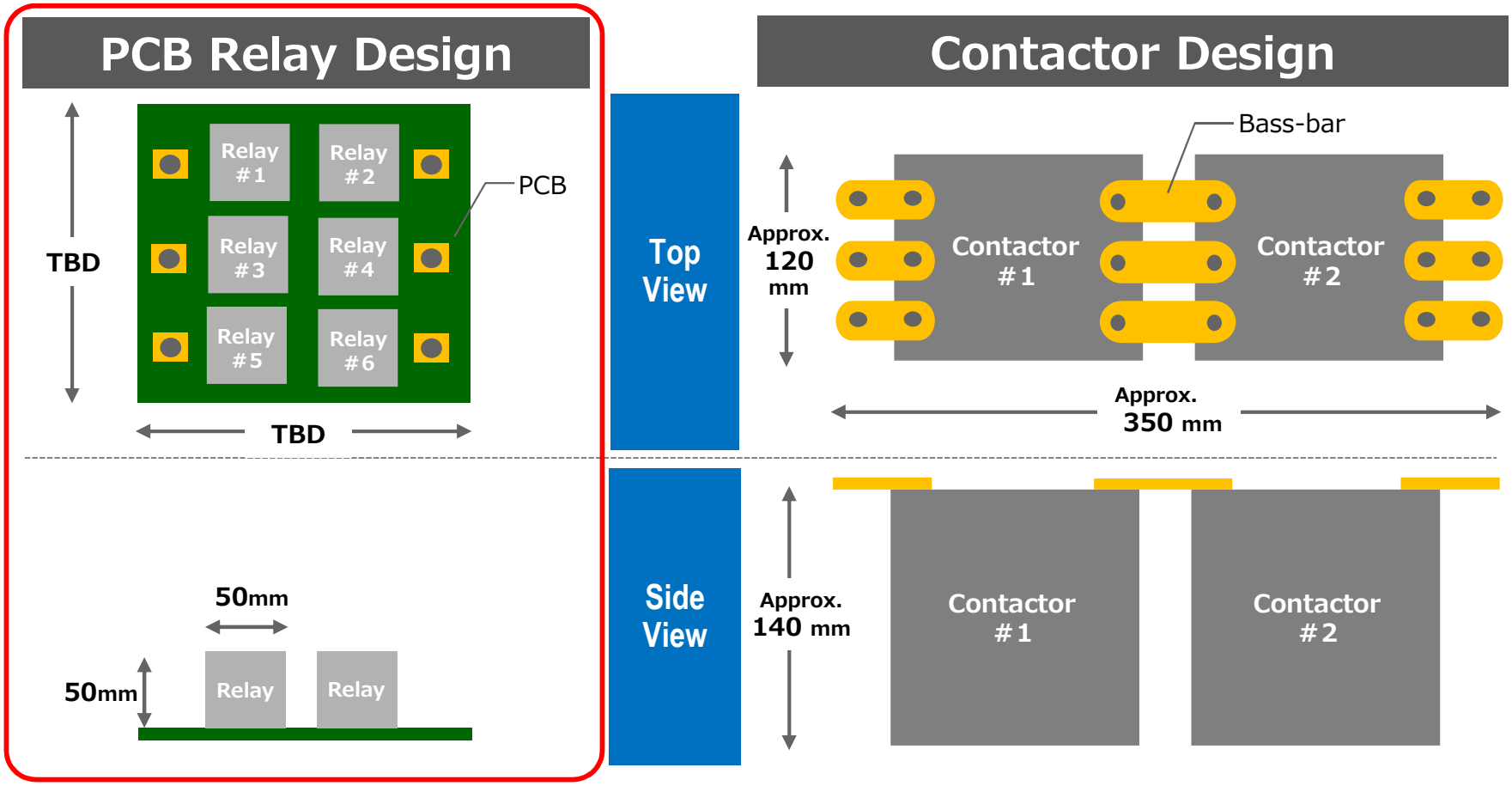
Advantages for customers: Replacing from contactor

PCB relay contributes less wiring, lower profile, and cost reduction by reasonable switching performance for inverter applications.

PCB Relay : G9KA			Contactor (General)
1a x 3 pcs 		VS.	3a x 1 pcs  General 3-pole Contactor
6 Power Lines In case 6 relays in 1 PC board	67% Down	Wiring	12 Power Lines In case 2 contactors in 1 Product
50mm	64% Down	Height	Approx. 140mm
750,000 mm^3 In case 6 relays in 1 product and without PC board	87% Down	Volume	5,880,000 mm^3 In case 2 contactors in 1 Product
0.6kg / 3pcs total	76% Down	Weight	Approx. 2.5kg / pcs

Advantages for customers: Replacing from contactor

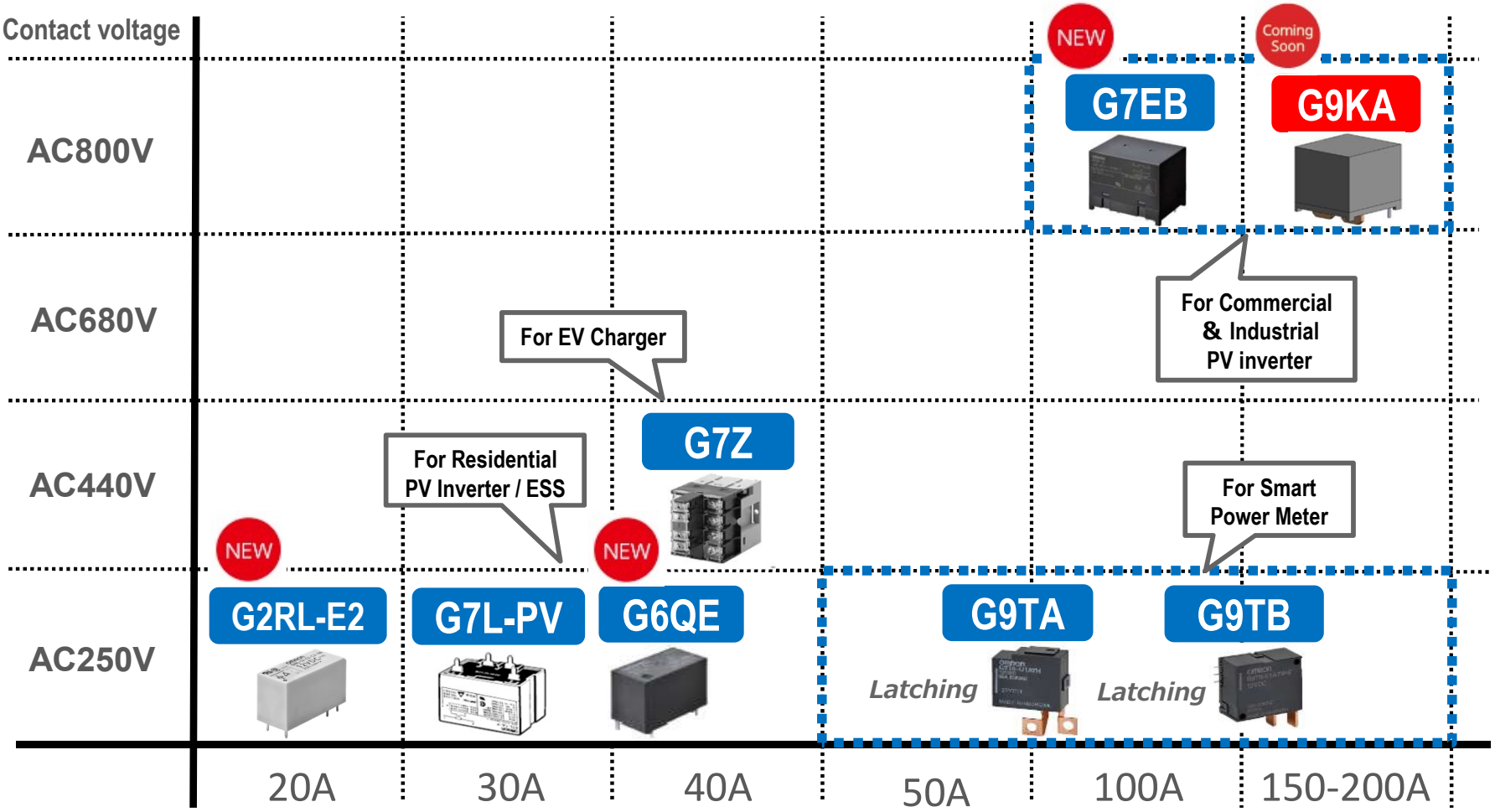
We estimate occupied area will be reduced, and height can be reduced to 1/3,
In case of being replaced by PCB relay design.



※ Above figures are just for reference based on Omron research. Actual values should depend on customer's product design.

Product lineup / AC high capacity PCB relays

A wide product line with compact / low-heat generating features are available for high capacity applications.



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