

# G9KA-E

## 1000VAC/300A High Power PCB Relay

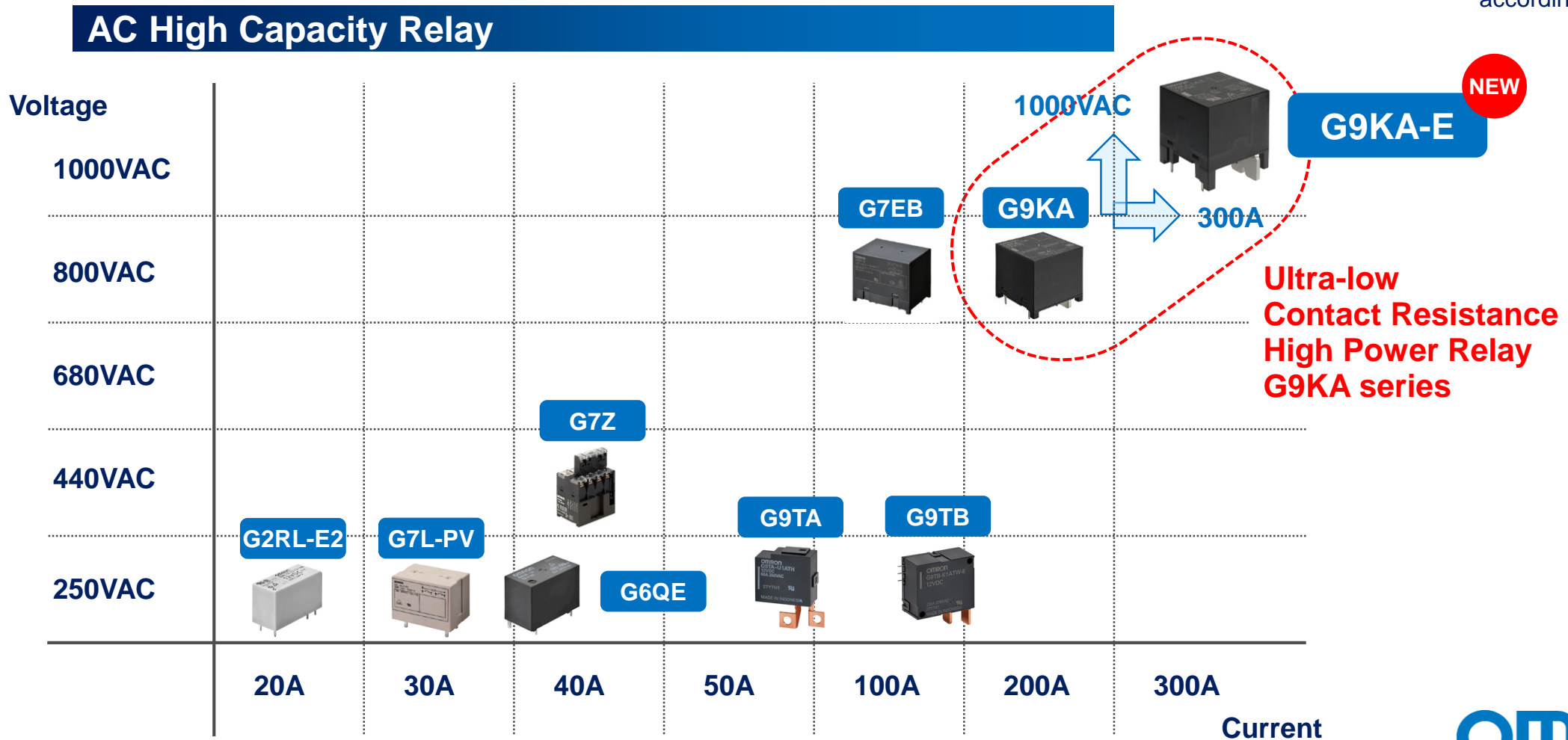


**OMRON**

# Updated Product Roadmap

- G9KA-E is positioned as the Highest Current & Voltage in our AC High Power PCB Relays.
- Not only in Omron's lineup, but also the Highest of all PCB relays in the market<sup>(\*1)</sup>.

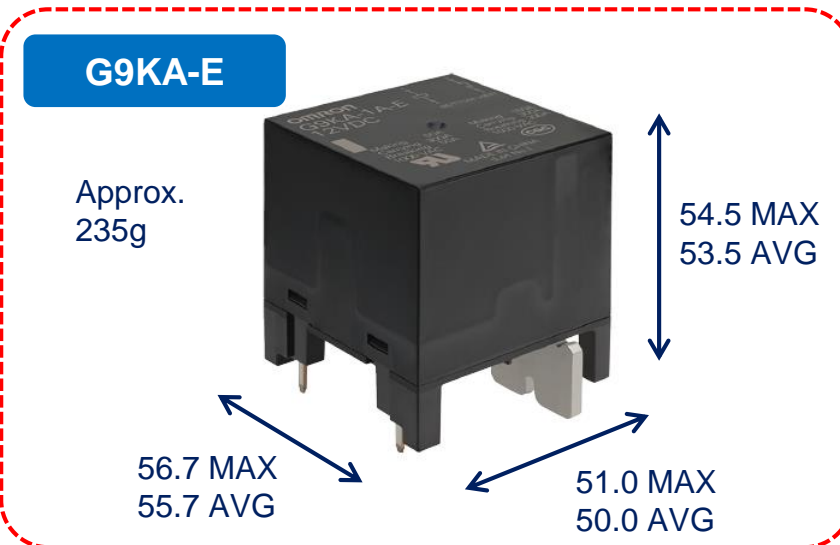
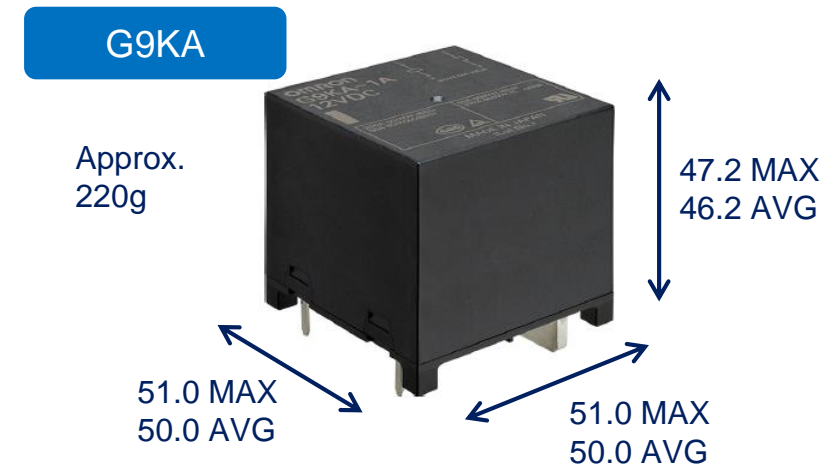
(\*1) as of Jan 2023,  
according to our research



# New Product Main Spec

- Other than Voltage(1000VAC) & Current(300A) and size & weight, most of specifications are same as G9KA including the Ultra-Low Contact Resistance feature.

Terms	G9KA (G9KA-1A)	G9KA-E (G9KA-1A-E)
<b>Coil</b>		
Rated Voltage	12VDC, 24VDC	
Power Consumption	5,000mW, 1,012mW at holding voltage	
<b>Contact</b>		
Rated Load (Resistive) (make/carry/break)	50A at 800VAC 800VAC 150A/200A/200A 200A at 600VAC	<b>1000VAC 50A/300A/50A</b> <b>1000VAC 150A/300A/300A</b>
Contact Resistance	0.2mΩ max.	
Contact Gap	4.0mΩ min. (applied to VDE0126)	
<b>Endurance</b>		
Mechanical	100K ops. min.	
Electrical (Make/Carry/Break ) (1sOn/9sOFF at85degC)	800VAC 50A/200A/50A 30K ops. min.	<b>1000VAC 50A/300A/50A</b> <b>30K ops. min.</b>
	800VAC 150A/200A/200A 10 ops. min.	<b>1000VAC 150A/300A/300A</b> <b>10 ops. min.</b>
	200A at 60VDC 2K ops. min.	(planning to be added)
<b>Others</b>		
Ambient Temp.	-40 to +85 deg.C	



# New Product Features & Benefits

- G9KA-E is the **Higher Capacity** version of G9KA moving from 800VAC, 200A to 1000VAC, 300A.
- The **Ultra-Low Contact Resistance** of  $\leq 0.2\text{m}\Omega$  spec generates low heat on the PCB.
- G9KA-E's **300A/1000VAC** is the highest capacity spec in the market PCB relays<sup>(\*1)</sup>.

(\*1) as of Jan 2023,  
according to our research

Unique<sup>(\*1)</sup> Structure  
of Double Brake & Twin Contacts  
to realize **Lower Contact Resistance**  
of  $\leq 0.2\text{m}\Omega$

Plunger-type Relay Structure  
to realize **Higher Endurance**  
with **Lower Power Consumption**

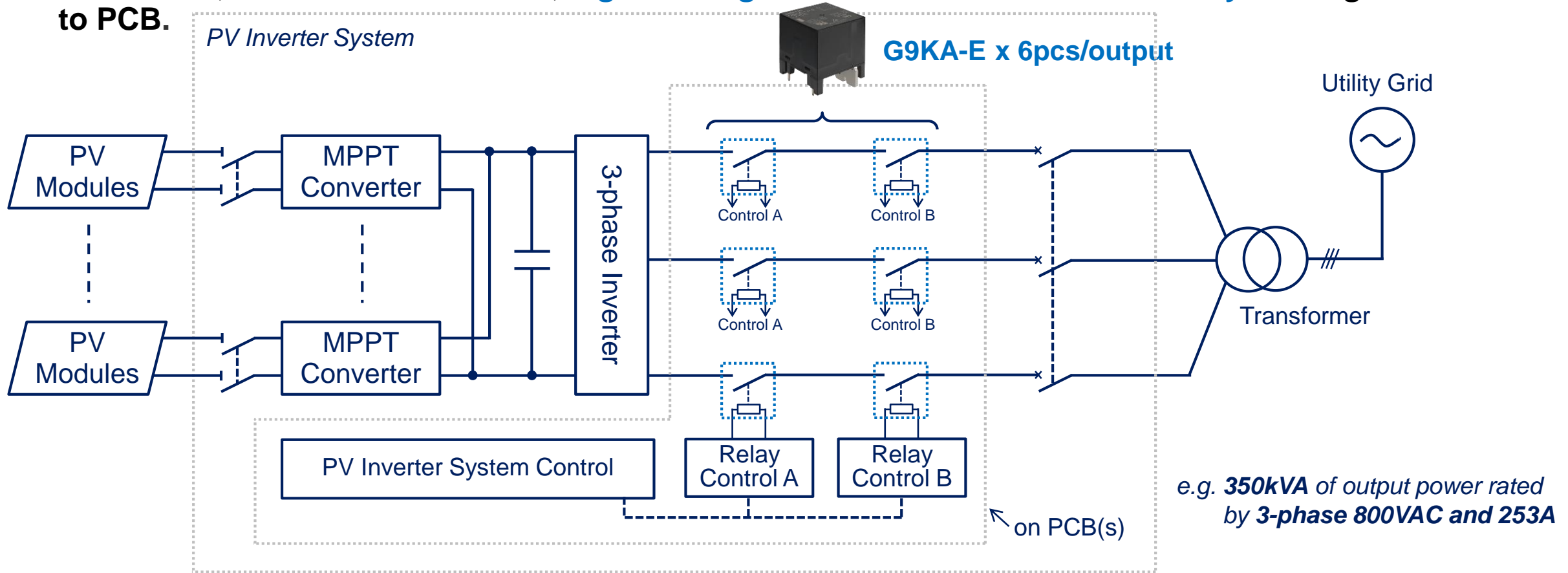
Contact Material  
with High Electrical Conductivity  
to realize **Lower Contact**  
**Resistance**

Well-Designed Terminals  
to realize **Higher Heat Radiation**  
(keep the Temperature Low)



# Application Case / Grid-tie Inverter for PV and ESS

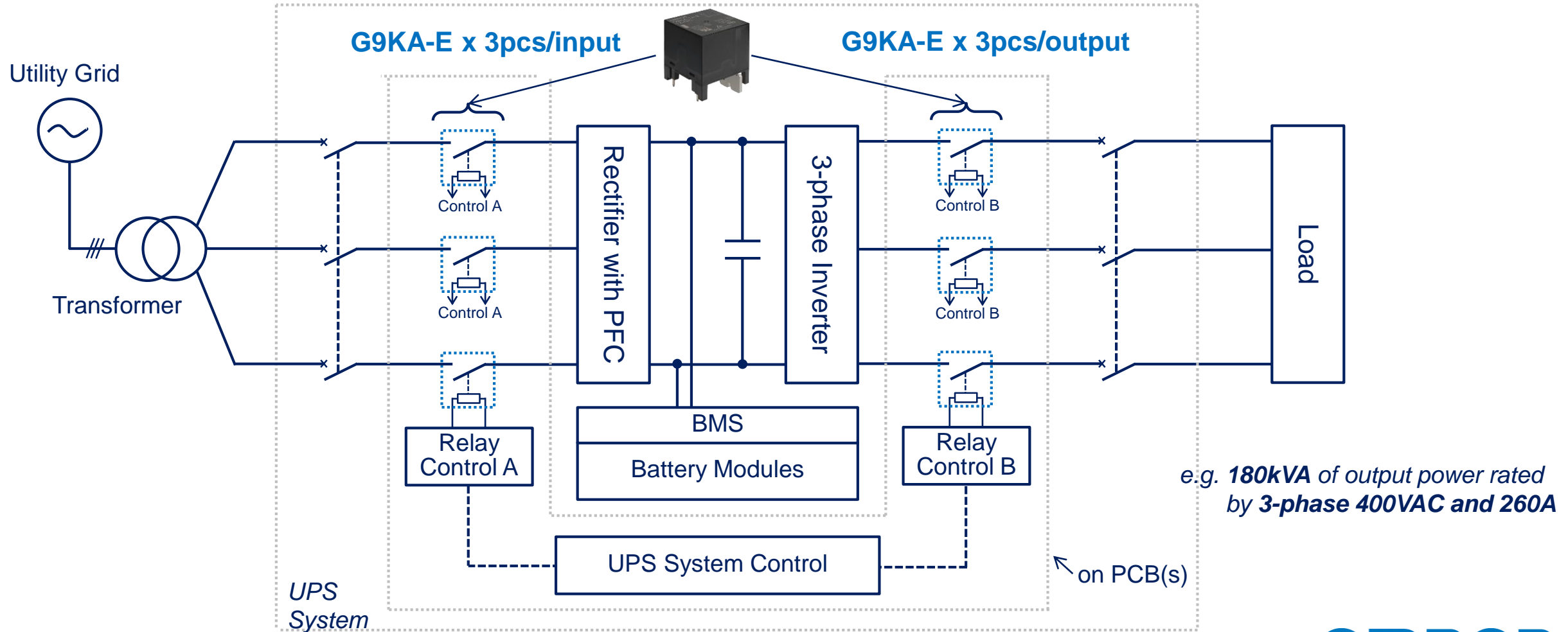
- G9KA series can be applied to **Inverters for PV & ESS** to disconnect from the grid
- G9KA-E is suitable to be used in **200-400kVA/600-800VAC designs**. By replacing conventional contactors, it can be **Smaller Size, Lighter Weight** and **Provide Ease in Assembly** moving from screws to **PCB**.



**Example of Fault Tolerant Automatic Disconnection from the grid in PV Inverter required by IEC62109-2**

# Application Case / UPS(Uninterruptible Power Supply)

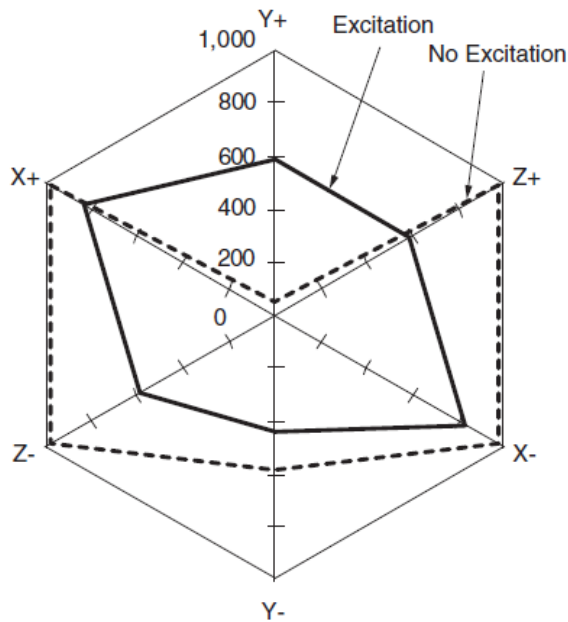
- G9KA series can be also applied to **UPS input & output lines** to disconnect from the grid and the load
- G9KA-E is suitable to be used in around 100-200kVA, 3-phase 400VAC input/output circuits.



# Caution for Shock Resistance

- As with G9KA, Shock Resistance should be taken into account to use G9KA-E.
- Even when the relay is on, the resistance to malfunction impact differs depending on the mounting direction, so please use it after understanding by the customer.
- Please also check the datasheet about shock resistance.

## Malfunction shock resistance



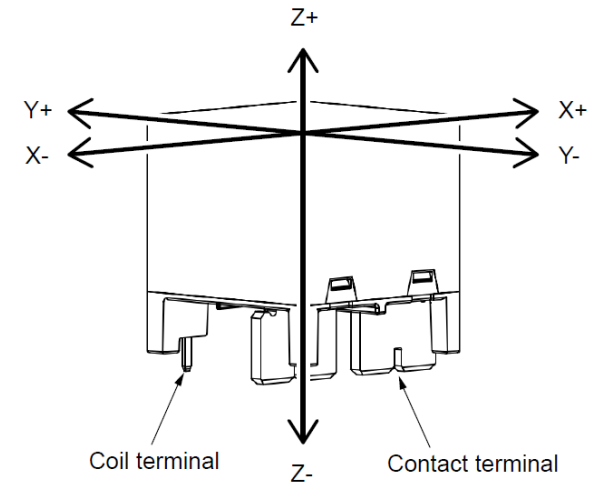
## Measurement:

Measure the value of contact malfunction happening by applying 3 axes with 6 direction 3 times each.

The energized voltage is within the range of the rated holding voltage.

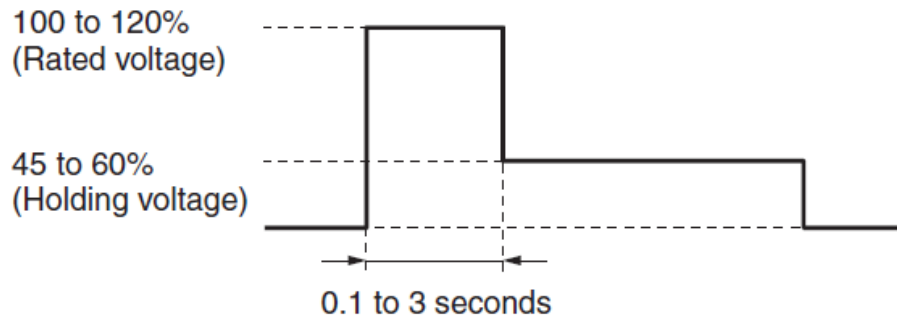
## Standard value:

Excitation 100 m/s<sup>2</sup>



# Caution for Holding Voltage

- As with G9KA, Holding Voltage **should be used** for G9KA-E.
- This allows customers to reduce coil power consumption by approximately 80%.
- Please also check the datasheet about holding voltage.



- Apply the rated voltage for 0.1 to 3 seconds to the coil first.
- The range of coil rated voltage must be set as 100 to 120%, and holding voltage must be 45 to 60%. Do not exceed the ranges due to the change of coil voltage change and so on.

	Applied coil voltage	Coil resistance *	Coil power consumption
Rated voltage	100 to 120%	28.8 $\Omega$ (DC12)	Approx. 5 to 7.2 W
Holding voltage	45 to 60%	115.2 $\Omega$ (DC24)	Approx. 1.0 to 1.8 W

\* The coil resistances were measured at a coil temperature of 23°C with tolerances of  $\pm 10\%$ .



# Warnings/Precautions

- As with G9KA, G9KA-E operates High Current so please explain the below to customers.
- As with G9KA, G9KA-E also requires an ACS (Application Check Sheet) submitted to Omron for approval before proceeding with the purchasing order.

## 【Warning】

- Do not connect to individual relays by probes or by socket.  
Abnormal heat may be experienced by insufficient connections.
- If a large current is applied while the mounting is uncertain, there is a risk of abnormal heat generation.
- Do not use dropped relays, as the shock may cause improper relay operation.



Thank You