

**Panasonic**  
INDUSTRY

# RELAYS

Short Form



**Your Committed Enabler**

# IN Your Future



Signal

Power

High Capacity

Safety

High Frequency

Semiconductor

Automotive

Plug-in

High Voltage



Information, Telecommunication,  
Measuring Technologies



White Goods



Control Engineering



Building Automation



System Engineering



Renewable Energy,  
Energy Distribution



Railway Engineering



Automotive

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# Equipping. Enabling. Inspiring.

## On our Relays

Hardly any sector of the working or living space can exist without modern relay technology today. Panasonic Industry meets the various needs with a broad range of innovative and economical relays series.

After more than 40 years of experience at the forefront of relay innovation and development, Panasonic Industry today offers a portfolio of more than 2,000 electromechanical relay versions in the field of miniaturized relays - from ultra-miniature SMD signal relays to robust, compact industrial high power types.

**With our new short form we'll invite you to gain a quick and comprehensive overview on our new relay portfolio: our endurance runners, our innovations – and for sure the ones that suit your project.**

## About Panasonic Industry

As established part of the global Panasonic Corporation with long-grown and European relationships we strive for continuous innovation and share the company's overarching purpose: **Shaping the future for the better.**

To take your ideas to the next level, we at Panasonic Industry research, develop and produce technologies and components for a vast range of industries.

From full-custom batch-size 1 factory automation devices to next-gen electronic and electromechanical components manufactured in billions of units, our clear focus on innovation, performance and reliability sets the bar high in multiple market sectors – and trends.

# Service & Support

## “ Does this relay suit my idea? And if not - which one does?

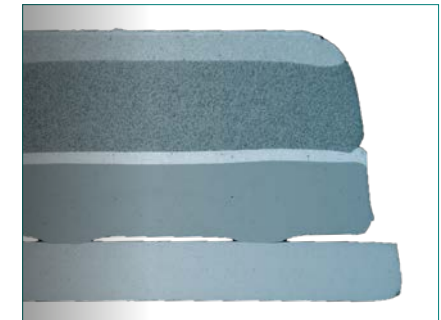
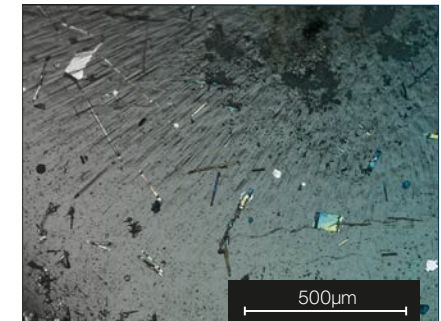
Albeit the standard relay datasheet covers more than 80% of all applications, the paper can only cover a certain scope of values and parameters, mostly concerning worst case scenarios, for example in terms of temperature.

When it comes to specific requests like switching 8A with a 6A relay, our laboratories in Germany are able to support you. Our engineers do not only perform lifetime tests but provide you with an in-depth view at the application parameters. In almost every case, there is a relay that fits your project, even if the datasheet wouldn't reveal it in the first place.

## “ Is it possible to switch 8A with a slim 6A relay?

Application support is then followed by the analysis part: Continuous tests during production will ensure a high and constant quality level.

When it comes to lifetime or customer related investigations, latest technology shows results about the condition, wear-out or remaining lifetime of relays. Finally, we encourage our customers to address our support in case of questions and claims. Resorting to many decades of experience, the reason of a relay fault is mostly found not the in the relay itself, but in the context of improper component decision or external factors like overcurrent, mechanical stress or hazardous materials.



# Industrial Relays

## Proven, reliable, innovative and energy-efficient switching solutions

We find ourselves already in the midst of the next industrial revolution, which is not only a question of visions and ideas - but also of nex-gen reliable and efficient components making a true difference in daily operations.

Get a glimpse on what Panasonic Industry has to offer in its latest portfolio of industrial relays – from circuit board connection types to plug-in or screw terminals, from low-level load switching to double-digit ampere values. Discover the variety of industrial switching.

Load switching capability ranges from low-level signals to double-digit ampere values.

Various connection types such as circuit boards, plug-in or screw terminals offer a large variety of options that are tailored to your application.

Signal

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High Capacity

Safety

High Frequency

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“

...NO MATTER IF YOU'RE AIMING FOR HIGH VOLTAGE ROBUSTNESS OR LOW COIL POWER LOSS.

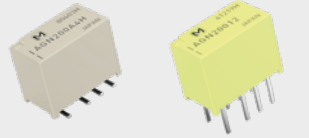
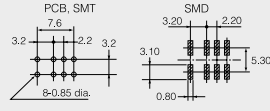
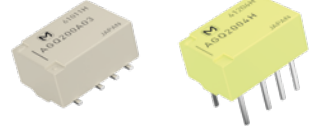
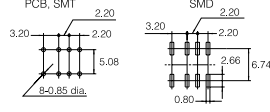
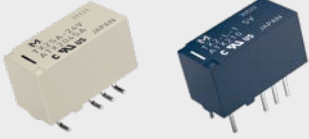
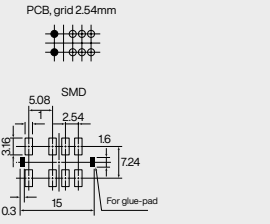


## Signal Relays

With a compact size and switching capability up to 2A, signal relays are used in a wide field of communication and security applications as well as in lighting, measurement or automation equipment.

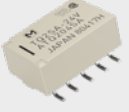
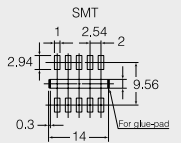

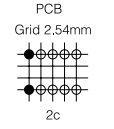

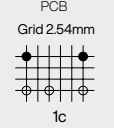
Galvanic separation between control and load circuit and ruggedness against high inrush or voltage peaks (overload) makes them an ideal choice for any kind of application.

Even battery-driven or energy harvesting applications can benefit from the modern latching technology all signal relays offer. Power is only needed for few hundred milliseconds during on- or off-switching, in between the relays needs no energy to keep the state.

Series	Features	Coil	Mounting (bottom view)																																				
<p><b>AGN</b></p>  <p>10.6 x 5.7 x 10.0 mm    10.6 x 5.7 x 9.0 mm</p> <p>RTIII    2c    1 coil latching    CSA    UL    BSI</p>	<ul style="list-style-type: none"> <li>» Compact slim body</li> <li>» 1,500V FCC</li> <li>» 2,500V Telcordia</li> <li>» Twin crossbar contacts ensures high contact reliability</li> <li>» High sensitivity 100mW type available</li> </ul> <p>1A    10µA minimal    110V DC 125V AC</p>	<table border="1"> <tr> <td>DC 1.5, 3, 4.5, 6, 9, 12V</td> <td>DC 24V</td> </tr> <tr> <td colspan="2">Single side stable</td> </tr> <tr> <td>140mW</td> <td>230mW</td> </tr> <tr> <td colspan="2">Sensitive / 1 coil latching type</td> </tr> <tr> <td>100mW</td> <td>120mW</td> </tr> </table>	DC 1.5, 3, 4.5, 6, 9, 12V	DC 24V	Single side stable		140mW	230mW	Sensitive / 1 coil latching type		100mW	120mW	<p>THT    SMD</p>  <p><a href="#">Go To Overview &gt;&gt;</a></p>																										
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<p><b>AGQ</b></p>  <p>10.6 x 7.2 x 5.4 mm    10.6 x 7.2 x 5.2 mm</p> <p>RTIII    2c    1 coil latching    CSA    UL    BSI</p>	<ul style="list-style-type: none"> <li>» Space saving flat body</li> <li>» 1,500V FCC</li> <li>» 2,500V Telcordia</li> <li>» The use of twin crossbar contacts ensures high contact reliability</li> <li>» Power type for 3,5A inrush current available</li> </ul> <p>2A    10µA minimal    110V DC 125V AC</p>	<table border="1"> <tr> <td>DC 1.5, 3, 4.5, 6, 9, 12V</td> <td>DC 24V</td> </tr> <tr> <td colspan="2">Single side stable</td> </tr> <tr> <td>140mW</td> <td>230mW</td> </tr> <tr> <td colspan="2">Sensitive / 1 coil latching type</td> </tr> <tr> <td>100mW</td> <td>120mW</td> </tr> </table>	DC 1.5, 3, 4.5, 6, 9, 12V	DC 24V	Single side stable		140mW	230mW	Sensitive / 1 coil latching type		100mW	120mW	<p>THT    SMD</p>  <p><a href="#">Go To Overview &gt;&gt;</a></p>																										
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<p><b>TX</b></p>  <p>15 x 7.4 x 8.4 mm    15 x 7.4 x 8.2 mm</p> <p>RTIII    2c    1 coil latching    2 coil latching    CSA    UL    BSI</p>	<ul style="list-style-type: none"> <li>» 1,500V FCC</li> <li>» 2,500V Telcordia</li> <li>» 3 types of surface-mount terminals available</li> </ul> <p>2A    10µA minimal    220V DC 220V AC</p> <p><b>TX-TH high inrush type</b></p> <p>7.5A inrush    2A    10µA minimal    220V DC 250V AC</p> <p><b>TX-D high insulation type</b></p> <ul style="list-style-type: none"> <li>» Surge breakdown voltage 6kV (contacts to coil)</li> </ul> <p>2A    10µA minimal    220V DC 250V AC</p> <p><b>TX-S sensitive type</b></p> <ul style="list-style-type: none"> <li>» Very low operating power</li> </ul> <p>1A    10µA minimal    110V DC 125V AC</p>	<table border="1"> <tr> <td>DC 1.5, 3, 4.5, 5, 6, 9, 12V</td> <td>DC 24V</td> <td>DC 48V</td> </tr> <tr> <td>Single side stable: 140mW</td> <td>270mW</td> <td></td> </tr> <tr> <td>1 coil latching: 100mW</td> <td></td> <td></td> </tr> <tr> <td>2 coil latching: 200mW</td> <td></td> <td></td> </tr> <tr> <td>Single side stable: 140mW</td> <td>270mW</td> <td></td> </tr> <tr> <td>1 coil latching: 100mW</td> <td></td> <td></td> </tr> <tr> <td>2 coil latching: 140mW</td> <td></td> <td></td> </tr> <tr> <td>Single side stable: 200mW</td> <td>230mW</td> <td></td> </tr> <tr> <td>1 coil latching: 150mW</td> <td>170mW</td> <td></td> </tr> <tr> <td>Single side stable: 50mW</td> <td>70mW</td> <td></td> </tr> <tr> <td>1 coil latching: 35mW</td> <td>50mW</td> <td></td> </tr> <tr> <td>2 coil latching: 70mW</td> <td>150mW</td> <td></td> </tr> </table>	DC 1.5, 3, 4.5, 5, 6, 9, 12V	DC 24V	DC 48V	Single side stable: 140mW	270mW		1 coil latching: 100mW			2 coil latching: 200mW			Single side stable: 140mW	270mW		1 coil latching: 100mW			2 coil latching: 140mW			Single side stable: 200mW	230mW		1 coil latching: 150mW	170mW		Single side stable: 50mW	70mW		1 coil latching: 35mW	50mW		2 coil latching: 70mW	150mW		<p>THT    SMD</p>  <p><a href="#">Go To Overview &gt;&gt;</a></p>
DC 1.5, 3, 4.5, 5, 6, 9, 12V	DC 24V	DC 48V																																					
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# Industrial Relays | Signal Relays

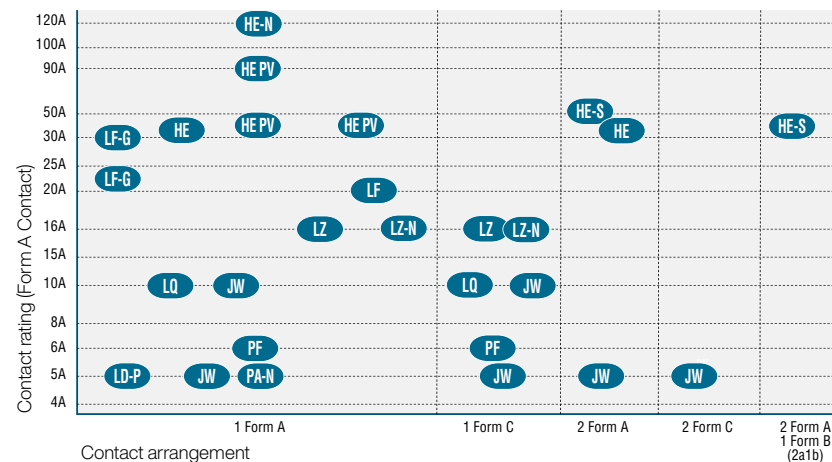
Series	Features	Coil			Mounting (bottom view)
<b>TQ SMD</b>  14 x 9 x 5.6 mm RTIII 2c 1 coil latching 2 coil latching CSA UL	» Ultra low profile 5.8mm » Surge withstand 2,500V » 3 types of surface-mount terminals available 2A 10µA minimal 220V DC 125V AC	DC 1.5, 3, 4.5, 5, 6, 9, 12V DC 24V DC 48V	DC 24V DC 24V DC 24V DC 24V	DC 48V DC 48V DC 48V DC 48V	SMD  <a href="#">Go To Overview &gt;&gt;</a>
<b>TQ THT</b>  14 x 9 x 5 mm RTIII 2c 1 coil latching 2 coil latching CSA UL	» 1,500V FCC » Low thermal electromotive force approx. 5 µV 1A 10µA minimal 110V DC 125V AC	DC 3, 4.5, 5, 6, 9, 12V DC 24V DC 48V	DC 24V DC 24V DC 24V DC 24V	DC 48V DC 48V DC 48V DC 48V	THT  <a href="#">Go To Overview &gt;&gt;</a>
<b>DS1</b>  15 x 9.9 x 9.9 mm RTIII 1c 1 coil latching 2 coil latching CSA UL	» 1,500V FCC 2A 10µA minimal 220V DC 250V AC	DC 1.5, 3, 5, 6, 9, 12, 24, 48V DC 24V DC 48V	DC 24V DC 24V DC 24V DC 24V	DC 48V DC 48V DC 48V DC 48V	THT SMD  <a href="#">Go To Overview &gt;&gt;</a>

**Power relays** - the backbone of applications in countless contexts.

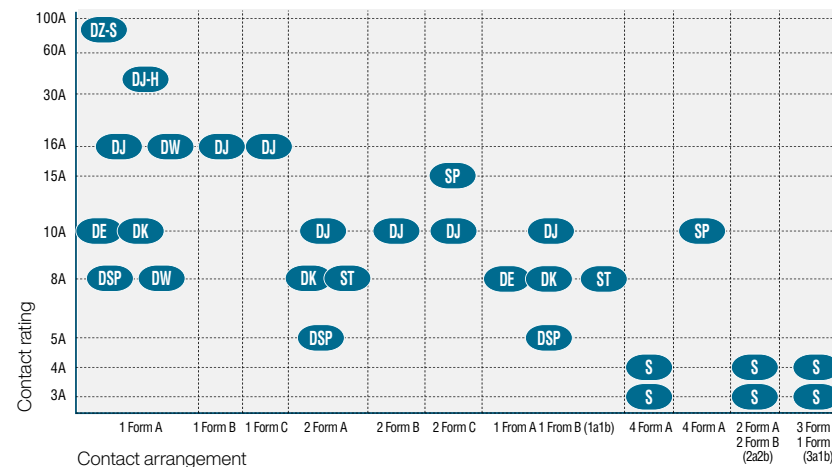
There are clear trends towards high power handling directly on the PCB – and towards polarized relay technology for low or (for the latching types) even zero energy consumption.

# Power Relays


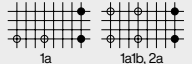

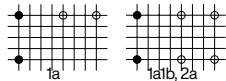

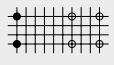

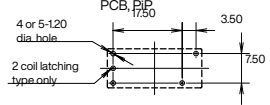
## Non polarized type power relays


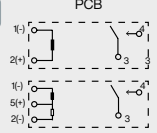

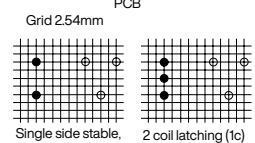


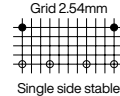


## Polarized type power relays (with latching)



# Industrial Relays | Power Relays

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<b>DSP</b>  20.2 x 11 x 10.5 mm RTIII 1a 1ab 2a 1 coil latching 2 coil latching CSA TÜV UL	<ul style="list-style-type: none"> <li>» Miniature high sensitive power relay</li> <li>» High breakdown voltage</li> <li>» Creepage &amp; clearance distance min. 3.5mm</li> </ul>	DC 3, 5, 6, 9, 12, 24V  Single side stable & 2 coil latching: 300mW 1 coil latching: 150mW	1,000Vrms	2,000Vrms	3,000Vrms	5,000V	THT PCB Grid 2.54mm  1a 1ab, 2a <a href="#">Go To Overview &gt;&gt;</a>
<b>DK</b>  20 x 12.5 x 9.7 mm RTIII 1a 1ab 2a 2 coil latching CSA TÜV UL VDE	<ul style="list-style-type: none"> <li>» Creepage &amp; clearance distance min. 8mm:                DK2A-L1/L2 min. 6.8mm                DK1A1B-L1/L2 min. 6.8mm</li> </ul>	DC 3, 5, 6, 9, 12, 24V  200mW	1,000Vrms	4,000Vrms	4,000Vrms	10,000V	THT PCB Grid 2.54mm  1a 1ab, 2a <a href="#">Go To Overview &gt;&gt;</a>
<b>DE</b>  25 x 12.5 x 12.5 mm RTIII 1a 1ab 2a 1 coil latching 2 coil latching CSA TÜV UL VDE	<ul style="list-style-type: none"> <li>» Conforms to VDE0631</li> <li>» Low coil power</li> <li>» High switching capacity:</li> <li>» Creepage &amp; clearance distance min. 8mm</li> <li>» PIP Types available on request. Please contact: relays@eu.panasonic.com</li> </ul>	DC 1.5, 3, 4.5, 5, 6, 9, 12, 24, 48V  Single side stable & 2 coil latching: 200mW 1 coil latching: 100mW	1,000Vrms	4,000Vrms (1ab, 2a)	5,000Vrms	12,000V	THT PCB Grid 2.54mm  <a href="#">Go To Overview &gt;&gt;</a>
<b>DW/ DW-HL</b>  24 x 10 x 18.8 (15.8) mm RTIII 1a 1 coil latching 2 coil latching UL/C-UL VDE	<ul style="list-style-type: none"> <li>» 15.8mm low profile type available</li> <li>» HL inrush type available (TV-8 UL/C-UL)</li> <li>» IEC60335-1* compliant, PTI325V (VDE approved) type available</li> <li>» Creepage &amp; clearance distance min. 6mm</li> <li>» High Inrush / 20A Type available on request. Please contact: relays@eu.panasonic.com</li> </ul>	DC 3, 5, 6, 9, 12, 24V  1 coil latching: 200mW 2 coil latching: 400mW	1,000Vrms	-	5,000Vrms	12,000V	THT PIP PCB, PIP, 1750  4 or 5-120 dia. hole 2 coil latching type only 3.50 7.50 <a href="#">Go To Overview &gt;&gt;</a>

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<b>DJ-H</b>  39 x 15 x 33 mm RTII 1a 1 coil latching 2 coil latching UL VDE 50A 1a 480V AC	<ul style="list-style-type: none"> <li>» Manual Lever Type</li> <li>» Creepage and clearance distance min. 8 mm</li> <li>» High inrush current capacity ~ 500A</li> <li>» EN 60669 compliant</li> </ul>	DC 5, 6, 9, 12, 24V  1 coil latching: 1,000mW 2 coil latching: 2,000mW	1,500Vrms	-	4,000Vrms	12,000V	THT PCB  <a href="#">Go To Overview &gt;&gt;</a>
<b>DJ</b>  29 x 13 x 16/16.5 mm RTII RTIII 1a 1b 1a1b 1c 1 coil latching 2a 2b 2c 2 coil latching UL VDE 20A 1a 16A 1b, 1c 10A 1a1b, 2a, 2b 125V DC 400V AC	<ul style="list-style-type: none"> <li>» Optional available with manual testbutton</li> <li>» Creepage and clearance distance min. 8 mm</li> <li>» Tungsten pre contact available</li> </ul>	DC 5, 6, 12, 24, 48V  Single side stable & 2 coil latching: 250mW 1 coil latching: 150mW	1,000Vrms	-	4,000Vrms	10,000V	THT PCB Grid 2.54mm  Single side stable, 1 coil latching (1c) 2 coil latching (1c) <a href="#">Go To Overview &gt;&gt;</a>
<b>DZ-S</b>  30 x 38.5 x 17.5 mm 1a 1 coil latching 2 coil latching 90A 277V AC	<ul style="list-style-type: none"> <li>» IEC62055-31 UC3 compliant (short current 3,000 A)</li> <li>» High switching capacity 90 A 250 VAC (resistive load)</li> <li>» Twin contacts for low temperature rise</li> </ul>	DC 5, 12, 24V  1 coil latching: 1500mW 2 coil latching: 3,000mW	2,000Vrms	-	4,000Vrms	12,000V	Terminal mounting Terminal mounting <a href="#">Go To Overview &gt;&gt;</a>
<b>ST</b>  31 x 14 x 11.3 mm RTIII 1a1b 2a 1 coil latching 2 coil latching CSA UL VDE 8A 250V DC 380V AC	<ul style="list-style-type: none"> <li>» High inrush capability, TV rating</li> <li>» Frictionless pivoted rotating armature</li> <li>» Socket available</li> <li>» Not for new applications</li> <li>» Creepage and clearance distance more than 3 mm, approx. 4 mm</li> </ul>	DC 3, 5, 6, 9, 12, 24, 48V  Single side stable & 2 coil latching: 240mW 1 coil latching: 130mW	1,200Vrms	2,000Vrms	3,750Vrms	6,000V	THT PCB Grid 2.54mm  Single side stable <a href="#">Go To Overview &gt;&gt;</a>

Signal

Power

High Capacity

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High Frequency


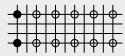

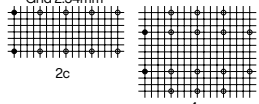

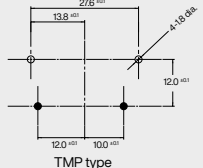

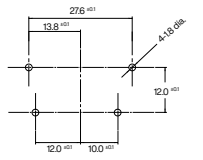
Semiconductor


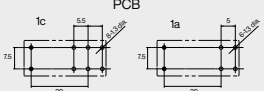
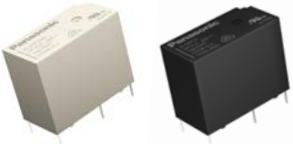
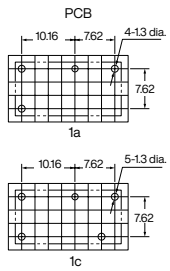

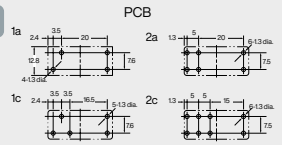

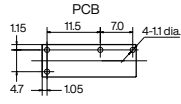
Automotive

Plug-in


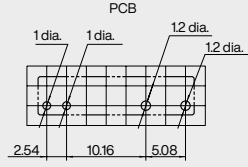

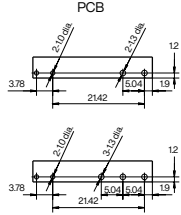
High Voltage

# Industrial Relays | Power Relays

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<b>S</b>  28 x 12 x 10.4 mm RTII 4a 2a2b 3a1b 1 coil latching 2 coil latching UL	<ul style="list-style-type: none"> <li>» 5-layer contact for wide switching capacity range: 100µA...4A</li> <li>» High vibration and shock resistance</li> <li>» Low thermal electromotive force (approx. 3µV)</li> <li>» Sockets available</li> </ul> 4A 30V DC 250V AC	DC 3, 5, 6, 12, 24, 48V  Single side stable & 2 coil latching: 200mW (48V: 271mW) 1 coil latching: 100mW (48V: 144mW)	750Vrms	1,000Vrms	1,500Vrms	-	THT PCB Grid 2.54mm  <a href="#">Go To Overview &gt;&gt;</a>
<b>SP</b>  50 x 25.6 x 22mm 50 x 36.8 x 22mm 2c 4c 2 coil latching CSA UL TÜV	<ul style="list-style-type: none"> <li>» Polarized power relay with rotating armature</li> <li>» High sensitivity</li> <li>» High vibration and shock resistance</li> <li>» Socket available</li> </ul> 15A 110V DC 250V AC	DC 3, 5, 6, 12, 24, 48V  300mW	1,500Vrms	3,000Vrms	3,000Vrms	-	THT Plug-in PCB, Plug-in Grid 2.54mm  2c 4c <a href="#">Go To Overview &gt;&gt;</a>
<b>LF</b>  301 x 157 x 23.3mm RTII 1a TÜV UL VDE CQC	<ul style="list-style-type: none"> <li>» Ideal for compressor and inverter loads</li> <li>» High insulation resistance</li> <li>» Inrush current: 102A/200V AC 224A/100V AC</li> <li>» High surge withstand voltage</li> <li>» Creepage and clearance distance min. 8mm</li> </ul> 20A 250V AC	DC 5, 6, 9, 12, 18, 24V  900mW	1,000Vrms	-	5,000Vrms	10,000V	THT Terminal mounting PCB, Top mounting  TMP type <a href="#">Go To Overview &gt;&gt;</a>
<b>LF-G</b>  301 x 157 x 23.3mm RTII 1a UL/C-UL VDE	<ul style="list-style-type: none"> <li>» Ideal for solar inverters</li> <li>» Contact gap 1.5 mm / 1.8 mm</li> <li>» Compliant with IEC62109 and VDE0126</li> <li>» Inrush current: 102A/200V AC 224A/100V AC</li> <li>» Creepage distance contact-coil: min. 9.5mm</li> <li>» Clearance distance contact-coil: min. 6.5mm</li> </ul> 22A 31A ALFG2 33A ALFG2*1 277V AC	DC 9, 12, 18, 24V  1,400mW	2,500Vrms	-	4,000Vrms	6,000V	THT PCB  <a href="#">Go To Overview &gt;&gt;</a>

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<b>LZ / LZ-N</b>  28.8 x 12.5 x 15.7 mm RTIII LZ RTII 1a 1c UL VDE 16A 250V DC 440V AC	<ul style="list-style-type: none"> <li>» Low profile relay (15.7 mm)</li> <li>» EN60335-1 GWT compliant</li> <li>» Ambient temperature up to 105 °C</li> <li>» Creepage and clearance distance min. 10 mm</li> </ul>	DC 5, 9, 12, 18, 24V (LZ 48V) 400mW	1,000Vrms	-	5,000Vrms	10,000V	THT  <a href="#">Go To Overview &gt;&gt;</a>
<b>LQ</b>  28.8 x 12.5 x 15.7 mm RTIII RTII 1a 1c UL / C-UL VDE 10A 277V AC	<ul style="list-style-type: none"> <li>» Low power consumption</li> <li>» F-coil type for 105 °C ambient temperature available</li> <li>» Creepage and clearance distance: 1a: min. 4.55 mm 1c: min. 3.53 mm High inrush type: min. 5.5 mm</li> <li>» High inrush type: 40A 100µs capacitor 30A motor load</li> <li>» PIP reflow solderable types available</li> </ul>	DC 5, 6, 9, 12, 18, 24V 200mW (1a) 400mW (1c)	1,000Vrms (1a) 750Vrms (1c)	-	4,000Vrms	8,000V	THT PIP  <a href="#">Go To Overview &gt;&gt;</a>
<b>JW</b>  28.6 x 12.8 x 20 mm RTIII 1a 2a 1c 2c CSA SEV TÜV UL VDE SEMKO 10A 5A 110V DC 440V AC 1a, 1c 2a, 2c	<ul style="list-style-type: none"> <li>» Class B coil insulation types available</li> <li>» Creepage and clearance distance min. 8 mm between contacts and coil (for 2 changeover contacts min. 7.5 mm)</li> <li>» Universal terminal footprint</li> </ul>	DC 5, 6, 9, 12, 18, 24, 48V 530mW	1,000Vrms	3,000Vrms (2a, 2c)	5,000Vrms	10,000V	THT  <a href="#">Go To Overview &gt;&gt;</a>
<b>LD-P</b>  20.3 x 7 x 15 mm RTIII 1a UL / C-UL VDE CQC 5A 30V DC 277V AC	<ul style="list-style-type: none"> <li>» Slim type: width 7 mm</li> <li>» Creepage and clearance distance min. 6 mm</li> <li>» EN60695 (GWT2-11, GWF12-12, GWT2-13) data available</li> </ul>	DC 5, 6, 9, 12, 18, 24V 200mW	750Vrms	-	4,000Vrms	10,000V	THT  <a href="#">Go To Overview &gt;&gt;</a>

# Industrial Relays | Power Relays

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<b>PA-N</b>  20 x 5 x 12.5mm RTIII 1a UL/C-UL TÜV 5A 110V DC 250V AC	<ul style="list-style-type: none"> <li>» High density mounting</li> <li>» Low operating power</li> <li>» Complies with IEC61010 reinforce insulation standards</li> <li>» Insulation distance: 5.29mm clearance, 5.35mm creepage</li> <li>» Complies with Standard for Hazardous Location (ANSI/ISA 12.12.01)</li> </ul>	DC 3, 4.5, 5, 6, 9, 12, 18, 24V 110mW	1,000Vrms	-	3,000Vrms	6,000V	THT  PCB 1 dia. 1 dia. 12 dia. 12 dia. 2.54 10.16 5.08 <a href="#">Go To Overview &gt;&gt;</a>
<b>PF</b>  28 x 5 x 15mm RTIII 1a 1c UL/C-UL VDE CSA 6A 250V AC 300V DC 400V AC	<ul style="list-style-type: none"> <li>» Slim size permits high density mounting</li> <li>» Slim relay for grid applications</li> <li>» Gold flash or gold-clad contacts available</li> <li>» Clearance distance min. 6.0mm</li> <li>» Creepage distance min. 8.0mm</li> <li>» Bent pin type available</li> <li>» EN60335-1, clause 30 (GWT) approved</li> </ul>	DC 4.5, 5, 6, 9, 12, 18, 24, 48, 60V 170mW 48V: 217mW 60V: 175mW	1,000Vrms	-	4,000Vrms	6,000V	THT  PCB 2.10mm 2.12mm 12 12 3.78 21.42 6.04 19 2.10mm 2.12mm 12 12 3.78 21.42 6.04 19 <a href="#">Go To Overview &gt;&gt;</a>

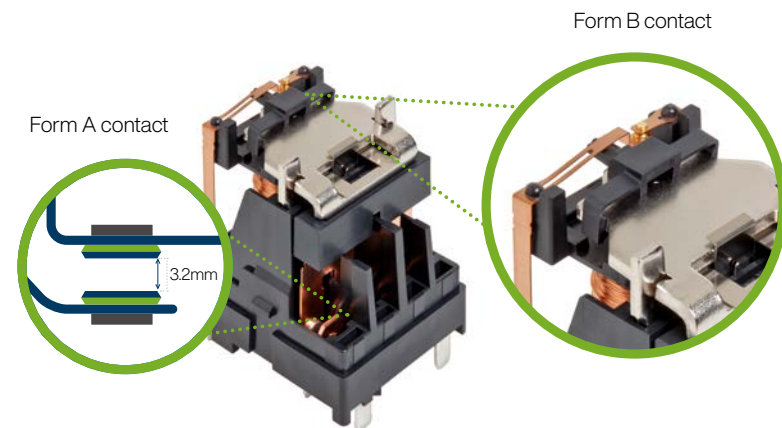


EXTREMELY LOW POWER DISSIPATION  
AT THE CONTACTS IS ACHIEVED  
BY REDUCING THE CONTACT  
RESISTANCE DOWN TO 0.4MΩ.

## High Capacity Relays


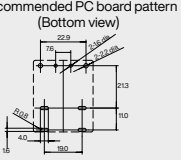

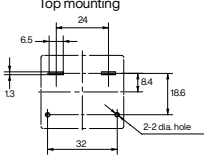

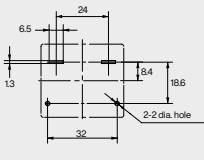

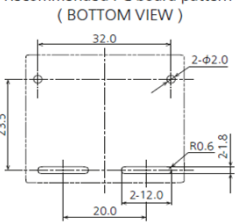
Our energy grid is changing. Decentralized power generation like wind engines or solar panels on each building require new ways to handle and distribute the current that keeps our modern life running.

In addition, e-mobility solutions bring high power applications to each and everyone. To miniaturize this technology - and to make it affordable, HE relays are designed to bring the high power handling on the PCB - without wiring, with improved reliability and low power losses.




With a gap between normally open contacts of 3.2mm, the HE-S exceeds mandatory regulations.

# Industrial Relays | High Capacity Relays

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<b>HE-S</b>  30 x 36 x 40 mm RTII 2a 2a1b CSA TÜV UL VDE 35A 300V DC 480V AC	<ul style="list-style-type: none"> <li>High-capacity and long life</li> <li>170mW coil holding power for energy saving</li> <li>Contact gap: 3.2mm</li> <li>Safety: Mirror contact mechanisms according to IEC 60947-4-1</li> </ul>	DC 6, 9, 12, 24, 48V 1,880mW	2,000Vrms	5,000Vrms	5,000Vrms (between coil and Form A contacts)	10,000V	THT Recommended PC board pattern (Bottom view)  <a href="#">Go To Overview &gt;&gt;</a>
<b>HE-Y5/ HE-PV</b>  33 x 38 x 36.3 mm 1a CSA UL VDE 35A PV type 48A Y5 type 277V AC	<ul style="list-style-type: none"> <li>Compliant with European photovoltaic standard VDE0126</li> <li>Compliant with EN61810-1 2.5kW surge breakdown voltage (between contacts)</li> <li>Contact gap 2.5mm</li> <li>Only 310mW holding power</li> </ul>	DC 6, 9, 12, 24V 1,920mW	2,000Vrms	-	5,000Vrms	10,000V	THT Top mounting  <a href="#">Go To Overview &gt;&gt;</a>
<b>HE-Y6</b>  33 x 38 x 38.8 mm RTII 1a CSA UL VDE 90A 277V AC	<ul style="list-style-type: none"> <li>Compliant with European photovoltaic standard VDE0126</li> <li>Compliant with EN61810-1 2.5kW surge breakdown voltage (between contacts)</li> <li>Contact gap 3.0mm</li> <li>Only 310mW holding power</li> </ul>	DC 6, 9, 12, 24V 1,920mW	2,000Vrms	-	5,000Vrms	10,000V	THT Top mounting  <a href="#">Go To Overview &gt;&gt;</a>
<b>HE-A</b>  38 x 33 x 38.8 mm 1a 1a1b UL VDE 90A 800V AC	<ul style="list-style-type: none"> <li>Max. carrying current 110 A</li> <li>1b mirror contact structure</li> <li>Contact gap 3.6mm</li> <li>Only 310mW holding power</li> <li>Creepage / clearance &gt;10.0mm</li> <li>SCCR 5,000A rms</li> </ul>	DC 12, 24V 1,920mW	2,000Vrms	5,000Vrms	5,000Vrms	10,000Vrms	THT Recommended PC board pattern (BOTTOM VIEW)  Tolerance ±0.1

# Industrial Relays | High Capacity Relays

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<b>HE-Y7</b>  50 x 40 x 43mm RTII 1a CSA UL/C-UL VDE	<ul style="list-style-type: none"> <li>» For inverter, battery charger, battery storage</li> <li>» Contact gap 3.6mm</li> <li>» Only 400mW holding power</li> <li>» Very low contact resistance</li> <li>» Creepage &amp; clearance distance min. 10.55mm</li> </ul> 120A 800V AC	DC 6, 9, 12, 24V 2,500mW	2,000Vrms	-	5,000Vrms	10,000V	THT Top mounting  <a href="#">Go To Overview &gt;&gt;</a>
<b>HE-V</b>  41 x 50 x 39.4mm 2a UL/C-UL VDE	<ul style="list-style-type: none"> <li>» Max. 1,000V DC, 20A cutoff</li> <li>» Coil holding power 210mW</li> <li>» Protective construction: Flux-resistant type</li> <li>» Contact gap: min. 3.0mm</li> <li>» Clearance distance min. 8mm</li> <li>» Creepage distance min. 9.6mm</li> </ul> 25A 1000V DC	DC 6, 9, 12, 15, 24V 1,920mW	2,000Vrms	4,000Vrms	5,000Vrms	10,000V	THT PCB  <a href="#">Go To Overview &gt;&gt;</a>
<b>HE-R</b>  58 x 35 x 47mm 4a 4a1b UL/C-UL VDE	<ul style="list-style-type: none"> <li>» Compliant IEC 62955</li> <li>» 1b mirror contact structure</li> <li>» Contact gap 3.6mm and 4.0mm</li> <li>» Only 490mW holding power</li> <li>» Creepage / clearance &gt;8.0mm</li> <li>» Short circuit withstand: I<sub>p</sub>=2.6kA, I<sub>t</sub>=6.5kA2s</li> </ul> 40A 3 phase 480V AC	DC 12, 24V 4,000mW	2,000Vrms	5,000Vrms	5,000Vrms	10,000V	THT PCB  <a href="#">Go To Overview &gt;&gt;</a>
<b>HE-R</b>  37 x 60 x 47mm 2a 2a2b UL/C-UL VDE	<ul style="list-style-type: none"> <li>» Compliant with UL508</li> <li>» 1b mirror contact structure</li> <li>» Contact gap 3.6mm</li> <li>» Only 490mW holding power</li> <li>» Creepage / clearance &gt;8.0mm</li> <li>» SCCR 5,000A rms</li> </ul> 80A 480VAC	DC 12, 24V 4,000mW	2,000Vrms	5,000Vrms	5,000Vrms	10,000Vrms	

# Industrial Relays | High Capacity Relays

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<b>EP</b>  78 x 40 x 48.1mm    75.5 x 40 x 79mm	<ul style="list-style-type: none"> <li>» Max. cut-off current 2,500A/300VDC (300A type)</li> <li>» Max. 1,000VDC contact voltage</li> <li>» Low operating noise</li> <li>» High contact reliability</li> <li>» DC type with sealed capsule</li> </ul>						THT TM type Lead wire Connector 
RTV 1a 	<b>1</b> 20A    400V DC	DC 12, 100V 3.9W	2,500Vrms	-	2,500Vrms	20A type 	
	<b>2</b> 80A    400V DC	DC 12, 100V 4.2W				80A type 	



ALL SAFETY RELAYS COMPLY  
WITH EN 61810-3

## Safety Relays

In relays designed according to the standard EN 61810-3, the contacts are interconnected in such a way that in case of failure, e.g. when a load contact for a motor welds, the corresponding forcibly guided contacts are blocked.

Redundancy in the circuit can, for example, allow a motor to be shut off where- by the blocked contact prevents the motor from being turned on again because the release circuit is not closed.

What this boils down to is, that relays with forcibly guided contacts are usual- ly power relays with several NO (1a) and NC (1b) contacts (minimum 1a1b) that comply with the relay standards EN 61810-1 and EN 61810-3. This technology guarantees defined and hence safe operating conditions in the event of a failure.

A safety relay has two or more forcibly guided contacts according to

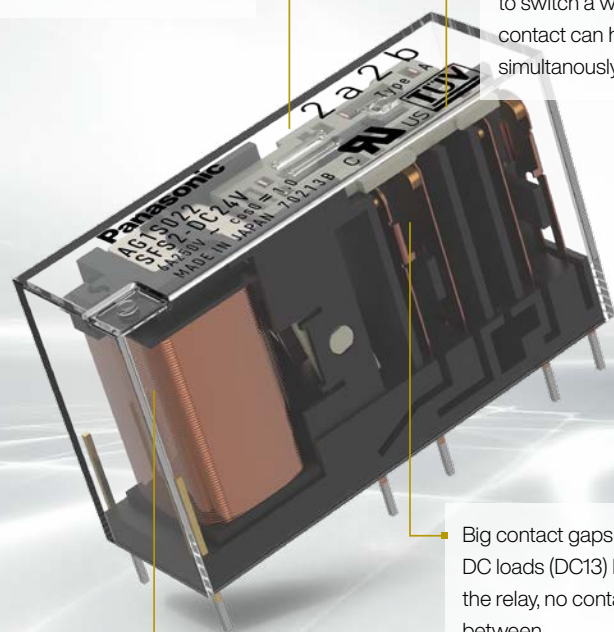
### EN 61810-3

In case of SFS series, it is realized by the white actuator.


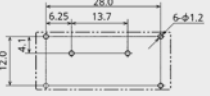

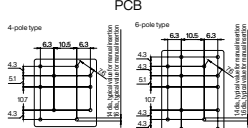
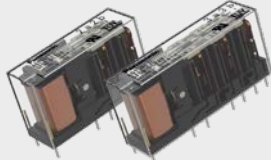
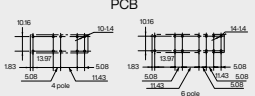
**1mA 5V** up to **6A 250VAC** (SFS series), the silver alloy contacts are designed to switch a wide range of loads. Each contact can handle maximum load simultaneously without derating.


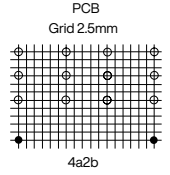

Big contact gaps helps to switch inductive DC loads (DC13) like valves directly with the relay, no contactor is needed in between.

All Panasonic Industry safety relays use a **polarized coil** system for low energy consumption



# Industrial Relays | Safety Relays

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<b>SFM</b>  330 x 140 x 7.8 mm RTII PIP type RTIII THT type 1a1b UL / C-UL TÜV	<ul style="list-style-type: none"> <li>Extremely low height</li> <li>Low holding power 100mW</li> <li>High shock resistance &gt;20g</li> <li>Reinforced insulation <math>\geq 5.5\text{mm}</math> (<math>V=230\text{V}</math> overvoltage category III, 6kV) on NO side</li> <li>Ambient temperature -40 to +85°C</li> <li>Tape &amp; Reel available</li> </ul>	DC 3, 5, 12, 16, 18, 21, 24V 270mW	1,500Vrms	- (no contact sets next to each other)	2,500Vrms for NC side 4,000Vrms for NO side	THT PIP  General tolerance: $\pm 0.1$ Schematic (BOTTOM VIEW)	<a href="#">Go To Overview</a>
<b>SFY</b>  310 x 286 x 14.5 mm    390 x 286 x 14.5 mm RTIII 2a2b    3a1b    4a2b    5a1b UL / C-UL    TÜV	<ul style="list-style-type: none"> <li>Gold clad contacts on request</li> <li>Reinforced insulation according to EN 50178, creepage and clearance distance <math>\geq 5.5\text{mm}</math> (<math>V=230\text{V}</math> overvoltage category III, 6 kV)</li> <li>Ambient temperature -40 to +85°C</li> <li>Tested as sealed device according to IEC / EN 60079-15:2010 clause 22.5 (VDE)</li> </ul>	DC 5, 12, 16, 18, 21, 24V 670mW	1,500Vrms	4,000Vrms	2,500Vrms for NC side 4,000Vrms for NO side	THT  PCB 4-pole type    6-pole type	<a href="#">Go To Overview</a>
<b>SFS</b>  400 x 130 x 24.0 mm    500 x 130 x 24.0 mm RTIII 2a2b    3a1b    4a2b    5a1b    3a3b TÜV    UL / C-UL    CQC	<ul style="list-style-type: none"> <li>Slim profile reduces mounting area</li> <li>PC board sockets available</li> <li>DIN-rail terminal sockets available</li> <li>RTII (IP54), RTIII 4pole on request</li> <li>Ambient temperature -40 to +85°C</li> <li>LED indication type available</li> </ul>	DC 12, 18, 21, 24, 48V 360mW (4pole) 500mW (6pole)	2,500Vrms	4,000Vrms	4,000Vrms	THT  PCB 4-pole    6-pole	<a href="#">Go To Overview</a>

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<b>SFN4D</b>  53.3 x 33 x 14.5 mm RTIII 4a2b TÜV UL CSA	<ul style="list-style-type: none"> <li>» EN 61810-3, Type B safety double contact</li> <li>» Reinforced insulation, creepage and clearance distance 5.5mm</li> </ul> 8A N.O.    8A N.C.    500V DC / 500V AC	DC 5, 9, 12, 16, 18, 21, 24, 36, 48, 60V 390mW (5 - 24V) 420mW (36 - 60V)	2,500Vrms	4,000Vrms	5,000Vrms	THT  PCB Grid 2.5mm 4a2b <a href="#">Go To Overview &gt;&gt;</a>	
<b>SF</b>  53.3 x 25 x 16.5 mm    53.3 x 33 x 16.5 mm RTIII 2a2b    3a1b    4a4b TÜV UL CSA	<ul style="list-style-type: none"> <li>» SF4D: EN 61810-3, Type B safety double contact</li> <li>» SF2D: EN 61810-3, Type A safety double contact</li> <li>» SF3: EN 61810-3, Type A</li> <li>» IEC/EN 60335-1 (GWT) available</li> </ul> 8A N.O.    8A N.C.    400V DC / 400V AC	DC 5, 9, 12, 18, 21, 24, 36, 48, 60V 500mW	2,500Vrms	4,000Vrms	5,000Vrms	THT <a href="#">Go To Overview &gt;&gt;</a>	



Signal

Power

High Capacity

Safety

High Frequency

Semiconductor

Automotive

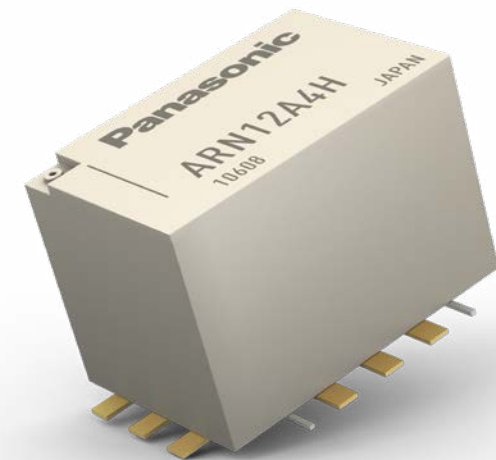
Plug-in


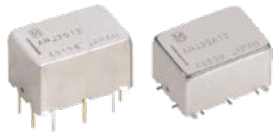
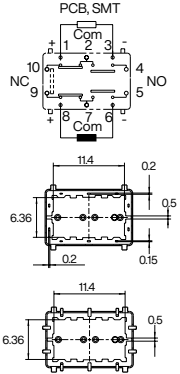
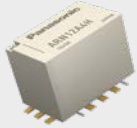
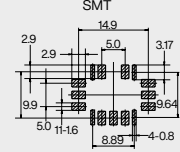
High Voltage

# High Frequency Relays

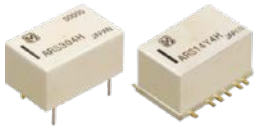
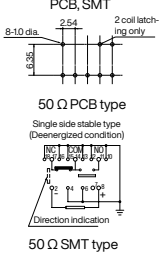

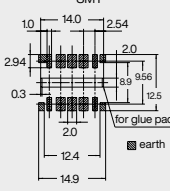
Microwave devices can be classified into relays and coaxial switches which handle high frequency signals above several 100MHz. These devices are frequently used in the field of test and measurement equipment, wireless devices and base stations.

Panasonic Industry has a wide range of relays and coaxial switch products for various frequency bands. Features include low insertion loss, high isolation, and low VSWR for impedance matching.



Series	Features	Coil	Mounting (bottom view)
<p><b>ARD</b></p>  <p>34 x 13.2 x 40mm    32 x 32 x 40mm    80 x 80 x 40.5mm</p> <p>SPDT    Transfer    SP6T</p>	<ul style="list-style-type: none"> <li>» Long life</li> <li>» Stable contact resistance</li> <li>» High sensitive coaxial switch</li> </ul> <p>50Ω Impedance    26.5GHz</p>	<p>DC 4.5, 5, 12, 24V</p> <p>Fail-safe (with or without indicator)</p> <p>Latching (with or without indicator)</p> <p>Latching with TTL driver (with self cut-off function, with or without indicator)</p>	<p>SMA Coax</p> <p><a href="#">Go To Overview &gt;&gt;</a></p>
<p><b>ARJ</b></p>  <p>14 x 9 x 82mm</p> <p>RTIII</p> <p>2c    2 coil latching</p>	<ul style="list-style-type: none"> <li>» Shielded HF relay</li> <li>» HF characteristics at 5GHz:</li> <li>» Isolation min. 35dB</li> <li>» Isolation min. 30dB between contact sets</li> <li>» Insertion loss max. 0.5dB</li> <li>» V.S.W.R. max.1.25</li> </ul> <p>50Ω Impedance    8GHz    1W @5GHz</p>	<p>DC 3, 4.5, 12, 24V</p> <p>Single side stable: 200mW</p> <p>2 coil latching: 150mW</p>	<p>THT    PCB, SMT</p> <p>SMD</p>  <p><a href="#">Go To Overview &gt;&gt;</a></p>
<p><b>ARN</b></p>  <p>14.6 x 9.6 x 10.0mm</p> <p>1c    1c reversed    2 coil latching</p>	<ul style="list-style-type: none"> <li>» 150W carrying power at 2GHz</li> <li>» HF characteristics at 2GHz:</li> <li>» Isolation min. 55dB</li> <li>» Insertion loss max. 0.12dB</li> <li>» V.S.W.R. max. 1.15</li> </ul> <p>50Ω Impedance    8GHz    80W @2GHz</p>	<p>DC 4.5, 12, 24V</p> <p>Single side stable: 320mW</p> <p>2 coil latching: 400mW</p>	<p>SMD</p>  <p><a href="#">Go To Overview &gt;&gt;</a></p>

# Industrial Relays | High Frequency Relays

Series	Features	Coil	Mounting (bottom view)
<p><b>ARS</b></p>  <p>14 x 8.6 x 7mm      14 x 8.6 x 8mm</p> <p>RTIII</p> <p>1c    1c reversed    1 coil latching    2 coil latching</p>	<ul style="list-style-type: none"> <li>» A or Y layout</li> <li>» 10W at 3GHz contact carrying power</li> <li>» Silent Type available</li> <li>» HF characteristics @ 3GHz (50Ω PCB type):</li> <li>» Isolation min. 35dB</li> <li>» Insertion loss max. 0.35dB</li> <li>» V.S.W.R. max. 14</li> </ul> <p>50Ω Impedance    75Ω Impedance    3GHz    1W @3GHz</p>	<p>DC 3, 4.5, 9, 12, 24V</p> <p>Single side stable /</p> <p>1 coil latching: 200mW</p> <p>2 coil latching: 400mW</p>	<p>THT</p> <p>SMD</p>  <p>PCB, SMT</p> <p>8-10 dia    2.54    2 coil latching only</p> <p>0.38</p> <p>50 Ω PCB type</p> <p>Single side stable type (deenergised condition)</p> <p>Direction indication</p> <p>50 Ω SMT type</p> <p><a href="#">Go To Overview &gt;&gt;</a></p>
<p><b>ARA</b></p>  <p>14.7 x 9.7 x 5.9mm</p> <p>RTIII</p> <p>1c    1 coil latching    2 coil latching</p>	<ul style="list-style-type: none"> <li>» SMD</li> <li>» Single side stable</li> <li>» HF characteristics at 1GHz:</li> <li>» Isolation min. 20dB</li> <li>» Isolation min. 30dB between contact sets</li> <li>» Insertion loss max. 0.3dB</li> <li>» V.S.W.R. max. 12</li> </ul> <p>50Ω Impedance    1GHz    3W @1GHz</p>	<p>DC 1.5, 3, 4.5, 5, 6, 9, 12, 24, 48V</p> <p>Single side stable /</p> <p>2 coil latching: 140mW (1.5 - 12V) 200mW (24V) 300mW (48V, only single side stable)</p> <p>1 coil latching: 70mW (1.5 - 12V) 100mW (24V)</p>	<p>SMD</p>  <p>1.0    14.0    2.54</p> <p>2.94    2.0</p> <p>0.3    8.9    9.56    12.5</p> <p>2.0    12.4    14.9</p> <p>for glue pad</p> <p>earth</p> <p><a href="#">Go To Overview &gt;&gt;</a></p>



# Semiconductor Relays

## Maximum service life - many application purposes

Panasonic Industry offers a wide range of PhotoMOS<sup>®</sup> relays for use in telecommunication, measurement, security devices and industrial control.

The power MOSFET's output acts as a pure ohmic resistance thus distinguishing the PhotoMOS<sup>®</sup> from an optocoupler or triac solution, since no saturation voltage or offset voltage is required.

PhotoMOS<sup>®</sup> relays with a MOSFET output enjoy an almost unlimited lifetime if used according to the specifications. Moreover, they are extremely reliable, unaffected by vibration, and their On-resistance remains stable throughout their entire lifetime. In addition to our broad product line-up for the industrial market, automotive-qualified types are also available.

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PhotoMOS<sup>®</sup>  
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Power

High Capacity

Safety

High Frequency

Semiconductor

Automotive

Plug-in

High Voltage



High Voltage

Plug-in

Automotive

Semiconductor

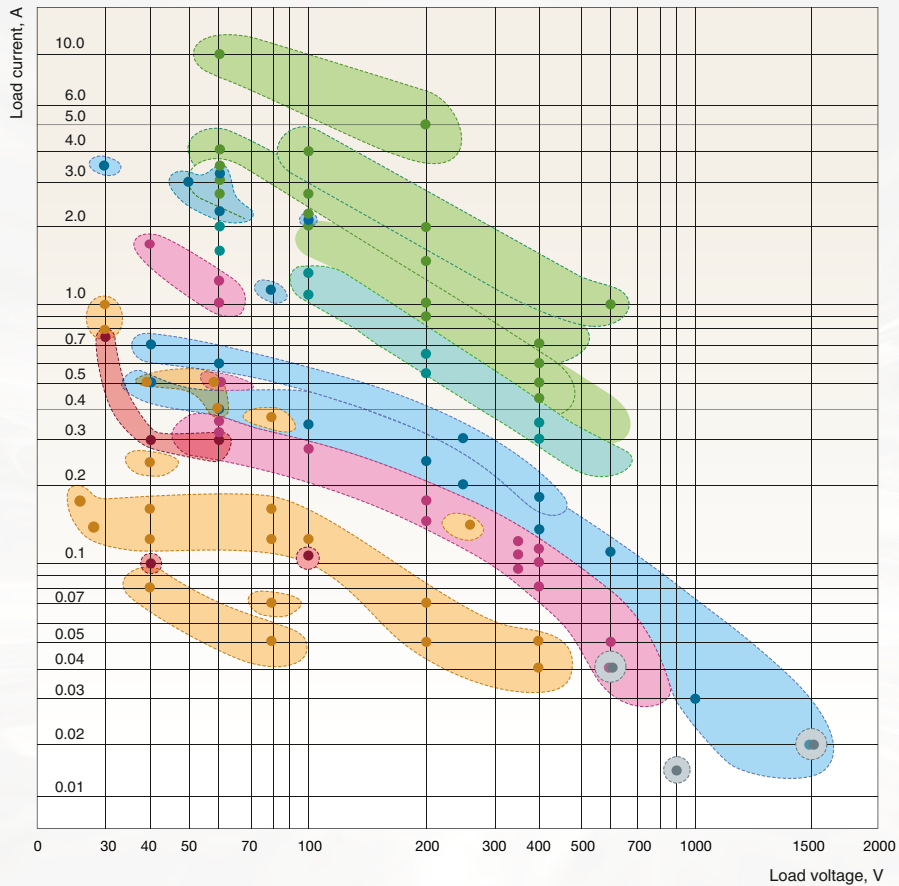
High Frequency

Safety

High Capacity

Power

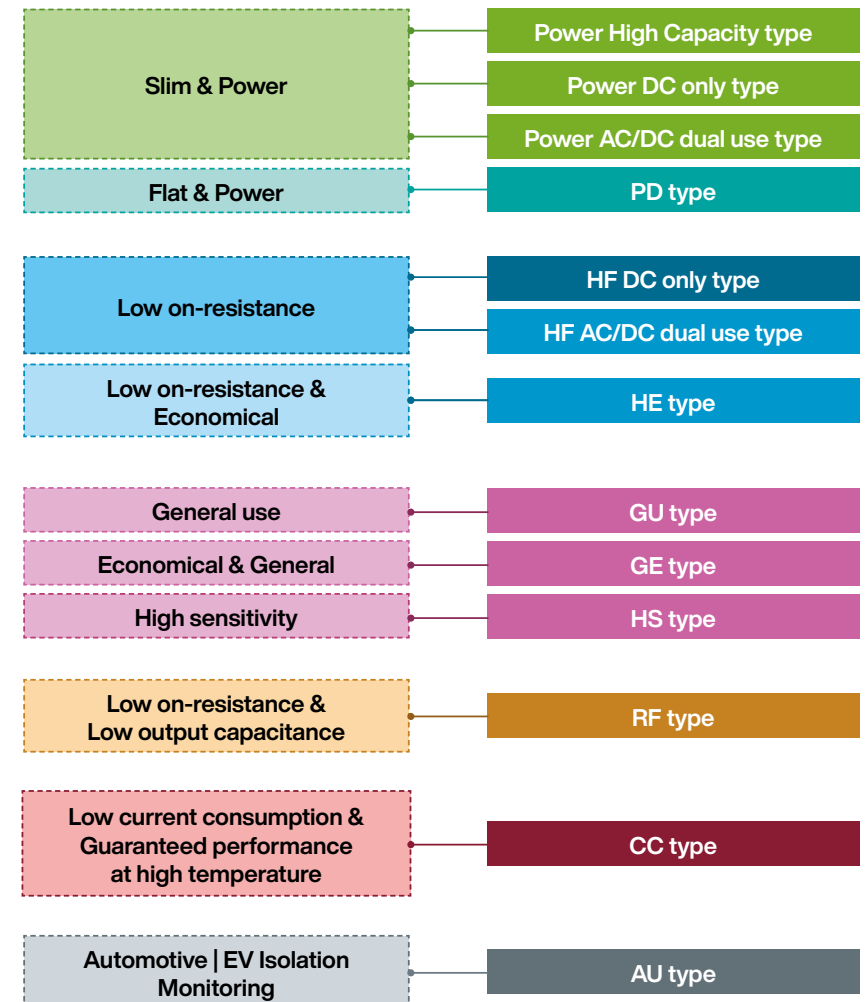
Signal



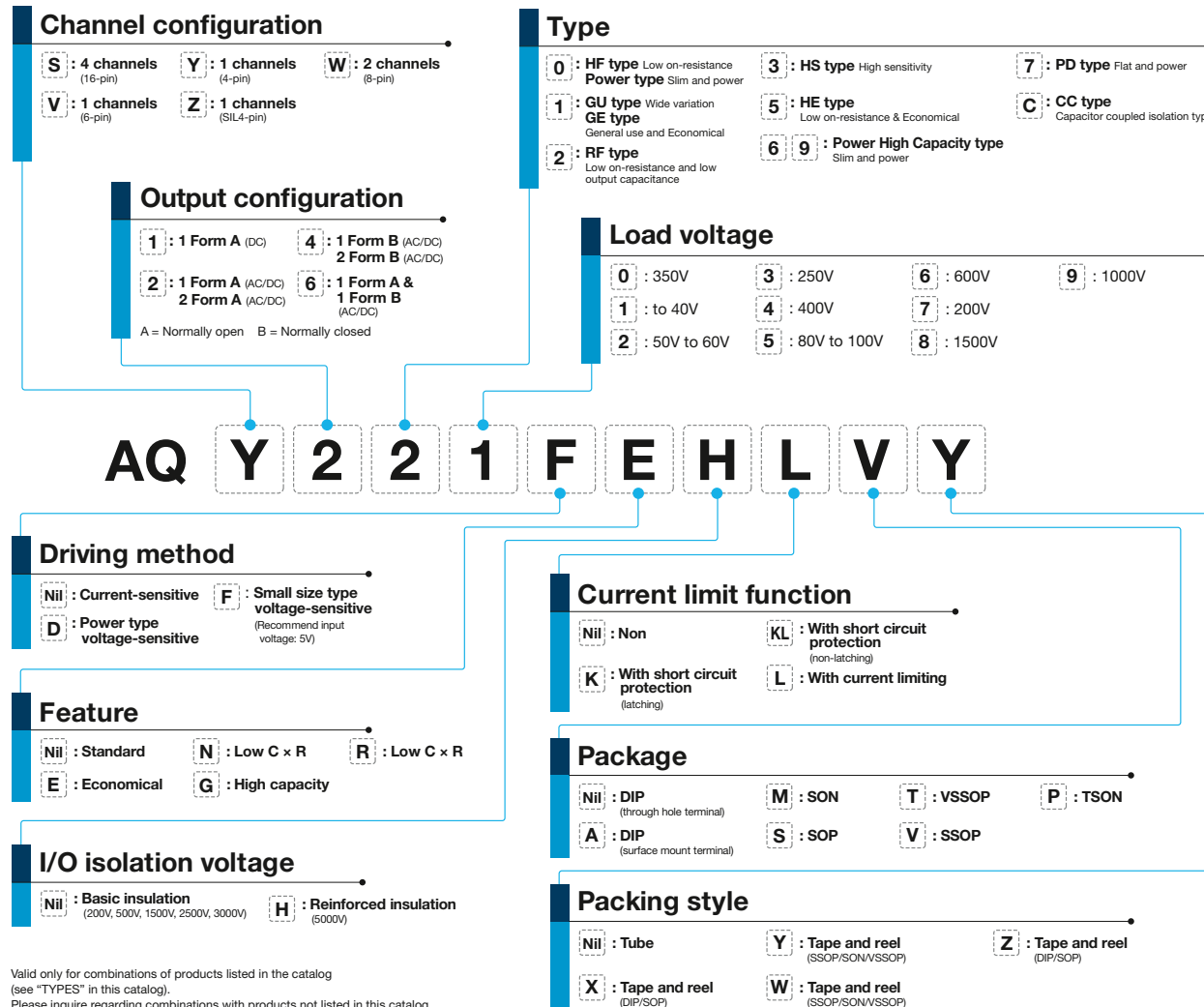
- PD: Power DIP
- HF: High Functioned
- HE: High functioned and Economical
- RF: Radio Frequency
- GU: General Use
- GE: General use and Economical
- HS: High Sensitivity
- CC: Capacitor Coupled
- AU: Automotive

# PhotoMOS®

## Overview



## Product key & Packages











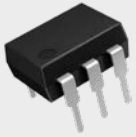

Packages	
<b>TSON</b> Thin Small Outline No lead Package	
<b>VSSOP</b> Very Shrink Small Outline Package	
<b>SON</b> Small Outline No lead Package	
<b>SSOP</b> Shrink Small Outline Package	
<b>SOP</b> Small Outline Package	SOP4pin            SOP6pin            SOP8pin            SOP16pin
<b>DIP</b> Dual Inline Package	DIP4pin            DIP6pin            DIP8pin
<b>Power-DIP</b> Power Dual Inline Package	Power-DIP
<b>SIL</b> Single Inline Package	SIL4pin

Valid only for combinations of products listed in the catalog (see "TYPES" in this catalog).  
Please inquire regarding combinations with products not listed in this catalog.

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Semiconductor  
Automotive  
Plug-in  
High Voltage



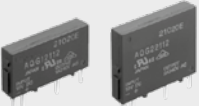



# Semiconductor Relays | PhotoMOS®

Series	Features	Output
<b>GU</b> General Use  1a 1b 2a 2b 1a1b	» Wide product range for most applications » Reinforced insulation type available DIP SOP	40V 1.6A 0.1Ω 60V 1.8A 0.08Ω 100V 0.32A 2.3Ω 200V 0.4A 1.8Ω 350V 0.13A 0.32Ω 400V 0.12A 26Ω 600V 0.05A 70Ω
<b>GE</b> Economical & General  1a 1b 2a 2b 1a1b	» Economic and Reinforced insulation DIP	30V 1.0A 0.25Ω 60V 0.55A 0.85Ω 350V 0.13A 18Ω 400V 0.12A 26Ω 600V 0.05A 52Ω
<b>HS</b> High sensitivity  1a	» Low LED operate current DIP SOP	60V 2A 0.07Ω 350V 0.12A 19Ω 32pF 400V 0.12A 30Ω 45pF
<b>RF</b> Low On Resistance & Low Output Capacitance  1a 2a 4a	» Very good RF characteristics » Low signal loss DIP SOP SSOP VSSOP SON	20V 0.18A 2.8Ω 1.1pF 25V 0.15A 5.5Ω 1.1pF 30V 1A 0.18Ω 37.5pF 40V 0.12A 9.5Ω 1pF 60V 0.4A 0.8Ω 24.5pF 80V 0.12A 10.5Ω 4.5pF 100V 0.12A 8.8Ω 5.8pF 200V 0.07A 30Ω 10pF 250V 0.14A 11Ω 33pF 400V 0.05A 70Ω 10pF
<b>CC</b> Capacitive Coupled  1a 1b	» Capacitor Coupled isolation type » Low On resistance, low output capacitance » High temperature range up to +105°C TSON	30V 0.75A 0.2Ω 40pF 40V 0.3A 0.8Ω 14.5pF 60V 0.3A 0.8Ω 27pF 100V 0.12A 9Ω 5.8pF

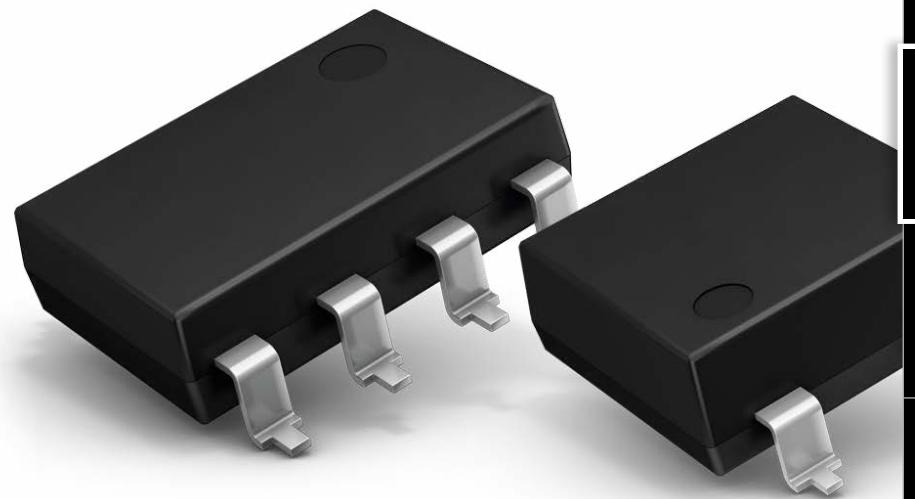
Series	Features	Output
<b>AU</b> Automotive  <b>1a</b>	<ul style="list-style-type: none"> <li>» Tested in accordance to AEC-Q101</li> <li>» Optimized for Isolation Monitoring &amp; HV measurement</li> </ul> <p>DIP SOP</p>	<div style="display: flex; justify-content: space-between;"> <div>60V 0.6A 0.85Ω</div> <div>100V 0.25A 2.3Ω</div> <div>600V 0.04A 70Ω</div> <div>900V 0.015A 310Ω</div> <div>1500V 0.02A 305Ω</div> <div>1800V 0.015A 620Ω</div> </div> <p style="text-align: right;"><a href="#">Go To Overview &gt;&gt;</a></p>
<b>Power</b> Slim & Power  <b>1a 1b</b>	<ul style="list-style-type: none"> <li>» High Current in SIL package</li> <li>» Voltage sensitive types</li> </ul> <p>SIL</p>	<div style="display: flex; justify-content: space-between;"> <div>60V DC 10A 0.008Ω</div> <div>100V 4A 0.035Ω</div> <div>200V DC 5A 0.031Ω</div> <div>400V DC 0.7A 1.06Ω</div> <div>600V 1A 0.52Ω</div> </div> <p style="text-align: right;"><a href="#">Go To Overview &gt;&gt;</a></p>
<b>PD</b> Flat & Power  <b>1a</b>	<ul style="list-style-type: none"> <li>» High Current in Power DIP package</li> </ul> <p>Power DIP</p>	<div style="display: flex; justify-content: space-between;"> <div>60V 2A 0.11Ω</div> <div>100V 1.3A 0.23Ω</div> <div>200V 0.65A 0.7Ω</div> <div>400V 0.35A 2.1Ω</div> </div> <p style="text-align: right;"><a href="#">Go To Overview &gt;&gt;</a></p>
<b>HF</b> Low On Resistance  <b>1a</b>	<ul style="list-style-type: none"> <li>» High Functionality</li> <li>» AC and DC types</li> </ul> <p>DIP SSOP</p>	<div style="display: flex; justify-content: space-between;"> <div>40V DC 0.7A 0.3Ω</div> <div>60V DC 0.6A 0.37Ω</div> <div>250V DC 0.3A 2.7Ω</div> <div>400V DC 0.18A 6.3Ω</div> <div>600V DC 0.15A 8Ω</div> <div>1200V DC 0.75A 1Ω</div> </div> <p style="text-align: right;"><a href="#">Go To Overview &gt;&gt;</a></p>
<b>HE</b> Low On Resistance & Economical  <b>1a 1b 2a 2b 1a1b</b>	<ul style="list-style-type: none"> <li>» High Efficiency</li> </ul> <p>DIP SOP</p>	<div style="display: flex; justify-content: space-between;"> <div>30V 3.5A 0.035Ω</div> <div>40V 0.5A 0.6Ω</div> <div>50V 3A 0.04Ω</div> <div>60V 3.5A 0.033Ω</div> <div>80V 1.25A 0.09Ω</div> <div>100V 2.4A 0.07Ω</div> <div>200V 0.25A 2.6Ω</div> <div>250V 0.2A 5.5Ω</div> <div>400V 0.15A 11Ω</div> <div>600V 0.13A 20Ω</div> <div>1000V 0.03A 85Ω</div> <div>1500V 0.02A 345Ω</div> </div> <p style="text-align: right;"><a href="#">Go To Overview &gt;&gt;</a></p>

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Plug-in  
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# Semiconductor Relays | Solid State Relays

Series	Features	Output
<b>APT</b> 	<ul style="list-style-type: none"> <li>» Phototric Coupler</li> </ul> <p>DIP SOP</p>	<p>600VAC 0.1A</p> <p><a href="#">Go To Overview &gt;&gt;</a></p>
<b>AQH</b> 	<ul style="list-style-type: none"> <li>» No derating up to +40°C</li> <li>» SMD mounting</li> </ul> <p>DIP</p>	<p>600VAC 1.2A</p> <p><a href="#">Go To Overview &gt;&gt;</a></p>
<b>AQG</b> 	<ul style="list-style-type: none"> <li>» Voltage Controlled</li> <li>» Integrated Snubber Circuit</li> </ul> <p>SIL</p>	<p>230VAC 2A</p> <p><a href="#">Go To Overview &gt;&gt;</a></p>
<b>AQ1</b> 	<ul style="list-style-type: none"> <li>» Voltage Controlled</li> <li>» Heat Sink ready</li> </ul> <p>SIL</p>	<p>230VAC 10A</p> <p><a href="#">Go To Overview &gt;&gt;</a></p>
<b>AQJ</b> 	<ul style="list-style-type: none"> <li>» Plug terminals</li> <li>» Integrated Varistor</li> </ul> <p>Hockey-Puck</p>	<p>230VAC 25A</p> <p><a href="#">Go To Overview &gt;&gt;</a></p>
<b>AQA</b> 	<ul style="list-style-type: none"> <li>» Wide range input (3 – 30VDC)</li> <li>» Screw terminals</li> <li>» Status LED</li> <li>» Integrated Varistor</li> </ul> <p>Hockey-Puck</p>	<p>230VAC 40A</p> <p>100VDC 10A</p> <p><a href="#">Go To Overview &gt;&gt;</a></p>

# Semiconductor Relays | Note



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# Automotive Relays

**All Panasonic Industry Automotive relays comply with IATF 16949.**

Panasonic Industry has been contributing to the ever increasing need for innovation in transportation electronics for decades, with highly reliable, long lasting devices for transportation safety, comfort, entertainment and powertrain applications. There is continued effort within the transportation industry to balance societal and economic perspectives with the environment.

Panasonic Industry continually supports these efforts with proven quality, a solid manufacturing organization and experienced engineering talent.

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Semiconductor

High Frequency

Safety

High Capacity

Power

Signal



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High Frequency

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Automotive

Plug-in

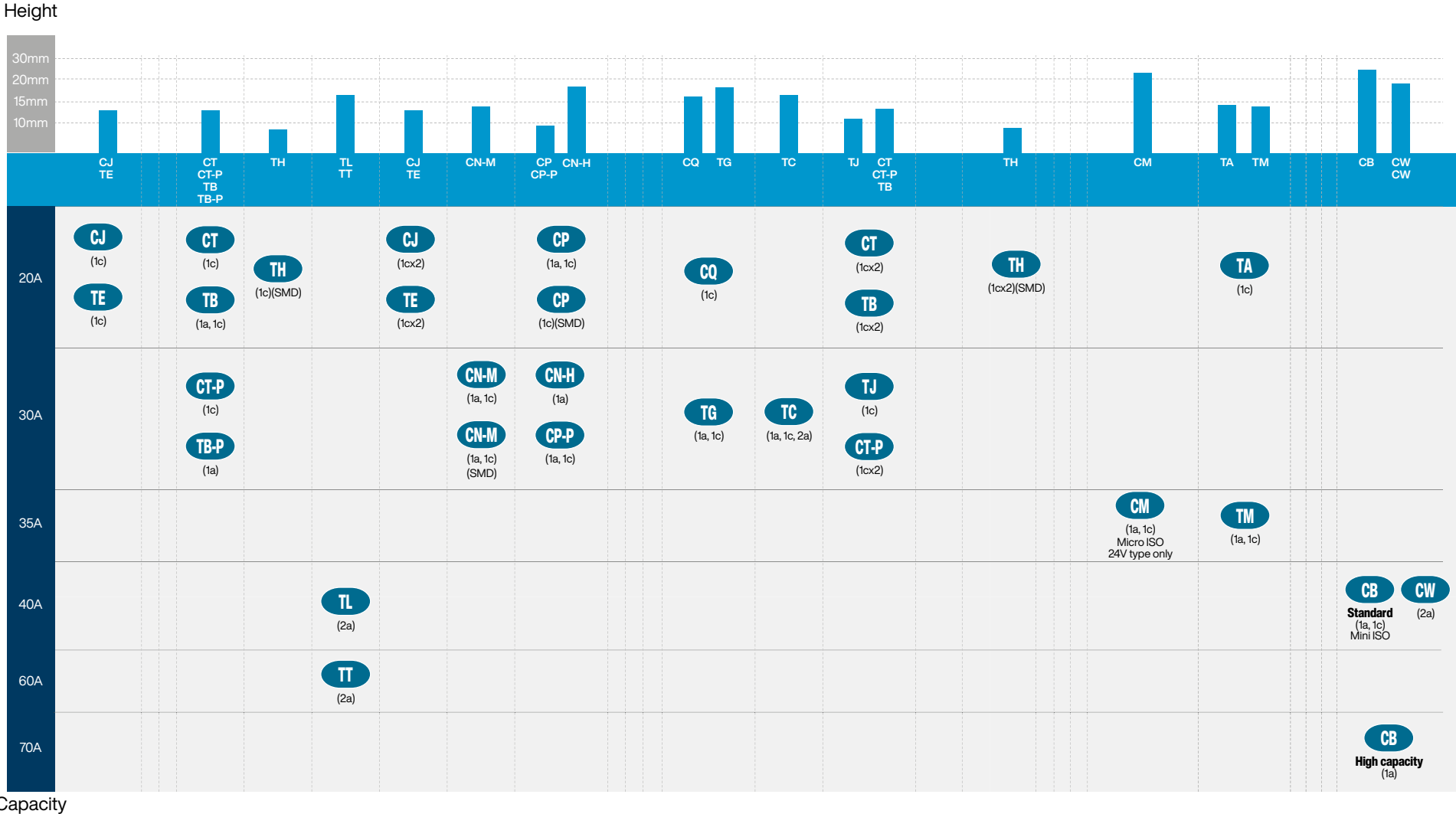
High Voltage

## PCB Relays



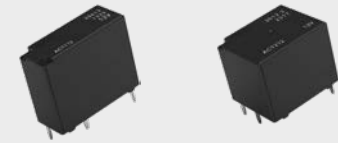
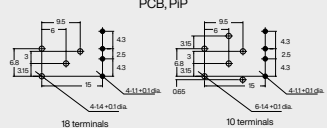
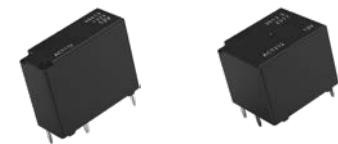
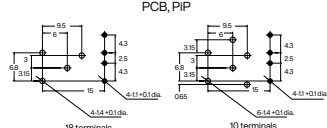

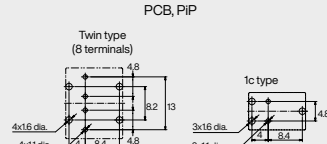

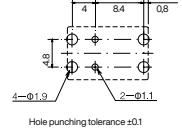
Modern automotive electric equipment and control technologies are a key aspect to achieve the safety, comfort and efficiency customers expect from a car nowadays. Discover how our relays and connectors meet the demand for sophisticated and sustainable automotive power and body control applications.


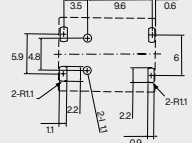

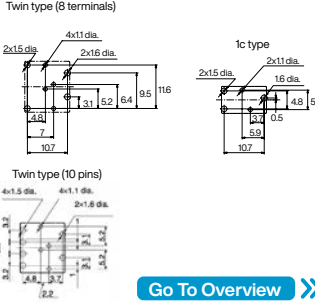
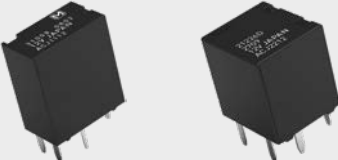
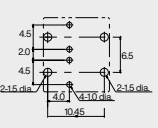

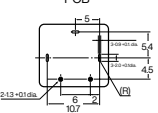
Overview




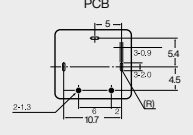

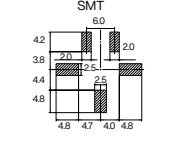

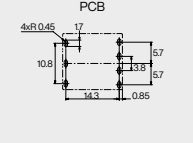

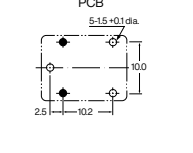
Signal  
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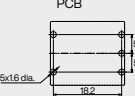

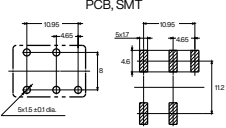

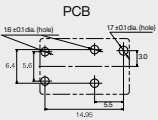

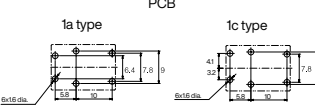
# Automotive Relays | PCB Relays

Series	Features	Coil	Mounting (bottom view)
<p><b>CT</b></p>  <p>17.4 x 7.2 x 13.5mm      17.4 x 14 x 13.5mm</p> <p><b>1c</b>      <b>1c x2 (Twin)</b></p>	<ul style="list-style-type: none"> <li>» Super miniature size</li> <li>» ACT512 layout = layout of 2 x ACT112</li> <li>» H-bridge type available (twin relay)</li> <li>» Quiet operation</li> <li>» Pin in Paste (with vent hole) available</li> <li>» Twin type as 8 pin or 10 pin version available</li> </ul> <p><b>20A N.O.</b>    <b>10A N.C.</b>    <b>16V</b></p>	<p>12V DC 800mW</p>	<p>THT    PIP</p>  <p>PCB, PIP</p> <p>18 terminals      10 terminals</p> <p><a href="#">Go To Overview &gt;&gt;</a></p>
<p><b>CT Power</b></p>  <p>17.4 x 7.2 x 13.5mm      17.4 x 14 x 13.5mm</p> <p><b>1c</b>      <b>1c x2 (Twin)</b></p>	<ul style="list-style-type: none"> <li>» Super miniature size</li> <li>» Footprint same as CT standard type</li> <li>» Suitable for motor loads</li> <li>» H-bridge type available (twin relay)</li> <li>» Pin in Paste (with vent hole) available</li> </ul> <p><b>30A N.O.</b>    <b>10A N.C.</b>    <b>16V</b></p>	<p>12V DC 1000mW</p>	<p>THT    PIP</p>  <p>PCB, PIP</p> <p>18 terminals      10 terminals</p> <p><a href="#">Go To Overview &gt;&gt;</a></p>
<p><b>TB</b></p>  <p>14.0 x 9.2 x 14.0mm      17.4 x 14.0 x 14.0mm</p> <p><b>1a</b>    <b>1c</b>      <b>1c x2 (Twin)</b></p>	<ul style="list-style-type: none"> <li>» Super miniature size</li> <li>» H-bridge type available (twin relay)</li> <li>» Pin in Paste (with vent hole) available</li> <li>» Lamp load type available</li> </ul> <p><b>20A N.O.</b>    <b>10A N.C.</b>    <b>16V</b></p>	<p>12V DC 1,440mW (for pick-up max. 5.5V DC) 900mW (for pick-up max. 6.5V DC) 640mW (for pick-up max. 7.7V DC)</p>	<p>THT    PIP</p>  <p>PCB, PIP</p> <p>Twin type (8 terminals)      1c type</p> <p>4x16 dia.    4x11 dia.    3x16 dia.    2x11 dia.</p> <p><a href="#">Go To Overview &gt;&gt;</a></p>
<p><b>TB1P</b></p>  <p>14.0 x 9.2 x 14.0mm</p> <p><b>1a</b></p>	<ul style="list-style-type: none"> <li>» Low power consumption</li> <li>» Small board space</li> <li>» Light weight</li> </ul> <p><b>30A N.O.</b>    <b>16V</b></p>	<p>12V DC 480mW</p>	 <p>Hole punching tolerance ±0.1</p> <p><a href="#">Go To Overview &gt;&gt;</a></p>



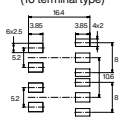
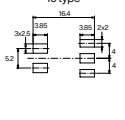
Series	Features	Coil	Mounting (bottom view)
<p><b>TL</b></p>  <p>14.4 x 11 x 16mm</p> <p><b>1u</b></p>	<ul style="list-style-type: none"> <li>» 1 form U contact arrangement (double make)</li> <li>» Small board space</li> <li>» Light weight</li> </ul> <p><b>40A N.O.</b> <b>16V</b></p>	<p>12V DC 640mW (for pick-up max. 6.5V DC)</p>	 <p><a href="#">Go To Overview &gt;&gt;</a></p>
<p><b>TE</b></p>  <p>136 x 12 x 13.5mm    120 x 72 x 144mm    136 x 12 x 13.5mm</p> <p><b>1c</b>    <b>1c</b>    <b>1c x2 (Twin)</b></p>	<ul style="list-style-type: none"> <li>» Ultra small size, smallest in its class</li> <li>» High capacity in a compact body</li> <li>» H-bridge type available (twin relay)</li> <li>» Pin in Paste (with vent hole) available</li> </ul> <p><b>20A N.O.</b> <b>25A N.C.</b> <b>10A N.C.</b> <b>16V</b></p>	<p>12V DC 1,309mW (for pick-up max. 5.5V DC) 900mW (for pick-up max. 6.5V DC) 655mW (for pick-up max. 7.7V DC)</p>	<p>THT    PIP    PCB, PIP</p>  <p><a href="#">Go To Overview &gt;&gt;</a></p>
<p><b>CJ</b></p>  <p>72 x 12.2 x 13.5mm    137 x 12.2 x 13.5mm</p> <p><b>1c</b>    <b>1c x2 (Twin)</b></p>	<ul style="list-style-type: none"> <li>» Ultra small size</li> <li>» High capacity in a compact body</li> <li>» H-bridge type available (twin relay)</li> <li>» Pin in Paste (with vent hole) available</li> </ul> <p><b>20A N.O.</b> <b>10A N.C.</b> <b>16V</b></p>	<p>12V DC 800mW</p> <p>High sensitive type 640mW</p>	<p>THT    PIP    PCB, PIP</p>  <p><a href="#">Go To Overview &gt;&gt;</a></p>
<p><b>CP</b></p>  <p>140 x 130 x 9.5mm</p> <p><b>1a</b>    <b>1c</b></p>	<ul style="list-style-type: none"> <li>» Very low profile</li> <li>» High capacity</li> <li>» 24V DC type available on request</li> </ul> <p><b>20A N.O.</b> <b>10A N.C.</b> <b>16V</b></p>	<p>12V DC 640mW</p>	<p>THT    PCB</p>  <p><a href="#">Go To Overview &gt;&gt;</a></p>

# Automotive Relays | PCB Relays

Series	Features	Coil	Mounting (bottom view)
<b>CP POWER</b>  14.0 x 13.0 x 9.5mm 1a 1c	<ul style="list-style-type: none"> <li>» Very low profile</li> <li>» Improved heat conduction by additional pin</li> <li>» Pin in Paste (with vent hole) available</li> </ul> 20A N.O. 10A N.C. 16V	12V DC 450mW 640mW	THT  Go To Overview >>
<b>CP SMD</b>  14.0 x 13.0 x 10.5mm 1c	<ul style="list-style-type: none"> <li>» Very low profile</li> <li>» High capacity</li> </ul> 20A N.O. 10A N.C. 16V	12V DC 640mW	SMD  Go To Overview >>
<b>TJ</b>  15.0 x 16.0 x 11.2mm 1c	<ul style="list-style-type: none"> <li>» Compact flat type (height: 11.2mm)</li> <li>» High capacity switching</li> <li>» Thermal resistant type</li> </ul> 30A N.O. 15A N.C. 16V	12V DC 450mW	THT  Go To Overview >>
<b>CQ</b>  17.0 x 13.0 x 16.6mm 1c	<ul style="list-style-type: none"> <li>» Very quiet operation</li> <li>» Terminal layout identical to JJM</li> </ul> 20A N.O. 10A N.C. 16V	12V DC 640mW	THT  Go To Overview >>

Series	Features	Coil	Mounting (bottom view)
<p><b>TA</b></p>  <p>19.8 x 17.0 x 14.0mm</p> <p><b>1c</b></p>	<ul style="list-style-type: none"> <li>» Very quiet operation</li> <li>» Flat type</li> </ul> <p><b>20A N.O.</b> <b>10A N.C.</b> <b>16V</b></p>	<p>12V DC 640mW (for pick-up max. 7.7V DC) 900mW (for pick-up max. 6.5V DC)</p>	<p>THT</p>  <p><b>Go To Overview &gt;&gt;</b></p>
<p><b>CN-M</b></p>  <p>15.5 x 11 x 14.4mm</p> <p><b>1a</b> <b>1c</b></p>	<ul style="list-style-type: none"> <li>» Space-saving design</li> <li>» SMD type available</li> <li>» Pin in Paste (with vent hole) available</li> </ul> <p>17.8 x 12.6 x 18mm</p> <p><b>30A N.O.</b> <b>25A N.C.</b> <b>16V</b></p>	<p>12V DC 640mW</p>	<p>THT</p> <p>PiP</p> <p>SMD</p>  <p><b>Go To Overview &gt;&gt;</b></p>
<p><b>CN-H</b></p>  <p>17 x 10.6 x 18.3mm</p> <p><b>1a</b></p>	<ul style="list-style-type: none"> <li>» Best space savings in its class</li> <li>» Substitute for Micro-ISO relay</li> <li>» Low operating power type</li> <li>» High current-carrying capacity</li> </ul> <p><b>30A N.O.</b> <b>16V</b></p>	<p>12V DC 450mW (for pick-up max. 6.5V DC) 640mW (for pick-up max. 5.5V DC)</p>	<p>THT</p>  <p><b>Go To Overview &gt;&gt;</b></p>
<p><b>TG</b></p>  <p>17.8 x 12.6 x 18mm</p> <p><b>1a</b> <b>1c</b></p>	<ul style="list-style-type: none"> <li>» Large switching capacity in small size</li> <li>» Substitute for micro ISO relays</li> <li>» Low operating power type</li> </ul> <p><b>30A N.O.</b> <b>15A N.C.</b> <b>16V</b></p>	<p>12V DC 640mW (for pick-up max. 6.5V DC) 450mW (for pick-up max. 7.0V DC)</p>	<p>THT</p>  <p><b>Go To Overview &gt;&gt;</b></p>



Series	Features	Coil	Mounting (bottom view)
<p><b>TH</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>110 x 12.0 x 8.8mm</p> <p><b>1c</b></p> </div> <div style="text-align: center;">  <p>216 x 12.0 x 8.8mm</p> <p><b>1c x2 (Twin)</b></p> </div> </div>	<ul style="list-style-type: none"> <li>» Ultra compact flat type</li> <li>» High switching capacity (up to 25A)</li> <li>» 10 terminals twin type</li> </ul> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px 5px; background-color: #f08080;">20A N.O.</div> <div style="border: 1px solid black; padding: 2px 5px; background-color: #f08080;">10A N.C.</div> <div style="border: 1px solid black; padding: 2px 5px; background-color: #f08080;">16V</div> </div>	<p>12V DC 900mW (for pick-up max. 6.5V DC) 655mW (for pick-up max. 7.7V DC)</p>	<p><b>SMD</b></p> <p style="text-align: center;">SMT</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Twin type (10 terminal type)</p>  </div> <div style="text-align: center;"> <p>1c type</p>  </div> </div> <p style="text-align: right;"><a href="#">Go To Overview &gt;&gt;</a></p>



Signal

Power

High Capacity

Safety

High Frequency

Semiconductor

Automotive

Plug-in


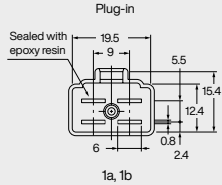

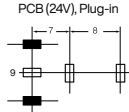

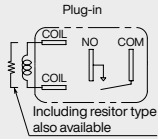
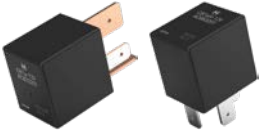
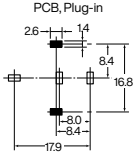
High Voltage

## Plug-in Relays

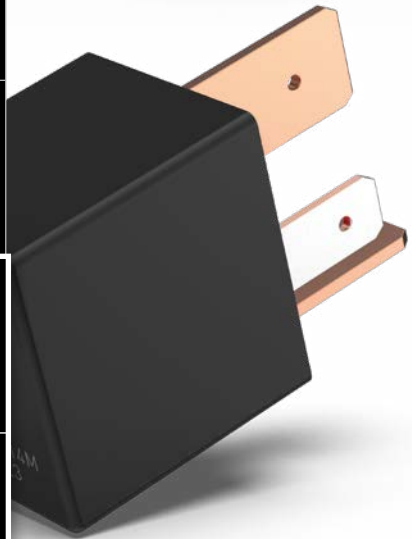


Panasonic Industry provides high-performing micro and mini ISO plug-in relays suitable for 12V and 24V power supply systems.

# Automotive Relays | Plug-in Relays

Series	Features	Coil	Mounting (bottom view)
<b>CA</b>  215 x 144 x 370 mm 1a 1b 1c	» Rubber bracket / screw mounting » Direct plug-in		Plug-in  <a href="#">Go To Overview &gt;&gt;</a>
	Standard <b>30A</b> 1a, <b>20A</b> 1b, 1c, <b>15V</b> 1c, <b>16V</b> 1a, 1b	12V DC 1,800mW	
	Type S <b>20A</b> N.O., <b>10A</b> N.C., <b>16V</b>	12V DC 1,400mW	
	1c 24V <b>20A</b> N.O., <b>20A</b> N.C., <b>30V</b>	24V DC 1,800mW	
<b>CM</b>  20 x 15 x 22 mm 1a 1c	» Small substitute for Mini-ISO relay » Micro-ISO terminal type		Plug-in THT  <a href="#">Go To Overview &gt;&gt;</a>
	<b>35A</b> N.O., <b>20A</b> N.C., <b>16V</b>	12V DC 1500mW	
	<b>35A</b> N.O., <b>20A</b> N.C., <b>32V</b>	24V DC 1800mW	
<b>CV-N</b>  22.5 x 15 x 15.7 mm 1a 1c	» Low profile » Low temperature rise » Low sound pressure level » RTIII (IP67) available	24V DC 800mW	Plug-in  <a href="#">Go To Overview &gt;&gt;</a>
	<b>20A</b> N.O., <b>10A</b> N.C., <b>14V</b>		
<b>CB</b>  26 x 22 x 25 mm 1a 1c	» 40A switching current at 85°C » Mini-ISO type terminals » High shock resistance » High thermal resistance		Plug-in THT  PCB, standard type <a href="#">Go To Overview &gt;&gt;</a>
	Standard <b>40A</b> N.O., <b>30A</b> N.C., <b>16Va</b>	12V DC 1400mW	
	H Type <b>70A</b> N.O., <b>16V</b>	12V DC 1800mW	
	24V Type <b>40A</b> N.O., <b>30A</b> N.C., <b>32V</b>	24V DC 1800mW	

# Automotive Relays | Note









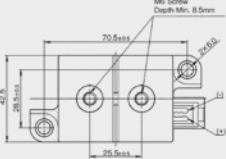













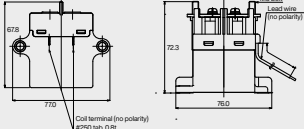

## High Voltage DC Relays

With increasing concern for the environment, the market for eco-friendly vehicles is expanding. To contribute to a greener world and environmental compliance regulations, we provide a broad range of solutions for hybrid to full-electric vehicles.




We aim at contributing to the electrification and safety of cars by offering EV relays (DC contactors) achieving high-capacity DC cutoff & space saving and Automotive relays capable of large current/voltage cutoff.

Charging the next generation of mobility.

# Automotive Relays | High Voltage DC Relays

Series	Features	Coil	Mounting
<b>EV-A</b>  82.6 x 73.0 x 23.0mm 	<ul style="list-style-type: none"> <li>» One of the smallest and lightest in 250 A class</li> <li>» 8,000 A short circuit tolerance</li> <li>» High cut-off capacity 1,800A at 500V DC without contact polarity</li> <li>» Vertical and horizontal type available</li> </ul> 	12V DC 6000mW	  
<b>EV-G, EV-H</b> high short-circuit capacity  1 66.8 x 49.7 x 37.9mm  2 78 x 40 x 48.1mm 	<ul style="list-style-type: none"> <li>» High short-circuit capacity type</li> <li>» AEVH (100A) available with lead wire</li> </ul>  	12V DC 5200mW 5400mW	 
<b>EV-S</b> quiet  1 76 x 36 x 72.3mm  2 77 x 67.8 x 37.7mm 	<ul style="list-style-type: none"> <li>» DC type with sealed capsule, mainly for hybrid vehicles</li> <li>» Very quiet operation</li> <li>» Small size and light weight</li> <li>» Blow-out magnets allow small arcing space</li> <li>» Safety construction</li> <li>» High contact reliability</li> <li>» Standard type for horizontal mounting available</li> </ul> 	12V DC 4500mW	  

# Automotive Relays | High Voltage DC Relays

Series	Features	Coil		Mounting
<b>EV</b>  1: 78 x 40 x 48.1mm 2: 82.8 x 40 x 79mm 3: 75.5 x 40 x 80mm	<ul style="list-style-type: none"> <li>» Sealed capsule for xEV</li> <li>» Compact size</li> <li>» Blow-out magnets allow small arcing space</li> <li>» Safety construction</li> <li>» High contact reliability</li> </ul>	12V DC	24V DC	Screw terminal Faston terminal
<b>1a</b>	1: 20A 400V 2: 80A 450V 3: 120A 450V	1240mW		<a href="#">Go To Overview &gt;&gt;</a>
<b>EBN</b>  82.6 x 73.0 x 23.0mm	<ul style="list-style-type: none"> <li>» Low height for mounting within battery packs</li> <li>» Max. 1,500 A 60 V DC switching off possible</li> </ul>	12V DC	2000mW	Plug-in
<b>1a</b>	100A 60V			<a href="#">Go To Overview &gt;&gt;</a>
<b>ECN</b>  29.0 x 25.0 x 28.9mm	<ul style="list-style-type: none"> <li>» Small pre-charging relay</li> <li>» Easy connect plug-in terminal</li> </ul>	12V DC	1400mW	Screw terminal
<b>1a</b>	15A 400V			<a href="#">Go To Overview &gt;&gt;</a>

Signal  
Power  
High Capacity  
Safety  
High Frequency  
Semiconductor  
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Plug-in  
High Voltage

# Panasonic

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