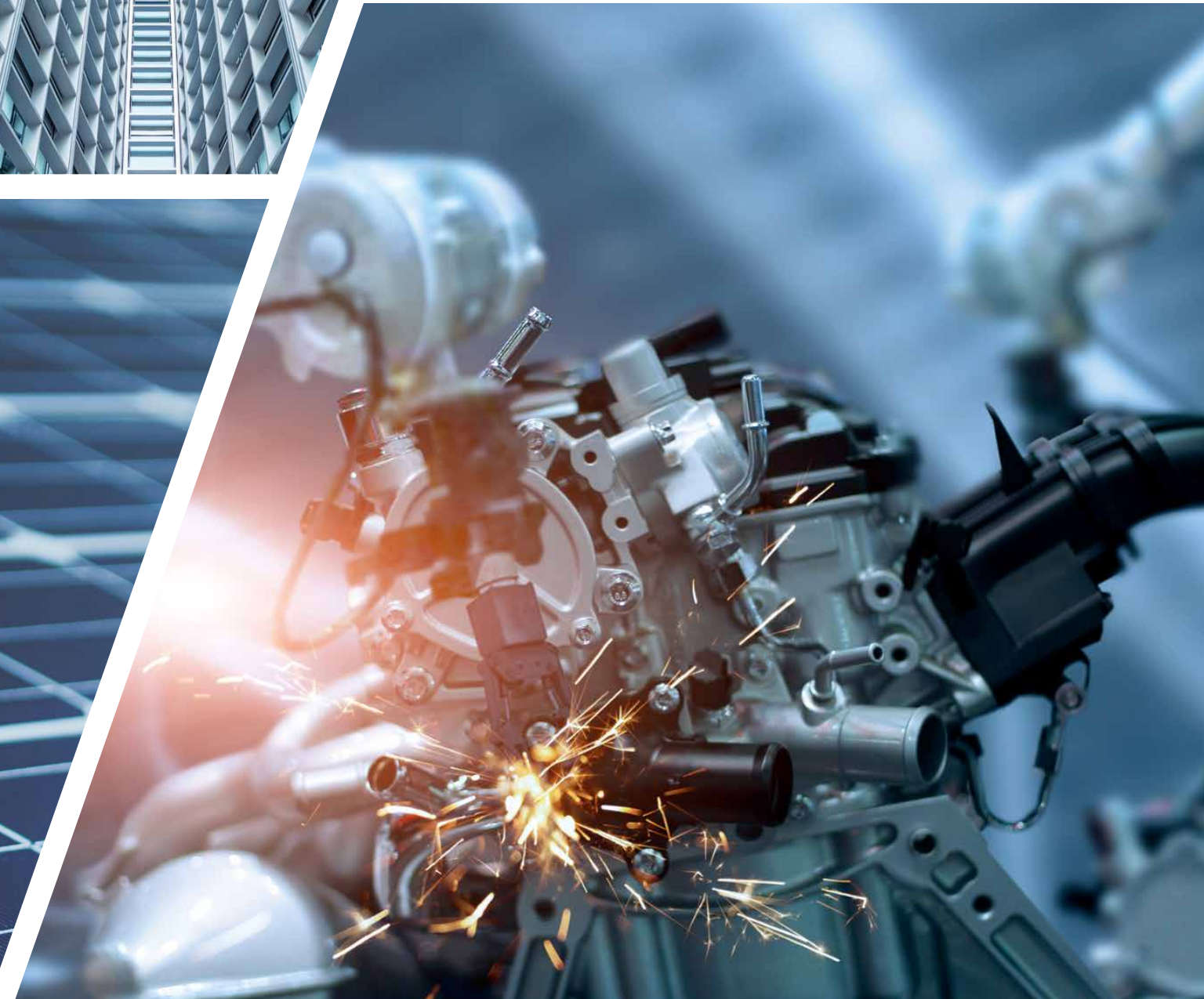


Short form **RELAYS**



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.

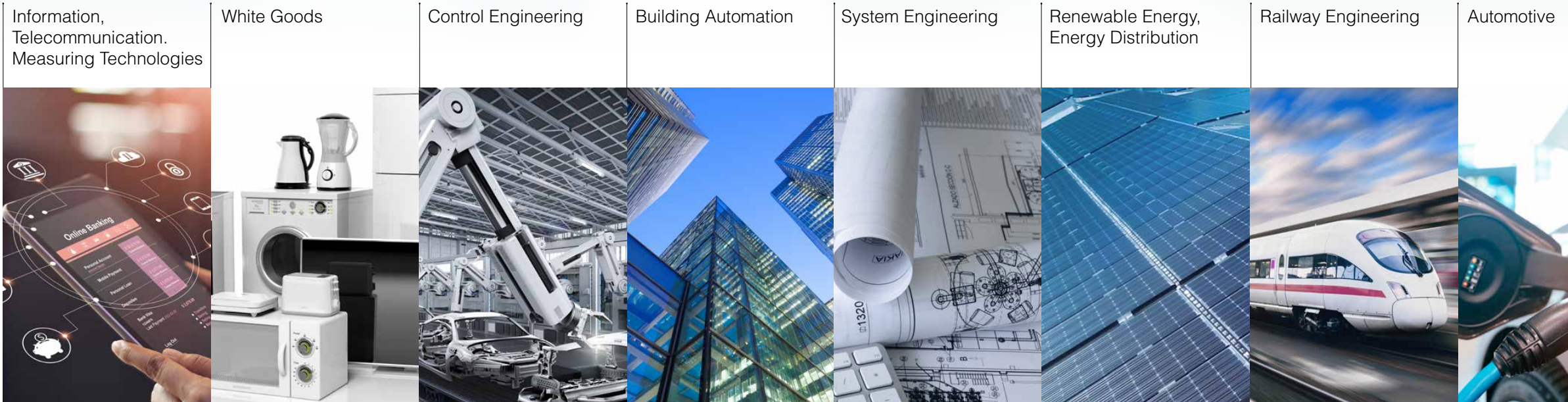
With our new short form we'll invite you to gain a quick and comprehensive overview on our new relay portfolio: our endurance runners, our innovations – and for sure the ones that suit your project.

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.

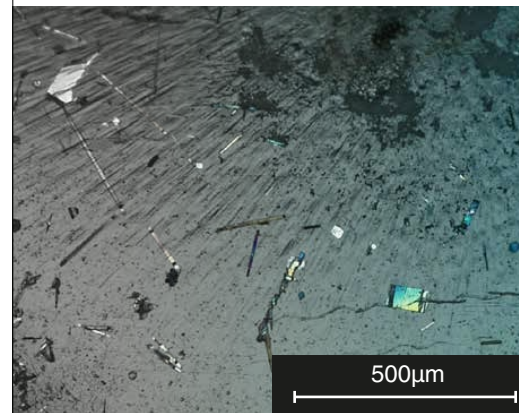
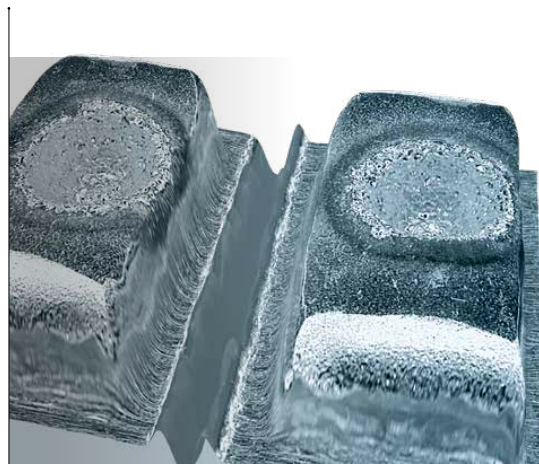


Service & Support

“
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 in the relay itself, but in the context of improper component decision or external factors like overcurrent, mechanical stress or hazardous materials.



Industrial Relays

Short form **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

Power

High Capacity

Safety

High Frequency

Semiconductor

Automotive

Plug-in

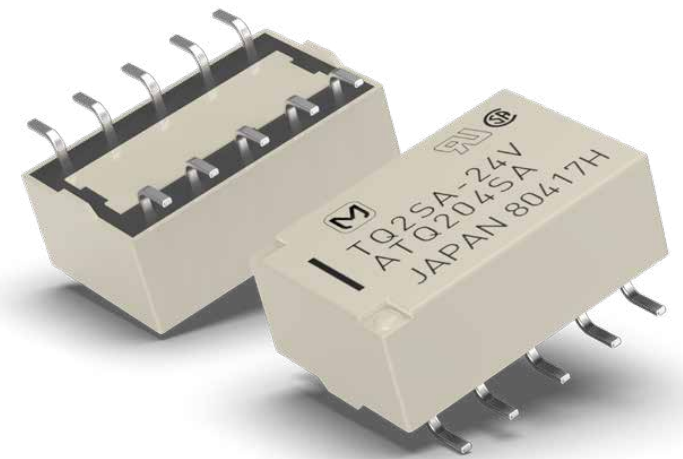
High Voltage

“

...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.

Industrial Relays | Signal Relays

Short form **RELAYS**

Series		Features	Coil		Mounting (bottom view)	
AGN  RTIII 2c 1 coil latching CSA UL BSI	 10.6 x 7.4 x 10.0mm 10.6 x 7.2 x 9.0mm CSA UL BSI	» Compact slim body » 1,500V FCC » 2,500V Telcordia » Twin crossbar contacts ensures high contact reliability » High sensitivity 100mW type available 1A 10µA minimal 110V DC 125V AC	DC 1.5, 3, 4.5, 6, 9, 12V	DC 24V	<div>THT</div> <div>SMD</div>  <div>Go To Overview >></div>	
			Single side stable			
			140mW	230mW		
			Sensitive / 1 coil latching type			
			100mW	120mW		
AGQ  RTIII 2c 1 coil latching CSA UL BSI	 10.6x 8.4 x 5.4mm 10.6x 7.2 x 5.2mm CSA UL BSI	» Space saving flat body » 1,500V FCC » 2,500V Telcordia » The use of twin crossbar contacts ensures high contact reliability » Power type for 3,5A inrush current available 1A 10µA minimal 110V DC 125V AC	DC 1.5, 3, 4.5, 6, 9, 12V	DC 24V	<div>THT</div> <div>SMD</div>  <div>Go To Overview >></div>	
			Single side stable			
			140mW	230mW		
			Sensitive / 1 coil latching type			
			100mW	120mW		
TX  RTIII 2c 1 coil latching 2 coil latching CSA UL BSI	 15 x 7.4 x 8.4mm 15 x 7.4 x 8.2mm CSA UL BSI	» 1,500V FCC » 2,500V Telcordia » 3 types of surface-mount terminals available 2A 10µA minimal 220V DC 220V AC	DC 1.5, 3, 4.5, 5, 6, 9, 12V	DC 24V	DC 48V	<div>THT</div> <div>SMD</div>  <div>Go To Overview >></div>
			Single side stable: 140mW		270mW	
			1 coil latching: 100mW	—		
		TX-TH high inrush type 7.5A inrush 2A 10µA minimal 220V DC 250V AC	2 coil latching: 200mW		—	
			Single side stable: 140mW		270mW	
			1 coil latching: 100mW	—		
		TX-D high insulation type » Conforms to insulation in EN41003 / EN60950 » Surge breakdown voltage 6kV (contacts to coil) 2A 10µA minimal 220V DC 250V AC	2 coil latching: 140mW		—	
			Single side stable: 200mW	230mW	—	
			1 coil latching: 150mW	170mW	—	
		TX-S sensitive type » Very low operating power 1A 10µA minimal 110V DC 125V AC	2 coil latching: 140mW		—	
			Single side stable: 50mW	70mW	—	
			1 coil latching: 35mW	50mW	—	
		2 coil latching: 70mW		150mW	—	

Signal

Power

High Capacity

Safety

High Frequency

Semiconductor


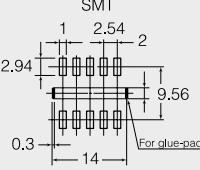

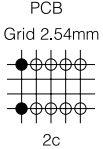

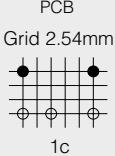

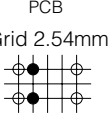
Automotive

Plug-in

High Voltage

Industrial Relays | Signal Relays

Short form **RELAYS**

Series		Features	Coil			Mounting (bottom view)
TQ SMD RTIII 2c1 coil latching2 coil latching CSAUL 14 x 9 x 5.6mm		» Ultra low profile 5.8mm » Surge withstand 2,500V » 3 types of surface-mount terminals available	DC 1.5, 3, 4.5, 5, 6, 9, 12V	DC 24V	DC 48V	SMD  Go To Overview >>
			Single side stable:	140mW	200mW	
			1 coil latching:	70mW	100mW	
			2 coil latching:	140mW	200mW	
TQ THT RTIII 2c1 coil latching2 coil latching CSAUL 14 x 9 x 5mm		» 1,500V FCC » Low thermal electromotive force approx. 5 µV	DC 3, 4.5, 5, 6, 9, 12V	DC 24V	DC 48V	THT  Go To Overview >>
			Single side stable:	140mW	200mW	
			1 coil latching:	100mW	150mW	
			2 coil latching:	140mW	300mW	
DS1 RTIII 1c1 coil latching2 coil latching CSAUL 15 x 9.9 x 9.9mm		» 1,500V FCC	DC 1.5, 3, 5, 6, 9, 12, 24, 48V			THT SMD  Go To Overview >>
			Single side stable:	200mW		
			1 coil latching:	90mW		
			2 coil latching:	120mW		
HY RTIII 1c CSAUL 12 x 7.4 x 10.1mm		» Non polarized type » Gold clad twin contacts for superior contact reliability	DC 1.5, 3, 4.5, 6, 9, 12, 24V			THT  Go To Overview >>

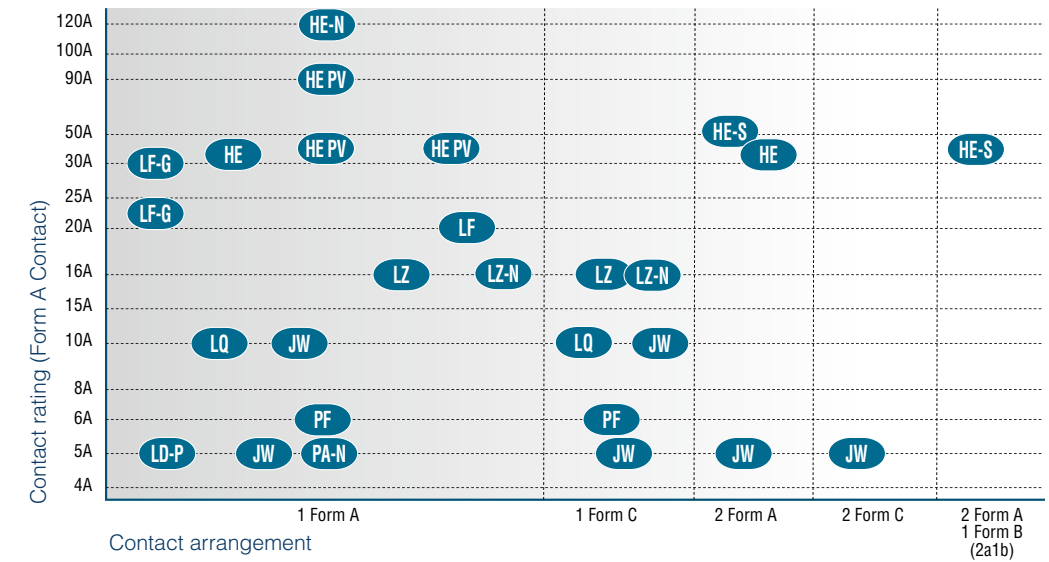
Power relays - the backbone of applications in countless contexts.

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.

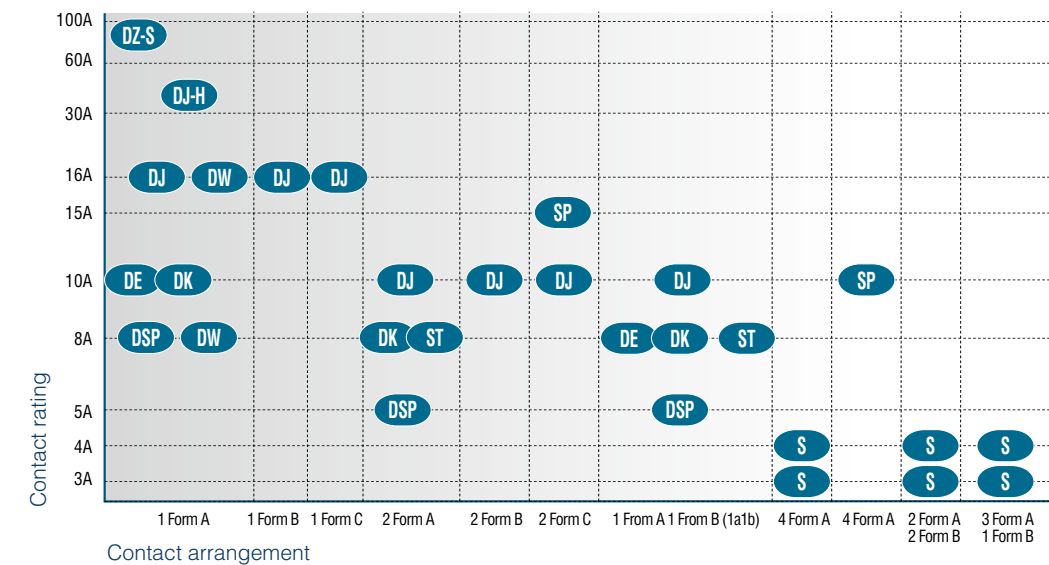


Power Relays

Non polarized type power relays



Polarized type power relays (with latching)



Signal

Power

High Capacity

Safety





High Frequency

Semiconductor

Automotive

Plug-in

High Voltage

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<div>DSP</div> <div></div> <div>20.2 x 11 x 10.5mm</div> <div>RTIII</div> <div>1a1a1b2a1 coil latching2 coil latchingCSATÜVUL</div> <div>8A 1a5A 1a1b, 2a220V DC 400V AC</div> <div>» Miniature high sensitive power relay</div> <div>» High breakdown voltage</div> <div>» Creepage & clearance distance min. 3.5mm</div> <div>DC 3, 5, 6, 9, 12, 24V</div> <div>Single side stable & 2 coil latching: 300mW</div> <div>1 coil latching: 150mW</div> <div>1,000Vrms2,000Vrms3,000Vrms5,000V</div> <div>THT</div> <div>PCB</div> <div>Grid 2.54mm</div> <div>1a1a1b, 2a</div> <div>Go To Overview >></div>							
<div>DK</div> <div></div> <div>20 x 12.5 x 9.7mm20 x 15 x 9.7mm</div> <div>RTIII</div> <div>1a1a1b2a2 coil latchingCSATÜVULVDE</div> <div>10A 1a8A 1a1b, 2a125V DC 400V AC</div> <div>» Creepage & clearance distance min. 8mm:</div> <div>DK2A-L1/L2 min. 6.8mm</div> <div>DK1A1B-L1/L2 min. 6.8mm</div> <div>DC 3, 5, 6, 9, 12, 24V</div> <div>200mW</div> <div>1,000Vrms4,000Vrms4,000Vrms10,000V</div> <div>THT</div> <div>PCB</div> <div>Grid 2.54mm</div> <div>1a1a1b, 2a</div> <div>Go To Overview >></div>							
<div>DE</div> <div></div> <div>25 x 12.5 x 12.5mm</div> <div>RTIII</div> <div>1a1a1b2a1 coil latching2 coil latchingCSATÜVULVDE</div> <div>16A 1a8A 1a1b, 2a230V DC 440V AC</div> <div>» Conforms to VDE0631</div> <div>» Low coil power</div> <div>» High switching capacity:</div> <div>16A = 25,000</div> <div>10A = 100,000 switching cycles</div> <div>» Creepage & clearance distance min. 8mm</div> <div>DC 1.5, 3, 4.5, 5, 6, 9, 12, 24, 48V</div> <div>Single side stable & 2 coil latching: 200mW</div> <div>1 coil latching: 100mW</div> <div>1,000Vrms4,000Vrms (1a1b, 2a)5,000Vrms12,000V</div> <div>THT</div> <div>PCB</div> <div>Grid 2.54mm</div> <div>Go To Overview >></div>							
<div>DW/ DW-HL</div> <div></div> <div>24 x 10 x 18.8 (15.8)mm</div> <div>RTIII</div> <div>1a1 coil latching2 coil latchingUL / C-ULVDE</div> <div>16A 1a277V AC</div> <div>» 15.8mm low profile type available</div> <div>» HL inrush type available (TV-8 UL/C-UL)</div> <div>» IEC60335-1* compliant, PTI325V (VDE approved) type available</div> <div>» Creepage & clearance distance min. 6mm</div> <div>DC 3, 5, 6, 9, 12, 24V</div> <div>1 coil latching: 200mW</div> <div>2 coil latching: 400mW</div> <div>1,000Vrms–5,000Vrms12,000V</div> <div>THTPiP</div> <div>PCB, PiP</div> <div>4 or 5-1.20 dia. hole</div> <div>2 coil latching type only</div> <div>17.503.507.50</div> <div>Go To Overview >></div>							

Signal

Power

High Capacity

Safety


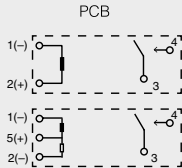

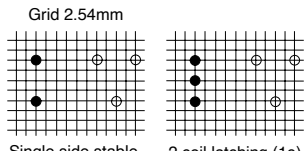


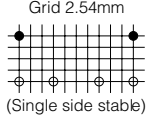
High Frequency

Semiconductor

Automotive

Plug-in

High Voltage

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<div>DJ-H</div> <div></div> <div>39 x 15 x 33mm</div> <div>RTII</div> <div>1a</div> <div>1 coil latching</div> <div>2 coil latching</div> <div>UL</div> <div>VDE</div> <div>50A 1a</div> <div>480V AC</div>	<div>» Manual Lever Type</div> <div>» Creepage and clearance distance min. 8mm</div> <div>» High inrush current capacity ~ 500A</div> <div>» EN 60669 compliant</div>	<div>DC 5, 6, 9, 12, 24V</div> <div>1 coil latching: 1,000mW</div> <div>2 coil latching: 2,000mW</div>	1,500Vrms	—	4,000Vrms	12,000V	<div>THT</div> <div>PCB</div> <div></div> <div>Go To Overview >></div>
<div>DJ</div> <div></div> <div>29 x 13 x 16/16.5mm</div> <div>RTII</div> <div>RTIII</div> <div>1a</div> <div>1b</div> <div>1a1b</div> <div>1c</div> <div>1 coil latching</div> <div>2a</div> <div>2b</div> <div>2c</div> <div>2 coil latching</div> <div>UL</div> <div>VDE</div> <div>20A 1a</div> <div>16A 1b, 1c</div> <div>10A 1a1b, 2a, 2b, 2c</div> <div>125V DC 400V AC</div>	<div>» Optional available with manual testbutton</div> <div>» Creepage and clearance distance min. 8mm</div> <div>» Tungsten pre contact available</div>	<div>DC 5, 6, 12, 24, 48V</div> <div>Single side stable & 2 coil latching: 250mW</div> <div>1 coil latching: 150mW</div>	1,000Vrms	—	4,000Vrms	10,000V	<div>THT</div> <div>PCB</div> <div>Grid 2.54mm</div> <div></div> <div>Single side stable, 1 coil latching (1c)</div> <div>2 coil latching (1c)</div> <div>Go To Overview >></div>
<div>DZ-S</div> <div></div> <div>30 x 38.5 x 17.5mm</div> <div>1a</div> <div>1 coil latching</div> <div>2 coil latching</div>	<div>» IEC62055-31 UC3 compliant (short current 3,000 A)</div> <div>» High switching capacity 90 A 250 VAC (resistive load)</div> <div>» Twin contacts for low temperature rise</div>	<div>DC 5, 12, 24V</div> <div>1 coil latching: 1500mW</div> <div>2 coil latching: 3,000mW</div>	2,000Vrms	—	4,000Vrms	12,000V	<div>Terminal mounting</div> <div>Terminal mounting</div> <div>Go To Overview >></div>
<div>ST</div> <div></div> <div>31 x 14 x 11.3mm</div> <div>RTIII</div> <div>1a1b</div> <div>2a</div> <div>1 coil latching</div> <div>2 coil latching</div> <div>CSA</div> <div>UL</div> <div>VDE</div> <div>8A</div> <div>250V DC 380V AC</div>	<div>» High inrush capability, TV rating</div> <div>» Frictionless pivoted rotating armature</div> <div>» Socket available</div> <div>» Not for new applications</div> <div>» Creepage and clearance distance more than 3mm, approx. 4mm</div>	<div>DC 3, 5, 6, 9, 12, 24, 48V</div> <div>Single side stable & 2 coil latching: 240mW</div> <div>1 coil latching: 130mW</div>	1,200Vrms	2,000Vrms	3,750Vrms	6,000V	<div>THT</div> <div>PCB</div> <div>Grid 2.54mm</div> <div></div> <div>(Single side stable)</div> <div>Go To Overview >></div>

Signal

Power

High Capacity

Safety


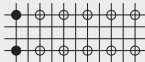


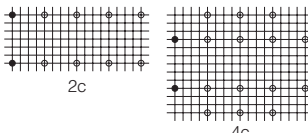

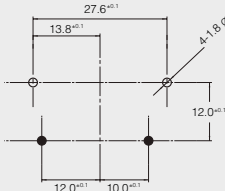

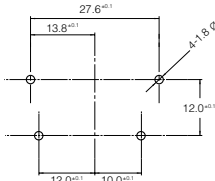
High Frequency

Semiconductor

Automotive

Plug-in

High Voltage

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<div>S</div> <div> 28 x 12 x 10.4mm</div> <div>RTIII</div> <div>4a2a2b3a1b1 coil latching2 coil latching</div> <div>UL</div> <div>4A30V DC250V AC</div> <div>» 5-layer contact for wide switching capacity range: 100µA...4A » High vibration and shock resistance » Low thermal electromotive force (approx. 3µV) » Sockets available</div> <div>DC 3, 5, 6, 12, 24, 48V</div> <div>Single side stable & 2 coil latching: 200mW (48V: 271mW) 1 coil latching: 100mW (48V: 144mW)</div> <div>750Vrms1,000Vrms1,500Vrms</div> <div>—</div> <div><div>THT</div><div>PCB Grid 2.54mm</div><div></div><div>Go To Overview >></div></div>	<div>SP</div> <div> 50 x 25.6 x 22mm</div> <div> 50 x 36.8 x 22mm</div> <div>2c4c2 coil latching</div> <div>CSAULTÜV</div> <div>15A110V DC250V AC</div> <div>» Polarized power relay with rotating armature » High sensitivity » High vibration and shock resistance » Socket available</div> <div>DC 3, 5, 6, 12, 24, 48V</div> <div>300mW</div> <div>1,500Vrms3,000Vrms3,000Vrms</div> <div>—</div> <div><div>THT</div><div>Plug-in</div><div>PCB, Plug-in Grid 2.54mm</div><div></div><div>Go To Overview >></div></div>	<div>LF</div> <div> 30.1 x 15.7 x 23.3mm</div> <div>RTII</div> <div>1a</div> <div>TÜVULVDECQC</div> <div>20A250V AC</div> <div>» Ideal for compressor and inverter loads » High insulation resistance » Inrush current:102A/200V AC 224A/100V AC » High surge withstand voltage » Creepage and clearance distance min. 8mm</div> <div>DC 5, 6, 9, 12, 18, 24V</div> <div>900mW</div> <div>1,000Vrms—5,000Vrms</div> <div>10,000V</div> <div><div>THT</div><div>Terminal mounting</div><div>PCB, Top mounting</div><div></div><div>TMP type</div><div>Go To Overview >></div></div>	<div>LF-G</div> <div> 30.1 x 15.7 x 23.3mm</div> <div>RTII</div> <div>1a</div> <div>UL/C-ULVDEVDE</div> <div>22A31A ALFG233A ALFG2*1277V AC</div> <div>» Ideal for solar inverters » Contact gap 1.5mm / 1.8mm » Compliant with IEC62109 and VDE0126 » Inrush current: 102A/200V AC 224A/100V AC » Creepage distance contact-coil: min. 9.5mm » Clearance distance contact-coil: min. 6.5mm</div> <div>DC 9, 12, 18, 24V</div> <div>1,400mW</div> <div>2,500Vrms—4,000Vrms</div> <div>6,000V</div> <div><div>THT</div><div>PCB</div><div></div><div>Go To Overview >></div></div>				

Signal

Power

High Capacity

Safety


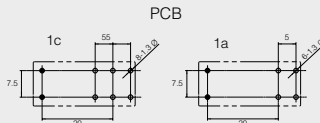

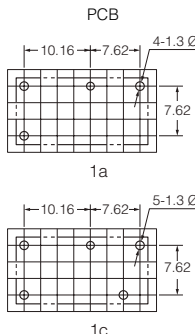

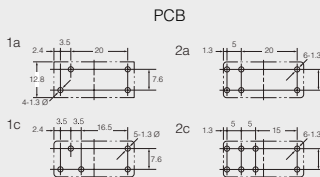

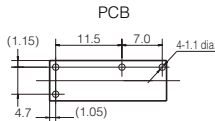
High Frequency

Semiconductor

Automotive

Plug-in

High Voltage

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<div>LZ / LZ-N</div> <div><div>RTIII</div><div>LZ</div></div> <div>RTII</div> <div><div>1a</div><div>1c</div></div> <div><div>UL</div><div>VDE</div></div> <div><div>16A</div><div>250V DC</div><div>440V AC</div></div> <div><div>28.8 x 12.5 x 15.7 mm</div></div>	<div>» Low profile relay (15.7mm)</div> <div>» EN60335-1 GWT compliant</div> <div>» Ambient temperature up to 105°C</div> <div>» Creepage and clearance distance min. 10mm</div>	DC 5, 9, 12, 18, 24V (LZ 48V) 400mW	1,000Vrms	—	5,000Vrms	10,000V	<div>THT</div> <div></div> <div>Go To Overview >></div>
<div>LQ</div> <div><div>RTIII</div></div> <div><div>1a</div><div>1c</div></div> <div><div>UL / C-UL</div><div>VDE</div></div> <div><div>10A</div><div>277V AC</div></div> <div><div>20 x 10 x 16mm</div></div>	<div>» Low power consumption</div> <div>» F-coil type for 105°C ambient temperature available</div> <div>» Creepage and clearance distance: 1a: min. 4.55 mm 1c: min. 3.53 mm</div>	DC 5, 6, 9, 12, 18, 24V 200mW (1a) 400mW (1c)	1,000Vrms (1a) 750Vrms (1c)	—	4,000Vrms	8,000V	<div>THT</div> <div></div> <div>Go To Overview >></div>
<div>JW</div> <div><div>RTIII</div></div> <div><div>1a</div><div>2a</div><div>1c</div><div>2c</div></div> <div><div>CSA</div><div>SEV</div><div>TÜV</div><div>UL</div><div>VDE</div><div>SEMIKO</div></div> <div><div>10A 1a, 1c</div><div>5A 2a, 2c</div><div>110V DC 440V AC</div></div> <div><div>28.6 x 12.8 x 20mm</div></div>	<div>» Class B coil insulation types available</div> <div>» Creepage and clearance distance min. 8mm between contacts and coil (for 2 changeover contacts min. 7.5mm)</div> <div>» Universal terminal footprint</div>	DC 5, 6, 9, 12, 18, 24, 48V 530mW	1,000Vrms	3,000Vrms (2a, 2c)	5,000Vrms	10,000V	<div>THT</div> <div></div> <div>Go To Overview >></div>
<div>LD-P</div> <div><div>RTIII</div></div> <div>1a</div> <div><div>UL / C-UL</div><div>VDE</div><div>CQC</div></div> <div><div>5A</div><div>30V DC 277V AC</div></div> <div><div>20.3 x 7 x 15mm</div></div>	<div>» Slim type: width 7mm</div> <div>» Creepage and clearance distance min. 6mm</div> <div>» EN60695 (GWT2-11, GWF12-12,GW12-13) data available</div>	DC 5, 6, 9, 12, 18, 24V 200mW	750Vrms	—	4,000Vrms	10,000V	<div>THT</div> <div></div> <div>Go To Overview >></div>

Signal

Power

High Capacity

Safety


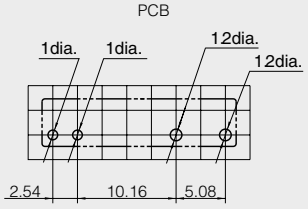

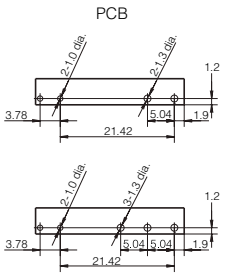
High Frequency

Semiconductor

Automotive

Plug-in

High Voltage

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<div>PA-N</div> <div></div> <div>20 x 5 x 12.5mm</div> <div>RTIII</div> <div>1a</div> <div>UL / C-UL</div> <div>TÜV</div> <div>5A</div> <div>110V DC</div> <div>250V AC</div>	<div>» High density mounting</div> <div>» Low operating power</div> <div>» Complies with IEC61010 reinforce dinsulation standards</div> <div>» Insulation distance: 5.29mm clearance, 5.35mm creepage</div> <div>» Complies with Standard for Hazardous Location (ANSI/ ISA 12.12.01)</div>	<div>DC 3, 4.5, 5, 6, 9, 12, 18, 24V</div> <div>110mW</div>	1,000Vrms	–	3,000Vrms	6,000V	<div>THT</div> <div></div> <div>Go To Overview >></div>
<div>PF</div> <div></div> <div>28 x 5 x 15mm</div> <div>RTIII</div> <div>1a</div> <div>1c</div> <div>UL / C-UL</div> <div>VDE</div> <div>CSA</div> <div>6A</div> <div>250V AC</div> <div>300V DC</div> <div>400V AC</div>	<div>» Slim size permits high density mounting</div> <div>» Slim relay for grid applications</div> <div>» Insulation construction conforms to VDE0700</div> <div>» Gold flash or gold-clad contacts available</div> <div>» Clearance distance min. 6.0mm</div> <div>» Creepage distance min. 8mm</div> <div>» Bent pin type available</div> <div>» EN60335-1, clause 30 (GWT) approved</div>	<div>DC 4.5, 5, 6, 12, 18, 24, 48, 60V</div> <div>170mW</div> <div>48V: 217mW</div> <div>60V: 175mW</div>	1,000Vrms	–	4,000Vrms	6,000V	<div>THT</div> <div></div> <div>Go To Overview >></div>

Signal

Power

High Capacity

Safety

High Frequency

Semiconductor

Automotive

Plug-in

High Voltage

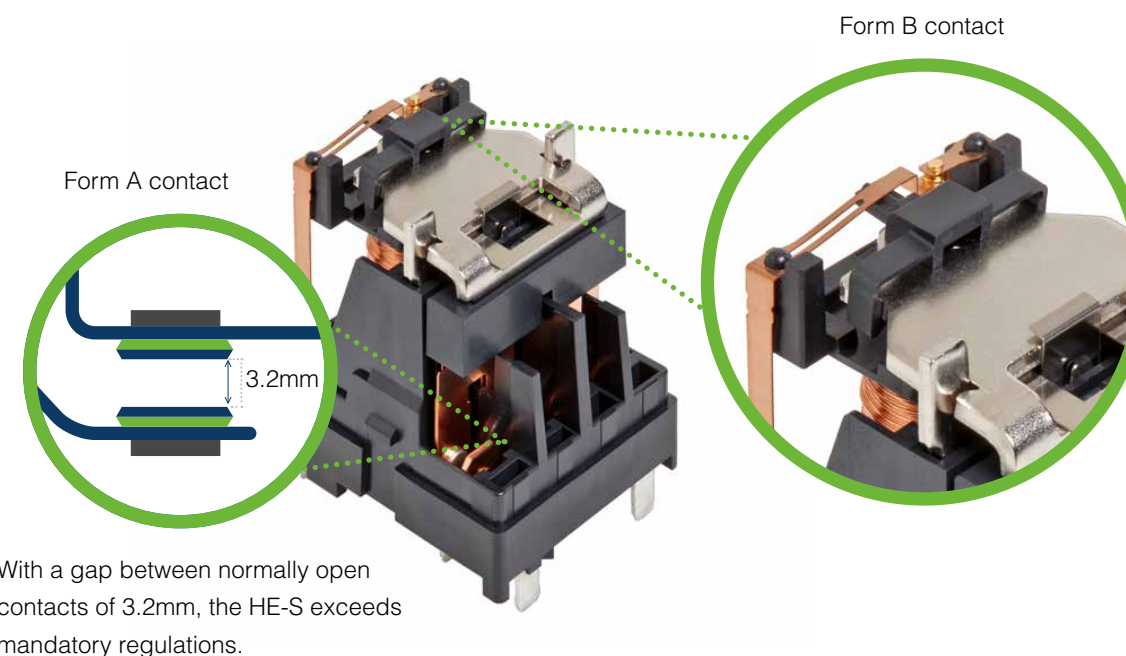
Short form **RELAYS**

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.

“Extremely low power dissipation at the contacts is achieved by reducing the contact resistance down to $0.4\text{m}\Omega$.”



Signal

Power

High Capacity

Safety


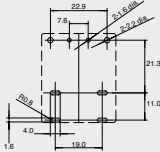

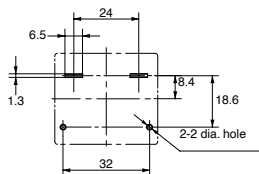

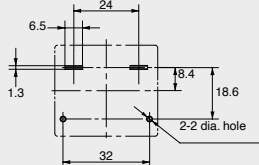
High Frequency


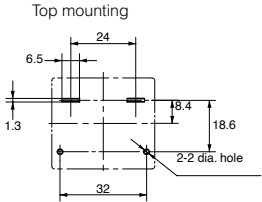

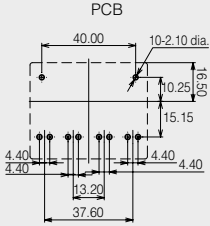
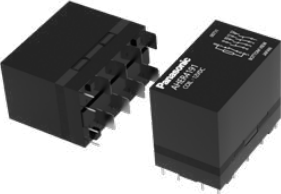
Semiconductor

Automotive

Plug-in

High Voltage

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<div>HE-S</div> <div><div>RTII</div><div>2a2a1b</div><div>CSATÜVULVDE</div></div> <div><div>30 x 36 x 40 mm</div></div>	<div>» High-capacity and long life</div> <div>» 170mW coil holding power for energy saving</div> <div>» Contact gap: 3.2mm</div> <div>» Safety: Mirror contact mechanisms according to IEC 60947-4-1</div>	<div>DC 6, 9, 12, 24, 48V</div> <div>1,880mW</div>	2,000Vrms	5,000Vrms	5,000Vrms (between coil and Form A contacts)	10,000V	<div>THT</div> <div>Recommended PC board pattern (Bottom view)</div> <div></div> <div>Go To Overview >></div>
<div>HE-Y5/ HE-PV</div> <div><div>1a</div><div>CSAULVDE</div></div> <div><div>33 x 38 x 36.3 mm</div></div>	<div>» Compliant with European photovoltaic standard VDE0126</div> <div>» Compliant with EN61810-1 2.5kW surge breakdown voltage (between contacts)</div> <div>» Contact gap 2.5mm</div> <div>» Only 310mW holding power</div>	<div>DC 6, 9, 12, 24V</div> <div>1,920mW</div>	2,000Vrms	-	5,000Vrms	10,000V	<div>THT</div> <div>Top mounting</div> <div></div> <div>Go To Overview >></div>
<div>HE-Y6</div> <div><div>RTII</div><div>1a</div><div>CSAULVDE</div></div> <div><div>33 x 38 x 38.8 mm</div></div>	<div>» Compliant with European photovoltaic standard VDE0126</div> <div>» Compliant with EN61810-1 2.5kW surge breakdown voltage (between contacts)</div> <div>» Contact gap 3.0mm</div> <div>» Only 310mW holding power</div>	<div>DC 6, 9, 12, 24V</div> <div>1,920mW</div>	2,000Vrms	-	5,000Vrms	10,000V	<div>THT</div> <div>Top mounting</div> <div></div> <div>Go To Overview >></div>

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<div>HE-Y7</div> <div></div> <div>50 x 40 x 43mm</div> <div>CSAUL / C-ULVDE</div> <div>RTII</div> <div>1a</div> <div>120A800V AC</div>	<div>» For inverter, battery charger, battery storage</div> <div>» Contact gap 3.6mm</div> <div>» Only 400mW holding power</div> <div>» Very low contact resistance</div> <div>» Creepage & clearance distance min. 10.55mm</div>	<div>DC 6, 9, 12, 24V</div> <div>2,500mW</div>	2,000Vrms	-	5,000Vrms	10,000V	<div>THT</div> <div></div> <div>Go To Overview >></div>
<div>HE-V</div> <div></div> <div>41 x 50 x 39.4 mm</div> <div>UL / C-ULVDE</div> <div>2a</div> <div>25A1000V DC</div>	<div>» Max. 1,000V DC, 20A cutoff</div> <div>» Coil holding power 210mW</div> <div>» Protective construction: Flux-resistant type</div> <div>» Contact gap: min. 3.0mm</div> <div>» Clearance distance min. 8mm</div> <div>» Creepage distance min. 9.6mm</div>	<div>DC 6, 9, 12, 15, 24V</div> <div>1,920mW</div>	2,000Vrms	4,000Vrms	5,000Vrms	10,000V	<div>THT</div> <div></div> <div>Go To Overview >></div>
<div>HE-R</div> <div></div> <div>58 x 35 x 47mm</div> <div>UL / C-ULVDE</div> <div>4a4a1b</div> <div>40A 3 phase440V AC</div>	<div>» Compliant IEC 62955</div> <div>» 1b mirror contact structure</div> <div>» Contact gap 3.6mm</div> <div>» Only 490mW holding power</div> <div>» Creepage / clearance >8.0mm</div> <div>» Low operation noise 61dB</div>	<div>DC 6, 9, 12, 24V</div> <div>4,000mW</div>	2,000Vrms	-	5,000Vrms	10,000V	<div>THT</div> <div>Go To Overview >></div>

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<div>EP</div> <div><div><div><div><div>1</div><div>66.8 x 37.9 x 45mm</div></div><div><div>2</div><div>78 x 40 x 48.1mm</div></div></div><div><div><div>3</div><div>75.5 x 40 x 79mm</div></div><div><div>4</div><div>95 x 45 x 86.4mm</div></div></div><div><div>5</div><div>111 x 63 x 74.7mm</div></div></div><div><div>RTIV</div><div>1a</div><div>UL / C-UL</div></div></div>	<div>» Max. cut-off current 2,500A/300VDC (300A type)</div> <div>» Max. 1,000VDC contact voltage</div> <div>» Low operating noise</div> <div>» High contact reliability</div> <div>» DC type with sealed capsule</div>		2,500Vrms	-	2,500Vrms		<div><div>THT</div><div>TM type</div><div>Lead wire</div><div>Connector</div></div> <div><div>PCB</div><div>10A PC board type</div><div>After doing through-hole plating</div><div>4-2.45^{+0.1}/_{-0.1} dia</div><div>Mounting hole 2-4.2^{+0.1}/_{-0.1} dia</div><div>9.5</div><div>16.5</div><div>19.6</div><div>55.9</div></div> <div><div>10A TM type</div><div>Mounting hole 2-4.2^{+0.1}/_{-0.1} dia</div><div>55.9⁺¹/₋₁</div></div> <div><div>20A type</div><div>Mounting hole 2-6.0^{+0.1}/_{-0.1} dia</div><div>64.0⁺¹/₋₁</div></div> <div><div>80A type</div><div>63.5</div><div>2-6 dia</div><div>25</div></div> <div><div>300A type</div><div>79</div><div>3-6 dia</div><div>47</div></div> <div>Go To Overview >></div>
	<div>1</div> <div>10A</div> <div>400V DC</div>	DC 24, 48V 1.24W					
	<div>2</div> <div>20A</div> <div>400V DC</div>	DC 12, 100V 3.9W					
	<div>3</div> <div>80A</div> <div>400V DC</div>	DC 12, 100V 4.2W					
	<div>4</div> <div>200A</div> <div>400V DC</div>	DC 12, 100V 6.0W					
	<div>5</div> <div>300A</div> <div>400V DC</div>	DC 12, 100V 40W 4W holding power					

“

All safety relays comply
with EN 61810-3

”

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

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 whereby 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 usually 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.

Signal

Power

High Capacity

Safety


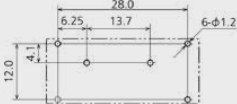

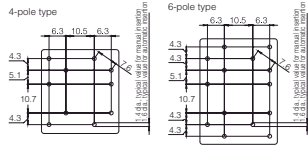
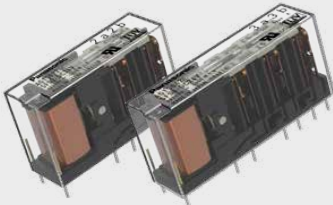
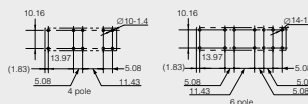
High Frequency


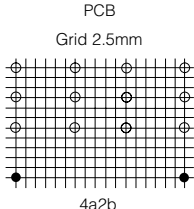

Semiconductor

Automotive

Plug-in

High Voltage

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<div>SFM</div> <div></div> <div>33.0 x 14.0 x 7.8mm</div> <div>RTII PIP type</div> <div>RTIII THT type</div> <div>1a1b</div> <div>UL/C-UL</div> <div>TÜV</div> <div>6A N.O.</div> <div>4A N.C.</div> <div>30V DC 250V AC</div>	<div>» Extremely low height</div> <div>» Low holding power 100mW</div> <div>» High shock resistance >20g</div> <div>» Reinforced insulation ≥ 5.5mm (V=230V overvoltage category III, 6kV) on NO side</div> <div>» Ambient temperature -40 to +85°C</div> <div>» Tape & Reel available</div>	<div>DC 3, 5, 12, 16, 18, 21, 24V</div> <div>270mW</div>	1,500Vrms	- (no contact sets next to each other)	2,500Vrms for NC side 4,000Vrms for NO side		<div>THT</div> <div>PiP</div> <div></div> <div>General tolerance: ±0.1</div> <div>Schematic (BOTTOM VIEW)</div> <div>Go To Overview >></div>
<div>SFY</div> <div></div> <div>31.0 x 28.6 x 14.5mm 39.0 x 28.6 x 14.5mm</div> <div>RTIII</div> <div>2a2b</div> <div>3a1b</div> <div>4a2b</div> <div>5a1b</div> <div>TÜV</div> <div>UL</div> <div>8A N.O.</div> <div>8A N.C.</div> <div>400V DC 250V AC</div>	<div>» Gold clad contacts on request</div> <div>» Reinforced insulation according to EN 50178, creepage and clearance distance ≥5.5mm (V=230V overvoltage category III, 6 kV)</div> <div>» Ambient temperature -40 to +85°C</div> <div>» Tested as sealed device according to IEC / EN 60079-15:2010 clause 22.5 (VDE)</div>	<div>DC 5, 12, 18, 21, 24V</div> <div>670mW</div>	1,500Vrms	4,000Vrms	2,500 / 4,000Vrms		<div>THT</div> <div>PCB</div> <div></div> <div>Go To Overview >></div>
<div>SFS</div> <div></div> <div>40.0 x 13.0 x 24.0mm 50.0 x 13.0 x 24.0mm</div> <div>RTIII</div> <div>2a2b</div> <div>3a1b</div> <div>4a2b</div> <div>5a1b</div> <div>3a3b</div> <div>TÜV</div> <div>UL/C-UL</div> <div>CQC</div> <div>6A N.O.</div> <div>6A N.C.</div> <div>30V DC 250V AC</div>	<div>» Slim profile reduces mounting area</div> <div>» PC board sockets available</div> <div>» DIN-rail terminal sockets available</div> <div>» RTII (IP54), RTIII 4pole on request</div> <div>» Ambient temperature -40 to +85°C</div> <div>» LED indication type available</div>	<div>DC 12, 18, 21, 24, 48V</div> <div>360mW (4pole) 500mW (6pole)</div>	2,500Vrms	4,000Vrms	4,000Vrms		<div>THT</div> <div>PCB</div> <div></div> <div>Go To Overview >></div>

Series	Features	Coil	Breakdown voltage			Surge voltage	Mounting (bottom view)
			open contacts	contact sets	contacts to coil		
<div>SFN4D</div> <div></div> <div>53.3 x 33 x 14.5 mm</div> <div>RTIII</div> <div>4a2b</div> <div>TÜVULCSA</div> <div>8A N.O.8A N.C.500V DC500V AC</div>	<div>» EN 61810-3, Type B safety double contact</div> <div>» Reinforced insulation, creepage and clearance distance 5.5mm</div>	<div>DC 5, 9, 12, 16, 18, 21, 24, 36, 48, 60V</div> <div>390mW (5 - 24V)</div> <div>420mW (36 - 60V)</div>	2,500Vrms	4,000Vrms	5,000Vrms		<div>THT</div> <div></div> <div>Go To Overview >></div>
<div>SF</div> <div></div> <div>53.3 x 25 x 16.5 mm53.3 x 33 x 16.5 mm</div> <div>RTIII</div> <div>2a2b3a1b4a4b</div> <div>TÜVULCSA</div> <div>8A N.O.8A N.C.400V DC400V AC</div>	<div>» SF4D: EN 61810-3, Type B safety double contact</div> <div>» SF2D: EN 61810-3, Type A safety double contact</div> <div>» SF3: EN 61810-3, Type A</div> <div>» For applications according to EN 50155</div> <div>» IEC/EN 60335-1 (GWT) available</div>	<div>DC 5, 9, 12, 18, 21, 24, 36, 48, 60V</div> <div>500mW</div>	2,500Vrms	4,000Vrms	5,000Vrms		<div>THT</div> <div>Go To Overview >></div>



Signal

Power

High Capacity

Safety

High Frequency

Semiconductor

Automotive

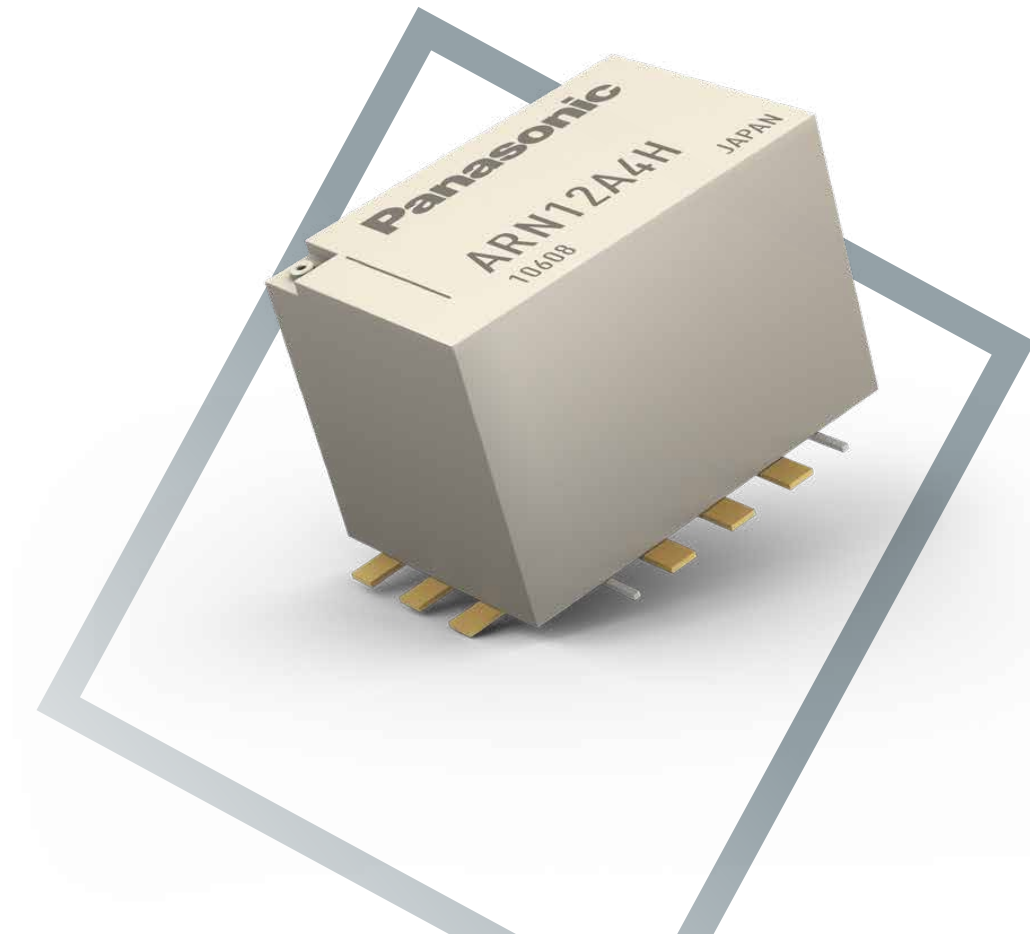
Plug-in


High Voltage

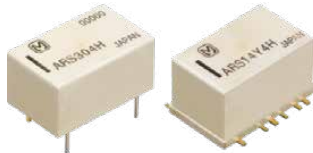
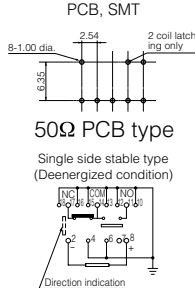
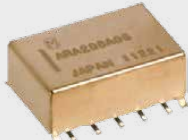
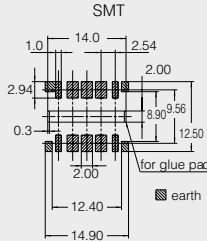
Short form **RELAYS**

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)
<div>ARD</div> <div></div> <div>34 x 13.2 x 40mm 32 x 32 x 40mm 80 x 80 x 40.5mm</div> <div><div>SPDT</div><div>Transfer</div><div>SP6T</div></div>	<div>» Long life</div> <div>» Stable contact resistance</div> <div>» High sensitive coaxial switch</div> <div><div>50Ω Impedance</div><div>26.5GHz</div></div>	<div>DC 4.5, 5, 12, 24V</div> <div>Fail-safe (with or without indicator)</div> <div>Latching (with or without indicator)</div> <div>Latching with TTL driver (with self cut-off function, with or without indicator)</div>	<div>SMA Coax</div> <div>Go To Overview >></div>
<div>ARJ</div> <div></div> <div>14 x 9 x 8.2mm</div> <div><div>RTIII</div><div>2c</div><div>2 coil latching</div></div>	<div>» Shielded HF relay</div> <div>» HF characteristics at 5GHz:</div> <div>» Isolation min. 35dB</div> <div>» Isolation min. 30dB between contact sets</div> <div>» Insertion loss max. 0.5dB</div> <div>» V.S.W.R. max. 1.25</div> <div><div>50Ω Impedance</div><div>8GHz</div><div>1W @5GHz</div></div>	<div>DC 3, 4.5, 12, 24V</div> <div>Single side stable: 200mW</div> <div>2 coil latching: 150mW</div>	<div>THT</div> <div>SMD</div> <div></div> <div>Go To Overview >></div>
<div>ARN</div> <div></div> <div>14.6 x 9.6 x 10.0mm</div> <div><div>1c</div><div>1c reversed</div><div>2 coil latching</div></div>	<div>» 150W carrying power at 2GHz</div> <div>» HF characteristics at 2GHz:</div> <div>» Isolation min. 55dB</div> <div>» Insertion loss max. 0.12dB</div> <div>» V.S.W.R. max. 1.15</div> <div><div>50Ω Impedance</div><div>8GHz</div><div>80W @2GHz</div></div>	<div>DC 4.5, 12, 24V</div> <div>Single side stable: 320mW</div> <div>2 coil latching: 400mW</div>	<div>SMD</div> <div></div> <div>Go To Overview >></div>

Series	Features	Coil	Mounting (bottom view)
<div>ARS</div> <div><div>14 x 8.6 x 7mm14 x 8.6 x 8mm</div></div> <div><div>RTIII</div><div>1c1c reversed1 coil latching2 coil latching</div></div>	<div><div>» A or Y layout</div><div>» 10W at 3GHz contact carrying power</div><div>» Silent Type available</div><div>» HF characteristics @ 3GHz (50Ω PCB type):</div><div>» Isolation min. 35dB</div><div>» Insertion loss max. 0.35dB</div><div>» V.S.W.R. max. 1.4</div></div> <div><div>50Ω Impedance</div><div>75Ω Impedance</div><div>3GHz</div><div>1W @3GHz</div></div>	<div>DC 3, 4.5, 9, 12, 24V</div> <div>Single side stable /</div> <div>1 coil latching: 200mW</div> <div>2 coil latching: 400mW</div>	<div><div>THT</div><div>SMD</div><div><div>PCB, SMT</div><div>8-1.00 dia2.546.352 coil latching only</div><div>50Ω PCB type</div><div>Single side stable type (Deenergized condition)</div><div>50Ω SMT type</div></div><div>Go To Overview</div></div>
<div>ARA</div> <div><div>14.7 x 9.7 x 5.9mm</div></div> <div><div>RTIII</div><div>1c1 coil latching2 coil latching</div></div>	<div><div>» SMD</div><div>» Single side stable</div><div>» HF characteristics at 1GHz:</div><div>» Isolation min. 20dB</div><div>» Isolation min. 30dB between contact sets</div><div>» Insertion loss max. 0.3dB</div><div>» V.S.W.R. max. 1.2</div></div> <div><div>50Ω Impedance</div><div>1GHz</div><div>3W @1GHz</div></div>	<div>DC 1.5, 3, 4.5, 5, 6, 9, 12, 24, 48V</div> <div>Single side stable /</div> <div>2 coil latching: 140mW (1.5 - 12V) 200mW (24V) 300mW (48V, only single side stable)</div> <div>1 coil latching: 70mW (1.5 - 12V) 100mW (24V)</div>	<div><div>SMD</div><div><div>SMT</div><div>1.014.02.542.002.948.909.5612.500.32.0012.4014.90</div><div>For glue pad</div><div>earth</div></div><div>Go To Overview</div></div>

Semiconductor Relays

Short form **RELAYS**

■ Maximum service life - many application purposes

Panasonic Industry offers a wide range of PhotoMOS® 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® from an optocoupler or triac solution, since no saturation voltage or offset voltage is required.

PhotoMOS® 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.



Signal

Power

High Capacity

Safety

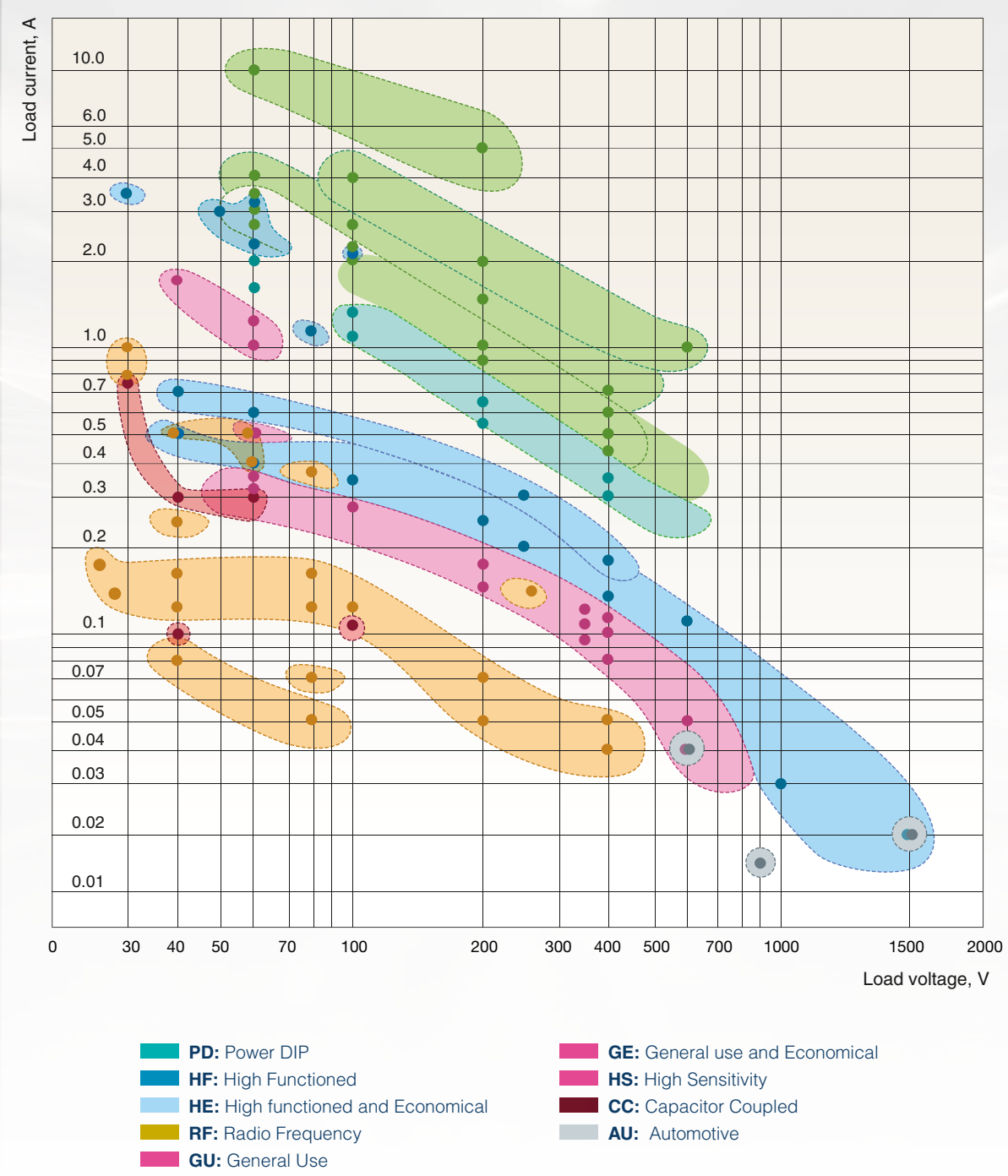
High Frequency

Semiconductor

Automotive

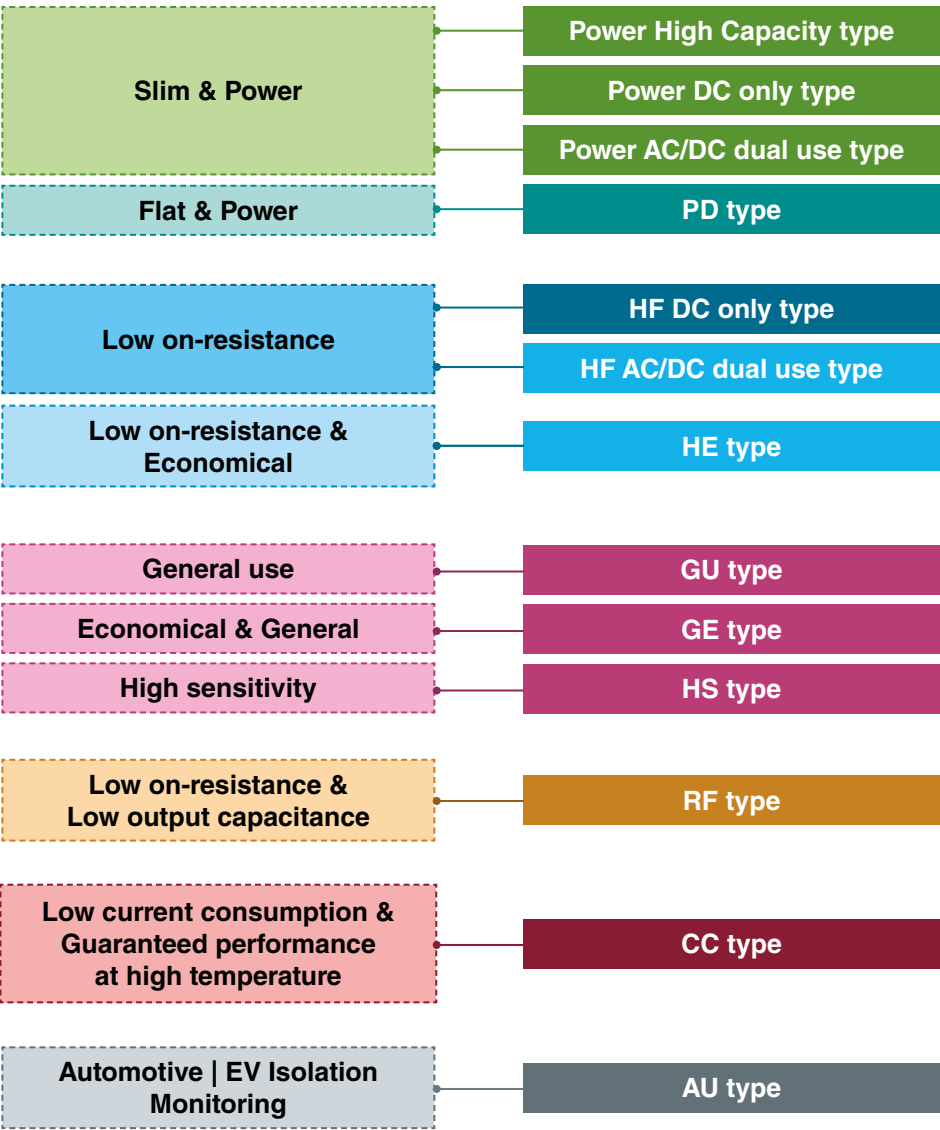
Plug-in

High Voltage



PhotoMOS®

Overview



Product key & Packages

Channel configuration

- S** : 4 channels (16-pin) **Y** : 1 channels (4-pin) **W** : 2 channels (8-pin)
V : 1 channels (6-pin) **Z** : 1 channels (SIL4-pin)

Output configuration

- 1** : 1 Form A (DC) **4** : 1 Form B (AC/DC)
 2 Form B (AC/DC)
2 : 1 Form A (AC/DC) **6** : 1 Form A &
 2 Form A (AC/DC) **1 Form B** (AC/DC)

A = Normally open B = Normally closed

Type

- 0** : HF type Low on-resistance
 Power type Slim and power
1 : GU type Wide variation
 GE type General use and Economical
2 : RF type Low on-resistance and low output capacitance
3 : HS type High sensitivity
5 : HE type Low on-resistance & Economical
6 9 : **Power High Capacity type** Slim and power
7 : PD type Flat and power
C : CC type Capacitor coupled isolation type

Load voltage

- 0** : 350V **3** : 250V **6** : 600V **9** : 1000V
1 : to 40V **4** : 400V **7** : 200V
2 : 50V to 60V **5** : 80V to 100V **8** : 1500V

AQ Y 2 2 1 F E H L V Y

Driving method

- Nil** : Current-sensitive **F** : Small size type voltage-sensitive
 (Recommend input voltage: 5V)
D : Power type voltage-sensitive

Feature

- Nil** : Standard **N** : Low C × R **R** : Low C × R
E : Economical **G** : High capacity

I/O isolation voltage

- Nil** : Basic insulation (200V, 500V, 1500V, 2500V, 3000V)
H : Reinforced insulation (5000V)

Current limit function

- Nil** : Non **KL** : With short circuit protection (non-latching)
K : With short circuit protection (latching) **L** : With current limiting

Package

- Nil** : DIP (through hole terminal) **M** : SON **T** : VSSOP **P** : TSON
A : DIP (surface mount terminal) **S** : SOP **V** : SSOP

Packing style

- Nil** : Tube **Y** : Tape and reel (SSOP/SON/VSSOP) **Z** : Tape and reel (DIP/SOP)
X : Tape and reel (DIP/SOP) **W** : Tape and reel (SSOP/SON/VSSOP)

Packages

TSON

Thin Small Outline
No lead Package



VSSOP

Very Shrink Small
Outline Package



SON

Small Outline No
lead Package



SSOP

Shrink Small
Outline Package



SOP

Small Outline
Package



SOP4pin



SOP6pin



SOP8pin



SOP16pin

DIP

Dual Inline
Package



DIP4pin



DIP6pin



DIP8pin

Power-DIP

Power Dual Inline
Package



Power-DIP






SIL


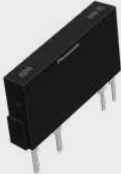

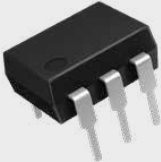

Single Inline
Package


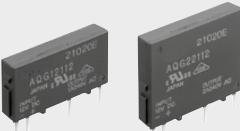





SIL4pin

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.

Series	Features	Output
<div>GU General Use</div> <div></div> <div><div>1a1b2a2b1a1b</div><div>DIPSOP</div></div>	<div>» Wide product range for most applications</div> <div>» Reinforced insulation type available</div>	<div><div>40V1.6A0.1Ω</div><div>60V1.25A0.2Ω</div><div>100V0.32A2.3Ω</div><div>200V0.4A1.8Ω</div><div>350V0.13A0.32Ω</div><div>400V0.12A26Ω</div><div>600V0.05A70Ω</div></div> <div>Go To Overview >></div>
<div>GE Economical & General</div> <div></div> <div><div>1a1b2a2b1a1b</div><div>DIP</div></div>	<div>» Economic and Reinforced insulation</div>	<div><div>30V1.0A025Ω</div><div>60V0.55A0.85Ω</div><div>350V0.13A18Ω</div><div>400V0.12A26Ω</div><div>600V0.05A52Ω</div></div> <div>Go To Overview >></div>
<div>HS High sensitivity</div> <div></div> <div><div>1a</div><div>DIPSOP</div></div>	<div>» Low LED operate current</div>	<div><div>60V0.5A0.85Ω80pF</div><div>350V0.12A19Ω32pF</div><div>400V0.12A30Ω45pF</div></div> <div>Go To Overview >></div>
<div>RF Low On Resistance & Low Output Capacitance</div> <div></div> <div><div>1a2a4a</div><div>DIPSOPSSOPVSSOPSON</div></div>	<div>» Very good RF characteristics</div> <div>» Low signal loss</div>	<div><div>20V0.18A2.8Ω1.1pF</div><div>25V0.15A5.5Ω1.1pF</div><div>30V1A0.18Ω37.5pF</div><div>40V0.12A9.5Ω1pF</div><div>60V0.4A0.8Ω24.5pF</div><div>80V0.12A10.5Ω4.5pF</div><div>100V0.12A8.8Ω5.8pF</div><div>200V0.07A30Ω10pF</div><div>250V0.14A11Ω33pF</div><div>400V0.05A70Ω10pF</div></div> <div>Go To Overview >></div>
<div>CC Capacitive Coupled</div> <div></div> <div><div>1a</div><div>TSON</div></div>	<div>» Capacitor Coupled isolation type</div> <div>» Low On resistance, low output capacitance</div> <div>» High temperature range up to +105°C</div>	<div><div>30V0.75A0.2Ω40pF</div><div>40V0.3A0.8Ω14.5pF</div><div>60V0.3A0.9Ω27pF</div><div>100V0.12A9Ω5.8pF</div></div> <div>Go To Overview >></div>

Series	Features	Output
<div><div>AU</div><div>Automotive</div><div></div><div><div>1a</div></div></div>	<div><div>» Tested in accordance to AEC-Q101</div><div>» Optimized for Isolation Monitoring & HV measurement</div></div> <div><div>DIP</div><div>SOP</div></div>	<div><div><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>1.500V 0.02A 305Ω</div><div>1.800V 0.015A 620Ω</div></div><div><div>Go To Overview</div><div>>></div></div></div>
<div><div>Power</div><div>Slim & Power</div><div></div><div><div>1a</div><div>1b</div></div></div>	<div><div>» High Current in SIL package</div><div>» Voltage sensitive types</div></div> <div><div>SIL</div></div>	<div><div><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><div><div>Go To Overview</div><div>>></div></div></div>
<div><div>PD</div><div>Flat & Power</div><div></div><div><div>1a</div></div></div>	<div><div>» High Current in Power DIP package</div></div> <div><div>Power DIP</div></div>	<div><div><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><div><div>Go To Overview</div><div>>></div></div></div>
<div><div>HF</div><div>Low On Resistance</div><div></div><div><div>1a</div></div></div>	<div><div>» High Functionality</div><div>» AC and DC types</div></div> <div><div>DIP</div></div>	<div><div><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><div><div>Go To Overview</div><div>>></div></div></div>
<div><div>HE</div><div>Low On Resistance & Economical</div><div></div><div><div>1a</div><div>1b</div><div>2a</div><div>2b</div><div>1a1b</div></div></div>	<div><div>» High Efficiency</div></div> <div><div>DIP</div><div>SOP</div></div>	<div><div><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>1.000V 0.03A 85Ω</div><div>1.500V 0.02A 345Ω</div></div><div><div>Go To Overview</div><div>>></div></div></div>

Series	Features	Output	
<div>APT</div> <div></div>	<div>» Phototric Coupler</div> <div>DIP</div> <div>SOP</div>	<div>600VAC</div> <div>0.1A</div> <div>Go To Overview >></div>	
<div>AQH</div> <div></div>	<div>» No derating up to +40°C</div> <div>» SMD mounting</div> <div>DIP</div>	<div>600VAC</div> <div>1.2A</div> <div>Go To Overview >></div>	
<div>AQG</div> <div></div>	<div>» Voltage Controlled</div> <div>» Integrated Snubber Circuit</div> <div>SIL</div>	<div>230VAC</div> <div>2A</div> <div>Go To Overview >></div>	
<div>AQ1</div> <div></div>	<div>» Voltage Controlled</div> <div>» Heat Sink ready</div> <div>SIL</div>	<div>230VAC</div> <div>10A</div> <div>Go To Overview >></div>	
<div>AQJ</div> <div></div>	<div>» Plug terminals</div> <div>» Integrated Varistor</div> <div>Hockey-Puck</div>	<div>230VAC</div> <div>25A</div> <div>Go To Overview >></div>	
<div>AQA</div> <div></div>	<div>» Wide range input (3 – 30VDC)</div> <div>» Screw terminals</div> <div>» Status LED</div> <div>» Integrated Varistor</div> <div>Hockey-Puck</div>	<div>230VAC</div> <div>40A</div>	<div>1.00VDC</div> <div>10A</div> <div>Go To Overview >></div>

Automotive Relays

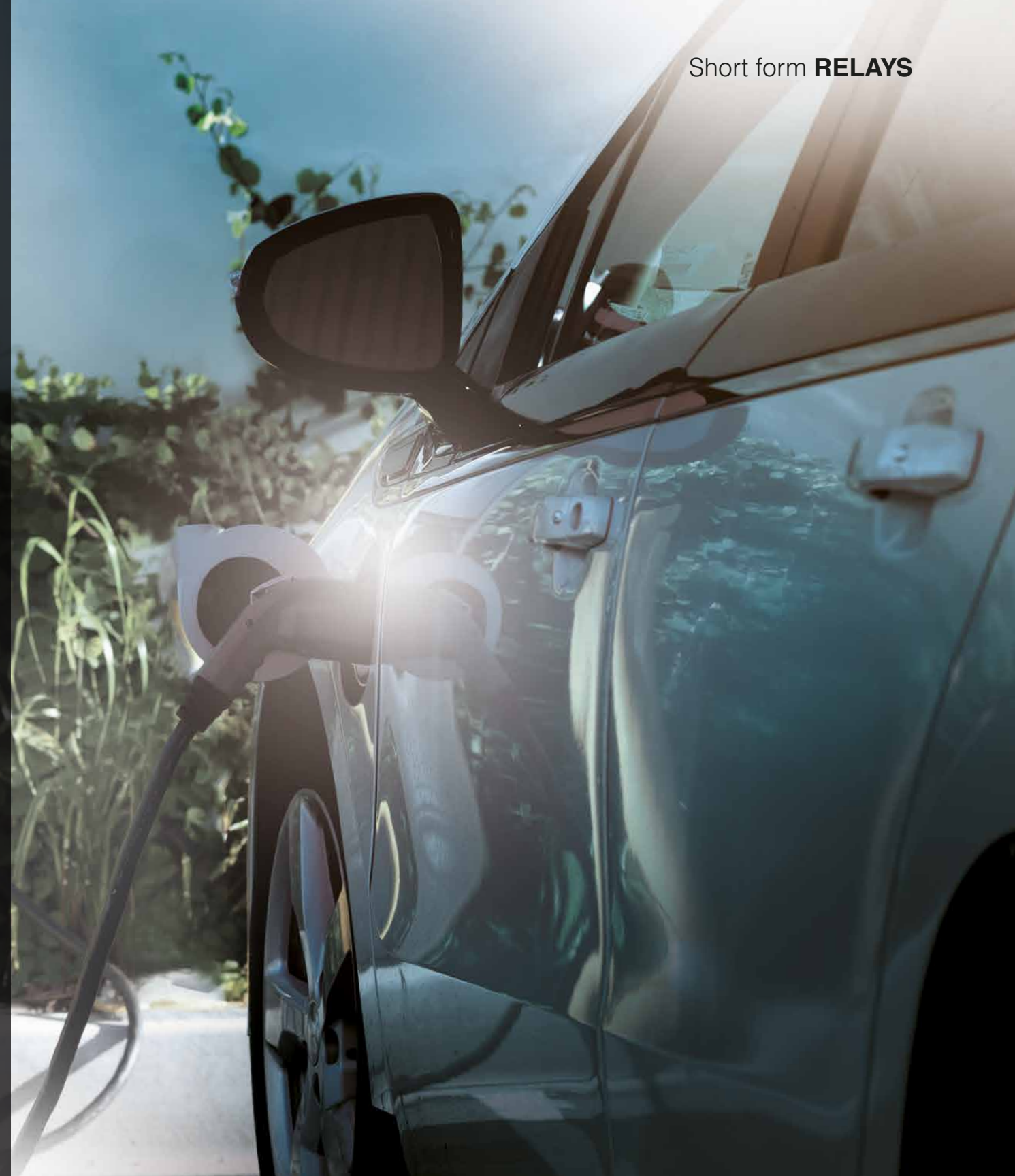
- **All Panasonic Industry Automotive relays comply with ISO / TS 16949.**

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.



Short form **RELAYS**



Signal

Power

High Capacity

Safety

High Frequency

Semiconductor

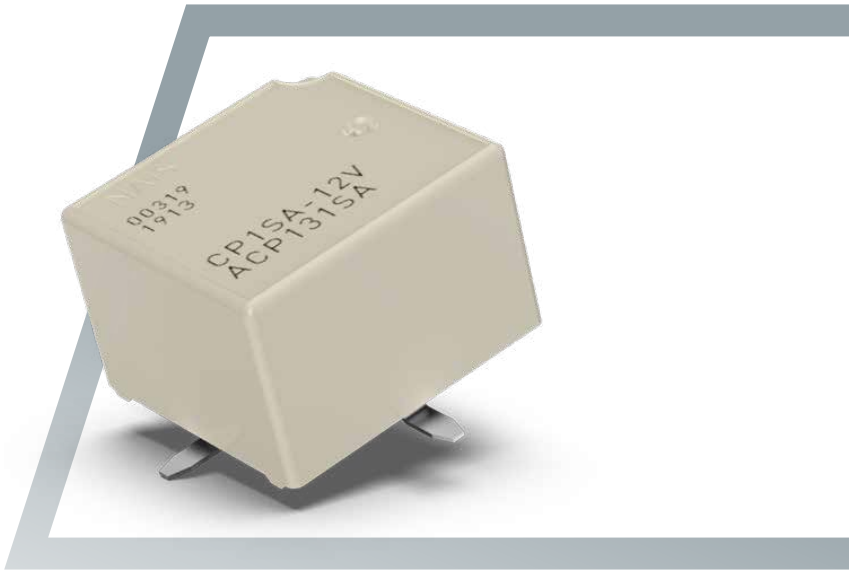
Automotive

Plug-in

High Voltage



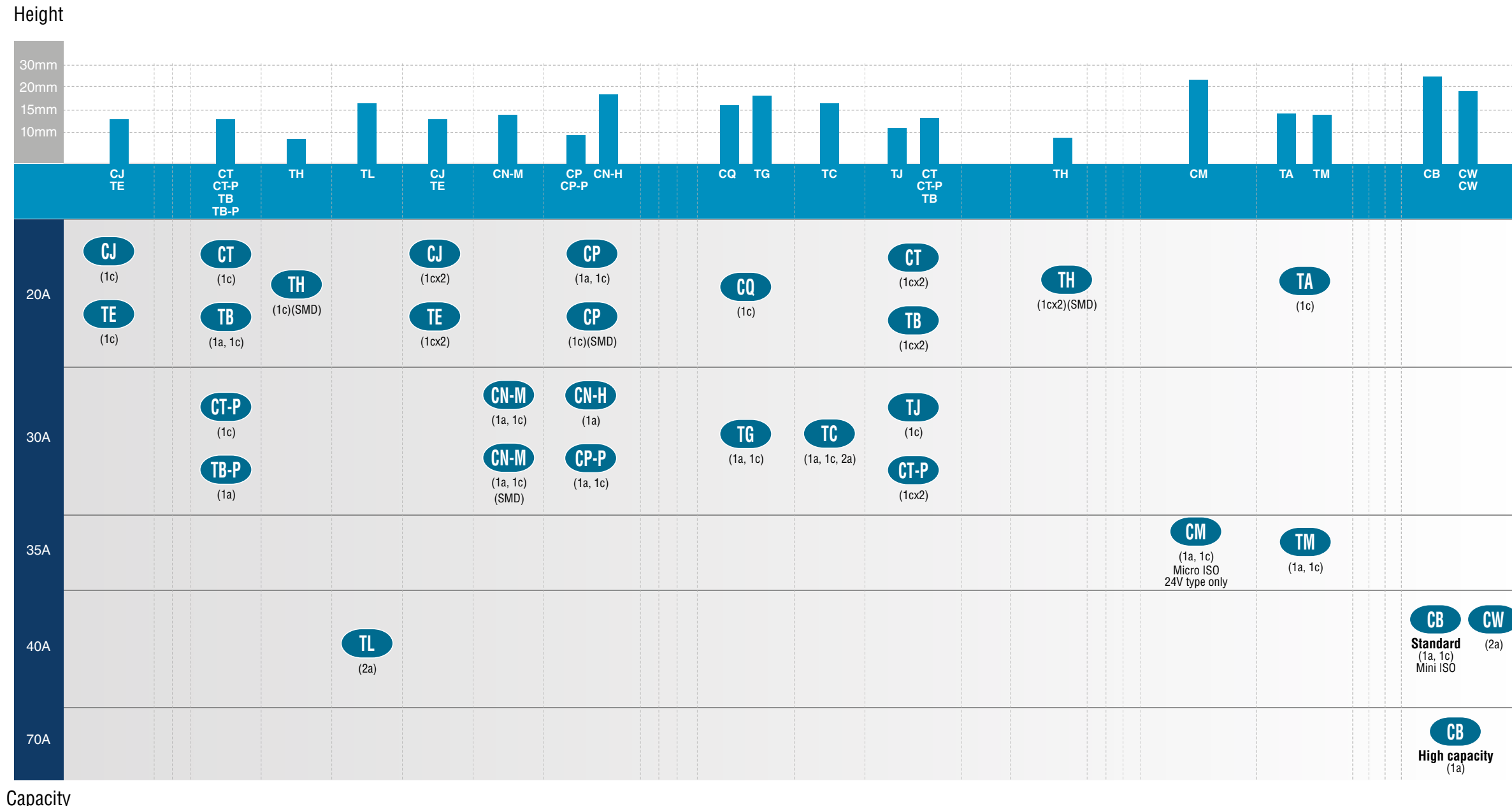
Short form **RELAYS**


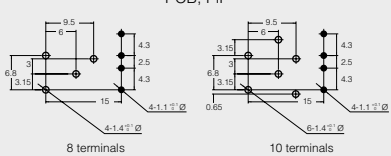


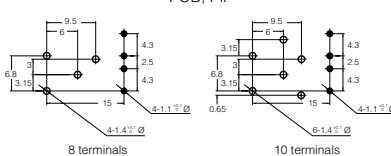


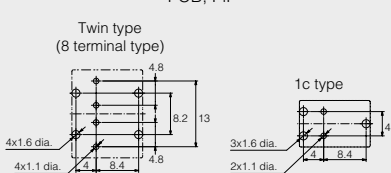


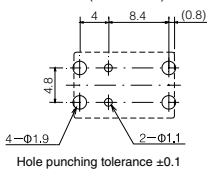



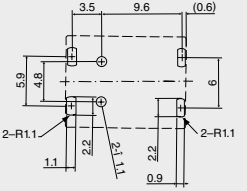


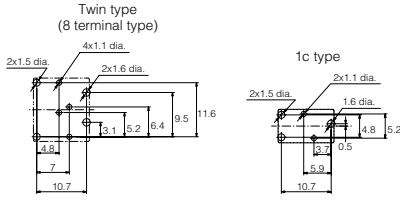
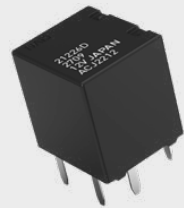

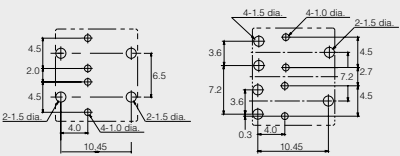

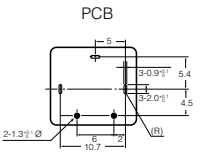
PCB Relays


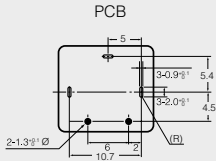

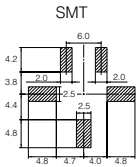
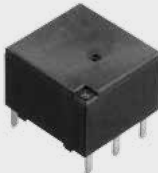
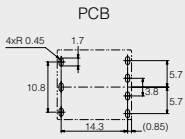

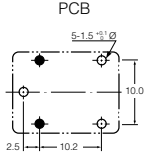
Modern automotive electric equipment and control technologies are a key aspect to achieve the safety, comfort and efficiency customers expect from a car nowadays. Discover how our relays and connectors meet the demand for sophisticated and sustainable automotive power and body control applications.


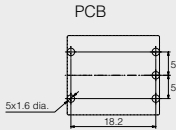
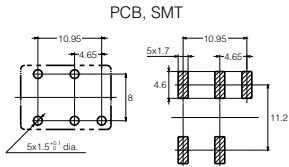

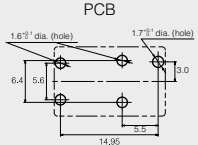
Overview



Series		Features	Coil	Mounting (bottom view)
CT	 17.4 x 7.2 x 13.5mm 1c	<ul style="list-style-type: none">» Super miniature size» ACT512 layout = layout of 2 x ACT112» H-bridge type available (twin relay)» Quiet operation» Pin in Paste (with vent hole) available» Twin type as 8 pin or 10 pin version available <div>20A N.O.10A N.C.16V</div>	12V DC 800mW	<div>THTPiP</div> <div>PCB, PiP</div>  <div>8 terminals10 terminals</div> <div>Go To Overview >></div>
	 17.4 x 14 x 13.5mm 1c x2 (Twin)			
CT Power	 17.4 x 7.2 x 13.5mm 1c	<ul style="list-style-type: none">» Super miniature size» Footprint same as CT standard type» Suitable for motor loads» H-bridge type available (twin relay)» Pin in Paste (with vent hole) available <div>30A N.O.10A N.C.16V</div>	12V DC 1000mW	<div>THTPiP</div> <div>PCB, PiP</div>  <div>8 terminals10 terminals</div> <div>Go To Overview >></div>
	 17.4 x 14 x 13.5mm 1c x2 (Twin)			
TB	 14.0 x 9.2 x 14.0mm 1a	<ul style="list-style-type: none">» Super miniature size» H-bridge type available (twin relay)» Pin in Paste (with vent hole) available» Lamp load type available <div>20A N.O.10A N.C.16V</div>	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)	<div>THTPiP</div> <div>PCB, PiP</div>  <div>Twin type (8 terminal type)1c type</div> <div>Go To Overview >></div>
	 17.4 x 14.0 x 14.0mm 1c			
TB1P	 14.0 x 9.2 x 14.0mm 1a	<ul style="list-style-type: none">» Low power consumption» Small board space» Light weight <div>30A N.O.16V</div>	12V DC 480mW	<div>(Bottom view)</div>  <div>Hole punching tolerance ±0.1</div> <div>Go To Overview >></div>

Series	Features	Coil	Mounting (bottom view)
<div>TL</div> <div></div> <div>14.0 x 9.2 x 14.0mm</div> <div>1u</div>	<div>» 1 form U contact arrangement (double make)</div> <div>» Small board space</div> <div>» Light weight</div> <div>40A N.O.</div> <div>16V</div>	12V DC 640mW (for pick-up max. 6.5V DC)	<div></div> <div>Go To Overview >></div>
<div>TE</div> <div></div> <div>12.0 x 7.2 x 13.5mm</div> <div>13.6 x 12 x 13.5mm</div> <div>1c</div> <div>1c x2 (Twin)</div>	<div>» Ultra small size, smallest in its class</div> <div>» High capacity in a compact body</div> <div>» H-bridge type available (twin relay)</div> <div>» Pin in Paste (with vent hole) available</div> <div>20A N.O.</div> <div>10A N.C.</div> <div>16V</div>	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)	<div>THT</div> <div>PCB, PIP</div> <div></div> <div>Go To Overview >></div>
<div>CJ</div> <div></div> <div>7.2 x 12.2 x 13.5mm</div> <div>13.7 x 12.2 x 13.5mm</div> <div>1c</div> <div>1c x2 (Twin)</div>	<div>» Ultra small size</div> <div>» High capacity in a compact body</div> <div>» H-bridge type available (twin relay)</div> <div>» Pin in Paste (with vent hole) available</div> <div>20A N.O.</div> <div>10A N.C.</div> <div>16V</div>	12V DC 800mW High sensitive type 640mW	<div>THT</div> <div>PCB, PIP</div> <div></div> <div>Go To Overview >></div>
<div>CP</div> <div></div> <div>14.0 x 13.0 x 9.5mm</div> <div>1a</div> <div>1c</div>	<div>» Very low profile</div> <div>» High capacity</div> <div>» 24V DC type available on request</div> <div>20A N.O.</div> <div>10A N.C.</div> <div>16V</div>	12V DC 640mW	<div>THT</div> <div>PCB</div> <div></div> <div>Go To Overview >></div>

Series	Features	Coil	Mounting (bottom view)
<div>CP POWER</div> <div></div> <div>14.0 x 13.0 x 9.5mm</div> <div>1a1c</div>	<div>» Very low profile</div> <div>» Improved heat conduction by additional pin</div> <div>» Pin in Paste (with vent hole) available</div> <div>20A N.O.10A N.C.16V</div>	12V DC 450mW 640mW	<div>THT</div> <div>PCB</div> <div>Go To Overview >></div>
<div>CP SMD</div> <div></div> <div>14.0 x 13.0 x 10.5mm</div> <div>1c</div>	<div>» Very low profile</div> <div>» High capacity</div> <div>20A N.O.10A N.C.16V</div>	12V DC 640mW	<div>SMD</div> <div>SMT</div> <div>Go To Overview >></div>
<div>TJ</div> <div></div> <div>15.0 x 16.0 x 11.2mm</div> <div>1c</div>	<div>» Compact flat type (height: 11.2mm)</div> <div>» High capacity switching</div> <div>» Thermal resistant type</div> <div>30A N.O.15A N.C.16V</div>	12V DC 450mW	<div>THT</div> <div>PCB</div> <div>Go To Overview >></div>
<div>CQ</div> <div></div> <div>17.0 x 13.0 x 16.6mm</div> <div>1c</div>	<div>» Very quiet operation</div> <div>» Terminal layout identical to JJM</div> <div>20A N.O.10A N.C.16V</div>	12V DC 640mW	<div>THT</div> <div>PCB</div> <div>Go To Overview >></div>

Series	Features	Coil	Mounting (bottom view)
<div>TA</div> <div></div> <div>19.8 x 17.0 x 14.0mm</div> <div>1c</div>	<div>» Very quiet operation</div> <div>» Flat type</div> <div>20A N.O.</div> <div>10A N.C.</div> <div>16V</div>	<div>12V DC</div> <div>640mW</div> <div>(for pick-up max. 7.7V DC)</div> <div>900mW</div> <div>(for pick-up max. 6.5V DC)</div>	<div>THT</div> <div>PCB</div> <div></div> <div>Go To Overview >></div>
<div>CN-M</div> <div></div> <div>15,5 x 11 x 14.4mm</div> <div>1a1c</div>	<div>» Space-saving design</div> <div>» SMD type available</div> <div>» Pin in Paste (with vent hole) available</div> <div>17.8 x 12.6 x 18mm</div> <div>30A N.O.</div> <div>25A N.C.</div> <div>16V</div>	<div>12V DC</div> <div>640mW</div>	<div>THT</div> <div>PCB, SMT</div> <div>PIP</div> <div>SMD</div> <div></div> <div>Go To Overview >></div>
<div>CN-H</div> <div></div> <div>17 x 10.6 x 18.3mm</div> <div>1a</div>	<div>» Best space savings in its class</div> <div>» Substitute for Micro-ISO relay</div> <div>» Low operating power type</div> <div>» High current-carrying capacity</div> <div>30A N.O.</div> <div>16V</div>	<div>12V DC</div> <div>450mW</div> <div>(for pick-up max. 6.5V DC)</div> <div>640mW</div> <div>(for pick-up max. 5.5V DC)</div>	<div>THT</div> <div>PCB</div> <div></div> <div>Go To Overview >></div>
<div>TG</div> <div></div> <div>17.8 x 12.6 x 18mm</div> <div>1a1c</div>	<div>» Large switching capacity in small size</div> <div>» Substitute for micro ISO relays</div> <div>» Low operating power type</div> <div>30A N.O.</div> <div>15A N.C.</div> <div>16V</div>	<div>12V DC</div> <div>640mW</div> <div>(for pick-up max. 6.5V DC)</div> <div>450mW</div> <div>(for pick-up max. 7.0V DC)</div>	<div>THT</div> <div>PCB</div> <div>1a type</div> <div>1c type</div> <div></div> <div>Go To Overview >></div>

Signal

Power

High Capacity

Safety



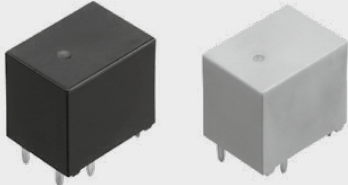
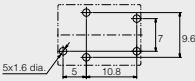

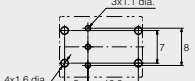
High Frequency


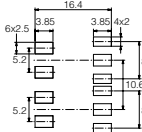
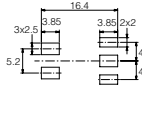

Semiconductor

Automotive

Plug-in

High Voltage

Series	Features	Coil	Mounting (bottom view)
<div>TM</div> <div> 19.2 x 16.8 x 13.6mm</div> <div>1a1c</div>	<div><div>» Flat type</div><div>» Ideal for smart junction box</div><div>» High capacity and 35A type</div><div>» High heat resistant type</div></div> <div>35A N.O.15A N.C.14V</div>	12V DC 450mW (320Ω type) 360mW (400Ω type)	<div>THT</div> <div>Go To Overview >></div>
<div>TT</div> <div> 17.8 x 13.0 x 16.0mm</div> <div>2a/1u</div>	<div><div>» Double make contact 2 Form A (1 Form U)</div><div>» 60 A fuse rating</div><div>» High heat resistant type available</div></div> <div>60A N.O.14V</div>	12V DC 450mW	<div>THT</div> <div>PiP</div> <div>Go To Overview >></div>
<div>TC</div> <div> 17.8 x 13.0 x 16.0mm</div> <div>1a1c2a</div>	<div><div>» Substitute for micro ISO relays</div><div>» Latching type available</div><div>» High heat resistant type available</div></div> <div>30A N.O.15A N.C.16V0W Latching relay</div>	12V DC 1,309mW (for pick-up max. 6.5V DC) 900mW (for pick-up max. 7.0V DC) 640mW (for pick-up max. 7.5V DC) 1,920mW (2 coil latching type)	<div>THT</div> <div>PiP</div> <div><div>PCB, PiP</div><div>1a standard type</div><div>1c/2a standard type</div><div>2a latching type</div><div>Go To Overview >></div></div>

Series		Features	Coil	Mounting (bottom view)
TH	 11.0 x 12.0 x 8.8mm 1c	» Ultra compact flat type » High switching capacity (up to 25A) » 10 terminals twin type	12V DC 900mW (for pick-up max. 6.5V DC) 655mW (for pick-up max. 7.7V DC)	<div>SMD</div> <div>SMT</div> <div><div>Twin type (10 terminal type)</div><div>1c type</div></div>
	 21.6 x 12.0 x 8.8mm 1c x2 (Twin) <div>20A N.O.</div> <div>10A N.C.</div> <div>16V</div>			

Go To Overview >>

Signal

Power

High Capacity

Safety

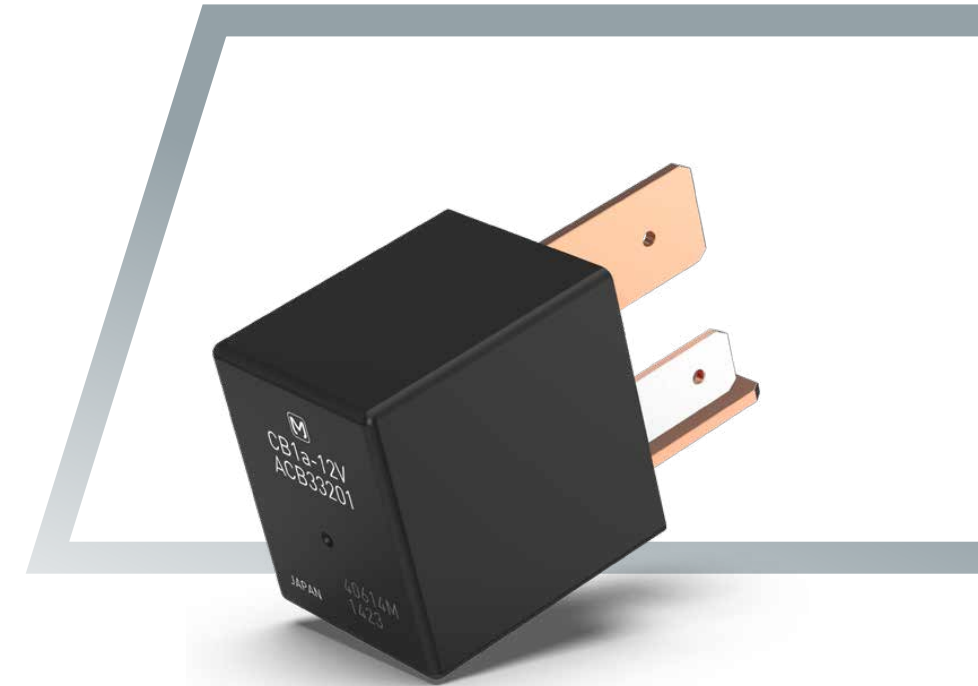
High Frequency

Semiconductor

Automotive


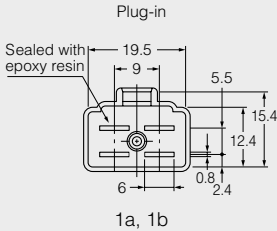

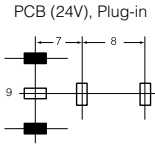

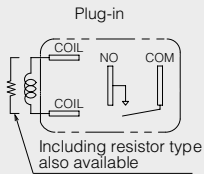
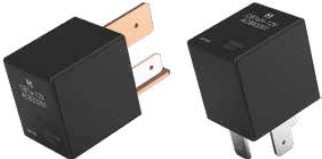
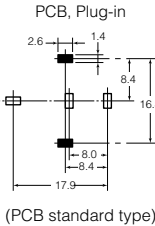
Plug-in


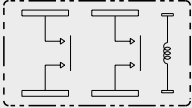

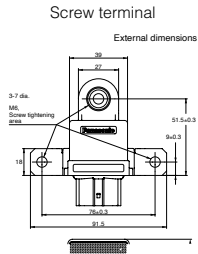
High Voltage

Short form **RELAYS**

Plug-in Relays

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


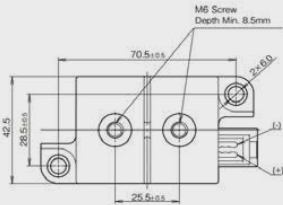




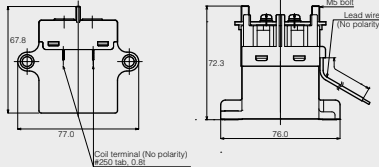
Series	Features	Coil	Mounting (bottom view)
CA  21.5 x 14.4 x 37.0mm <div>1a1b1c</div>	» Rubber bracket / screw mounting » Direct plug-in		<div>Plug-in</div>  <div>Go To Overview >></div>
	Standard <div>30A1a20A1b, 1c15V1c16V1a, 1b</div>	12V DC 1,800mW	
	Type S <div>20A N.O.10A N.C.16V</div>	12V DC 1,400mW	
	1c 24V <div>20A N.O.20A N.C.30V</div>	24V DC 1,800mW	
CM  20 x 15 x 22mm <div>1a1c</div>	» Small substitute for Mini-ISO relay » Micro-ISO terminal type		<div>Plug-in</div> <div>THT</div>  <div>Go To Overview >></div>
	<div>35A N.O.20A N.C.16V</div>	12V DC 1500mW	
	<div>35A N.O.20A N.C.32V</div>	24V DC 1800mW	
CV-N  22.5 x 15 x 15.7mm <div>1a1c</div>	» Low profile » Low temperature rise » Low sound pressure level » RTIII (IP67) available	24V DC 800mW	<div>Plug-in</div>  <div>Go To Overview >></div>
	<div>20A N.O.10A N.C.14V</div>		
CB  26 x 22 x 25mm <div>1a1c</div>	» 40A switching current at 85°C » Mini-ISO type terminals » High shock resistance » High thermal resistance		<div>Plug-in</div> <div>THT</div>  <div>Go To Overview >></div>
	Standard <div>40A N.O.30A N.C.16Va</div>	12V DC 1400mW	
	H Type <div>70A N.O.16V</div>	12V DC 1800mW	
	24V Type <div>40A N.O.30A N.C.32V</div>	24V DC 1800mW	

Series	Features	Coil	Mounting (bottom view)
<div>CW</div> <div> 32 x 18 x 26mm</div> <div>2a</div>	<div><div>» Ideal relay for high output, 3-phase motors (Electric Power Steering)</div><div>» High cut-off current capability</div><div>» High current carrying capability</div></div> <div><div>120A N.O.</div><div>14V</div></div>	12V DC 1400mW	<div>Welding</div> <div></div> <div>Go To Overview >></div>
<div>CN-L</div> <div> 91.5 x 38.5 x 85.3mm</div> <div>1a</div>	<div><div>» Continuous carrying current of 150A@85°C, 80A@125°C</div><div>» Max. ambient temperature 125°C</div><div>» Can be installed to engine compartment (IP54)</div><div>» Version without fasten lug available</div><div>» Overcurrent (> 2000A) trip function</div><div>» No additional fuse needed</div></div> <div><div>150A N.O.</div><div>0W Latching relay</div></div>	12V DC 30W	<div>Plug-in/ Screw</div> <div></div> <div>Go To Overview >></div>

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.



Series	Features	Coil	Mounting
<div>EV-A</div> <div></div> <div>82.6 x 73.0 x 23.0mm</div> <div>1a</div>	<div>» One of the smallest and lightest in 250 A class</div> <div>» 8,000 A short circuit tolerance</div> <div>» High cut-off capacity 1,800A at 500V DC without contact polarity</div> <div>» Vertical and horizontal type available</div> <div>250A</div> <div>500V</div>	<div>12V DC</div> <div>6000mW</div>	<div>Screw terminal</div> <div></div> <div>Go To Overview >></div>
<div>EV-G, EV-H</div> <div>high short-circuit capacity</div> <div><div><div>1</div><div></div><div>66.8 x 49.7 x 37.9mm</div></div><div><div>2</div><div></div><div>78 x 40 x 48.1mm</div></div></div> <div>1a</div>	<div>» High short-circuit capacity type</div> <div>» AEVH (100A) available with lead wire</div> <div>1</div> <div>60A</div> <div>450V</div> <div>2</div> <div>100A</div> <div>450V</div>	<div>12V DC</div> <div>5200mW</div> <div>5400mW</div>	<div>Screw terminal</div> <div>Go To Overview >></div>
<div>EV-S</div> <div>quiet</div> <div><div></div><div>76 x 36 x 72.3mm</div></div> <div><div></div><div>77 x 67.8 x 37.7mm</div></div> <div>1a</div>	<div>» DC type with sealed capsule, mainly for hybrid vehicles</div> <div>» Very quiet operation</div> <div>» Small size and light weight</div> <div>» Blow-out magnets allow small arcing space</div> <div>» Safety construction</div> <div>» High contact reliability</div> <div>» Standard type for horizontal mounting available</div> <div>60A</div> <div>450V</div>	<div>12V DC</div> <div>4500mW</div>	<div>Screw terminal</div> <div></div> <div>Go To Overview >></div>

Signal

Power

High Capacity

Safety




High Frequency


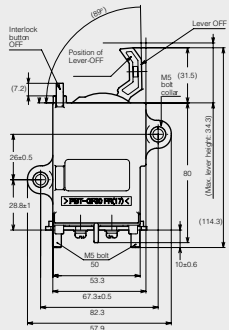
Semiconductor

Automotive

Plug-in

High Voltage

Series		Features	Coil		Mounting
EV	<div><div><div>1</div><div>66.8 x 49.7 x 37.9mm</div></div><div><div>2</div><div>78 x 40 x 48.1mm</div></div><div><div>3</div><div>82.8 x 40 x 79mm</div></div></div>	<div>» Sealed capsule for xEV</div> <div>» Compact size</div> <div>» Blow-out magnets allow small arcing space</div> <div>» Safety construction</div> <div>» High contact reliability</div>	12V DC	24V DC	<div>Screw terminal</div> <div>Faston terminal</div>
	<div><div>1</div><div>10A</div><div>450V</div></div>	1240mW			
	<div><div>2</div><div>20A</div><div>400V</div></div>	3900mW			
	<div><div>3</div><div>80A</div><div>450V</div></div>	4200mW			
	<div><div>4</div><div>120A</div><div>450V</div></div>	4200mW			
	<div><div>5</div><div>200A</div><div>450V</div></div>	6000mW			
	<div><div>6</div><div>300A</div><div>450V</div></div>	3600mW Inrush: 37.9W (~0.1 sec.)	3800mW Inrush: 44.4W (~0.1 sec.)		
1a					<div>Go To Overview</div> »
EBN	<div><div><div>1a</div><div>82.6 x 73.0 x 23.0mm</div></div></div>	<div>» Low height for mounting within battery packs</div> <div>» Max. 1,500 A 60 V DC switching off possible</div>	12V DC 2000mW		<div>Plug-in</div>
	<div><div>100A</div><div>60V</div></div>			<div>Go To Overview</div> »	
ECN	<div><div><div>1a</div><div>29.0 x 25.0 x 28.9mm</div></div></div>	<div>» Small pre-charging relay</div> <div>» Easy connect plug-in terminal</div>	12V DC 1400mW		<div>Screw terminal</div>
	<div><div>15A</div><div>400V</div></div>			<div>Go To Overview</div> »	

Series	Features	Coil	Mounting
<div>EV switch</div> <div></div> <div>59.9 x 34.6 x 114.3mm</div> <div>1a</div>	<div><div>» High performance with capsule contact technology</div><div>» High carrying current performance</div><div>» Safety function</div></div> <div>80A400V</div>	<div>No coil, manual switch</div>	<div>Screw terminal</div> <div></div> <div>Go To Overview >></div>



Panasonic Industry Europe GmbH

Caroline-Herschel-Strasse 100

85521 Ottobrunn

Tel. 49 89 45354-1000

info.pieu@eu.panasonic.com

industry.panasonic.eu

Panasonic[®]