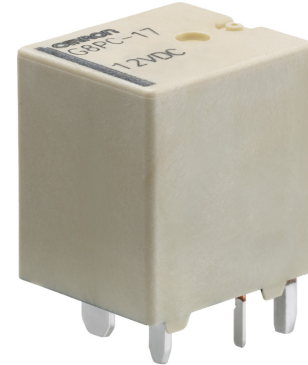


G8PC

PCB Power Relay for Automotive and AC Applications

On board charger for EV & small mobility, AC power switching applications Compact Power PCB Relays

- Enables high-density design and space saving on PCB
- Compatible with 3-phase 22 kW on board charger for EV and small mobility (Up to AC277 V, 32 A)
- SPDT contact structure ensures isolation between circuits
- Flow soldering compliant



Model Number Legend

G8PC-

1 2 3 4 5

1. Number of Contact Poles

1: 1-pole

2. Contact Form

Blank: SPDT(1 Form C)

3. Contact structure

Blank: Single contact

4. Protective structure

7: Flux tight (Open vent hole) (RT II IEC61810)

5. Terminal Shape

Blank: PCB terminals

Application Examples (For automotive applications, please feel free to contact our sales representatives.)

- EV on board charger
- Small mobility charger (construction machines, agricultural machines, etc.)
- AC power carrying and switching application

Ordering Information

Classification	Contact form	Protective structure	Rated coil voltage (V)	Model	Minimum Packing unit (Tube packing)
Standard	SPDT (1 Form C)	Flux tight (open vent hole) (RT II IEC61810)	DC12	G8PC-17	1200 pcs. / box (40 pcs. x 30 tubes)

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Ratings

●Coil

Classification	Rated voltage (V)	Rated current (mA)	Coil resistance (Ω)	Must operate voltage (V)	Must release voltage (V)	Permissible voltage Range (V)	Rated Power consumption (mW)	Model
Standard	DC12	53.3	225	9.0 Max.	1.2 Min.	10 to 16	640	G8PC-17

Note 1. The rated current and coil resistance are measured at a coil temperature of 20°C with a tolerance of ±10%.

Note 2. The operating characteristics are measured at a coil temperature of 20°C.

●Contacts

Classification		Standard
Item	Model	G8PC-17
Contact type		Single
Contact material		Ag-alloy (Cd free)
Rated carry current	85°C	32 A, Continuous
Max. switching current		32 A (AC277 V)
Min. switching current		1 A (AC250 V)

Characteristics

Classification		Standard
Contact resistance *1		10 mΩ max.
Operate time		10 ms max. (DC12 V, not including bounce time)
Release time		5ms max. (DC12 V, not including bounce time)
Insulation resistance *2	Between coil and contacts	100 MΩ min.
	Between contacts of the same polarity	100 MΩ min.
Dielectric strength	Between coil and contacts	AC2,000 V 50/60 Hz 1 min.
	Between contacts of the same polarity	AC1,000 V 50/60 Hz 1 min.
Vibration resistance	Destruction	33 Hz, 45 m/s ²
	Malfunction	10 to 500 Hz, 45 m/s ² (detection time 10 μs)
Shock resistance	Destruction	1,000 m/s ² (pulse duration: 6 ms)
	Malfunction	100 m/s ² (pulse duration: 11 ms, detection time: 10 μs)
Mechanical endurance *3		1,000,000 ops. min.
Electrical endurance	C+R Load	AC250 V, Inrush 2 A/Carrying 32 A/ Breaking 2 A, 0.5 s ON/3 s OFF, 100,000 operations min. (*4)
	Resistive	AC250 V, Making 5 A/Carrying 32 A/ Breaking 5 A, 0.5 s ON/3 s OFF, 25,000 operations min.
Ambient operating temperature		-40°C to 85°C (105°C *5) (without freezing or condensation)
Ambient operating humidity		35% to 85% RH
Weight		Approx. 7.6 g

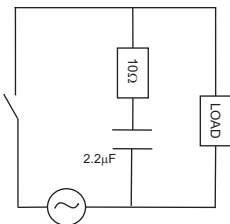
Note. The above values are initial values at an ambient temperature of +20°C and humidity of 65% or less, unless otherwise specified.

*1. The contact resistance was measured with 10 A at DC12 V using the voltage drop method.

*2. The insulation resistance was measured with a DC500 V megohmmeter.

*3. The mechanical endurance was measured at a switching frequency of 18,000 operations/hr.

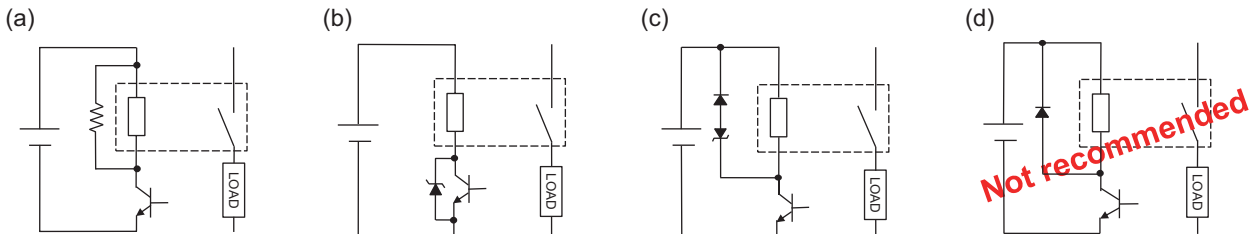
*4. The load circuit shall be as follows.



*5. Use at ambient temperatures exceeding 85°C may be possible depending on the conditions of current, voltage, PCB etc.,. Please refer to the data in Item Coil voltage, contact current and ambient temperature of Clause Reference Technical Data on Page 5, the actual load conditions as well, contact our sales representative.

• Surge absorber connection

Connecting a surge absorber to the coil drive circuit has the effect of suppressing coil surge voltage and protecting the drive circuit, so please use the representative examples (a), (b), and (c) shown below as a reference when designing the circuit. However, in a circuit like (d) shown below, the performance of the relay may be damaged significantly due to the delay in release time, please be sure to check the actual performance before adopting the surge absorber.



G8PC

Reference Technical Data (The data shown below are reference values and are not guaranteed.)

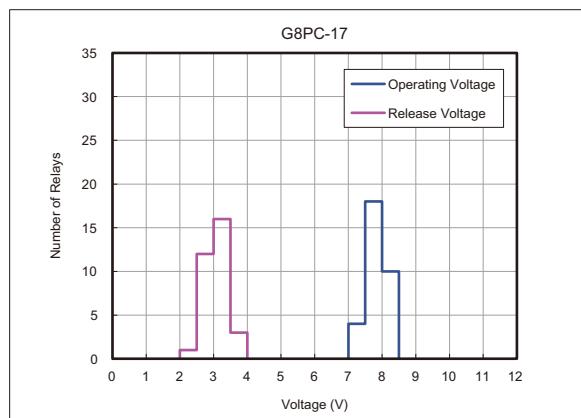
●Actual Electrical performance (reference)

Model	Application	Load voltage	Inrush current	Steady current	Break current	Ambient temperature (°C)	Switching frequency		Required cycles (min.)
		(VAC)	(A)	(A)	(A)		On(s)	Off(s)	Total
G8PC-17	C+R Load	277	2	32	2	20	0.5	3.0	80,000
G8PC-17	Resistive	277	5	32	5	20	0.5	3.0	25,000
G8PC-17	Resistive	277	2	32	32	20	0.5	10.0	1,000

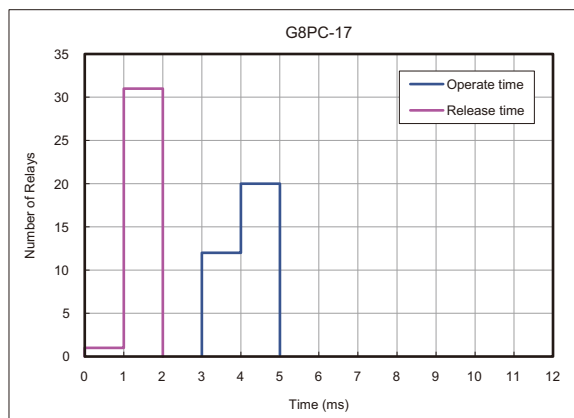
●Overcurrent (reference)

Model	Coil voltage	Current	Fuse rating	Ambient temperature	Overcurrent time	Result
	(VDC)	(A)	(A)	(°C)	(s)	
G8PC-17	16	54.0	40	25	3,600	Passed
G8PC-17	16	80.0	40	25	120	Passed

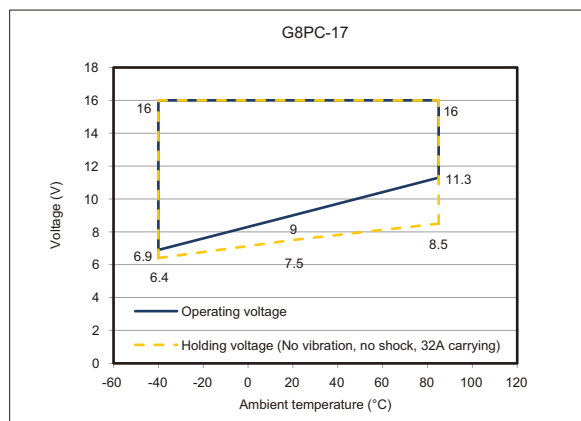
●Operating Voltage and Release Voltage Distributions (Number of Relays × Voltage (V))



●Time Characteristic Distributions (Number of Contacts × Time (ms))

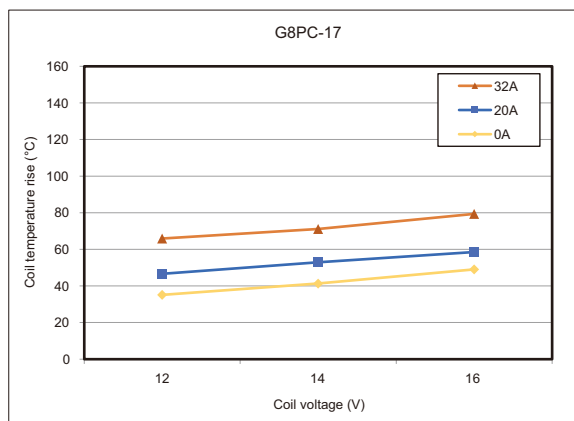


●Operating voltage (cold start), Holding voltage (hot start) and ambient temperature

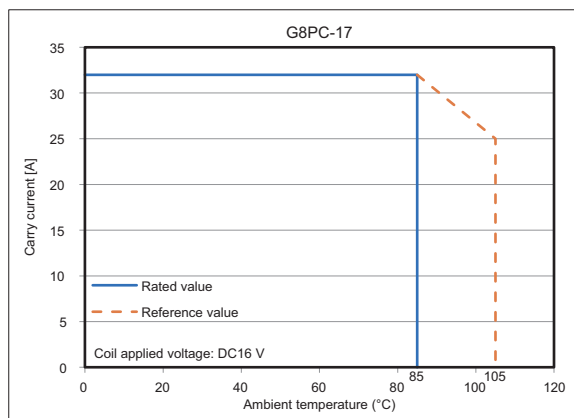
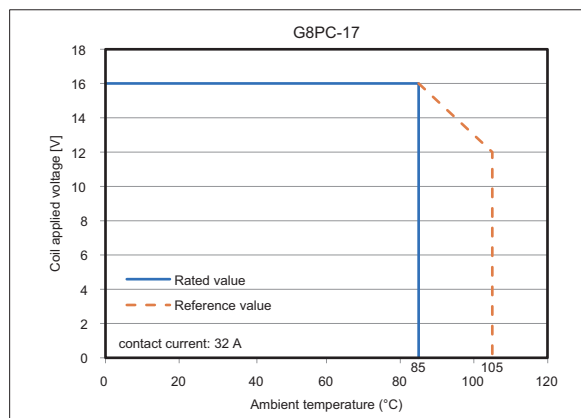


●Coil temperature rise [degC] at 85°C

(For using under a higher ambient temperature, please select the proper current carrying condition to avoid a possible excessive temperature rising.)



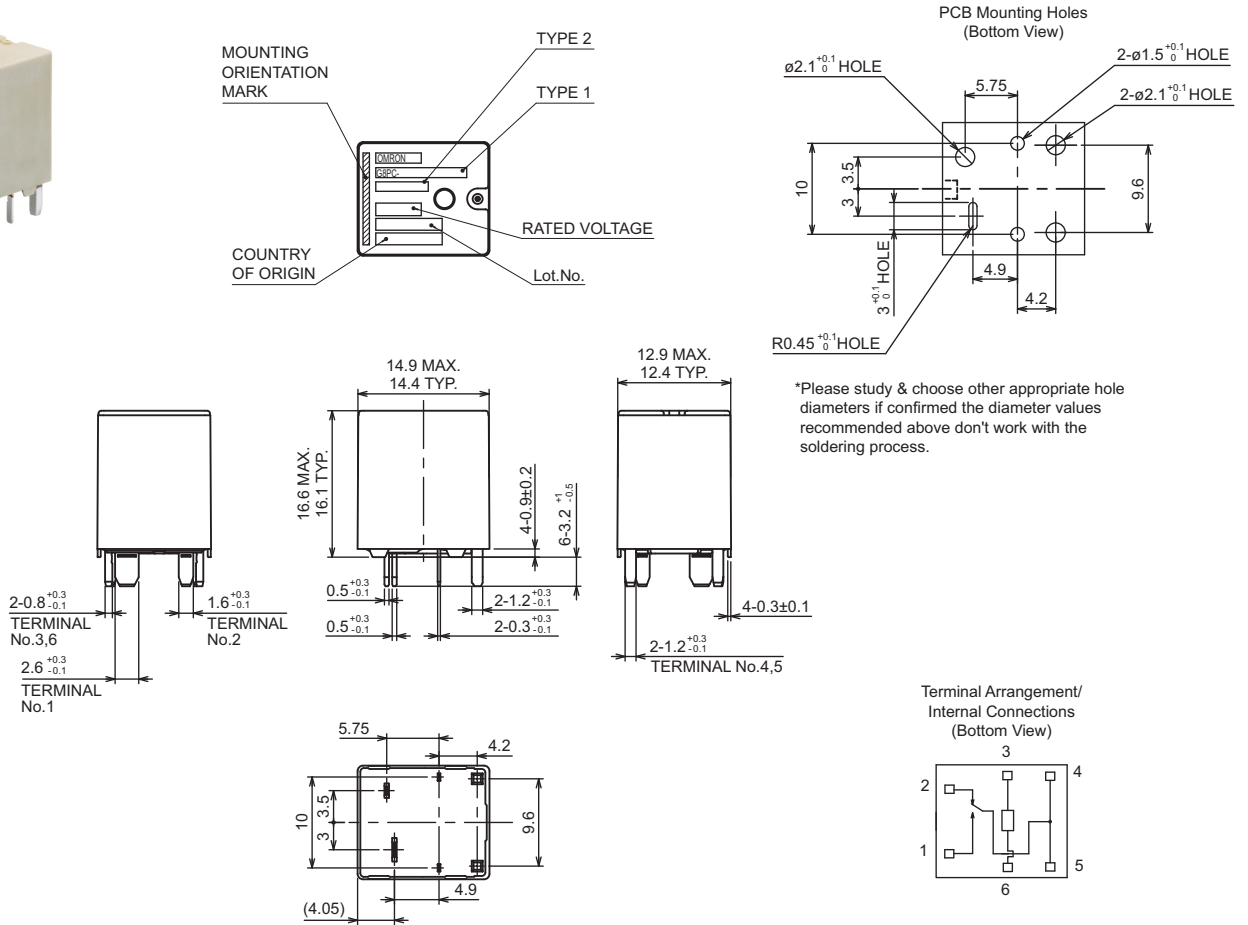
●Coil applied voltage, current flowing through the contact, and ambient temperature



Dimensions

CAD Data marked products, 2D drawings and 3D CAD models are available.
For CAD information, please visit our website, which is noted on the last page

G8PC-17



*Please study & choose other appropriate hole diameters if confirmed the diameter values recommended above don't work with the soldering process.

TOLERANCE UNLESS OTHERWISE SPECIFIED
LESS THAN 1mm : ± 0.1 mm
1 to 3mm : ± 0.2 mm
3mm OR MORE : ± 0.3 mm
() is reference dimension

CAD Data

Precautions

●Please refer to “Safety Precautions for ALL Automotive and small power relay” for correct use.

Precautions for Safe Use

●Notice to ensure safety

- Refer to the specification and confirm that the relay meets the application before using any relay from this catalog.
- Confirm acceptability for safety critical applications by appropriate testing or contact Omron.
- Do not use the relay for loads which exceed the rated values given in the data sheet. Failure to do so may result in unforeseen consequences such as insulation failure, smoking, breakdown of operation, etc.
- Do not apply over-voltage to the relay coil. Do not apply AC power to a DC relay coil. Be careful not to exceed the temperature ratings of the relay.
- Do not make incorrect connections to the relay terminals.
- Endurance (Lifetime) is significantly affected by changes to the load and switching condition. When using the relay, check the relay behavior with an actual product under actual conditions. Use the relay within timing characteristics it can meet according to the data sheet.
- Carry out the proper number of confirmation tests with an actual product for each application or contact Omron.
- A relay is a precision part. Do not apply vibration and shock beyond the specified value. Do not drop the relay. Do not use a relay that has been dropped.
- Do not remove the case of a relay or modify the terminals in any way.
- Do not touch the relay terminal or opposing mating terminal while applying current. Electric shock may occur.
- Do not use a relay under any environment that contains flammable or explosive gas. Fire or an explosion may result.

●When using a relay

- As with all technologies, relays may not always behave as expected. Therefore, evaluation under actual application conditions is always best.
- Each performance rating in this catalog is based on the value under controlled conditions (i.e. temperature, humidity, etc 86 to 106 kPa) unless otherwise specified. Confirm not only load condition but also actual environmental conditions for actual use.
- Reference data in the catalog is based on measurement values from sampling of production. The values are as accurate as possible and believed to be correct at the time of publication. Due to production necessity or other reasons, specifications may change without notice.
- When a relay is used outside the recommended conditions, there is no way for Omron to predict the failure mode or results of the failure. Omron will remain blameless for the results of applying relays outside of the recommended parameters described in this catalog.

Storage and Usage Environment

When using, storing and transporting relays, avoid direct sunlight and keep normal temperature, humidity and pressure.

- Oxides or sulfurized films may accumulate on the contact surface if the relay is exposed to high temperature and humidity for long periods of time. That could be a root cause of failure like contact defect.
- Condensation may occur inside the relay if the ambient temperature changes sharply from a high temperature and humidity to a lower temperature. Condensation should be avoided because it may cause insulation failure. Furthermore, bluish-green compounds may be generated inside of the relay due to relatively strong arc discharge associated with contact switching at high humidity. Best overall relay performance is attained at low humidity.
- When relays have been stored for a long period of time, it is possible for various oxides to form on the terminals and contacts. Therefore, if such a situation were to occur, it is necessary to evaluate the readiness of relays for use.

Please check each region's Terms & Conditions by region website.

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