OMRON

Ultra Miniature Power PCB Relay for Automotive and DC 12 V Applications

G8K Relay

Ultra Miniature Relay Capable for Motor/ Control of BCM Applications

- High-density design and extremely small mounting space
- Equivalent capability of switching 14 V 25 A motor load despite of smaller footprint
- Available as 1x Form C package, or 2x Form C (independent) package
- Pin in paste reflow compliant relay
- Temperature range -40°C to +125°C
- 100% modular footprint for 1x relay or 2x relay PCB layout

■Model Number Legend

G8K-□□□□

1 2 3 4

1. Number of Contact Poles/Structure
1: SPDT (1 Form C)
2: SPDT × 2 (1 Form C × 2)

2. Protective structure
Blank: Plastic sealed (RT III IEC61810)
7 : Flux tight (Open vent hole) (RT II IEC61810)

3. Characteristics
Blank: Standard
S : Low operating voltage
U : Ultralow operating voltage

4. Special function
Blank: Standard
R : Pin in Paste reflow compliant

■Application Examples

- DC motor/resistive application control
- Automotive DC applications (Door lock, Power window, Power seat, Power slide door closure, Horn, etc.)

■Ordering Information

Classification	Contact form	*Protective structure	Rated coil		Model	Characteristics	Minimum Packing unit (Tube packing)
			Voltage (V)	Resistance (Ω)			
Single	SPDT (1 Form C)	Flux tight (open vent hole) (RT II IEC61810)	DC12	160	**G8K-17R DC12**	Standard	63 pcs. / stick 48 sticks / box Total 3,024 pcs.
				120	**G8K-17SR DC12**	Low operating voltage	
				100	**G8K-17UR DC12**	Ultralow operating voltage	
Twin	SPDT × 2 (1 Form C × 2)	Flux tight (open vent hole) (RT II IEC61810)		160	**G8K-27R DC12**	Standard	32 pcs. / stick 48 sticks / box Total 1,536 pcs.
				120	**G8K-27SR DC12**	Low operating voltage	
				100	**G8K-27UR DC12**	Ultralow operating voltage	

* Please contact our sales representative for other models available
Note. Above models are not certificated for the safety standards of UL or CSA, etc.

■Ratings

●Coil

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	
							Single	Twin
DC12	75	160	6.9 Max.	1.0 Min.	10 to 16	900	**G8K-17R DC12**	**G8K-27R DC12**
	100	120	6.0 Max.			1200	**G8K-17SR DC12**	**G8K-27SR DC12**
	120	100	5.6 Max.	0.7 Min.		1440	**G8K-17UR DC12**	**G8K-27UR DC12**

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

Item \ Classification / Model		Standard **G8K-17R DC12 G8K-27R DC12**	Low operating voltage **G8K-17SR DC12 G8K-27SR DC12**	Ultralow operating voltage **G8K-17UR DC12 G8K-27UR DC12**
Contact material		Silver-alloy		
Max. switching current (N.O.)		30 A		
Max. carrying current *1	at 20°C	35 A 30 s *2		-
	at 105°C	30 A 30 s *2		30 A 30 s *2
	at 125°C	20 A 30 s *2		-
Min. switching current		1 A DC12V		

*1. This does not guarantee repeated condition. Also depends on the connecting conditions.
Ultralow operating voltage version is not designed for continuous use. Please contact our sales if you have specific conditions.
*2. Applicable when the single model or the single part of twin model operates.

■Characteristics

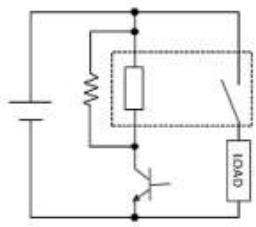
Item			Standard value	
			Single	Twin
Contact resistance (See *1.)			Typ.5 mΩ max.50 mΩ	
Operate time			10 ms max. (DC12V not including bounce time)	
Release time			5 ms max. (DC12V not including bounce time)	
Insulation resistance (See *2.)	Between coil and contacts		100 MΩ min.	
	Between contacts of the same polarity		100 MΩ min.	
Dielectric strength	Between coil and contacts		AC500V 1 min	
	Between contacts of the same polarity		AC500V 1 min	
Vibration resistance	Destruction		33 Hz, 45 m/s²	
	Malfunction		10 to 500 Hz, 45 m/s² (detection time: 10 μs)	
Shock resistance	Destruction		1,000 m/s² (pulse duration: 6 ms)	
	Malfunction		100 m/s² (pulse duration: 11 ms detection time: 10 μs)	
Mechanical endurance (See *3.)			1,000,000 ops. min.	
Electrical endurance (See *4.)		Resistive Load	5 A DC14V, 1.0 s ON/ 1.0 s OFF, 100,000 ops	
		Motor Load	25 A DC13.5V, 0.3 mH, 0.2 s ON/ 9.8 s OFF, 100,000 ops	
Ambient operating temperature (See *5.)			-40 to 125°C (without freezing or condensation)	
Ambient operating humidity			35% to 85% RH	
Weight			Approx. 3.0 g	Approx. 6.0 g

Note. The above values are initial values at an ambient temperature of +20°C unless otherwise specified.
*1. The contact resistance was measured with 1 A at DC5V.
*2. The insulation resistance was measured with a DC500V megohmmeter.
*3. The mechanical endurance was measured at a switching frequency of 18,000 operations/hr.
*4. Please connect N.O. terminal to the +BATT side on Electrical use and connect surge suppression element in parallel with between coil based on recommended circuit.
*5. G8K-17R/27R/17SR/27SR supports 125°C. G8K-17UR/27UR supports 105°C.
Please refer to the condition of carrying current and derating curve if using under the maximum ambient temperature.

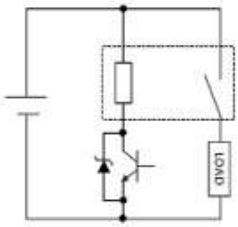
Recommended circuit: (a), (b), (c)
Not-recommended circuit: (d)

Note:
OMRON recommends coil driver circuit (b) and (c) for coil surge suppression. However the circuit (d) is not recommended because it may negatively affect the durability performance.

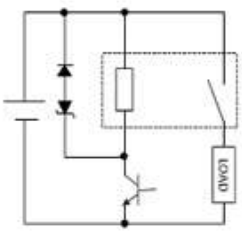
(a)



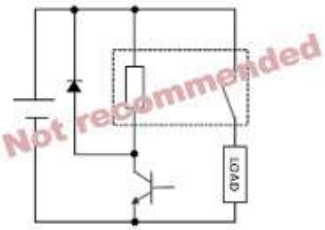
(b)



(c)



(d)

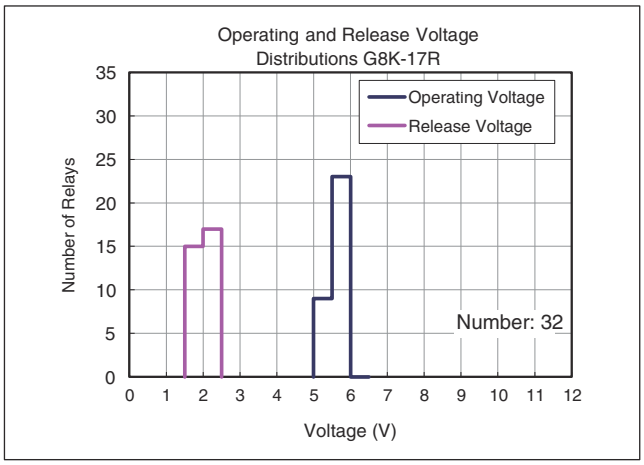


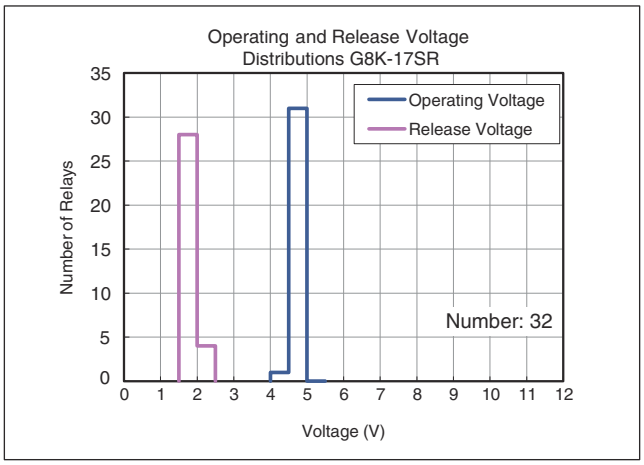
■Reference Technical Data

●Actual Electrical performance (reference)

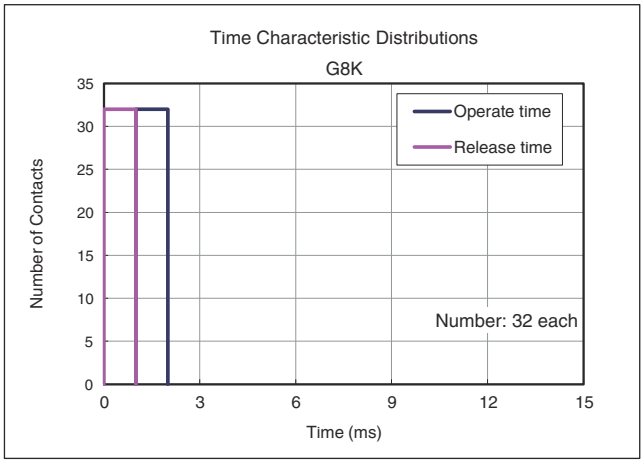
Model	Application	Load voltage	Inrush	Steady state	Switching off	Inductance	Ambient temperature	Required Cycles (min)
		(V)	(A)	(A)	(A)	(mH)	(°C)	Total
G8K-27SR DC12	Central door lock	14	-	25	25	0.5	25	170,000
G8K-27SR DC12	Anti Theft Horn	14	7.1	3.4	3.4	3	-40°C to +90°C	200,000
G8K-27R DC12	Door Lock	16	-	16.5	16.5	1.48	-40°C to +85°C	100,000
G8K-27R DC12	Door Lock	14	-	20	20	0.75	25	130,000
G8K-17UR DC12	Door Lock	14			28	0.16		210,000
G8K-17UR DC12	DC motor	16		38	38		85°C	1,000
G8K-17UR DC12	DC motor	18		26	26		85°C	1,000

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

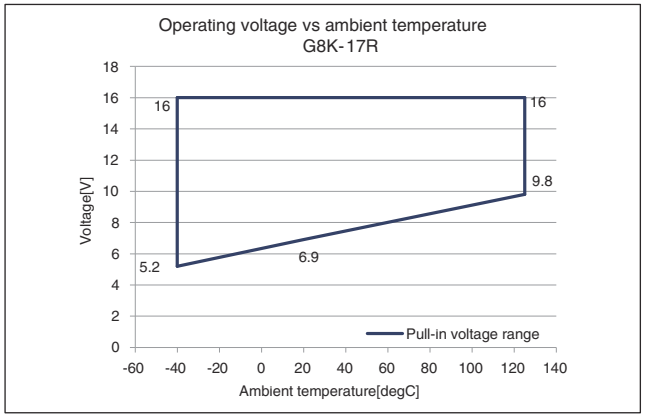


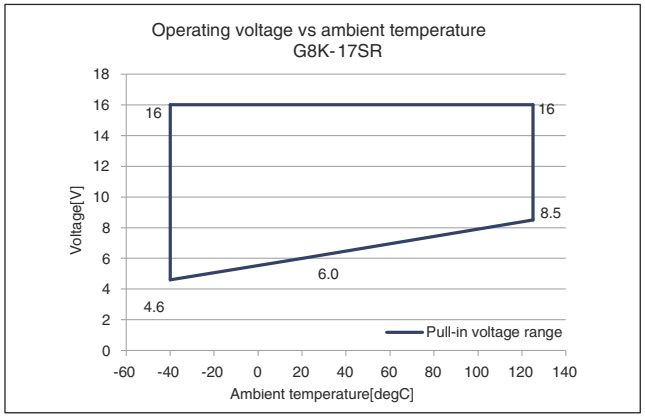


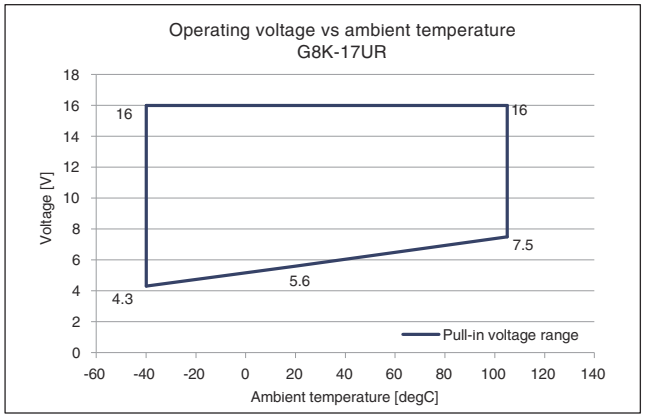
●Time Characteristic Distributions (Number of Contacts × Time (ms))



●Operating voltage vs ambient temperature (Cold start)

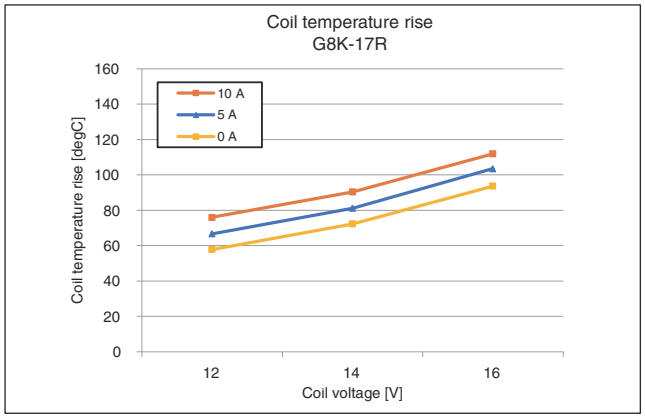


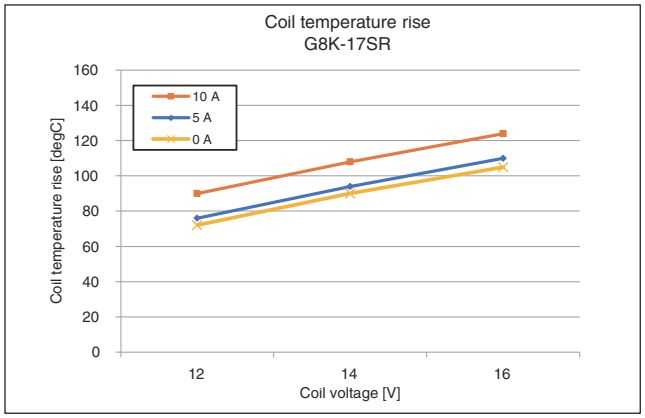




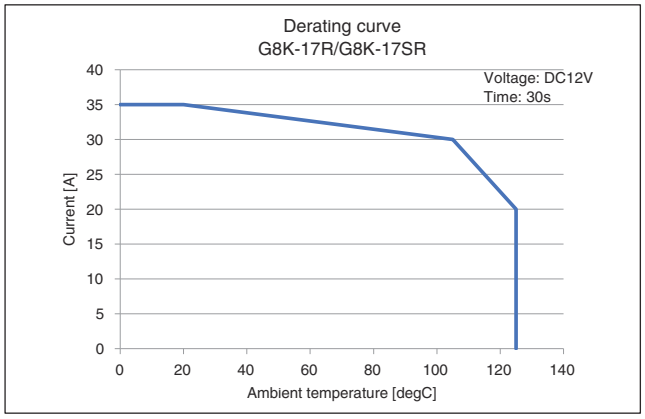
●Coil temperature rise [degC] at 20°C

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





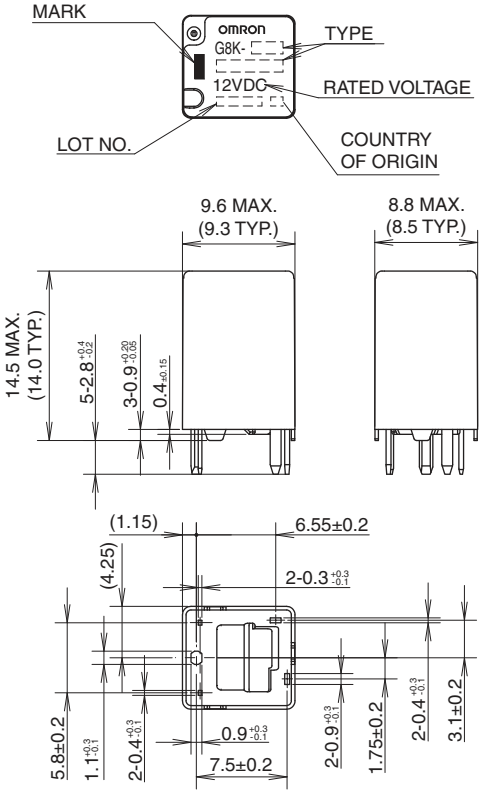
●Derating curve



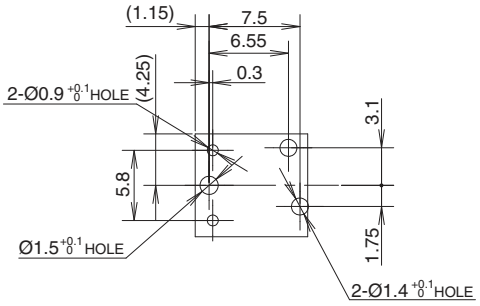
■Dimensions

CAD Data Please visit our website, which is noted on the last page. **(Unit: mm)**

G8K Single

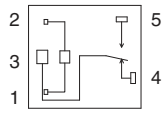


FOR REFERENCE:PCB MOUNTING HOLES (BOTTOM VIEW)



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

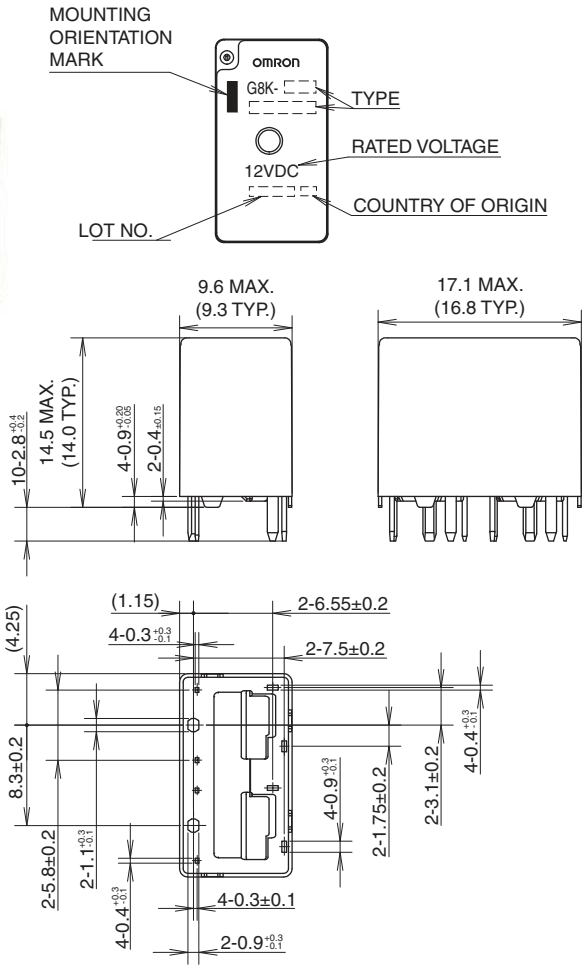
TERMINAL ARRANGEMENT/ INTERNAL CONNECTIONS (BOTTOM VIEW)



TOLERANCE UNLESS OTHERWISE SPECIFIED
LESS THAN 1mm : ±0.1mm
1 to 3mm : ±0.2mm
3mm OR MORE : ±0.3mm

CAD Data

G8K Twin



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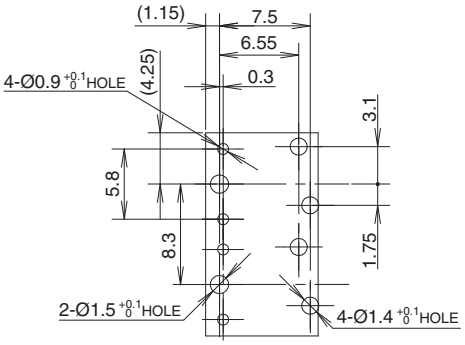

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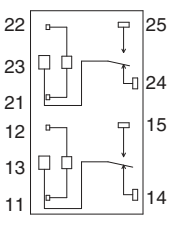

TOLERANCE UNLESS OTHERWISE SPECIFIED
LESS THAN 1mm : ±0.1mm
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CAD Data

■Precautions

●Please refer to “Safety Precautions for All Automotive Relays” for correct use.

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

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1122 (1221)