

Compact, Industry-Standard 2-pole relay, designed to switch 2A Signal Loads.

- Long terminals for ideal for soldering and mounting reliability. (Surface mounting terminal models)
- Space-saving inside-L terminal. (Surface mounting terminal models)
- Unique terminal structure, designed to withstand IRS soldering processes. (Surface mounting terminal models)
- High dielectric strength (2,000 VAC) and impulse withstand voltage between coil and contacts (2,500 V, 2 \times 10 μs : Telcordia requirements).
- \bullet Ultra-miniature at 9.4 mm (H) \times 7.5 mm (W) \times 15 mm (L).
- Models available with BSI (EN62368-1) supplementary insulation certification. (-Y type)

RoHS Compliant

Model Number Legend

$\frac{G6S}{1} - \frac{1}{2} - \frac{1}{3} - \frac{1}{4}$

1 2 3 4

1. Relay Function

- None : Single-side stable
 - U : Single-winding latching

Ordering Information

- K : Double-winding latching
- 2. Number of poles/ Contact form
- 2: 2-pole/DPDT (2c)

- 3. Terminal Shape
- None : PCB terminals
 - F : Outside-L surface mounting terminals
 - G : Inside-L surface mounting terminals

4. Approved Standards

None : UL, CSA

Y : UL, CSA, BSI (EN62368-1)

Application Examples

- Telecommunication equipment
- Measurement devices
- Office automation machines
- Audio-visual products.
- Security equipment
- Building automation equipment
- Industrial equipment
- Amusement equipment
- Home appliances

		Packing		Tube Packing			Тар	e Packing	
Enclosure rating	Relay Function	Contact form	Model	Rated coil voltage	Minimum packing unit	Model	Rated coil voltage	Minimum packing unit	Minimum ordering uni (tape packing)
				3 VDC			3 VDC		
			000.05	4.5 VDC		000 05 75	4.5 VDC		
			G6S-2F G6S-2G	5 VDC		G6S-2F-TR G6S-2G-TR	5 VDC		
	Single-side		003-20	12 VDC		000-20-111	12 VDC		
	stable			24 VDC			24 VDC		
			000.05.1	5 VDC		G6S-2F-Y-TR G6S-2G-Y-TR	5 VDC	-	
			G6S-2F-Y G6S-2G-Y	12 VDC			12 VDC		
			400 24 1	24 VDC		000 20 T III	24 VDC		
		-		3 VDC			3 VDC		
			00011.05	4.5 VDC			4.5 VDC		
Fully sealed		DPDT (2c)	G6SU-2F G6SU-2G	5 VDC	50 pcs/tube	G6SU-2F-TR G6SU-2G-TR	5 VDC	400 pcs/reel	800 pcs/2 reels
	Single-winding		0000-20	12 VDC		0000-20-111	12 VDC	-	
	latching			24 VDC			24 VDC		
				5 VDC			5 VDC		
			G6SU-2F-Y G6SU-2G-Y	12 VDC		G6SU-2F-Y-TR G6SU-2G-Y-TR	12 VDC		
			4000 24 1	24 VDC		0000 20 T III	24 VDC		
		-		3 VDC			3 VDC		
	D 11 · · ·		0001/ 05	4.5 VDC			4.5 VDC		
	Double-winding latching		G6SK-2F G6SK-2G	5 VDC	1	G6SK-2F-TR G6SK-2G-TR	5 VDC	-	
	latorning		00000 20	12 VDC]		12 VDC		
				24 VDC	1		24 VDC	1	

Note 1. When ordering, add the rated coil voltage to the model number.

Example: G6S-2F DC3

 \Box Rated coil voltage However, the notation of the coil voltage on the product case as well as on the packing will be marked as \Box VDC.

Note 2.When ordering tape packing, add -TR" to the model number.

Be sure since -TR" is n ot part of the relay model number, it is not marked on the relay case.

Note 3. When ordering tape packing, minimum order unit is 2 reels (400 pcs \times 2 = 800 pcs).

Note 4.Surface mounting terminal (SMT) standard models are shipped in moisture-proof package.

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●PCB Terminal Standard Models

Enclosure	Relay Function	Single-s	ide stable	Single-wind	ing latching Double-winding latching			Minimum
rating	Contact form	Model	Rated coil voltage	Model	Rated coil voltage	Model	Rated coil voltage	packing unit
			3 VDC		3 VDC		3 VDC	
		G6S-2 DT (2c) G6S-2-Y	4.5 VDC	G6SU-2	4.5 VDC	G6SK-2	4.5 VDC	50 pcs/tube
			5 VDC		5 VDC		5 VDC	
Fully appled			12 VDC		12 VDC		12 VDC	
Fully sealed DPDT (2c)	DFD1 (20)		24 VDC		24 VDC		24 VDC	
			5 VDC		5 VDC			
			12 VDC	G6SU-2-Y	12 VDC		-	
			24 VDC		24 VDC			

Note 1. When ordering, add the rated coil voltage to the model number.

Example: G6S-2 DC3

Rated coil voltage

However, the notation of the coil voltage on the product case as well as on the packing will be marked as DDVDC.

Note 2.PCB terminal standard types do not require moisture proof packaging and therefore shipped in non-moisture-proof package.

Ratings

•Single-side Stable Model

Model	Rated	Item voltage	Rated current (mA)	Coil resistance (Ω)	Must operate voltage (V)	Must release voltage (V)	Max. voltage (V)	Power consumption (mW)
		3	46.7	64.3				
000 0		4.5	31	145			200%	Approx. 140
G6S-2 G6S-2F	DC	5	28.1	178	75% max.	10% min.	(at 23°C)	Арргод. 140
G6S-2G	00	12	11.7	1,028	7070 max.	10 /0 11111.		
		24	8.3	2,880			170% (at 23°C)	Approx. 200
G6S-2-Y		5	40	125			1700/	Approx. 200
G6S-2F-Y	DC	12	16.7	720	75% max.	10% min.	170% (at 23°C)	Appilox. 200
G6S-2G-Y		24	9.6	2,504			(u: 20 0)	Approx. 230

Contacts

Item Load	Resistive load
Contact type	Bifurcated crossbar
Contact material	Ag (Au-Alloy)
Rated load	0.5 A at 125 VAC; 2 A at 30 VDC
Rated carry current	2 A
Max. switching voltage	250 VAC, 220 VDC
Max. switching current	2 A

Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%. 2. Operating characteristics are measured at a coil temperature of 23°C.

3. The maximum voltage is the highest voltage that can be imposed on the relay coil.

Single-winding Latching Model

Model	Rated	Item voltage	Rated current (mA)	Coil resistance (Ω)	Must operate voltage (V)	Must release voltage (V)	Max. voltage (V)	Power consumption (mW)
		3	33.3	90				
G6SU-2		4.5	22.2	203			1000/	Approx. 100
G6SU-2F	DC	5	20	250	75% max.	75% max.	180% (at 23°C)	Approx. 100
G6SU-2G		12	8.3	1,440			(0120 0)	
		24	6.3	3,840				Approx. 150
G6SU-2-Y		5	28.1	178			0000/	
G6SU-2F-Y	DC	12	11.7	1,028	75% max.	75% max.	200% (at 23°C)	Approx. 140
G6SU-2G-Y		24	5.8	4,114			(0.20 0)	

Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%. 2. Operating characteristics are measured at a coil temperature of 23°C.

3. The maximum voltage is the highest voltage that can be imposed on the relay coil.

Double-winding Latching Model

Model	Rated	Item voltage	Rated current (mA)	Coil resistance (Ω)	Must operate voltage (V)	Must release voltage (V)	Max. voltage (V)	Power consumption (mW)
		3	66.6	45				
G6SK-2		4.5	44.4	101			170%	Approx. 200
G6SK-2 G6SK-2F	DC	5	40	125	75% max.	75% max.	(at 23°C)	Appilox. 200
G6SK-2G	20	12	16.7	720	rovo max.	rovo max.		
		24	12.5	1,920			140% (at 23°C)	Approx. 300

Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%. 2. Operating characteristics are measured at a coil temperature of 23°C.

3. The maximum voltage is the highest voltage that can be imposed on the relay coil.

Characteristics

Item	Relay Function	Single-side Stable G6S-2, G6S-2F, G6S-2G	Single-winding Latching G6SU-2, G6SU-2F, G6SU-2G	Double-winding Latching G6SK-2, G6SK-2F, G6SK-2G	Single-side Stable G6S-2F-Y, G6S-2G-Y, G6S-2-Y	Single-winding Latching G6SU-2-Y, G6SU-2F-Y, G6SU-2G-Y			
Contact re	sistance *1	75 mΩ max.							
Operate (s		4 ms max.							
Release (r	/			4 ms max.					
	set pulse width	-		ms	-	10 ms			
Insulation	resistance *2		1,0	000 M Ω min. (at 500 VD	C)				
	Between coil and contacts	2,000 VAC, 50/	60 Hz for 1 min	1,000 VAC, 50/60 Hz for 1 min	2,000 VAC, 50/60 Hz for 1 min				
Dielectric	Between contacts of different polarity		1,5	00 VAC, 50/60 Hz for 1 i	min				
strength	Between contacts of the same polarity		1,0	00 VAC, 50/60 Hz for 1 i	min				
	Between set and reset coil	-	-	500 VAC, 50/60 Hz for 1 min	-	-			
Insulation distance	Between coil and contacts	Cleara	nce: 1 mm, Creepage:	1.5 mm	Clearance: 2 mm,	Creepage: 2 mm			
Impulse	Between coil and contacts	2,500 V (2 \times 10 μs);	1,500 V (10 × 160 μs)	1,500 V (10 × 160 μs)	2,500 V (2 × 10 μs); 1,500 V (10 × 160 μs)				
withstand voltage	Between contacts of different polarity	2,500 V (2 × 10 µs); 1,500 V (10 × 160 µs)							
voltage	Between contacts of the same polarity			1,500 V (10 × 160 μs)					
Vibration	Destruction		10 to 55 to 10 Hz, 2.5	mm single amplitude (5	mm double amplitude)				
resistance	Malfunction		10 to 55 to 10 Hz, 1.65 i	nm single amplitude (3.3	3 mm double amplitude)			
Shock	Destruction			1,000 m/s²					
resistance	mananouon			750 m/s²					
	Mechanical			perations min. (at 36,000					
Durability	Electrical			i. for AC (at 1,800 opera i. for DC (at 1,200 opera					
Failure rate	e (P level) (reference value) *3	10 μA at 10 m VDC							
Ambient of	perating temperature	-40°C to 85°C (with no icing or condensation), and -40°C to 70°C (with no icing or condensation) only for double-winding latching 24 VDC and -Y type 24 VDC							
Ambient of	perating humidity			5% to 85%					
Weight				Approx. 2 g					

Note: The above values are initial values.

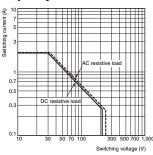
The contact resistance was measured with 10 mA at 1 VDC with a voltage drop method. *1.

*2. The insulation resistance was measured with a 500 VDC megohmmeter applied to the same parts as those used for checking the dielectric strength (except between the set and reset coil). This value was measured at a switching frequency of 120 operations/min and the criterion of contact resistance is 50 Ω . This value may vary, depending on

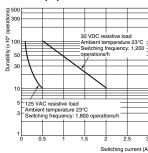
*3. switching frequency, operating conditions, expected reliability level of the relay, etc. It is always recommended to double-check relay suitability under actual load conditions.

Engineering Data

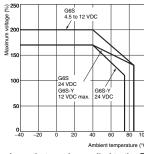
Maximum Switching Capacity



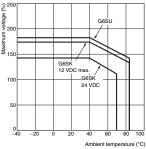
Ourability G6S-2F(G)



Ambient Temperature vs. Maximum Voltage (Single-side Stable)

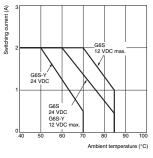


Ambient Temperature vs. Maximum Voltage (Latching)

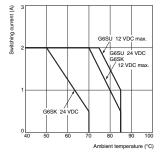


Note: "Maximum voltage" is the maximum voltage that can be applied to the Relay coil.

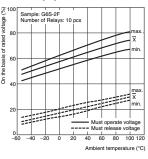
Ambient Temperature vs. Switching Current (Single-side Stable)



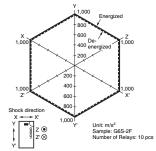
Ambient Temperature vs. Switching Current (Latching)



Ambient Temperature vs. Must Operate or Must **Release Voltage** G6S-2F(G)

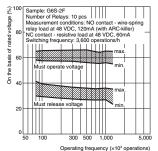


Shock Malfunction G6S-2F(G)

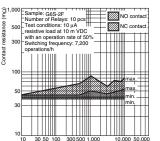


Conditions: Shock is applied in ±X, ±Y, and ±Z directions three times each with and without energizing the Relavs to check the number of contact malfunctions.

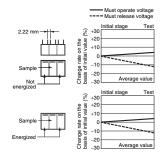
•Electrical Endurance (with Must Operate and Must Release Voltage) *1 G6S-2F(G)



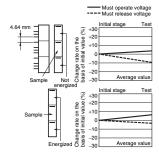
•Contact Reliability Test (Contact Resistance) *1, *2 G6S-2F(G)



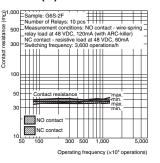
Operating frequency (×10³ operations)



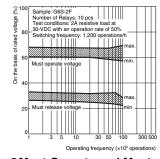
•Mutual Magnetic Interference G6S-2F(G)



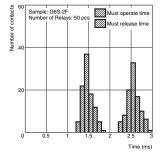
•Electrical Endurance (Contact Resistance) *1 G6S-2F(G)



•Electrical Endurance (with Must Operate and Must Release Voltage) *1 G6S-2F(G)



•Must Operate and Must Release Time Distribution *1 G6S-2F(G)



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Sample: G6S-2F Number of Relays:10 pcs

(Insertion Loss) *1. *3

f Relays: 10 pcs 50 100

Sampl Numb

2.0l

G6S-2F(G) (Average value (initial))

High-frequency

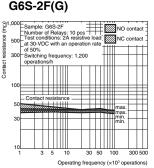
Characteristics

-30

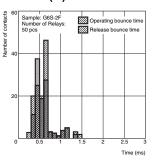
5

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•Electrical Endurance (Contact Resistance) *1 G6S-2F(G)



•Distribution of Bounce Time *1 G6S-2F(G)



(Average value)

Must operate Must release

External magnetic field (A/m)

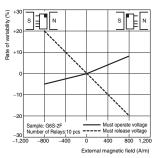
400

800 1,200

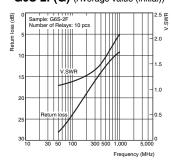
Frequency (MHz

s 📮 N

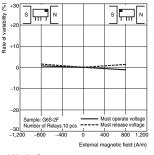
(Average value)



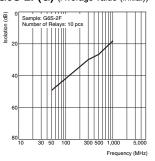
High-frequency Characteristics (Return Loss, V.SWR) *1, *3 G6S-2F(G) (Average value (initial))



•External Magnetic Interference G6S-2F(G) (Average value)



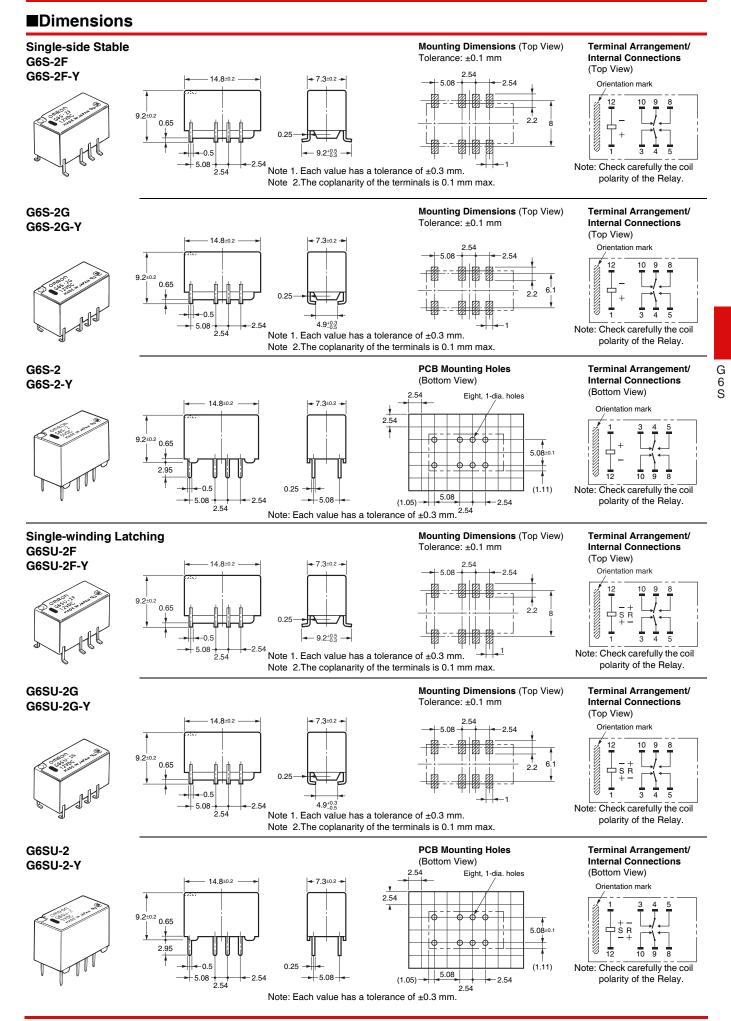
High-frequency
 Characteristics
 (Isolation) *1, *2
 G6S-2F(G) (Average value (initial))

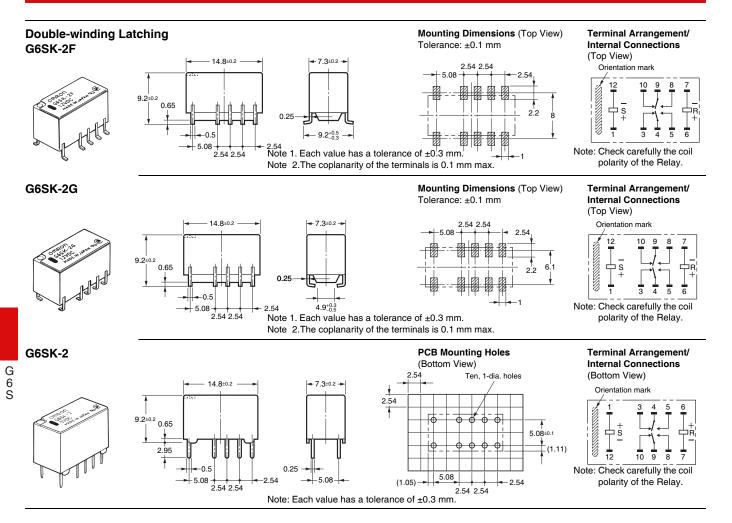


*1. The tests were conducted at an ambient temperature of 23°C.

- *2. The contact resistance data are periodically measured reference values and are not values from each monitoring operation. Contact resistance values will vary according to the switching frequency and operating environment, so be sure to check operation under the actual operating conditions before use.
- High-frequency characteristics depend on the PCB to which the Relay is mounted. Always check these characteristics, including durability, in the actual machine before use.

G6S





Tube Packing and Tape Packing

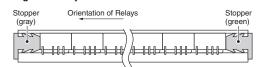
Surface mounting terminal (SMT) standard models are shipped in moisture-proof package, and PCB terminal standard types do not require moisture proof packaging and therefore shipped in non-moisture-proof package.

Please refer to "Correct Use" for handling after opening moisture-proof packaging for Surface mounting terminal (SMT) models.

(1) Tube Packing

• Relays in tube packing are arranged so that the orientation mark of each Relay in on the left side.

Be sure not to make mistakes in Relay orientation when mounting the Relay to the PCB.



Tube length: 772 mm (stopper not included) No. of Relays per tube: 50 pcs

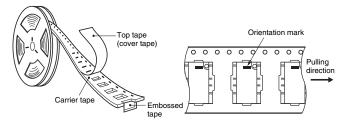
(2) Tape Packing (Surface Mounting Terminal Models)

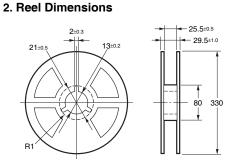
• When ordering Relays in tape packing, add the prefix "-TR" to the model number, otherwise the Relays in tube packing will be provided.

Relays per Reel: 400 pcs

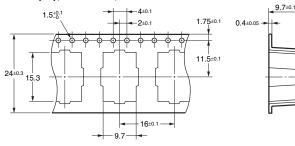
Minimum packing unit: 2 reels (800 pcs)

1. Direction of Relay Insertion

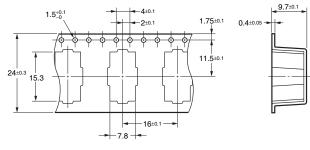




3. Carrie Tape Dimensions G6S-2F(-Y), G6SU-2F, G6SK-2F



G6S-2G(-Y), G6SU-2G, G6SK-2G



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• The thickness of cream solder to be applied should be within a

range between 150 and 200 µm on OMRON's recommended

 In order to perform correct soldering, it is recommended that the correct soldering conditions be maintained as shown

Termi

PCB

Visually check that the Relay is properly soldered.

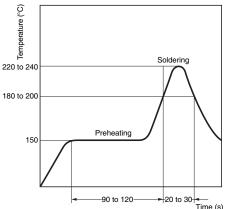
Incorrect Soldering

Insufficient amount

Excessive amount

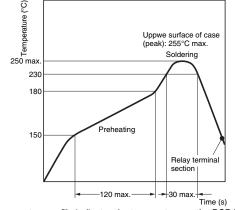
Recommended Soldering Method

(1) IRS Method (Mounting Solder: Lead)



(The temperature profile indicates the temperature on the circuit board surface.)

(2) IRS Method (Mounting Solder: Lead-free)



(The temperature profile indicates the temperature on the PCB.)

■Approved Standards

UL recognized: 💫 (File No. E41515) CSA certified: (File No. LR31928)

Contact form	Coil ratings	Contact ratings		Number of test operations
DPDT (2c)	DPDT (2c) 3 to 24 VDC 0.3 A, 10 0.5 A, 125			6,000
BSI (EN623	68-1) (File N	lo.VC657351)		(-Y type)
Contact form	Isola	tion category		Voltage

250 VAC

Supplementary Insulation

Uppwe surface of case
(peak): 255°C max.
Soldering
\frown

Precautions

PCB pattern.

Correct Soldering

Solde

Heel fillet

is formed

below on the left side.

• Please refer to "PCB Relays Common Precautions" for correct use.

Correct Use

- Long-term Continuously ON Contacts
- Using the Relay in a circuit where the Relay will be ON continuously for long periods (without switching) can lead to unstable contacts because the heat generated by the coil itself will affect the insulation, causing a film to develop on the contact surfaces. We recommend using a latching relay (magnetic-holding relay) in this kind of circuit. If a single-side stable model must be used in this kind of circuit, we recommend using a fail-safe circuit design that provides protection against contact failure or coil burnout.
- Relay Handling
- Use the Relay as soon as possible after opening the moistureproof package. (As a guideline, use the Relay within one week at 30°C or less and 60% RH or less.) If the Relay is left for a long time after opening the moisture-proof package, the appearance may suffer and seal failure may occur after the solder mounting process. To store the Relay after opening the moisture-proof package, place it into the original package and sealed the package with adhesive tape.
- When washing the product after soldering the Relay to a PCB, use a water-based solvent or alcohol-based solvent, and keep the solvent temperature to less than 40°C. Do not put the Relay in a cold cleaning bath immediately after soldering.
- Claw Securing Force During Automatic Mounting

DPDT (2c)

Surface-mounting Relay

G6S

• During automatic insertion of Relays, be sure to set the securing force of each claw to the following so that the Relay's characteristics will be maintained.



Dimension A: 1.96 N max. Dimension B: 4.90 N max. Dimension C: 1.96 N max.

Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.
Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

Note: Do not use this document to operate the Unit.

OMRON Corporation Electronic and Mechanical Components Company

Contact: www.omron.com/ecb

Cat. No. K093-E1-13 0118(0207)(O)

Mouser Electronics

Authorized Distributor

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Omron:

G6S-2G-DC12 G6SU-2-DC3 G6SK-2F-DC5 G6S-2G-Y-DC5 G6S-2G-DC24 G6SK-2F-DC12 G6SK-2F-DC24 G6S-2F-DC24 G6S-2F-DC12 G6S-2G-DC5 G6S-2-DC4.5 G6S-2G-Y-TR-DC5 G6S-2-DC24 G6S-2F-DC5 G6S-2F-DC3 G6S-2G-TR-DC24 G6S-2-Y-DC12 G6S-2-Y-DC4.5 G6S-2-Y-DC5 G6S-2-DC12 G6SU-2F-TR-DC3 G6SK-2-H-DC5 G6SU-2-DC12 G6SU-2F-DC5 G6S-2F-DC4.5 G6SK-2-DC5 G6SK-2F-TR DC3 G6S-2 DC48 G6S-2F DC48 G6S-2F-TR DC9 G6S-2F-Y-TR DC24 G6S-2F-Y-TR DC4.5 G6S-2F-Y-TR DC5 G6S-2F-Y-TR DC9 G6S-2G DC48 G6S-2G-10 DC24 G6S-2G-10-TR DC24 G6S-2G-TR DC12 G6S-2G-TR DC3 G6S-2G-TR DC4.5 G6S-2G-TR DC5 G6S-2G-TR DC9 G6S-2G-Y-TR DC12 G6S-2G-Y-TR DC24 G6S-2G-Y-TR DC4.5 G6SK-2 DC2 G6SK-2F-H-TR DC12 G6SK-2F-H-TR DC3 G6SK-2F-H-TR DC5 G6SK-2F-TR DC24 G6SK-2F-TR DC4.5 G6SK-2F-TR DC5 G6SK-2G-H-TR DC5 G6SU-2-3 DC5 G6SU-2F-TR DC24 G6SU-2F-TR DC5 G6SU-2G-TR DC4.5 G6SU-2G-TR DC5 G6SK-2F-TR-DC12 G6SK-2F-H-TR DC4.5 G6S-2F-TR DC12 G6S-2G-Y-TR DC9 G6SK-2F DC2 G6SK-2F DC4.5 G6SK-2F-H-3 DC3 G6SK-2F-H-TR DC2.4 G6SK-2G DC4.5 G6SK-2G-H DC4.5 G6SK-2G-TR DC4.5 G6SK-2-H DC4.5 G6SU-2 DC4.5 G6SU-2F DC4.5 G6SU-2F-TR DC12 G6SU-2F-TR DC4.5 G6SU-2G DC4.5 G6S-2 DC6 G6S-2 DC9 G6S-2F DC9 G6S-2F-Y DC12 G6S-2F-Y DC24 G6S-2F-Y DC3 G6S-2F-Y DC4.5 G6S-2F-Y DC6 G6S-2F-Y DC9 G6S-2G DC3 G6S-2G DC4.5 G6S-2G-Y DC12 G6S-2G-Y DC24 G6S-2G-Y DC3 G6S-2G-Y DC4.5 G6S-2G-Y DC9 G6S-2-Y DC24 G6S-2-Y DC3 G6S-2-Y DC6 G6S-2-Y DC9 G6SK-2 DC12 G6SK-2 DC24 G6SK-2 DC3 G6SK-2 DC6 G6SK-2 DC9