

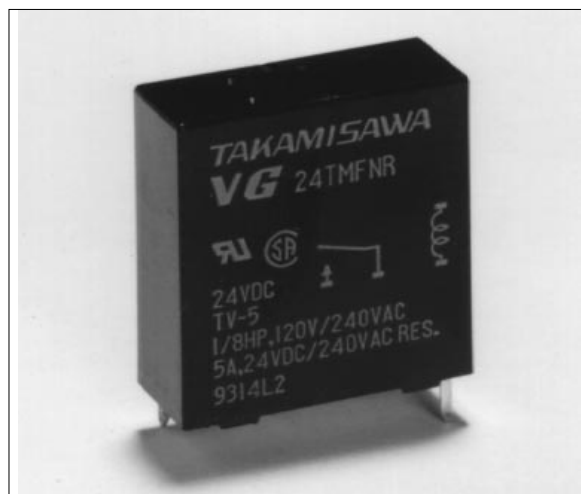
POWER RELAY

1 POLE—3A to 5 A (CADMIUM FREE CONTACTS TYPE)

VG SERIES

■ FEATURES

- UL, CSA recognized, TV-5 rated
- 1 form A (SPST-NO) or 1 form C (SPDT) contact
- Reliable, low power consumption miniature power relay
—Surge strength 7,000 V
- Slim type—meets high density mounting requirement
- Easy circuit design with completely separated terminal arrangement (coil and contact terminals)
- Plastic sealed type backfilled with nitrogen available
- Environmentally friendly cadmium free contact type is available



■ ORDERING INFORMATION

[Example] $\frac{VG}{(a)}$ - $\frac{12}{(*)}$ $\frac{H}{(b)}$ $\frac{M}{(d)}$ $\frac{S}{(e)}$ $\frac{E}{(f)}$ - $\frac{K}{(g)}$ - $\frac{UL}{(h)}$

| | | |
|-----|---------------------------|---|
| (a) | Series Name | VG: VG Series |
| (b) | Nominal Voltage | Refer to the COIL DATA CHART |
| (c) | Contact Rating | Nil : 3 A H : 5 A T : 5 A (only TV-5) |
| (d) | Contact Arrangement | Nil : 1 form C (SPDT) M : 1 form A (SPST-NO) |
| (e) | Coil Type | Nil : Standard type S : High sensitivity type (only 3 A type available) |
| (f) | Contact Material (Rating) | Nil : Gold overlay silver-nickel (3 A, 5 A) Nil : Silver alloy (only TV-5) E : Silver-nickel (3 A, 5 A) |
| (g) | Enclosure | Nil : Flux free type C : Plastic sealed type (with tape) K : Plastic sealed type |
| (h) | Standard | UL : UL, CSA approved type |

Note: Actual marking omits the hyphen (-) of (*)

■ SAFETY STANDARD AND FILE NUMBERS

UL508, 873 (File No. E56140)

C22.2 No. 1, No. 14 (File No. LR35579)

Please note that UL/CSA ratings may differ from the standard ratings.

| | Type | Nominal voltage | Contact rating |
|-----------|-------|-----------------|--|
| TV-Rating | VG-TM | 5 to 48 VDC | TV-5 120 VAC 1/8 HP 120 VAC/240 VAC 5 A 24 VDC/240 VAC resistive (*) Pilot duty C 150 |
| General | VG-H | 5 to 48 VDC | 1/8 HP 120 VAC/240 VAC 5 A 24 VDC/120 VAC resistive Pilot duty C 150 |
| | VG | 5 to 48 VDC | 1/10 HP 120 VAC/240 VAC 3 A 30 VDC/120 VAC resistive Pilot duty D 150 |

* Only UL approval

■ SPECIFICATIONS

| Item | | Standard Type | | | High Sensitive Type |
|----------------|-------------------------------------|--|---|---------------------------|---------------------------|
| | | TV-5 Type | 5 A Type | 3 A Type | 3 A Type |
| | | VG-() TM | VG-() H VG-() HE | VG VG-E | VG-S VG-SE |
| Contact | Arrangement | 1 form A (SPST-NO) | 1 form A (SPST-NO) or 1 form C (SPDT) | | |
| | Material | Silver alloy | Gold overlay silver alloy (VG-H, VG), silver alloy (VG-HE, E) | | |
| | Style | Single | | | |
| | Resistance (initial) (at 1 A 6 VDC) | Maximum 200 mΩ | Maximum 70 mΩ (VG-H, VG), Max. 100 mΩ (VG-HE, E) | | |
| | Rating (resistive) | 5 A 120 VAC 5 A 24 VDC | | 3 A 120 VAC 3 A 30 VDC | |
| | Maximum Carrying Current | 5 A | | | |
| | Maximum Switching Power | 1,000 VA, 150 W | | 500 VA, 90 W | |
| | Maximum Switching Voltage | 250 VAC, 150 VDC | | | |
| | Maximum Switching Current | 5 A | | 3 A | |
| | Minimum Switching Load*1 | 10 mA 5 VDC (VG-H, VG), 100 mA 5 VDC (VG-TM, VG-HE, E) | | | |
| Coil | Nominal Power (at 20°C) | 0.36 to 0.4 W | | | 0.21 to 0.26 W |
| | Operate Power (at 20°C) | 0.18 to 0.2 W | | | 0.102 to 0.13 W |
| | Operating Temperature | -40°C to +70°C (no frost) | | | -40°C to +85°C (no frost) |
| Time Value | Operate (at nominal voltage) | Maximum 10 ms | | | |
| | Release (at nominal voltage) | Maximum 5 ms | | | |
| Insulation | Resistance (at 500 VDC) | Minimum 1,000 MΩ | | | |
| | Dielectric Strength | between open contacts | 900 VAC 1 minute | 750 VAC 1 minute | |
| | | between coil and contacts | 4,000 VAC 1 minute | | |
| Surge Strength | 7,000 V (at 1.2×50 μs) | | | | |
| Life | Mechanical | 1 × 10 ⁷ operations minimum | | | |
| | Electrical | 1 × 10 ⁵ operations minimum (at contact rating) | | | |
| Other | Vibration Resistance | Misoperation | 10 to 55 Hz (double amplitude of 1.5 mm) | | |
| | | Endurance | 10 to 55 Hz (double amplitude of 1.5 mm) | | |
| | Shock Resistance | Misoperation | 100 m/s ² (11 ±1 ms) | | |
| | | Endurance | 1,000 m/s ² (6 ±1 ms) | | |
| | Weight | Approximately 12 g | | | |

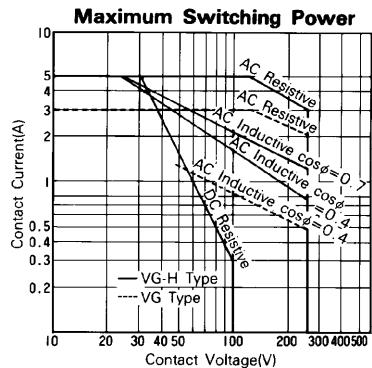
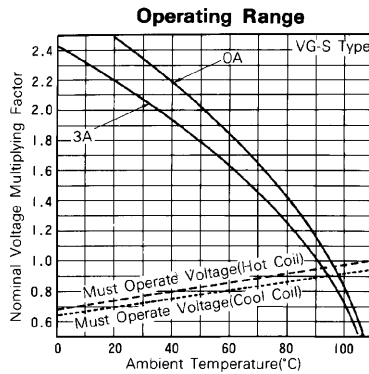
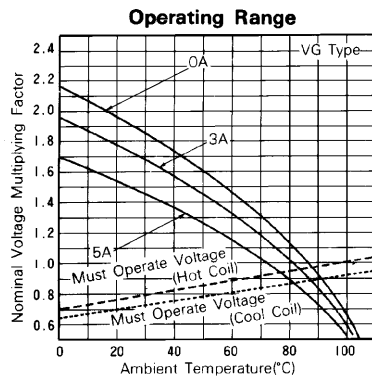
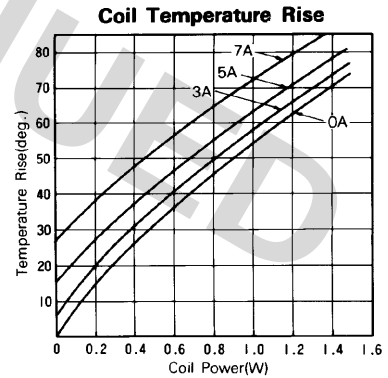
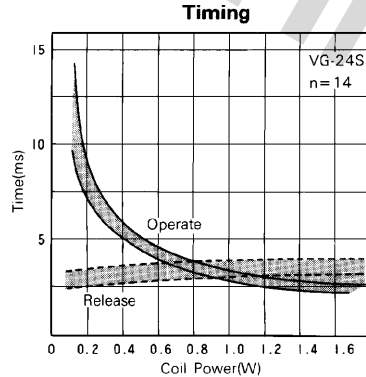
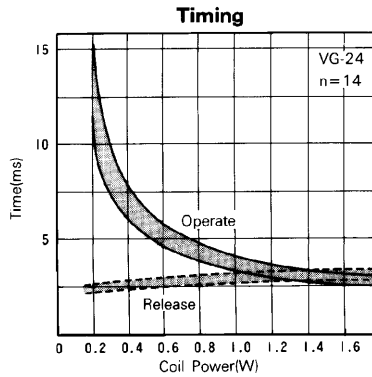
*1 Minimum switching loads mentioned above are reference values. Please perform the confirmation test with the actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

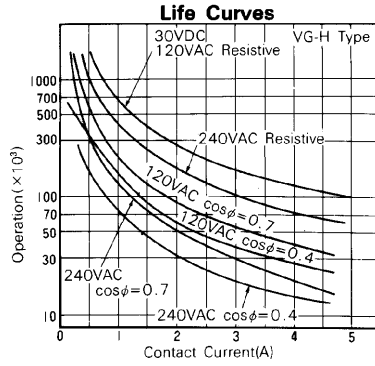
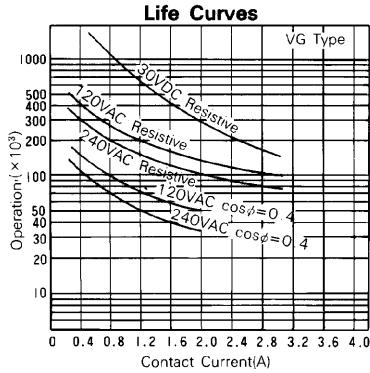
COIL DATA CHART

| | MODEL | | | Nominal voltage | Coil resistance (±10%) | Must operate voltage | Must release voltage | Nominal power |
|---------------------|----------|----------------|-----------------|-----------------|------------------------|----------------------|----------------------|---------------|
| | TV | Standard Type | | | | | | |
| | 5 A Type | 5 A Type | 3 A Type | | | | | |
| Standard Type | VG- 5TM | VG- 5H (M) (E) | VG- 5 (M) (E) | 5 VDC | 69 Ω | 35 VDC | 0.25 VDC | 360 mW |
| | VG- 6TM | VG- 6H (M) (E) | VG- 6 (M) (E) | 6 VDC | 100 Ω | 4.2 VDC | 0.3 VDC | 360 mW |
| | VG- 9TM | VG- 9H (M) (E) | VG- 9 (M) (E) | 9 VDC | 225 Ω | 6.3 VDC | 0.45 VDC | 360 mW |
| | VG-12TM | VG-12H (M) (E) | VG-12 (M) (E) | 12 VDC | 400 Ω | 8.4 VDC | 0.6 VDC | 360 mW |
| | VG-18TM | VG-18H (M) (E) | VG-18 (M) (E) | 18 VDC | 870 Ω | 12.6 VDC | 0.9 VDC | 380 mW |
| | VG-24TM | VG-24H (M) (E) | VG-24 (M) (E) | 24 VDC | 1,450 Ω | 16.8 VDC | 1.2 VDC | 400 mW |
| | VG-48TM | VG-48H (M) (E) | VG-48 (M) (E) | 48 VDC | 6,000 Ω | 33.6 VDC | 2.4 VDC | 390 mW |
| High Sensitive Type | | | VG- 5 (M) S (E) | 5 VDC | 120 Ω | 3.5 VDC | 0.25 VDC | 210 mW |
| | | | VG- 6 (M) S (E) | 6 VDC | 150 Ω | 4.2 VDC | 0.3 VDC | 240 mW |
| | | | VG- 9 (M) S (E) | 9 VDC | 325 Ω | 6.3 VDC | 0.45 VDC | 250 mW |
| | | | VG-12 (M) S (E) | 12 VDC | 575 Ω | 8.4 VDC | 0.6 VDC | 250 mW |
| | | | VG-18 (M) S (E) | 18 VDC | 1,400 Ω | 12.6 VDC | 0.9 VDC | 240 mW |
| | | | VG-24 (M) S (E) | 24 VDC | 2,230 Ω | 16.8 VDC | 1.2 VDC | 260 mW |

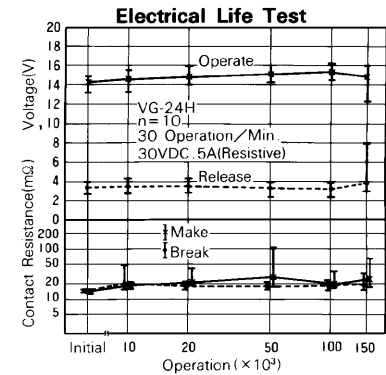
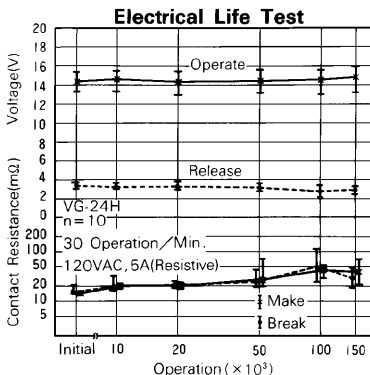
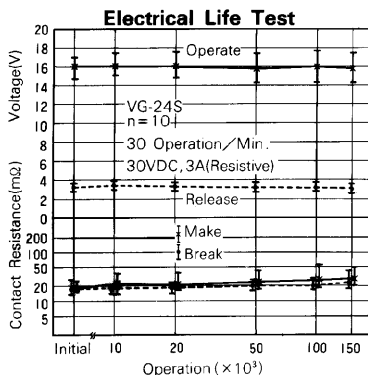
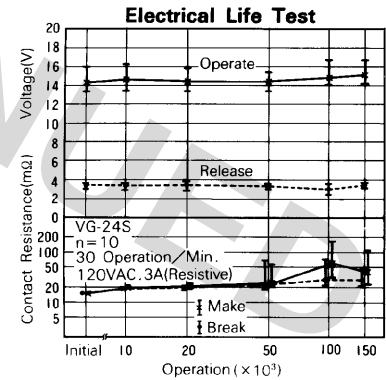
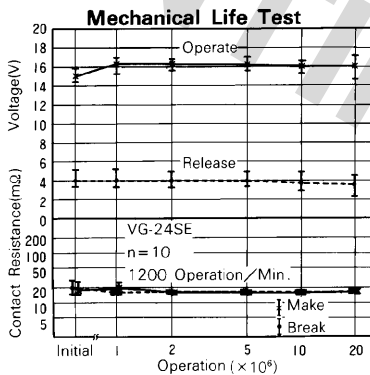
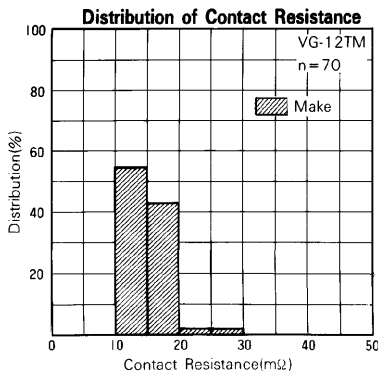
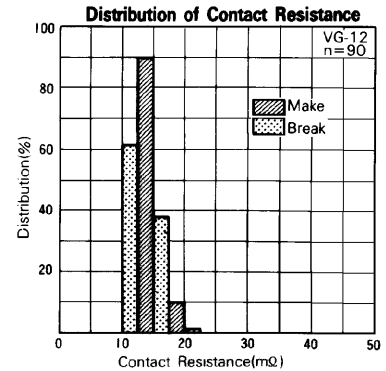
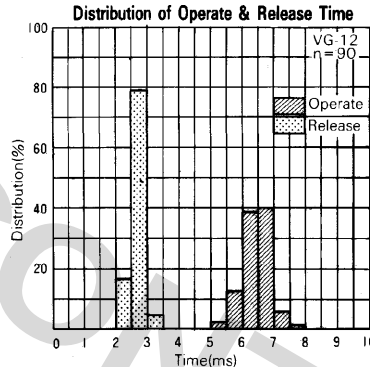
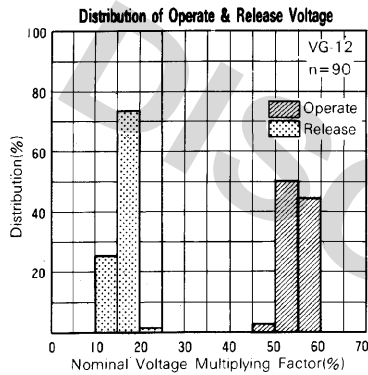
Note: All values in the table are measured at 20°C.

CHARACTERISTIC DATA





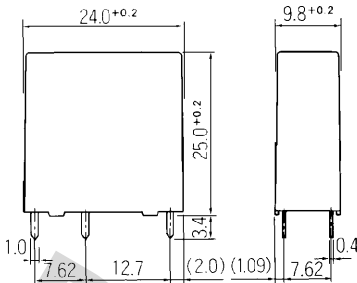
REFERENCE DATA



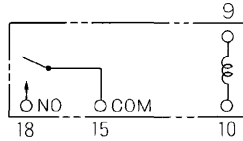
■ DIMENSIONS

● Dimensions

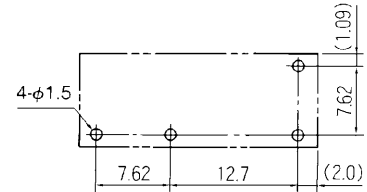
VG-M type



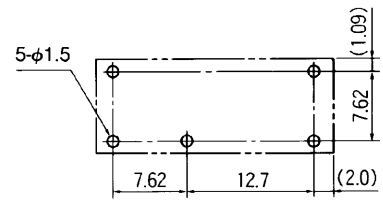
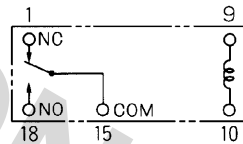
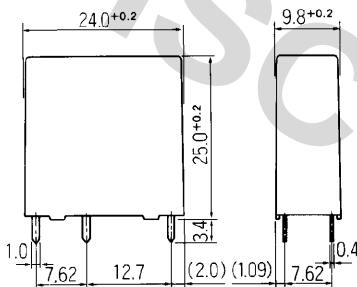
● Schematics (BOTTOM VIEW)



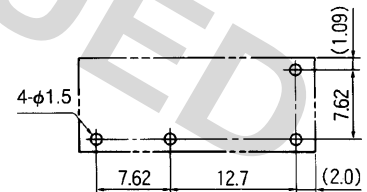
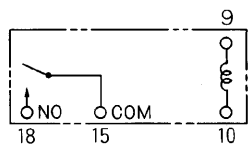
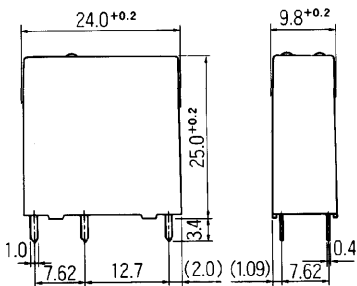
● PC board mounting hole layout (BOTTOM VIEW)



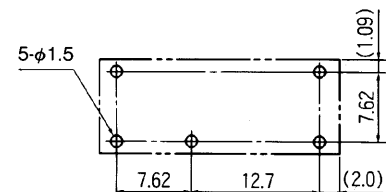
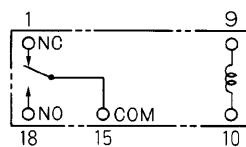
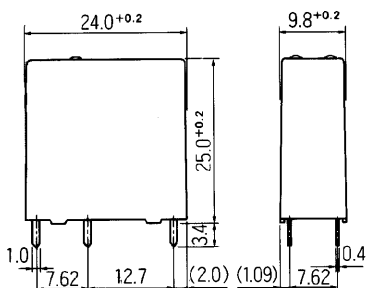
VG type



VG-M-K type (Plastic sealed type)



VG-K type (Plastic sealed type)



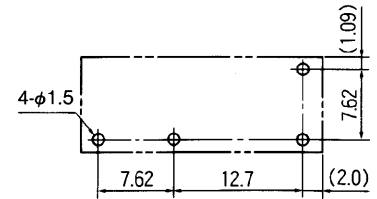
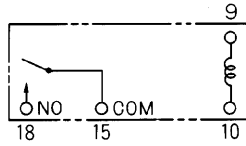
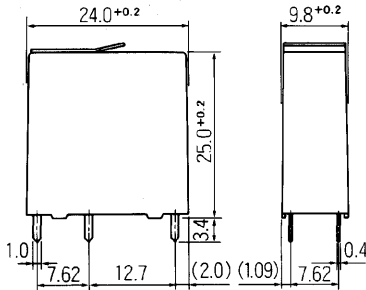
Unit: mm

● **Dimensions**

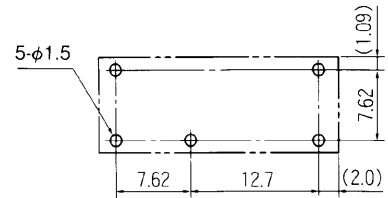
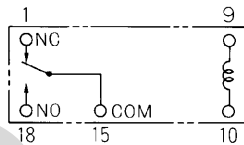
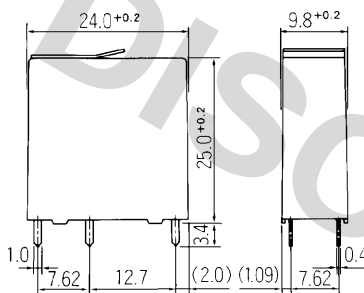
● **Schematics**
(BOTTOM VIEW)

● **PC board mounting hole layout**
(BOTTOM VIEW)

VG-M-C type (Plastic sealed type with tape)



VG-C type (Plastic sealed type with tape)



Unit: mm

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