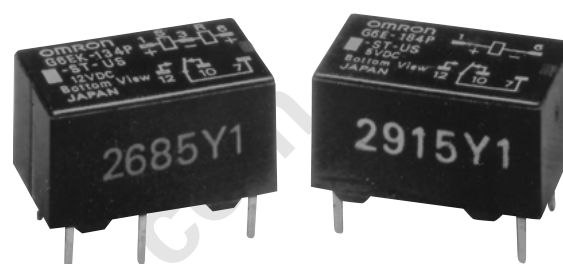




## Low Signal Relay

**G6E**

- Subminiature 7.87 H x 9.91 W x 16 L mm (0.31 H x 0.39 W x 0.63 L in)
- High sensitivity with pick-up coil power of 98 mW
- Surge withstand voltage meets FCC Part 68 rule and Bellcore 2.5 kV
- Packaged for automatic insertion
- Unique moving loop armature reduces relay size, magnetic interference, and contact bounce time
- Bifurcated crossbar contact assures high reliability
- Minimal loss of latching capability due to highly efficient magnetic circuit; also, highly resistant to shock and vibration
- Sealed construction allows automatic solder and cleaning; assures high reliability even in adverse environments
- Terminal arrangement fits international standard 100-mil grid



## Ordering Information

To Order: Select the part number and add the desired coil voltage rating, (e.g., G6E-134P-ST-US-DC6).

### ■ NON-LATCHING

| Type | Contact form | Part number           |                        |
|------|--------------|-----------------------|------------------------|
|      |              | Standard              | Low sensitivity        |
| PCB  | SPDT         | <b>G6E-134P-ST-US</b> | <b>G6E-134PL-ST-US</b> |

### ■ LATCHING

| Type | Contact form | Part number            |                 |                        |                         |
|------|--------------|------------------------|-----------------|------------------------|-------------------------|
|      |              | Single coil latching   |                 | Dual coil latching     |                         |
| PCB  | SPDT         | Standard               | Low sensitivity | Standard               | Low sensitivity         |
|      |              | <b>G6EU-134P-ST-US</b> | —               | <b>G6EK-134P-ST-US</b> | <b>G6EK-134PL-ST-US</b> |

# G6E **OMRON** G6E

## Specifications

### CONTACT DATA

| Load                    | Resistive load (p.f. = 1)        | Inductive load (p.f. = 0.4) (L/R = 7 ms) |
|-------------------------|----------------------------------|------------------------------------------|
| Rated load              | 0.40 A at 125 VAC, 2 A at 30 VDC | 0.20 A at 125 VAC, 1 A at 30 VDC         |
| Contact material        | Ag (Au clad)                     |                                          |
| Carry current           | 3 A                              |                                          |
| Max. operating voltage  | 250 VAC, 220 VDC                 |                                          |
| Max. operating current  | 3 A (AC), 3 A (DC)               | 1.50 A (AC), 1.50 A (DC)                 |
| Max. switching capacity | 50 VA, 60 W                      | 25 VA, 30 W                              |
| Min. permissible load   | 10 $\mu$ A, 10 mVDC              |                                          |

### COIL DATA

#### Standard non-latching (G6E-134P-ST-US)

| Rated voltage (VDC) | Rated current (mA) | Coil resistance ( $\Omega$ ) | Coil inductance (ref. value) (H) |             | Pick-up voltage<br>% of rated voltage | Dropout voltage | Maximum voltage                                           | Power consumption (mW) |
|---------------------|--------------------|------------------------------|----------------------------------|-------------|---------------------------------------|-----------------|-----------------------------------------------------------|------------------------|
|                     |                    |                              | Armature OFF                     | Armature ON |                                       |                 |                                                           |                        |
| 3                   | 66.70              | 45                           | 0.08                             | 0.06        | 70% max.                              | 10% min.        | 190% max. at 23°C (73°F)<br><br>115% max. at 70°C (158°F) | Approx. 200            |
| 5                   | 40                 | 125                          | 0.18                             | 0.17        |                                       |                 |                                                           |                        |
| 6                   | 33.30              | 180                          | 0.31                             | 0.24        |                                       |                 |                                                           |                        |
| 9                   | 22.20              | 405                          | 0.62                             | 0.50        |                                       |                 |                                                           |                        |
| 12                  | 16.70              | 720                          | 1.20                             | 0.99        |                                       |                 |                                                           |                        |
| 24                  | 8.30               | 2,880                        | 4.70                             | 3.90        |                                       |                 |                                                           |                        |
| 48                  | 8.30               | 5,760                        | 5.35                             | 5.12        |                                       |                 |                                                           | Approx. 400            |

#### Low-sensitivity non-latching type (G6E-134PL-ST-US)

| Rated voltage (VDC) | Rated current (mA) | Coil resistance ( $\Omega$ ) | Coil inductance (ref. value) (H) |             | Pick-up voltage<br>% of rated voltage | Dropout voltage | Maximum voltage                                           | Power consumption (mW) |
|---------------------|--------------------|------------------------------|----------------------------------|-------------|---------------------------------------|-----------------|-----------------------------------------------------------|------------------------|
|                     |                    |                              | Armature OFF                     | Armature ON |                                       |                 |                                                           |                        |
| 3                   | 133                | 22.50                        | 0.03                             | 0.03        | 70% max.                              | 10% min.        | 190% max. at 23°C (73°F)<br><br>115% max. at 70°C (158°F) | Approx. 400            |
| 5                   | 79.40              | 63                           | 0.08                             | 0.07        |                                       |                 |                                                           |                        |
| 6                   | 66.60              | 90                           | 0.12                             | 0.10        |                                       |                 |                                                           |                        |
| 9                   | 44.30              | 203                          | 0.21                             | 0.19        |                                       |                 |                                                           |                        |
| 12                  | 33.30              | 260                          | 0.45                             | 0.42        |                                       |                 |                                                           |                        |
| 24                  | 16.70              | 1,440                        | 1.77                             | 1.65        |                                       |                 |                                                           |                        |

#### Standard single coil latching type (G6EU-134P-ST-US)

| Rated voltage (VDC) | Rated current (mA) | Coil resistance ( $\Omega$ ) | Coil inductance (ref. value) (H) |             | Set pick-up voltage<br>% of rated voltage | Reset pick-up voltage | Maximum voltage                                           | Power consumption (mW) |
|---------------------|--------------------|------------------------------|----------------------------------|-------------|-------------------------------------------|-----------------------|-----------------------------------------------------------|------------------------|
|                     |                    |                              | Armature OFF                     | Armature ON |                                           |                       |                                                           |                        |
| 3                   | 66.70              | 4.50                         | 0.05                             | 0.04        | 70% max.                                  | 70% min.              | 190% max. at 23°C (73°F)<br><br>130% max. at 70°C (158°F) | Approx. 200            |
| 5                   | 40                 | 125                          | 0.13                             | 0.12        |                                           |                       |                                                           |                        |
| 6                   | 33.30              | 180                          | 0.19                             | 0.17        |                                           |                       |                                                           |                        |
| 9                   | 22.20              | 405                          | 0.45                             | 0.40        |                                           |                       |                                                           |                        |
| 12                  | 16.70              | 720                          | 0.84                             | 0.79        |                                           |                       |                                                           |                        |
| 24                  | 8.30               | 2,880                        | 3.56                             | 3.10        |                                           |                       |                                                           |                        |

Note: 1. The rated current and coil resistance are measured at a coil temperature of 23°C (73°F) with a tolerance of  $\pm 10\%$ .  
2. The operating characteristics are measured at a coil temperature of 23°C (73°F).

# G6E **OMRON** G6E

## ■ COIL DATA (continued)

### Standard dual coil latching type (G6EK-134P-ST-US)

| Rated voltage (VDC) | Rated current (mA) | Coil resistance (Ω) | Coil inductance (ref. value) (H) |             | Set pick-up voltage<br>% of rated voltage | Reset pick-up voltage | Maximum voltage                                                 | Power consumption (mW) |
|---------------------|--------------------|---------------------|----------------------------------|-------------|-------------------------------------------|-----------------------|-----------------------------------------------------------------|------------------------|
|                     |                    |                     | Armature OFF                     | Armature ON |                                           |                       |                                                                 |                        |
| 3                   | 66.70              | 45                  | 0.03                             | 0.03        | 70% max.                                  | 70% min.              | 190% max.<br>at 23°C (73°F)<br><br>130% max.<br>at 70°C (158°F) | Approx. 200            |
| 5                   | 40                 | 125                 | 0.09                             | 0.08        |                                           |                       |                                                                 |                        |
| 6                   | 33.30              | 180                 | 0.12                             | 0.11        |                                           |                       |                                                                 |                        |
| 7                   | 22.20              | 405                 | 0.25                             | 0.22        |                                           |                       |                                                                 |                        |
| 12                  | 16.70              | 720                 | 0.44                             | 0.41        |                                           |                       |                                                                 |                        |
| 24                  | 8.30               | 2,880               | 1.66                             | 1.62        |                                           |                       |                                                                 |                        |

### Low-sensitivity dual coil latching type (G6EK-134PL-ST-US)

| Rated voltage (VDC) | Rated current (mA) | Coil resistance (Ω) | Coil inductance (ref. value) (H) |             | Set pick-up voltage<br>% of rated voltage | Reset pick-up voltage | Maximum voltage                                                 | Power consumption (mW) |
|---------------------|--------------------|---------------------|----------------------------------|-------------|-------------------------------------------|-----------------------|-----------------------------------------------------------------|------------------------|
|                     |                    |                     | Armature OFF                     | Armature ON |                                           |                       |                                                                 |                        |
| 3                   | 133                | 22.50               | 0.02                             | 0.01        | 70% max.                                  | 70% min.              | 170% max.<br>at 23°C (73°F)<br><br>115% max.<br>at 70°C (158°F) | Approx. 400            |
| 5                   | 79.40              | 63                  | 0.04                             | 0.03        |                                           |                       |                                                                 |                        |
| 6                   | 66.60              | 90                  | 0.06                             | 0.04        |                                           |                       |                                                                 |                        |
| 9                   | 44.30              | 203                 | 0.12                             | 0.09        |                                           |                       |                                                                 |                        |
| 12                  | 33.30              | 360                 | 0.21                             | 0.15        |                                           |                       |                                                                 |                        |
| 24                  | 16.70              | 1,440               | 0.80                             | 0.58        |                                           |                       |                                                                 |                        |

Note: 1. The rated current and coil resistance are measured at a coil temperature of 23°C (73°F) with a tolerance of ±10%.  
2. The operating characteristics are measured at a coil temperature of 23°C (73°F).

## ■ CHARACTERISTICS

|                         |                        |                                                                      |
|-------------------------|------------------------|----------------------------------------------------------------------|
| Contact resistance      |                        | 50 mΩ max.                                                           |
| Operate (set) time      |                        | 5 ms max. (mean value approx. 2.90 ms, 48 VDC type, approx. 2.40 ms) |
| Release (reset) time    |                        | 5 ms max. (mean value approx. 1.30 ms)                               |
| Bounce time             | Operate                | Approx. 3 ms (mean value 0.37 ms)                                    |
|                         | Release                | Approx. 3 ms (mean value 1.12 ms)                                    |
| Operating frequency     | Mechanical             | 36,000 operations/hour                                               |
|                         | Electrical             | 1,800 operations/hour (under rated load)                             |
| Insulation resistance   |                        | 1,000 MΩ min. (at 500 VDC)                                           |
| Dielectric strength     |                        | 1,500 VAC, 50/60 Hz for 1 minute between coil and contacts           |
|                         |                        | 1,000 VAC, 50/60 Hz for 1 minute between contacts of same pole       |
| Surge withstand voltage |                        | 1,500 V 10 x 160 μs (conforms to part 68 of FCC Rules)               |
|                         |                        | 2,500 V 2 x 10 μs (Bellcore Requirement)                             |
| Vibration               | Mechanical durability  | 10 to 55 Hz; 5 mm (0.20 in) double amplitude                         |
|                         | Malfunction durability | 10 to 55 Hz; 3.3 mm (0.13 in) double amplitude                       |
| Shock                   | Mechanical durability  | 1,000 m/s <sup>2</sup> (approx. 100 G)                               |
|                         | Malfunction durability | 300 m/s <sup>2</sup> (approx. 30 G)                                  |
| Ambient temperature     |                        | -40 to 70°C (-40° to 158°F)                                          |
| Humidity                |                        | 45% to 85% RH                                                        |
| Service life            | Mechanical             | 1 million operations min. (at 36,000 operations/hour)                |
|                         | Electrical             | See "Characteristic Data"                                            |
| Weight                  |                        | Approx. 2.7 g (0.10 oz)                                              |

Note: Data shown are of initial value.

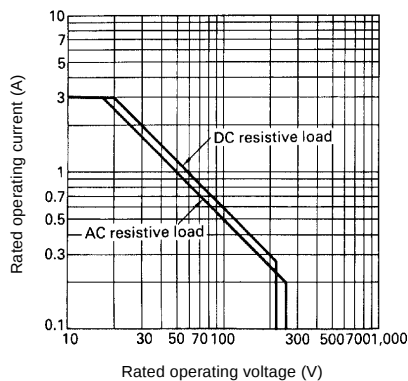
G6E

OMRON

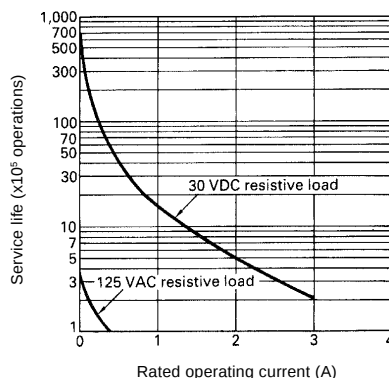
G6E

## CHARACTERISTIC DATA

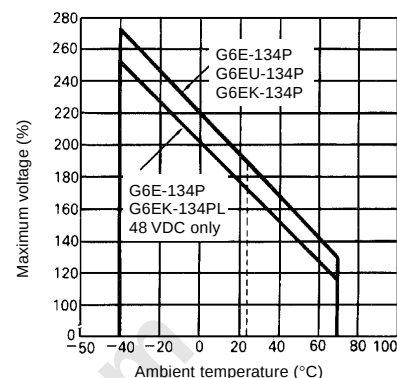
### Maximum switching capacity



### Electrical service life



### Ambient temperature vs. maximum voltage (reference only)

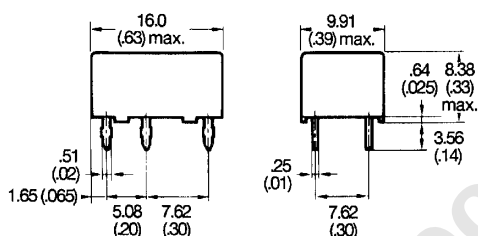


## Dimensions

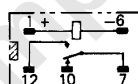
Unit: mm (inch)

### NON-LATCHING

#### G6E-134P-ST-US, G6E-134PL-ST-US

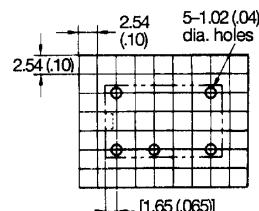


### Terminal arrangement/ Internal connections (Bottom view)



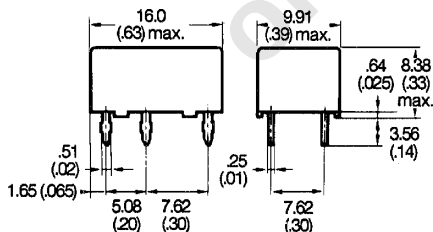
### Mounting holes

[Bottom view, tolerance: ±.10 (0.004)]

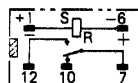


### LATCHING

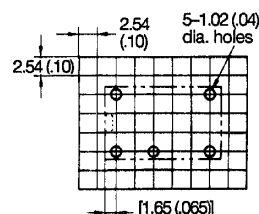
#### G6EU-134P-ST-US



### Terminal arrangement/ Internal connections (Bottom view)



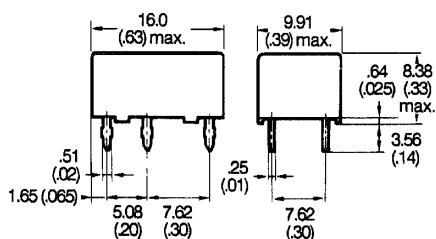
### Mounting holes (Bottom view)



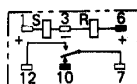
- Note:
1. and indicate mounting orientation marks.
  2. Pay attention to the polarity of the coil.

# G6E OMRON G6E

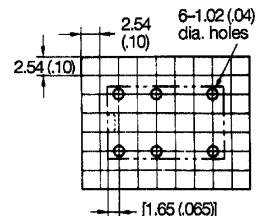
## G6EK-134P-ST-US, G6EK-134PL-ST-US



Terminal arrangement/  
Internal connections  
(Bottom view)



Mounting holes  
(Bottom view)



- Note: 1. and indicate mounting orientation marks.  
2. Pay attention to the polarity of the coil.

## ■ APPROVALS

UL (File No. E41515)/CSA (File No. LR31928)

| Type             | Contact form | Coil ratings  | Contact ratings                  |
|------------------|--------------|---------------|----------------------------------|
| G6E-134P-ST-US   | SPDT         | 1.5 to 48 VDC | 0.2 A, 250 VAC (General purpose) |
| G6E-134PL-ST-US  |              |               | 0.6 A, 125 VAC (General purpose) |
| G6EU-134P-ST-US  |              |               | 2 A, 30 VDC (Resistive)          |
| G6EK-134P-ST-US  |              |               | 0.6 A, 125 VDC (Resistive)       |
| G6EK-134PL-ST-US |              |               |                                  |

- Note: 1. The rated values approved by each of the safety standards (e.g., UL, CSA, TUV) may be different from the performance characteristics individually defined in this catalog.  
2. In the interest of product improvement, specifications are subject to change.

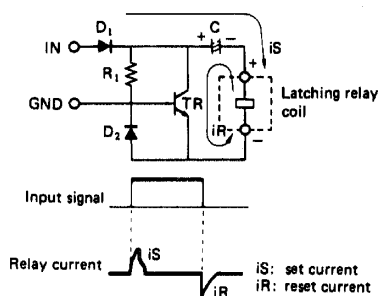
## Hints on Correct Use

Avoid ultrasonic cleaning at 28 kHz, 13 mW/cm<sup>3</sup> for a period of more than 30 seconds.

### Single-winding type (G6EU)

#### Example of low-power consumption driver circuit

- This is an example of a driver circuit that allows Model G6E to function as a normal relay with a normal switching pulse input.
- The relay is set by an abrupt current charged to capacity C. This current flows in the relay via diode D<sub>1</sub> and C and out via diode D<sub>2</sub>.
- The relay is reset by the discharge current of C flowing in the relay via transistor TR and C.



Notes:

- Give adequate consideration to the circuit constant when actually using this circuit, confirming the set and reset status of the relay.
- OMRON owns the patent on this circuit. Consult OMRON when using this circuit.

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