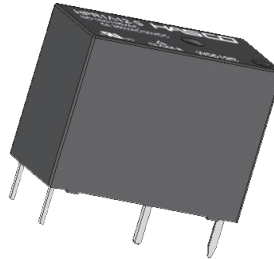




File No.:E75887



File No.:R 50325379



## FEATURES

- 10A switching capability
- 1 Form A and 1 Form C configurations
- Subminiature, standard PCB layout
- Sealed Type, Dust Cover Type and Flux Tight Type is available.

## CONTACT RATINGS

|                           |                                                                                                                                                                                         |                                     |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Contact Arrangement       | 1A                                                                                                                                                                                      | 1C                                  |
| Contact Resistance        | $\leq 100\text{m}\Omega$ (1A 24VDC)                                                                                                                                                     |                                     |
| Contact Material          | AgSnO                                                                                                                                                                                   |                                     |
| Contact Rating(Resistive) | 1A                                                                                                                                                                                      | 1C                                  |
|                           | N.O.                                                                                                                                                                                    | N.C.                                |
|                           | 5A/250VAC<br>5A/30VDC<br>10A/125VAC                                                                                                                                                     | 5A/250VAC<br>5A/30VDC<br>10A/125VAC |
| Max. Switching Voltage    | 250VAC/150VDC                                                                                                                                                                           |                                     |
| Max. Switching Current    | 10A                                                                                                                                                                                     | 5A                                  |
| Max. Switching Power      | 1250VA/150W                                                                                                                                                                             |                                     |
| Mechanical Life           | $45 \times 10^4$ OPS                                                                                                                                                                    |                                     |
| Electrical Life           | 1A type: $1 \times 10^5$ OPS (5A 250VAC, Resistive load, Room temp., 1s on 1s off)<br>1C type: $5 \times 10^4$ OPS (N.O./N.C.: 5A 250VAC, Resistive load, Room temp., 1.5s on 1.5s off) |                                     |

## ORDERING INFORMATION

|                                       |                    |   |    |    |   |   |   |   |      |
|---------------------------------------|--------------------|---|----|----|---|---|---|---|------|
| Model                                 | HPR                | F | 1A | 12 | - | 1 | S | - | XXXX |
| F: Class F                            | Blank: Class B     |   |    |    |   |   |   |   |      |
| 1A: 1 Form A                          | 1C: 1 Form C       |   |    |    |   |   |   |   |      |
| Coil Voltage                          |                    |   |    |    |   |   |   |   |      |
| 1: Dust Cover Type                    | 2: Flux Tight Type |   |    |    |   |   |   |   |      |
| Blank: Sealed Type                    |                    |   |    |    |   |   |   |   |      |
| S: Sensitive type (Only for 1 Form A) |                    |   |    |    |   |   |   |   |      |
| Blank: Standard type                  |                    |   |    |    |   |   |   |   |      |
| Customer Code                         |                    |   |    |    |   |   |   |   |      |

## CHARACTERISTICS

|                               |                         |                                               |
|-------------------------------|-------------------------|-----------------------------------------------|
| Insulation Resistance         |                         | 1000MΩ (500VDC)                               |
| Dielectric Strength           | Between coil & contacts | 4000VAC 1min                                  |
|                               | Between open contacts   | 750VAC 1min                                   |
| Operate time (at nomi. volt.) |                         | ≤20ms                                         |
| Release time (at nomi. volt.) |                         | ≤10ms                                         |
| Humidity                      |                         | 85%                                           |
| Operation temperature         |                         | -40°C~+85°C                                   |
| UL Class F                    |                         | Insulation System Class F                     |
| Shock Resistance              | Functional              | 98m/s²                                        |
|                               | Destructive             | 980m/s²                                       |
| Vibration resistance          |                         | 10Hz ~ 55Hz 1.5mm DA                          |
| Unit weight                   |                         | Approx. 7g                                    |
| Construction                  |                         | Sealed Type, Dust Cover Type, Flux Tight Type |

Notes: 1) The data shown above are initial values.

2) Please find coil temperature curve in the characteristic curves.

This datasheet is for customers' reference. All the specifications are subject to change without notice.



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# RELAYS

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### COIL DATA

at 25°C

#### Standard Type

| Nominal Voltage VDC | Operate Voltage (Max.) VDC | Release Voltage (Min.) VDC | *Max. Allowable Voltage VDC | Coil Resistance $\Omega \pm 10\%$ |
|---------------------|----------------------------|----------------------------|-----------------------------|-----------------------------------|
| 5                   | 3.75                       | 0.25                       | 6.5                         | 63                                |
| 6                   | 4.50                       | 0.30                       | 7.8                         | 90                                |
| 9                   | 6.75                       | 0.45                       | 11.7                        | 202                               |
| 12                  | 9.00                       | 0.60                       | 15.6                        | 360                               |
| 24                  | 18.0                       | 1.20                       | 31.2                        | 1440                              |

#### Sensitive Type(Only for 1 Form A)

| Nominal Voltage VDC | Operate Voltage (Max.) VDC | Release Voltage (Min.) VDC | *Max. Allowable Voltage VDC | Coil Resistance $\Omega \pm 10\%$ |
|---------------------|----------------------------|----------------------------|-----------------------------|-----------------------------------|
| 5                   | 3.75                       | 0.25                       | 7.5                         | 125                               |
| 6                   | 4.50                       | 0.30                       | 9.0                         | 180                               |
| 9                   | 6.75                       | 0.45                       | 13.5                        | 405                               |
| 12                  | 9.00                       | 0.60                       | 18.0                        | 720                               |
| 24                  | 18.0                       | 1.20                       | 36.0                        | 2800                              |

Note: "Max Allowable Voltage": The relay coil can endure max allowable voltage for a short period time only.

### COIL

|            |                       |
|------------|-----------------------|
| Coil Power | Standard Type: 400mW  |
|            | Sensitive Type: 200mW |

### SAFETY APPROVAL RATINGS

|        |      |                                                                                                                                                                                                                                                                                              |
|--------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UL&CUL | HPRF | N.O.:5A 250VAC, 100°C, 5×10 <sup>4</sup> OPS<br>N.O.:5A 30VDC, 100°C, 2×10 <sup>4</sup> OPS<br>N.O.:10A 125AC, 100°C, 5×10 <sup>4</sup> OPS<br>N.O.:1/6HP 125VAC, 40°C, 5×10 <sup>4</sup> OPS<br>N.C.:5A 250VAC, 100°C, 5×10 <sup>4</sup> OPS<br>N.C.:5A 30VDC, 100°C, 2×10 <sup>4</sup> OPS |
|        | HPR  | N.O.:5A 250VAC, 1×10 <sup>5</sup> OPS<br>N.O.:5A 30VDC, 1×10 <sup>5</sup> OPS<br>N.O.:10A 125AC, 1×10 <sup>5</sup> OPS<br>N.C.:5A 250VAC, 1×10 <sup>5</sup> OPS<br>N.C.:5A 30VDC, 1×10 <sup>5</sup> OPS                                                                                      |

|     |                                                                                                                                                                                                                    |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TüV | N.O.:10A 125VAC, 2×10 <sup>4</sup> OPS<br>N.C.:5A 250VAC, 5×10 <sup>4</sup> OPS<br>N.C.:5A 30VDC, 5×10 <sup>4</sup> OPS<br>N.O./N.C.:5A 250VAC, 5×10 <sup>4</sup> OPS<br>N.O./N.C.:5A 30VDC, 5×10 <sup>4</sup> OPS |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### NOTES:

1. All values without specified temperature are at 25°C.
2. The above lists the typical loads only. Other loads may be available upon request.

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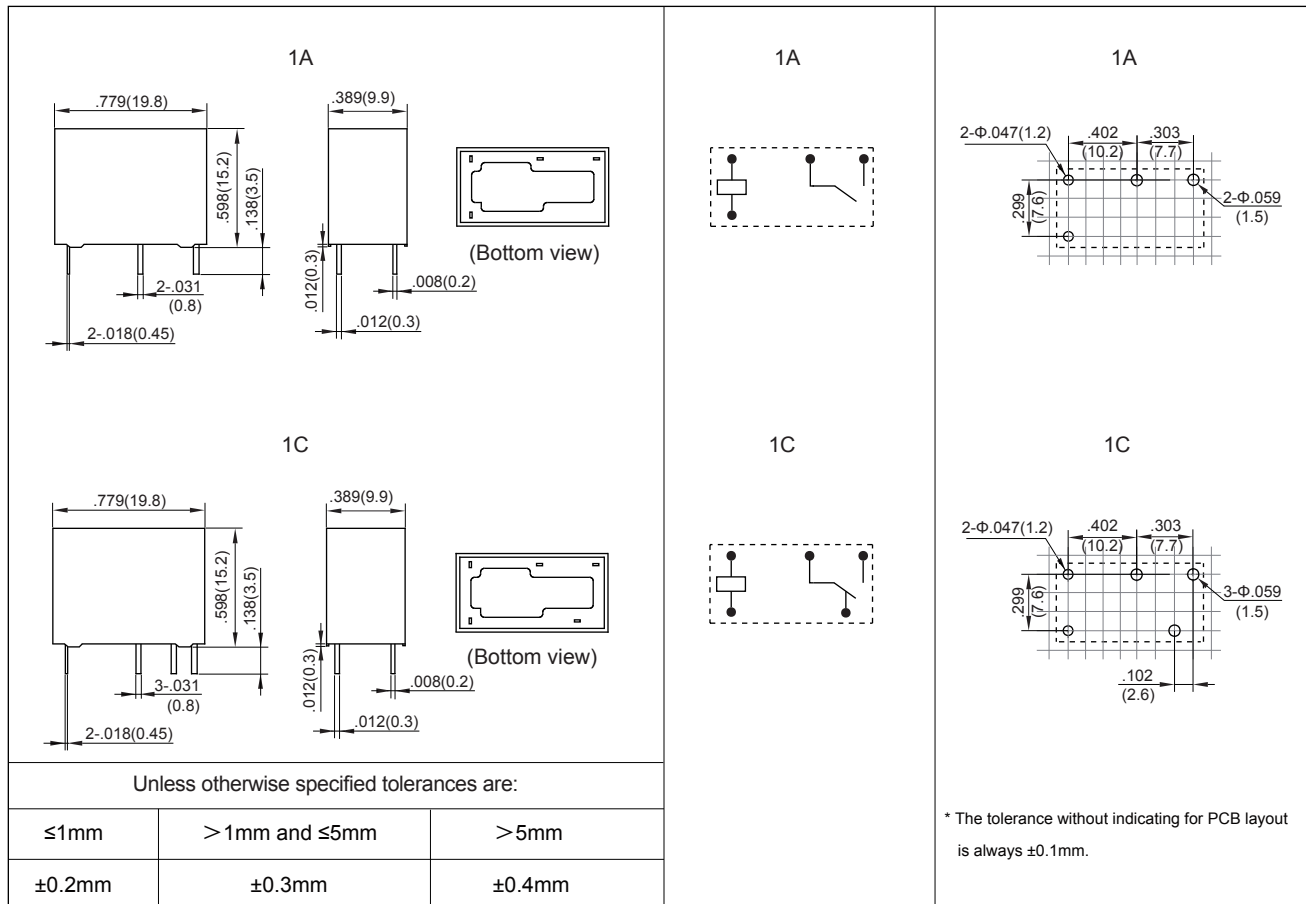
## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT.

Unit: inch(mm)

### Outline Dimensions

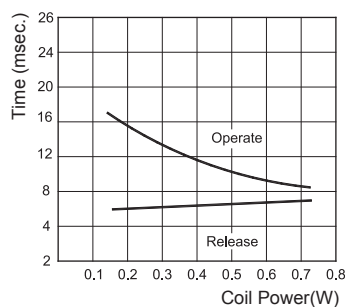
### Wiring Diagram (Bottom view)

### PCB Layout (Bottom view)

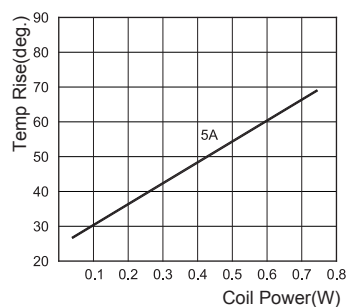


## CHARACTERISTIC CURVES

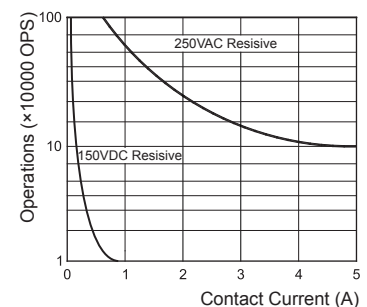
### Timing



### Coil Temperature Rise



### Life Curves



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### PACKAGING SPECIFICATION

| BLISTER BOX | INNER CARTON | OUTER CARTON | OUTER CARTON SIZE    |
|-------------|--------------|--------------|----------------------|
| 100PCS      | 600PCS       | 2400PCS      | L375mm*W280mm*H400mm |

### APPLICATION GUIDELINES

#### Automatic Wave Soldering

- \* Wave solder is the optimum method for soldering.
- \* Adjust the level of solder so that it does not overflow onto the top of the PC board.
- \* Unless otherwise specified, solder under the following conditions depending on the type of relay.

| Preheat time<br>20°C-100°C | Rising slope<br>20°C-120°C | Decreasing slope<br>Peak-150°C | Soldering temperature<br>255°C-265°C |
|----------------------------|----------------------------|--------------------------------|--------------------------------------|
| 90±5 seconds               | <3°C/s                     | <4°C/s                         | 3~5s                                 |

#### Hand Soldering

- \* Keep the tip of the soldering iron clean.

|                      |                          |
|----------------------|--------------------------|
| Solder Iron          | 30W or 60W               |
| Iron Tip Temperature | Approx. 350°C 662°F      |
| Solder Time          | Within approx. 3 seconds |

- \* Immediate air cooling is recommended to prevent deterioration of the relay and surrounding parts due to soldering heat.
- \* Although the sealed type relay can be cleaned, avoid immersing the relay into cold liquid (such as washing solvent) immediately after soldering. Doing so may deteriorate the sealing performance.

#### Discard the dropped product

This datasheet is for customers' reference. All the specifications are subject to change without notice.