



# 190 series

## 2 Amp, DPDT, High Sensitivity, DIP PC Board Relay

File E55708

File LR73303

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

### Features

- Standard DIP configuration mates with 16-pin socket.
- Meets FCC Part 68 (10/160μs).
- For applications in telecommunications, office automation, security devices, measurement and control equipment.
- Immersion cleanable, plastic sealed case.
- Standard, high and ultra-sensitive coils.
- Ultrasonic cleaning not recommended.

### Contact Data @ 23°C

**Arrangement:** Bifurcated 2 Form C (DPDT) contacts.  
**Material:** Stationary: Silver, gold clad.  
**Ratings:** Max. Switched Current: 2A.  
           Max. Carry Current: 2A.  
           Max. Switched Voltage (at nom. voltage): 125VDC, 125VAC.  
           Max. Switched Power: 60W DC or 62.5VA AC.  
           Min. Switching Load: 10μA, 10mVDC.  
           Rated Load: 500mA at 125VAC.  
**Initial Contact Resistance:** 50 milliohms.  
**Expected Mechanical Life:** 15,000,000 ops at 36,000 ops/hr.

### Initial Dielectric Strength

**Between Open Contacts:** 750VAC 50/60 Hz. for 1 minute.  
**Between Coil and Contacts:** 1,000VAC 50/60 Hz. for 1 minute.  
**Between Poles:** 1,000VAC 50/60 Hz. for 1 minute.  
**Surge Voltage Resistance per FCC 68 (10 / 160 μs):**  
           Between Open Contacts: 1,500V.  
           Between Coil and Contacts: 1,500V.  
           Between Poles: 1,500V.

### Initial Insulation Resistance

**Between Contact and Coil:** 10<sup>9</sup> ohms or more @ 500VDC.

### Coil Data @ 23°C

**Voltage:** 3 to 48VDC.  
**Nominal Power:** 150mW to 580mW. See Coil Data table for details.  
**Duty Cycle:** Continuous.

### Coil Data @ 23°C

| Nominal Voltage (VDC)                                                | Current ±10% (mA) | Maximum Voltage (VDC) | Resistance ±10% (Ohms) | Approx. Power (mW) |
|----------------------------------------------------------------------|-------------------|-----------------------|------------------------|--------------------|
| Standard sensitivity (Max. Voltage stated @ 65°C, except 48V @ 60°C) |                   |                       |                        |                    |
| 3                                                                    | 166.7             | 3.6                   | 18                     | 500                |
| 5                                                                    | 100.0             | 6.0                   | 50                     | 500                |
| 6                                                                    | 83.3              | 7.2                   | 72                     | 500                |
| 9                                                                    | 55.6              | 10.8                  | 162                    | 500                |
| 12                                                                   | 41.7              | 14.4                  | 288                    | 500                |
| 24                                                                   | 20.8              | 28.8                  | 1,152                  | 500                |
| 48                                                                   | 12.0              | 52.8                  | 4,000                  | 580                |
| High sensitivity (Max. Voltage stated @ 70°C)                        |                   |                       |                        |                    |
| 3                                                                    | 120.7             | 3.6                   | 25                     | 360                |
| 5                                                                    | 72.0              | 6.0                   | 70                     | 360                |
| 6                                                                    | 60.0              | 7.2                   | 100                    | 360                |
| 9                                                                    | 40.0              | 10.8                  | 225                    | 360                |
| 12                                                                   | 30.0              | 14.4                  | 400                    | 360                |
| 24                                                                   | 15.0              | 28.8                  | 1,600                  | 360                |
| 48                                                                   | 7.5               | 52.8                  | 6,400                  | 360                |
| Ultra high sensitivity (Max. Voltage stated @ 70°C)                  |                   |                       |                        |                    |
| 3                                                                    | 50.0              | 4.5                   | 60                     | 150                |
| 5                                                                    | 30.0              | 7.5                   | 167                    | 150                |
| 6                                                                    | 25.0              | 9.0                   | 240                    | 150                |
| 9                                                                    | 16.7              | 13.5                  | 540                    | 150                |
| 12                                                                   | 12.5              | 18.0                  | 960                    | 150                |
| 24                                                                   | 8.3               | 36.0                  | 2,880                  | 200                |
| 48                                                                   | 6.25              | 72.0                  | 7,680                  | 300Ap              |

### Operate Data @ 23°C

**Operate Voltage:** 75% of nominal voltage.  
**Release Voltage:** 5% of nominal voltage.  
**Operate Time:** 7 ms, max. (3.5 ms, mean).  
**Release Time:** 3 ms, max. (0.8 ms, mean).  
**Bounce Time:** Operate: 0.5 ms, approx.  
                   Release: 3.5 ms, approx.  
**Operating Frequency:** Mechanical: 36,000 ops/hr.  
                                   Electrical: 1,800 ops/hr at rated load.

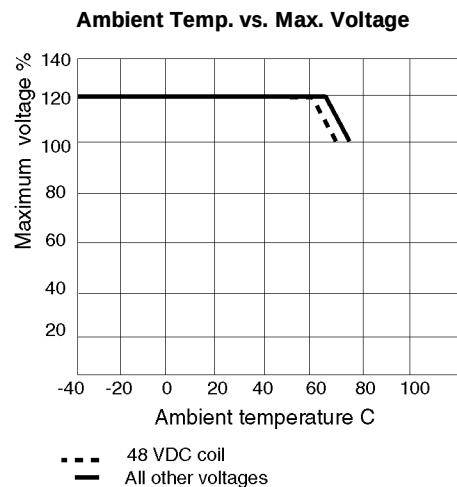
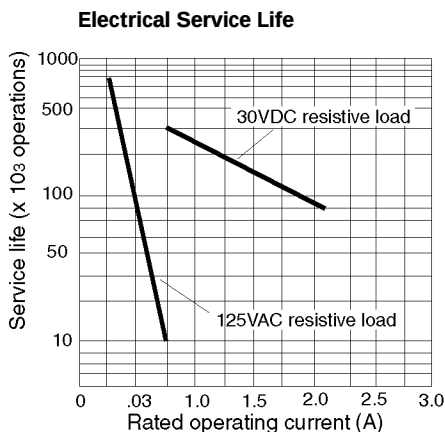
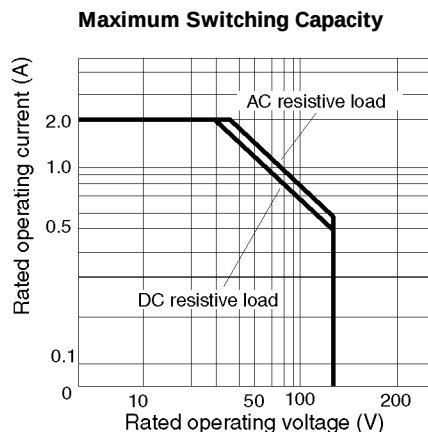
### Environmental Data

**Temperature Range:** -40°C to +70°C.  
**Relative Humidity Range:** 35% to 85%.  
**Shock: Functional:** 200m/s<sup>2</sup> (approx. 10g).  
                   Destructive: 1,000m/s<sup>2</sup> (approx. 100g).  
**Vibration:** 10-55 Hz., .059 in (1.5 mm) double amplitude.

### Mechanical Data

**Termination:** DIP compatible, printed circuit terminals.  
**Enclosure Type:** Immersion cleanable plastic case.  
**Weight:** 0.21 oz. (6g) approximately.

## Operational Performance Curves



## Ordering Information

Typical Part Number ➤

**190**

**- 2**

**2**

**B**

**2**

**UO**

### 1. Basic Series:

190 = Miniature PC board relay.

### 2. Enclosure and Terminals:

2= DIP, 16-pin package, sealed.

### 3. Contact Arrangement:

2= DPDT (2 form C).

### 4. Coil Voltage:

J = 3VDC

A = 6VDC

B = 12VDC

D = 48VDC

E = 5VDC

G = 9VDC

C = 24VDC

### 5. Contact Material and Type:

2= Silver, gold clad. Bifurcated crossbar.

### 6. Coil Sensitivity

UO = Standard sensitivity (Approx. 500-580mW).

SO = High sensitivity. (Approx. 360mW)

US = Ultra high sensitivity. (Approx. 150-200mW)

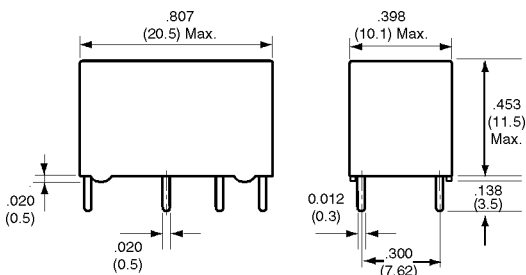
**Our authorized distributors are more likely to stock the following items for immediate delivery.**

190-22B2UO

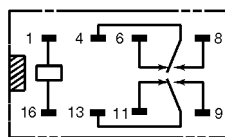
190-22C2UO

190-22E2UO

## Outline Dimensions



## Wiring Diagram (Bottom View)



## PC Board Layout (Bottom View)

