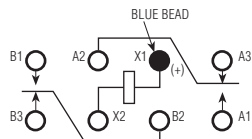


## Double Pole, Electrically Held, 5 Amps and Less (Continued)

**FW, FW5A, SF, SF5A**

**Two Pole Full Size  
Crystal-Can Relay**

**FW Qualified to  
MIL-R-5757/10**



Terminal View

### Product Facts

- Hermetically sealed
- Up to 5 amps switching
- High shock & vibration ratings
- Optional terminals & mounting options
- Excellent RF switching

### Electrical Characteristics

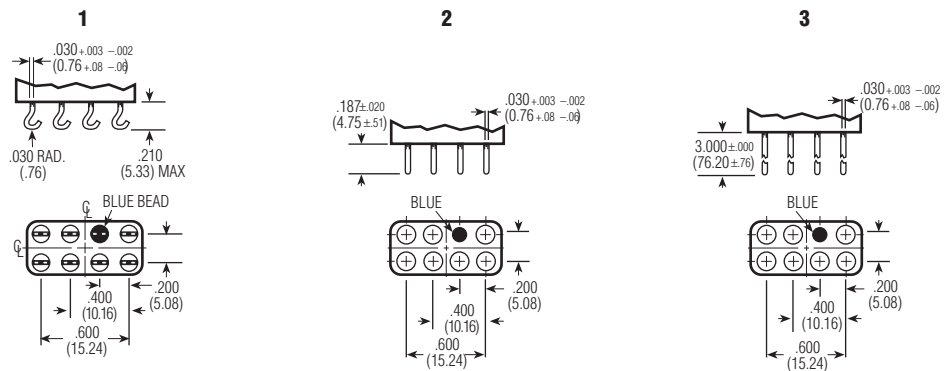
**Contact Arrangement** — 2 Form C  
**Contact Material** — Stationary — Bifurcated hardened silver alloy  
 Moveable — Gold plated hardened alloy  
**Contact Resistance** — Before Life — 50 milliohms max. (measured @ 10 mA @ 6 Vdc)  
 After Life — 100 milliohms max. (measured @ 2 mA @ 28 Vdc)  
**Mechanical Life Expectancy** — 50 million operations  
**Coil Voltage** — 6.3 to 110 Vdc (FW, FW5A)  
 1.8 to 40 Vdc (SF)  
 2.8 to 40 Vdc (SF5A)  
**Coil Power** — 1.5 watts max. @ 25°C  
**Duty Cycle** — Continuous  
**Pick-up Voltage** — Approximately 50% of nominal coil voltage  
**Pick-up Sensitivity** — 250 mW (FW, FW5A)  
 40 mW (SF)  
 80 mW (SF5A)

### Operating Characteristics

**Operate Time** — 15 ms max. (SF)  
 5 ms (FW, FW5A)  
 6 ms max. (MIL-R-5757/10)  
**Release Time** — 10 ms max. (SF)  
 5 ms max. (FW, FW5A)  
 6 ms max. (MIL-R-5757/10)  
**Contact Bounce** — 2 ms max.  
**Dielectric Withstanding Voltage** — Between Open Contacts — 500 Vrms 60 Hz  
 Between Adjacent Contacts — 1,000 Vrms 60 Hz  
 Between Contacts and Coil — 1,000 Vrms 60 Hz  
**Insulation Resistance** — 10,000 megohms min @ 500 Vdc

### Environmental Characteristics

**Temperature Range** — -65°C to +125°C  
**Weight** — 0.6 oz. max. (FW, FW5A)  
 0.7 oz. max. (SF 6)  
 1.1 oz. max. (SF/SF 5A)  
**Vibration Resistance** — Standard — 20 G's, 10 to 2000 Hz (FW, FW5A)  
 15 G's, 10 to 2000 Hz (SF)  
 QPL — 20 G's, 10 to 2000 Hz  
**Shock Resistance** — 100 G's, 6 ±1 ms  
**QPL Approval** — MIL-R-5757/10 (FW only)  
**QPL Equivalent** — MIL-R-5757/13 (SF only)



Terminals

### RF Performance

| Frequency (MHz) | RF Losses (dB) | VSWR   | Isolation (dB) |
|-----------------|----------------|--------|----------------|
| 100             | 0.1            | 1.17:1 | 40             |
| 250             | 0.2            | 1.18:1 | 33             |
| 500             | 0.3            | 1.19:1 | 28             |
| 750             | 0.4            | 1.19:1 | 25             |
| 1,000           | 0.4            | 1.19:1 | 23             |

### Contact Ratings

| Contact Load                         | Type               | Operations Min. |
|--------------------------------------|--------------------|-----------------|
| 5 A @ 28 Vdc (FW5A/SF5A)             | Resistive          | 100,000         |
| 3 A @ 28 Vdc (FW)                    | Resistive          | 100,000         |
| 2 A @ 28 Vdc (SF)                    | Resistive          | 100,000         |
| 1 A @ 115 Vac, 60 Hz & 400 Hz (FW)   | Resistive          | 100,000         |
| 0.3 A @ 115 Vac, 60 Hz & 400 Hz (SF) | Resistive          | 100,000         |
| 1 A @ 28 Vdc                         | Inductive (200 mH) | 100,000         |
| 0.1 A @ 28 Vdc                       | Lamp               | 100,000         |
| 10 µA @ 50 mVdc                      | Low Level          | 1,000,000       |
| 75 WATTS @ 50 MHz (FW)               | RF                 | 10,000,000      |

**Double Pole, Electrically Held, 5 Amps and Less** (Continued)

**FW, FW5A Coil Data**

| Nom. Coil Voltage (Vdc) | Coil Resistance in Ohms ±10% @ 25°C | Pickup Voltage Vdc (Max.) @ 25°C | Pickup Voltage Vdc (Max.) @ 125°C | Drop-out Voltage Vdc (Min.) @ 25°C | Drop-out Voltage Vdc (Min.) @ -65°C | Nom. Coil Power (W) @ 25°C | Max. Coil Voltage | Coil Desig. |
|-------------------------|-------------------------------------|----------------------------------|-----------------------------------|------------------------------------|-------------------------------------|----------------------------|-------------------|-------------|
| 6.3                     | 35                                  | 3.2                              | 4.4                               | 0.35                               | 0.23                                | 1.13                       | 7.9               | A           |
| 12.6                    | 200                                 | 6.8                              | 9.4                               | 0.74                               | 0.49                                | .79                        | 15.8              | D           |
| 17.6                    | 340                                 | 8.9                              | 12.3                              | 0.97                               | 0.64                                | .91                        | 22.0              | E           |
| 26.5                    | 675                                 | 13.5                             | 18.7                              | 1.47                               | 0.96                                | 1.04                       | 33.1              | G           |
| 32.0                    | 975                                 | 15.5                             | 21.5                              | 1.69                               | 1.1                                 | 1.05                       | 40.0              | H           |
| 48.0                    | 2,450                               | 25.0                             | 34.7                              | 2.73                               | 1.8                                 | .94                        | 60.0              | L           |
| 56.0                    | 3,150                               | 30.0                             | 41.6                              | 3.27                               | 2.1                                 | 1.00                       | 70.0              | M           |
| 75.0                    | 5,000                               | 38.0                             | 52.7                              | 4.14                               | 2.7                                 | 1.13                       | 93.8              | N           |
| 110.0                   | 9,100                               | 51.0                             | 70.7                              | 5.56                               | 3.6                                 | 1.33                       | 137.5             | R           |

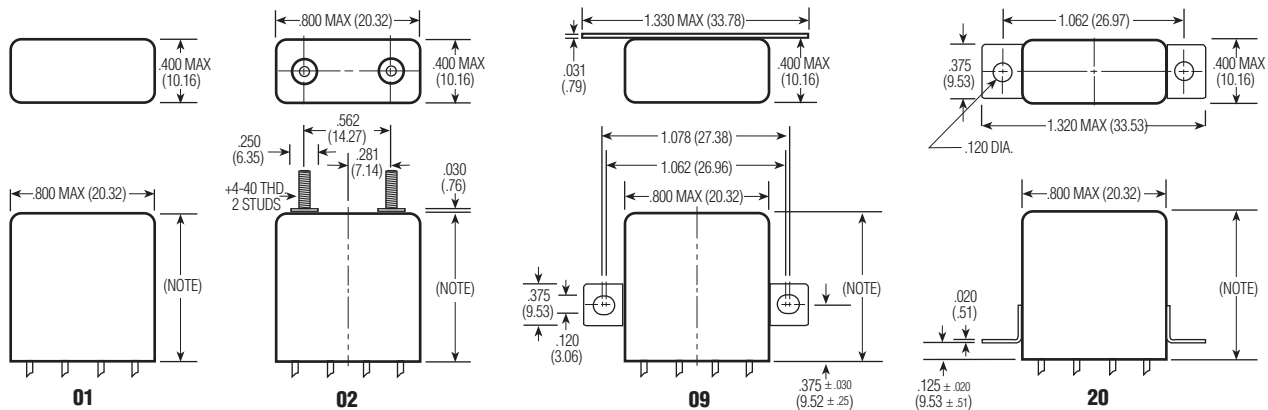
**SF5/SF6 Coil Data**

| Nom. Coil Voltage (Vdc) | Nom. Current (mA) | Coil Resistance in Ohms ± 10% @ 25°C | Pickup Current (mA) @ 25°C | Nom. Coil Power (mW) @ 25°C | Coil Desig. |
|-------------------------|-------------------|--------------------------------------|----------------------------|-----------------------------|-------------|
| 1.8                     | 90.0              | 20                                   | 45.0                       | 162                         | A           |
| 9.0                     | 18.0              | 500                                  | 9.0                        | 162                         | E           |
| 12.6                    | 12.6              | 1,000                                | 6.5                        | 159                         | F           |
| 16.5                    | 11.0              | 1,500                                | 5.2                        | 182                         | G           |
| 18.0                    | 9.0               | 2,000                                | 4.5                        | 162                         | H           |
| 20.0                    | 8.0               | 2,500                                | 4.0                        | 160                         | J           |
| 26.5                    | 5.3               | 5,000                                | 2.8                        | 140                         | W           |
| 36.0                    | 4.5               | 8,000                                | 2.3                        | 162                         | L           |
| 40.0                    | 4.0               | 10,000                               | 2.0                        | 160                         | Y           |

**SF5A Coil Data**

| Nom. Coil Voltage (Vdc) | Nom. Current (mA) | Coil Resistance in Ohms ± 10% @ 25°C | Pickup Current (mA) @ 25°C | Nom. Coil Power (mW) @ 25°C | Coil Desig. |
|-------------------------|-------------------|--------------------------------------|----------------------------|-----------------------------|-------------|
| 2.8                     | 140.0             | 20                                   | 65.0                       | 392                         | A           |
| 4.0                     | 80.0              | 50                                   | 41.6                       | 320                         | B           |
| 12.0                    | 24.0              | 500                                  | 12.5                       | 288                         | E           |
| 18.0                    | 18.0              | 1,000                                | 9.3                        | 324                         | F           |
| 26.5                    | 10.6              | 2,500                                | 5.6                        | 281                         | J           |
| 40.0                    | 8.0               | 5,000                                | 4.0                        | 320                         | W           |

**NOTE:**  
 FW/FW5A = .875 (22.23) Max.  
 SF6 = .900 (22.86) Max.  
 SF5/SF5A5 = 1.281 (32.54) Max.



**Mounting Styles**

Specifying a Part Number Example:

| Type | Series | Terminals | Mountings | Coils | Features |
|------|--------|-----------|-----------|-------|----------|
| FW   | 1      | 1         | 20        | G     | 00       |
| SF   | 5      | 1         | 20        | W     | 00       |
| SF5A | 5      | 1         | 20        | W     | 00       |
| SF   | 6      | 1         | 20        | W     | 00       |

\* The part number example shown on this page is for catalog items. For a list of specific QPL part numbers, please see the index in Section 15.

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