

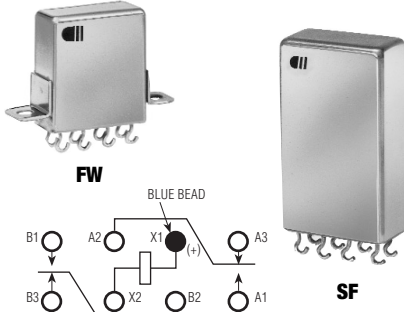
# FW · FW5A · SF · SF5A

FULL SIZE HIGH PERFORMANCE RELAYS

## FW · FW5A · SF · SF5A

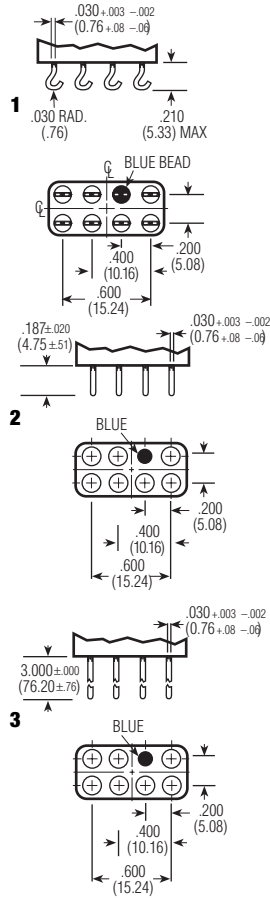
**TWO POLE FULL SIZE  
CRYSTAL CAN RELAY**

**FW QUALIFIED TO MIL-R-5757/10**



**FEATURES**

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



**TERMINALS**

**ELECTRICAL CHARACTERISTICS**

**CONTACT ARRANGEMENT**

2 Form C

**CONTACT MATERIAL**

Stationary:  
Bifurcated hardened silver alloy

Moveable:

Gold plated hardened silver 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**

1.8 Vdc to 110 Vdc

**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)  
40 mW (SF)  
80 mW (SF 5A)

**RF PERFORMANCE (FW ONLY)**

| FREQUENCY (MHz) | RFLOSSES (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             |

**OPERATING CHARACTERISTICS**

**TIMING**

Operate Time:  
15 ms max. (SF)  
5 ms (FW)  
6 ms max. (MIL-R-5757/10)

Release Time:  
10 ms max. (SF)  
5 ms max. (FW)  
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 @ 500 Vdc

**ENVIRONMENTAL CHARACTERISTICS**

**TEMPERATURE RANGE**

-65° to +125°C

**WEIGHT**

0.6 oz. max. (FW)  
0.7 oz. max. (SF 6)  
1.1 oz. max. (SF/SF 5A)

**STANDARD VIBRATION RESISTANCE**

20 G's, 10 to 2000 Hz (FW)  
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 (SFonly)

**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 uA @ 50 mVdc                      | Low Level          | 1,000,000       |
| 75 WATTS @ 50 MHz (FW)               | RF                 | 10,000,000      |

# FW • FW5A • SF • SF5A

FULL SIZE HIGH PERFORMANCE RELAYS

## FW 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 | DROPOUT VOLTAGE Vdc (MIN.) @ 25°C | DROPOUT 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                                | 1.90                       | 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           |

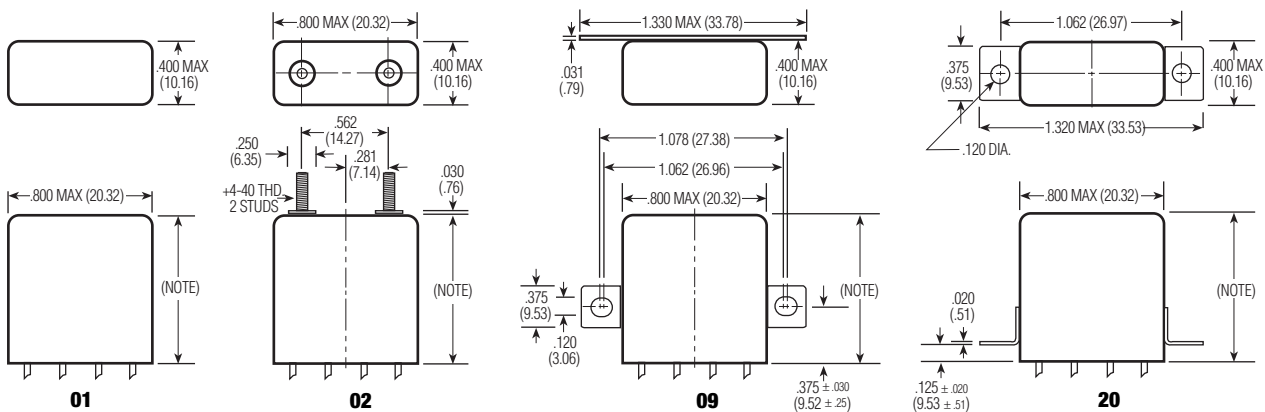
## SF5 /SF6 COIL DATA

| 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       |

