

WR-28 Waveguide Electromechanical Relay Failsafe, Ka Band Switch SPDT/DPDT 40 GHz Max Freq., 550 Watts UG O-Ring, 28V, TTL, Indicators

The FMWGS6059 WR28 waveguide electromechanical switch operates across a wide frequency range from 26.5 GHz to 40 GHz and is configured for single pole double throw (SPDT) operation. A shorting plate on port 3 can be removed for optional double pole double throw (DPDT) operation. This innovative design features a failsafe actuator and patented motor drive with arc suppression. The motor drive housing supports a viewable position indicator window and a cover that can be removed for manual override access. Impressive typical performance includes 0.07 dB typ insertion loss, 69 dB typ Isolation and 1.05:1 typ VSWR. The design operates across a temperature range of -40°C to +85°C, requires +28Vdc nominal bias voltage, and has an input power rating of up to 0.55 kW CW maximum, and an unpressurized peak power rating up to 13.3 kW. Operating life is 250K cycles minimum. The waveguide ports have UG O-Ring grooves with O-Rings included for pressurized operation. The rugged package design is fully weatherized for up to 100% humidity exposure and supports a quick connect circular 6 pin MIL-SPEC DC bias connector with mate included.



Features:

- 26.5 to 40 GHz SPDT Waveguide Switch
- Optional DPDT Configuration
- WR28 Waveguide with UG O-Ring Grooves
- Failsafe Actuator and Position Indicator
- Insertion Loss: 0.07 dB typ
- Isolation: 69 dB typ
- Switching Time: <80 msec typ
- +28 Vdc Nominal Voltage
- Input Power Rating up to 0.55 kW CW max
- Unpressurized Peak Power Rating up to 13.3 kW
- Manual Override Access
- Fully Weatherized Package
- Quick Connect Circular DC Connector with Mate
- -40°C to +85°C Operating Temperature

Electrical Specifications

| | |
|---------------------|--|
| Switch Type | SPDT/DPDT |
| Actuator Type | Failsafe |
| Actuator Options | TTL Logic, Window Indicator, Manual Override |
| TTL Control | on: 2.4 to 5.5 Volts off: 0 to 0.8 Volts |
| TTL Control Current | 5 mA at 5.5 Volts 5 mA at 0.8 Volts |

| Description | Min | Typ | Max | Units |
|----------------------------------|------|--------|--------|--------|
| Frequency Range | 26.5 | | 40 | GHz |
| Impedance | | 50 | | Ohms |
| Operating Voltage | 25.2 | 28 | 30.8 | Volts |
| Actuating Current @ 28 Volts | | 140 | 300 | mA |
| VSWR | | 1.05:1 | 1.15:1 | |
| Insertion Loss | | 0.07 | 0.15 | dB |
| Isolation | 55 | 69 | | dB |
| Switching Time | | <80 | | ms |
| Input Power (CW) | | | 550 | Watts |
| Input Power (Peak/Unpressurized) | | | 13.3 | kWatts |

Electrical Specification Notes:

Active logic switch command duration must be maintained to keep switch in energized position.

Maximum switching rate not to exceed 30 per minute.

Applications:

- Electronic Warfare
- Electronic Countermeasures
- Microwave Radio
- VSAT
- Radar
- Space Systems
- Test Instrumentation
- Research and Development

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Mechanical Specifications

Size

| | |
|--------------------|---------------------|
| Length | 2.11 in [53.59 mm] |
| Width/Diameter | 2.11 in [53.59 mm] |
| Height | 3.35 in [85.09 mm] |
| Weight | 0.88 lbs [399.16 g] |
| Operating Life | 250,000 Cycles |
| Operating Pressure | 30 psig |

Configuration

| | |
|----------------------------|-----------------|
| Waveguide Size | WR-28 |
| Flange Type | UG O-Ring |
| Body Material and Plating | Aluminum, Black |
| Body Plating Specification | MIL-DTL-5541 |

Environmental Specifications

Temperature

| | |
|-----------------|-------------------|
| Operating Range | -40 to +85 deg C |
| Storage Range | -55 to +100 deg C |

Humidity 0 to 100% Fully Weatherized IAW IP67

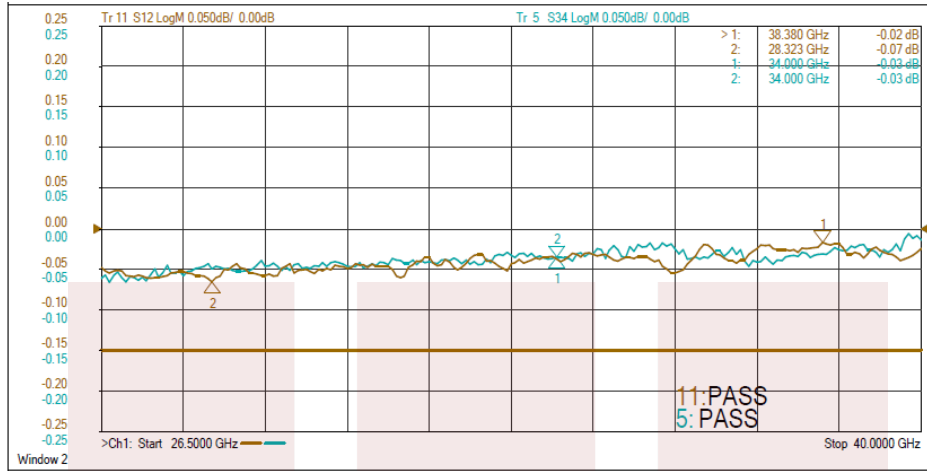
Compliance Certifications (see [product page](#) for current document)

Plotted and Other Data

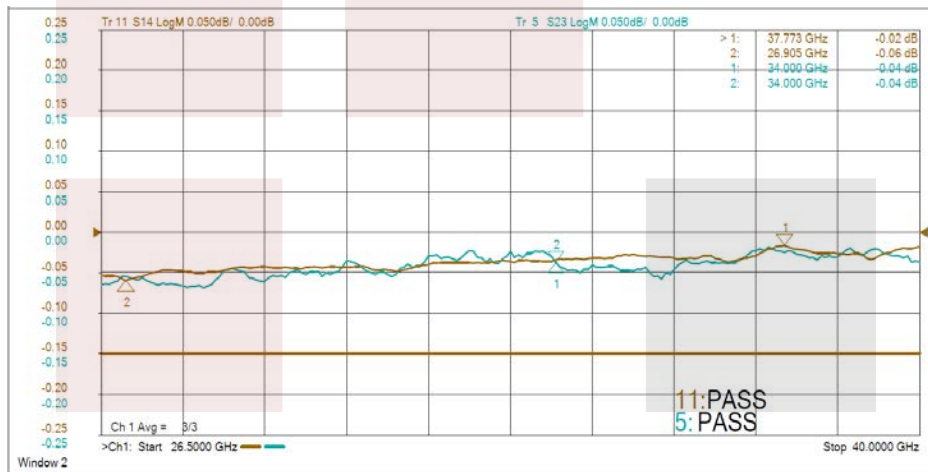
Notes:

Typical Performance Data

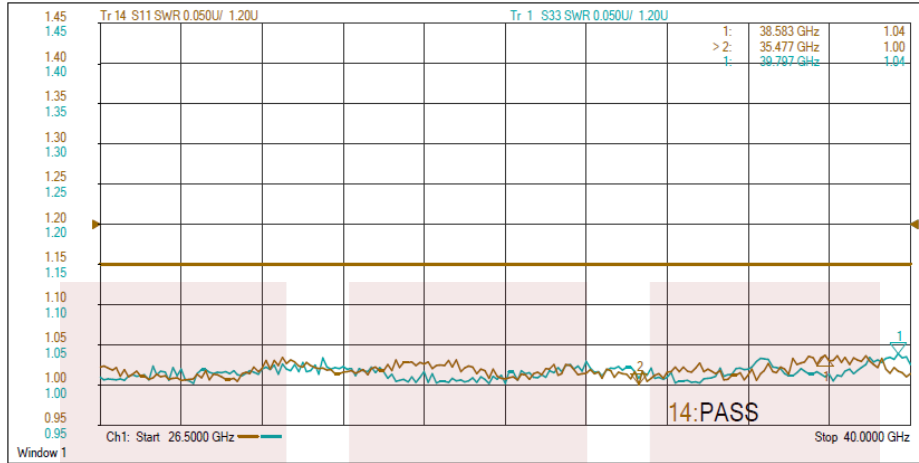
Typical (Position 1) Insertion Loss



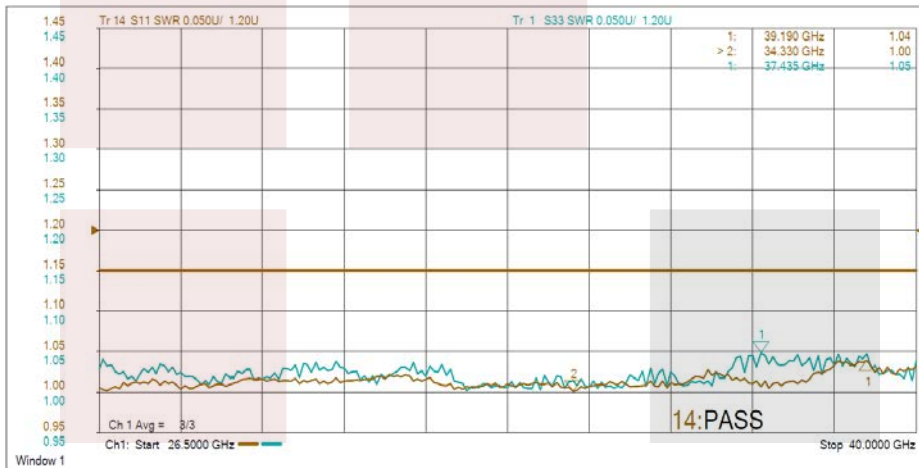
Typical (Position 2) Insertion Loss



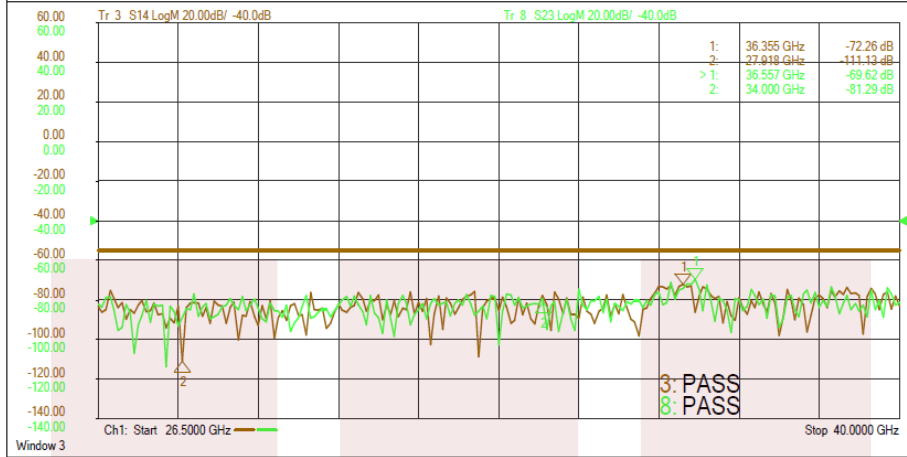
Typical (Position 1)
VSWR



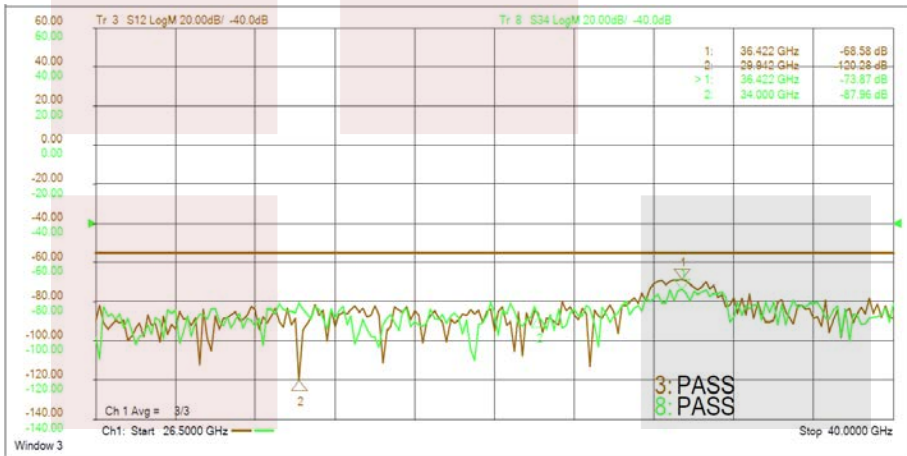
Typical (Position 2)
VSWR



Typical (Position 1)
Isolation



Typical (Position 2)
Isolation



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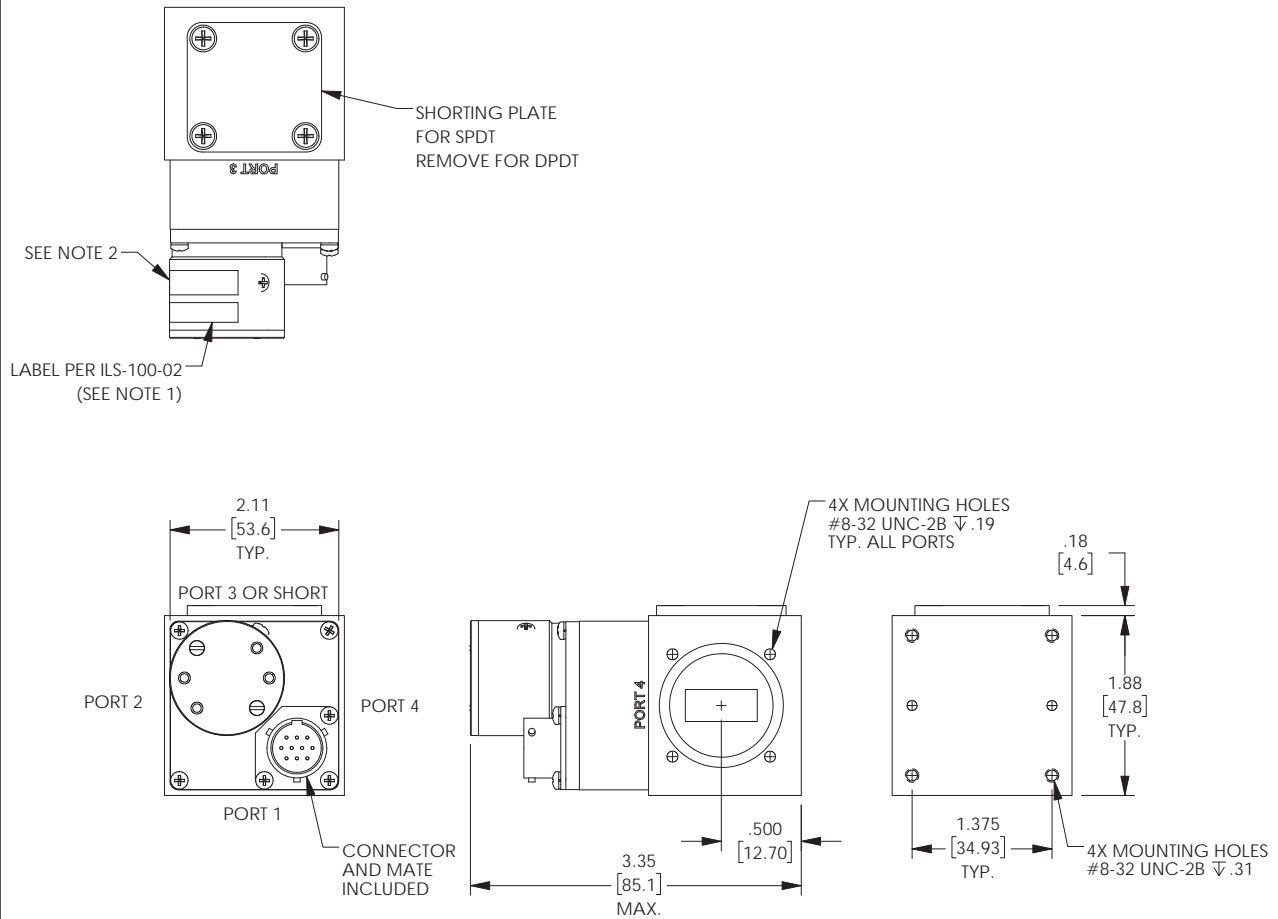
For additional information on this product, please click the following link: [WR-28 Waveguide Electromechanical Relay Failsafe, Ka Band Switch SPDT/DPDT 40 GHz Max Freq., 550 Watts UG O-Ring, 28V, TTL, Indicators FMWGS6059](#)

URL: <https://www.fairviewmicrowave.com/wr-28-waveguide-electromechanical-relay-failsafe-switch-spdt-dpdt-40-ghz-fmwgs6059-p.aspx>

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| REVISIONS | | | |
|-----------|-----------------|------------|----------|
| REV. | DESCRIPTION | DATE | APPROVED |
| A | INITIAL RELEASE | 03/26/2021 | TGALLA |



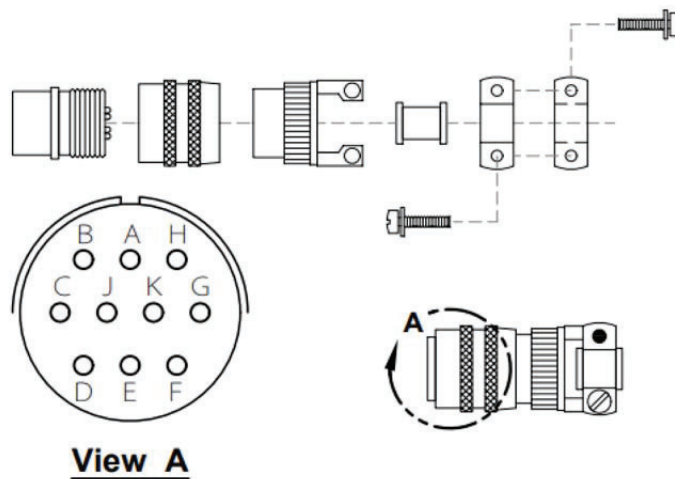
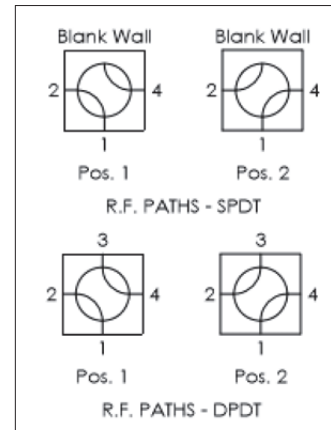
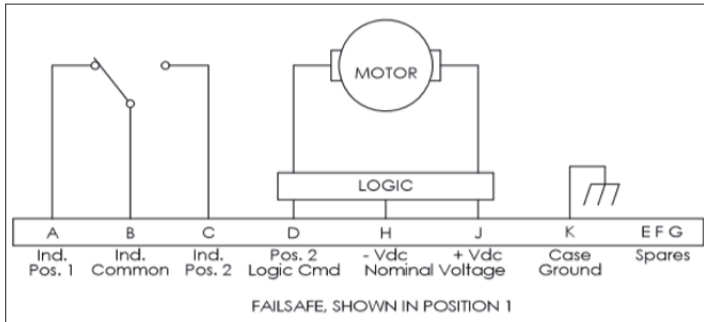
- NOTES:
1. LABEL PER ILS-100-02. FOR INTERNAL REFERENCE ONLY.
 2. SERIAL NUMBER AND DATE CODE ARE COMBINED. EX: 2020040500001

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TITLE
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| | | | |
|---|--------------------|------------------------------|-----------------------|
| UNLESS OTHERWISE SPECIFIED LEADING DIMENSIONS ARE INCHES DIMENSIONS IN [] ARE MILLIMETERS | | THIRD-ANGLE PROJECTION | |
| TOLERANCES: | | CABLE LENGTH (L) TOLERANCES: | |
| .X = ± 2 [5.08] | FRACTIONS ± 1/32 | L ≤ 12 [305] | = +1 [25] / -0 |
| .XX = ± 0.2 [5.1] | ANGLES ± 1° | 12 [305] < L ≤ 60 [1524] | = +2 [51] / -0 |
| .XXX = ± 0.005 [13] | | 60 [1524] < L ≤ 120 [3048] | = +4 [102] / -0 |
| | | 120 [3048] < L ≤ 300 [7620] | = +6 [152] / -0 |
| | | 300 [7620] < L | = +5%L / -0 |
| ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. | | | |
| SIZE A | CAGE CODE 3FKR5 | DRAWN BY DFRISIELLO | ITEM NO. FMWGS6059 |
| | | SCALE N/A | REV A |

T-Rev.D



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DIMENSIONS IN [] ARE MILLIMETERS

TOLERANCES: CABLE LENGTH (L), TOLERANCES:

| | | |
|---------------------------|----------------------|--|
| $X = \pm 2$ [5.08] | FRACTIONS | $L \leq 12$ [305] = +1 [25] / -0 |
| $.XX = \pm 0.02$ [.51] | $\pm 1/32$ | 12 [305] < $L \leq 60$ [1524] = +2 [51] / -0 |
| $.XXX = \pm 0.005$ [.13] | ANGLES $\pm 1^\circ$ | 60 [1524] < $L \leq 120$ [3048] = +4 [102] / -0 |
| | | 120 [3048] < $L \leq 300$ [7620] = +6 [152] / -0 |
| | | 300 [7620] < $L = +5\%L$ / -0 |

THIRD-ANGLE PROJECTION



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SHEET 2 OF 2

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SCALE N/A

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| SIZE A | CAGE CODE 3FKR5 | DRAWN BY DFRISIELLO | ITEM NO. FMWGS6059 | REV A |
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T-Rev.D