Fairview Microwave
RF COMPONENTS ON DEMAND. Done!

FMSW6344
DATA SHEET

SPDT Latching DC to 8 GHz Electro-Mechanical Relay Switch, Hot Switching, up to 400W, 12V, SMT

The FMSW6344 is a single pole double throw electromechanical relay switch that operates from DC to 8 GHz and can handle up to 400 Watts of CW input power in a break before make condition. The design features a latching actuator and is rated for 2M life cycles of cold switching for high reliability operation. Insertion loss is specified from 0.1 dB max and Isolation from 50 dB min, with +12 Vdc operating voltage. Performance is guaranteed over -40°C to +85°C and the switch assembly is RoHS and REACH compliant.

Electrical Specifications

Switch Type	SPDT
Actuator Type	Latching
Switching Sequence	Break before Make
Actuator Options	Hot Switching

Description	Min	Typ	Max	Units
Frequency Range	DC		8	GHz
Impedance		50		Ohms
Operating Voltage	10.2	12	13	Volts
Actuating Current @ 12 Volts		58		mA
VSWR			1.4:1	
Insertion Loss			0.8	dB
Isolation	30			dB
Coil Resistance		205		Ohms
Third Order Intermodulation		-120		dBc
Input Power (CW) (Cold Switching)			35	Watts

Performance by Frequency

Description	F1	F2	F3	F4	F5	Units
Frequency Range	DC - 1	1 - 2	2 - 3	3 - 6	6 - 8	GHz
VSWR, Max	1.1:1	1.2:1	1.35:1	1.35:1	1.4:1	
Insertion Loss, Max	0.1	0.2	0.3	0.4	0.8	dB
Isolation, Min	50	45	40	35	30	dB
Power In, Max (CW)	400	280	175	50	35	Watts

Electrical Specification Notes:
Average Power and Actuating Current values at 25°C.
Third Order Intermodulation conditions: 2 carriers, 20W each.
Max. Input Power (CW) for hot switching: 50W (DC to 2GHz), 40W (2 to 3GHz), 25W (3 to 6GHz), 5W (6 to 8GHz).
Dielectric test voltage: 300Vrms.
Insulation resistance at 500Vdc: 100MOhms min.

Features:

- Single Pole Double Throw SMT Relay Switch
- DC to 8 GHz Frequency Range
- 2M Cycle Min Operating Life (Cold Switching)
- 35 Watt Avg Power
- -40 to +85 Deg C Operating Temperature
- Insertion Loss 0.8 dB Max
- VSWR 1.4:1 Max

Applications:

- High Performance Relay Switch
- Military Communications
- Communications Systems
- Test & Measurement

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Mechanical Specifications

Size

Length	0.53 in [13.46 mm]
Width/Diameter	0.41 in [10.41 mm]
Height	0.28 in [7.11 mm]
Weight	0.0085 lbs [3.86 g]
Package Type	Surface Mount
Operating Life (Cold Switching)	2,000,000 Cycles
Operating Life (Hot Switching)	500,000 Cycles
Making Contacts	4 ms Max (1.8 ms Typ)
Breaking Contacts	1 ms Max (500 µs Typ)

Connectors

RF Connector Type	SMT

Mechanical Specification Notes:
Cold Switching: 120 cycles/min maximum
Hot Switching: 20 cycles/min maximum

Environmental Specifications

Temperature

Operating Range	-40 to +85 deg C
Storage Range	-55 to +85 deg C
Ingress Protection (IP) Rating	IEC 60529 / IP67
Shock	MIL-STD-202, Method 213B, Cond C (operating)
Sine Vibration	MIL-STD-202, Method 204, Cond D (operating)/Cond G (non-operating)
Random Vibration	MIL-STD-202, Method 214A, Profile I, Cond F (operating)/Cond H (non-operating)

Environmental Specification Notes:
Environmental specifications are guaranteed but not tested.

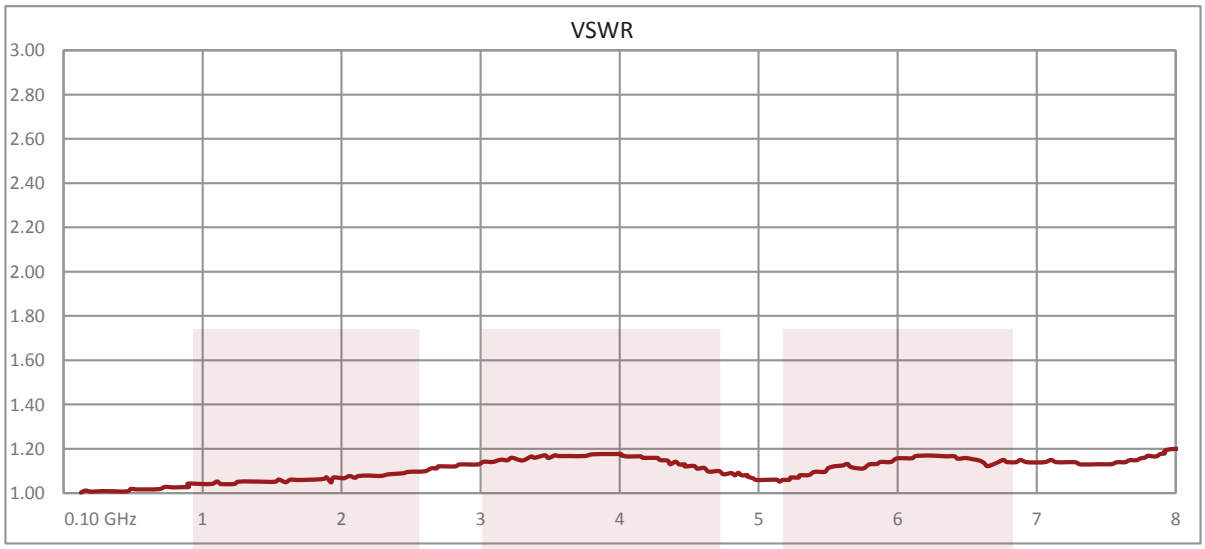
Compliance Certifications (see product page for current document)

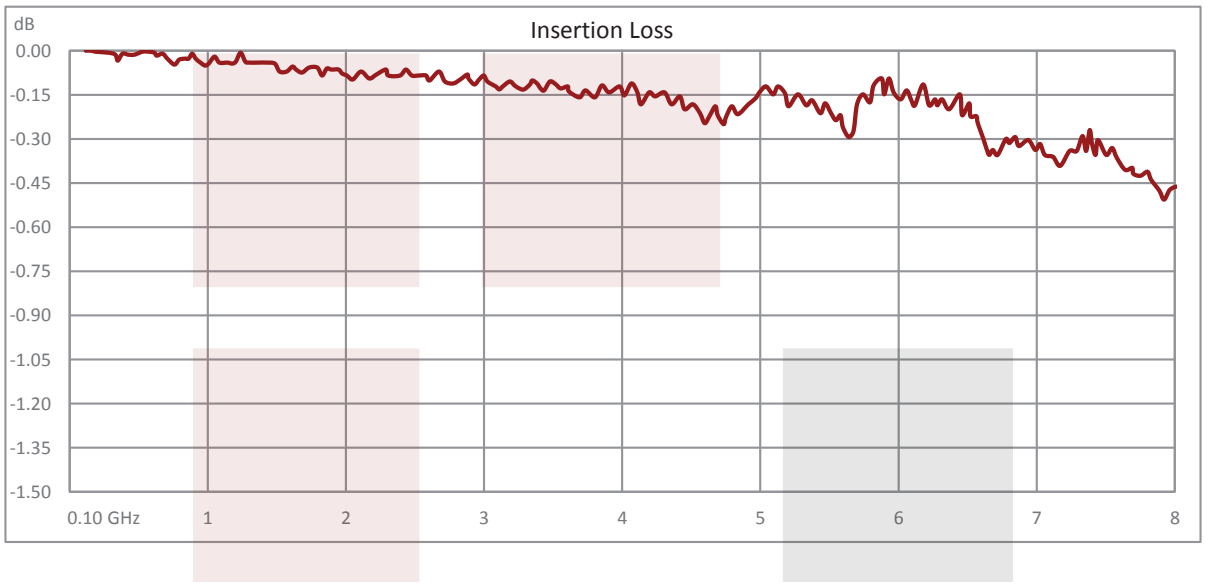
Plotted and Other Data

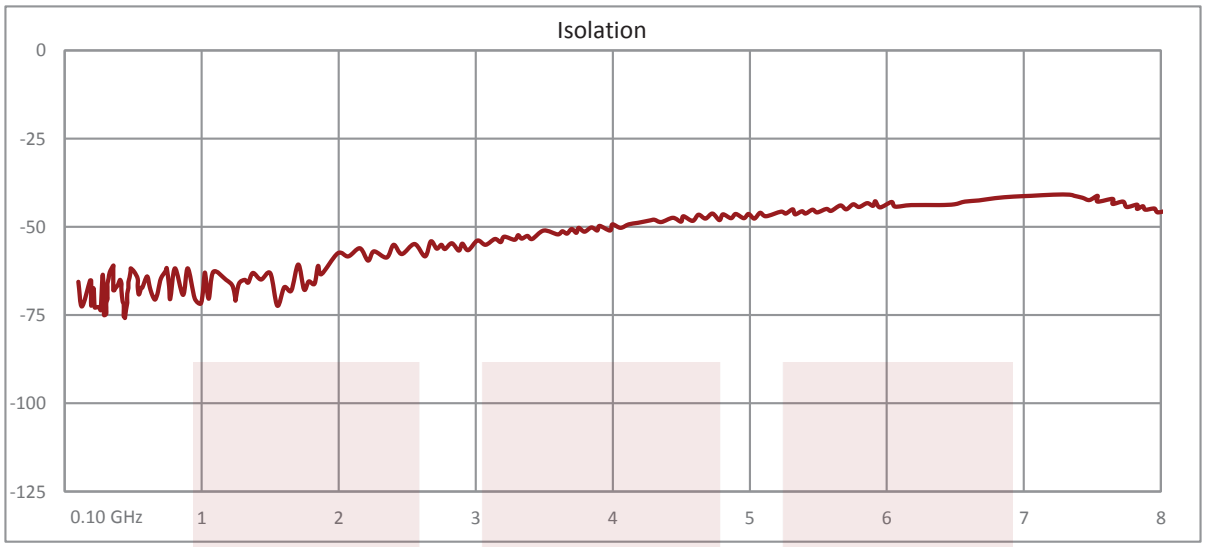
Notes:

- Values shown are typical at 25°C.

Typical Performance Data







SPDT Latching DC to 8 GHz Electro-Mechanical Relay Switch, Hot Switching, up to 400W, 12V, SMT from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Allen, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: SPDT Latching DC to 8 GHz Electro-Mechanical Relay Switch, Hot Switching, up to 400W, 12V, SMT FMSW6344

URL: https://www.fairviewmicrowave.com/spdt-latching-electromechanical-relay-switch-hot-switching-fmsw6344-p.aspx

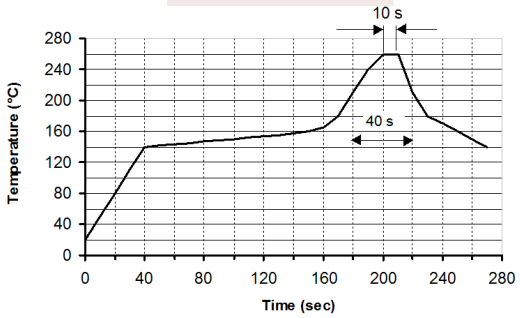
A – Soldering procedure using automatic pick and place equipment

1-Solder paste:
R596 series are « Lead Free », and Lead Free Sn-Ag3.5-Cu0.7 solder cream may be used as well as standard Sn63–Pb35–Ag2. It is recommended using a « no clean - low residue » solder cream (5% solid residue of flux quantity) that will permit the elimination of the cleaning operation step after soldering.
Note: Due to the gold plating of the switch PCB interface, it is important to use a paste made with silver. This will help in avoiding formation of intermetallics as part of the solder joint.
RECOMMENDED SOLDERING PROCEDURE

2-Solder paste deposition:
Solder cream may be applied on the board with screen printing or dispenser technologies. For either method, the solder paste must be coated to appropriate thickness and shapes to achieve good solder wetting. Please optically verify that the edges of the zone are clean and without contaminates, and that the PCB zoned areas have not oxydated. The design of the mounting pads and the stenciling area are given on page 7, for a thickness of the silk-screen printing of 0.15 mm (0.006 ‘’).

3-Placement of the component:
For small lightweight components such as chip components, a self-alignment effect can be expected if small placement errors exist. However, this effect is not as expected for relays components and they require a accurate positioning on their soldering pads, typically +/- 0.1mm (+/-0.004’’).
Place the relay onto the PCB with automatic pick and place equipment. Various types of suction can be used.
We do not recommend using adhesive agents on the component or on the PCB.

4-Soldering: infra-red process
Please follow the recommended temperature profile for infra-red reflow or forced air convection:



Higher temperature (>260°C) and longer process duration would damage permanently the switches

5-Cleaning procedure:
On miniature relays, high frequency cleaning may cause the contacts to stick. If cleaning is needed, please avoid ultrasonic cleaning and use alcohol based cleaning solutions.

In-line cleaning process, spraying, immersion, especially under temperature, may cause a risk of degradation of internal contacts.

6-Quality check:
Verify by visual inspection that the component is centered on the mounting pads.
Solder joints: verify by visual inspection that the formations of meniscus on the pads are proper, and have a capillarity amount upper the third of the height.

B – Soldering procedure by manual operation

1-Solder paste and flux deposition:
Refer to procedure A – 1
Deposite a thin layer of flux on mounting zone.
Allow the flux to evaporate a few seconds before applying the solder paste, in order to avoid dilution of the paste.

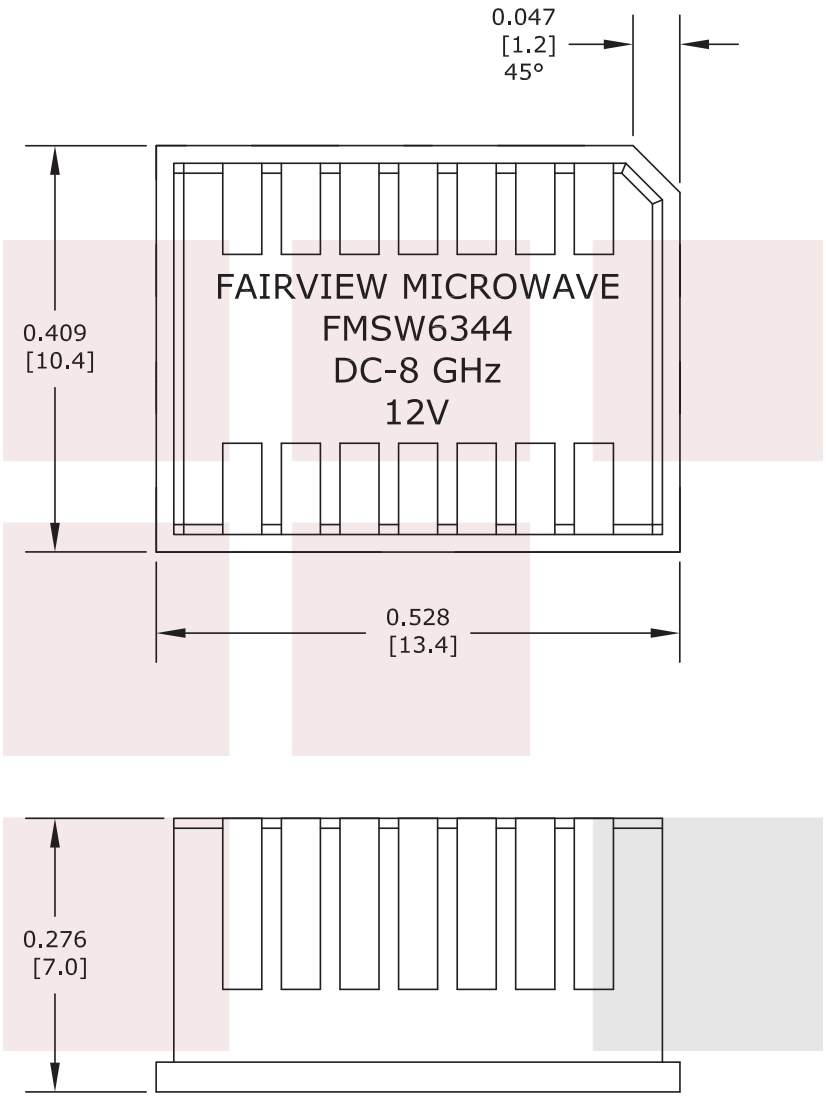
2-Solder paste deposition:
We recommends depositing a small amount of solder paste on the mounting zone area by syringe.
Be careful, not to apply solder paste outside of the zone area.

3-Placement of the component:
During manipulation, avoid contaminating gold surfaces by contact with fingers.
Place the component on the mounting zone by pressing on the top of the relay lid.

4-Hand soldering:
Iron wattage 30 to 60 W.
Tip temperature 280 to 300°C for max. 5 seconds
To keep good RF characteristics above 3GHz, it is important to solder RF ports first, and apply pressure on the relay lid during all the soldering stage, so as to reduce the air gap between the PC board and the relay.
5-Cleaning procedure:
Refer to procedure A – 5.

6-Quality check:
Verify by visual inspection that component is centered on the mounting pads.
Solder joints: verify by visual inspection that the formations of meniscus on the RF pads are proper, and have a capillarity amount higher than one third of the height.

SPDT Latching DC to 8 GHz Electro-Mechanical Relay
Switch, Hot Switching, up to 400W, 12V, SMT



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TITLE SPDT Latching DC to 8 GHz Electro-Mechanical Relay Switch, Hot Switching, up to 400W, 12V, SMT	DWG NO FMSW6344	CAGE CODE 3FKR5			
	CAD FILE 020117	SHEET	SCALE N/A	SIZE A	2233

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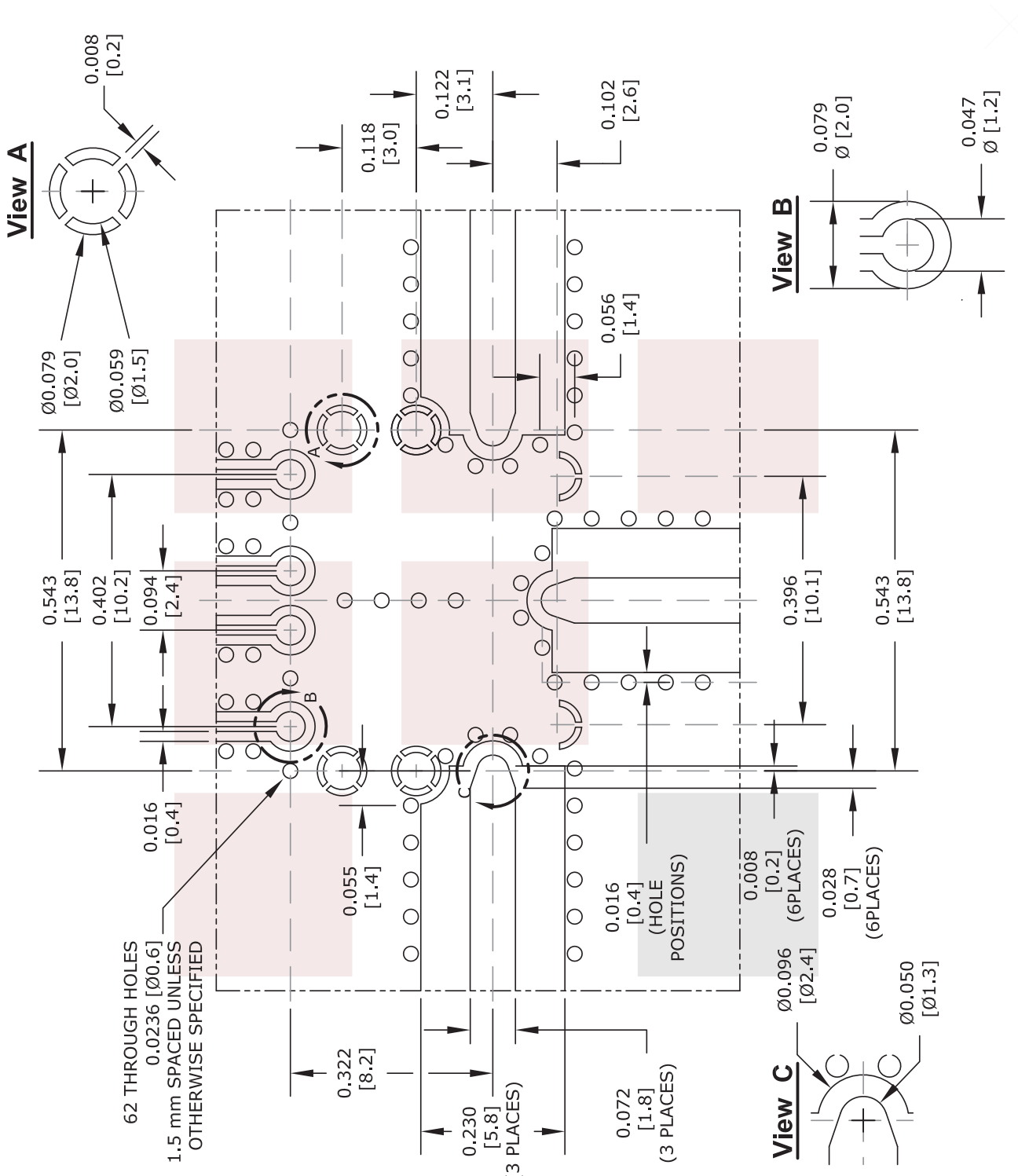

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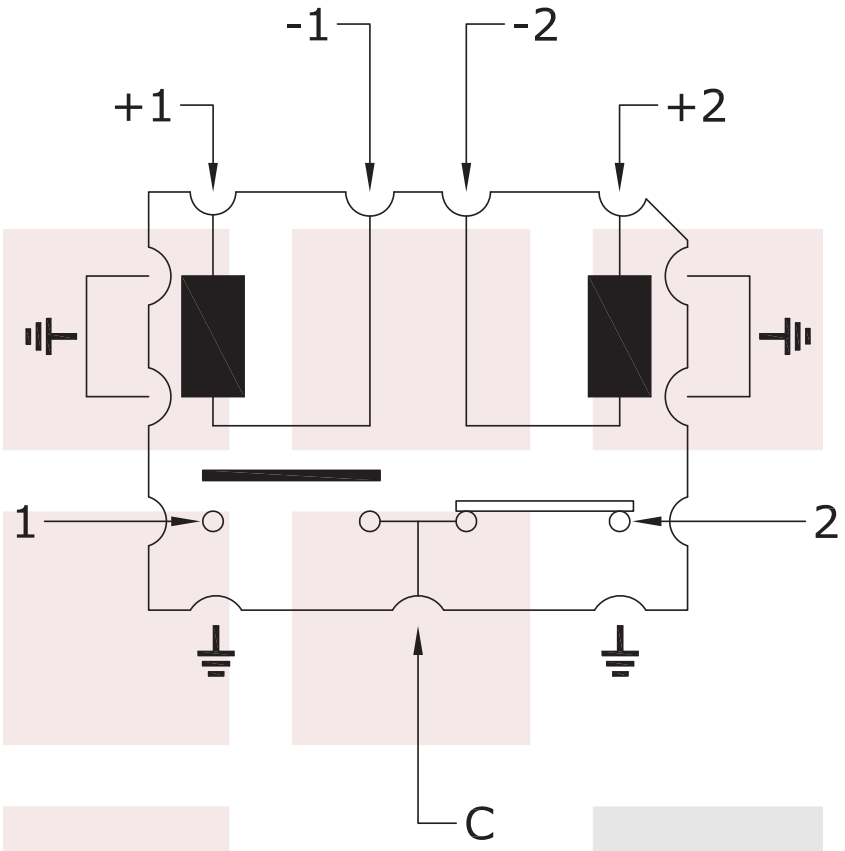

LATCHING MODEL
(TYPE 3)

Voltage		RF Continuity
-1	+1	C ⟷ 1
-2	+2	C ⟷ 2

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