Fairview Microwave
RF COMPONENTS ON DEMAND. Done!

SEMS-4089-SPDT-SM
DATA SHEET

SPDT Electro-Mechanical Relay Switch From DC to 3 GHz, 400 Watts with Latching, SMT

SEMS-4089-SPDT-SM is an SMT SINGLE POLE DOUBLE THROW RELAY SWITCH that operates from DC TO 3 GHz. The Switch has a 24 VDC LATCHING ACTUATOR. The Switch is SMT and operates from -40 Deg C to +85 Deg C.

Electrical Specifications

Frequency Range	DC to 3 GHz
Impedance	50 Ohms
Actuator	Latching
Actuating Current	32 mA
Control Voltage	24 Volts
RF Input Power (Max CW)	400 Watts

RF Characteristic

Description	Band 1	Band 2	Band 3	Band 4	Band 5	Units
Frequency Range	DC to 1	1 to 2	2 to 3			GHz
VSWR, Max	1.1:1	1.2:1	1.35:1			
Insertion Loss, Max	0.1	0.2	0.3			dB
Isolation, Min	50	45	40			dB
Average Power @25°C	400	280	175			Watts

Mechanical Specifications

Operating Life	2,000,000
Weight	0.004 lbs [1.81 g]

Environmental Specifications

Temperature

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

Compliance Certifications (visit www.FairviewMicrowave.com for current document)

RoHS Compliant

Plotted and Other Data

Notes:

- Values at +25 °C, sea level
- ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in approved ESD Workstation

Features:

- Single Pole Double Throw SMT Relay Switch
- DC to 3 GHz Frequency Range
- 2M Operating Life
- 175 Watt Avg Power
- -40 to +85 Deg C Operating Temperature
- Insertion Loss 0.3 dB Max
- VSWR 1.35:1 Max

Applications:

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

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SPDT Electro-Mechanical Relay Switch From DC to 3 GHz, 400 Watts with Latching, 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 Electro-Mechanical Relay Switch From DC to 3 GHz, 400 Watts with Latching, SMT SEMS-4089-SPDT-SM

URL: http://www.fairviewmicrowave.com/smt-electro-mechanical-relay-switch-spdt-3-ghz-sems-4089-spdt-sm-p.aspx

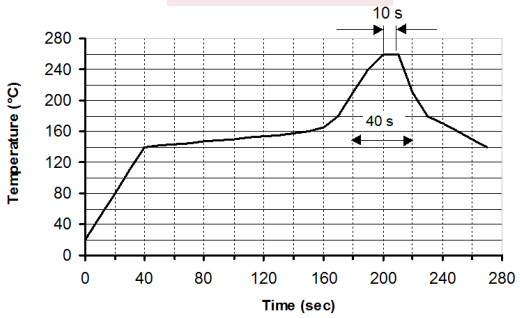
A – Soldering procedure using automatic pick and place equipment

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.

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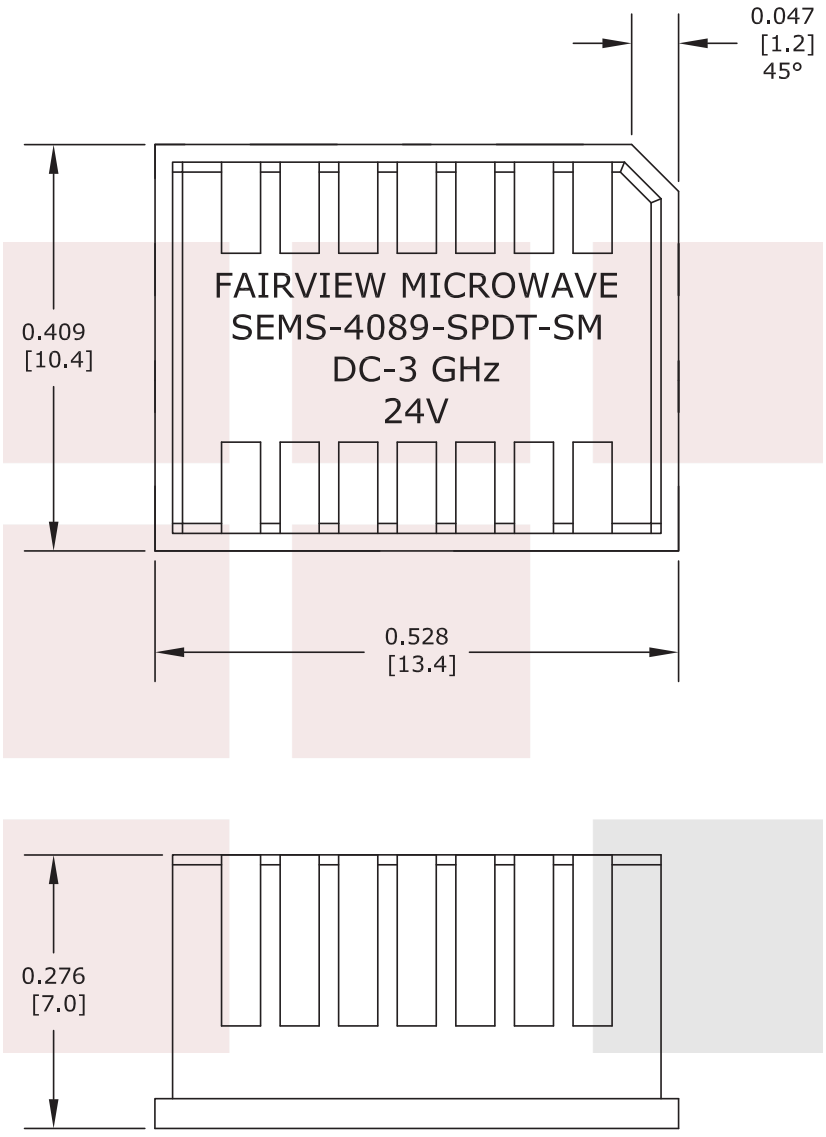
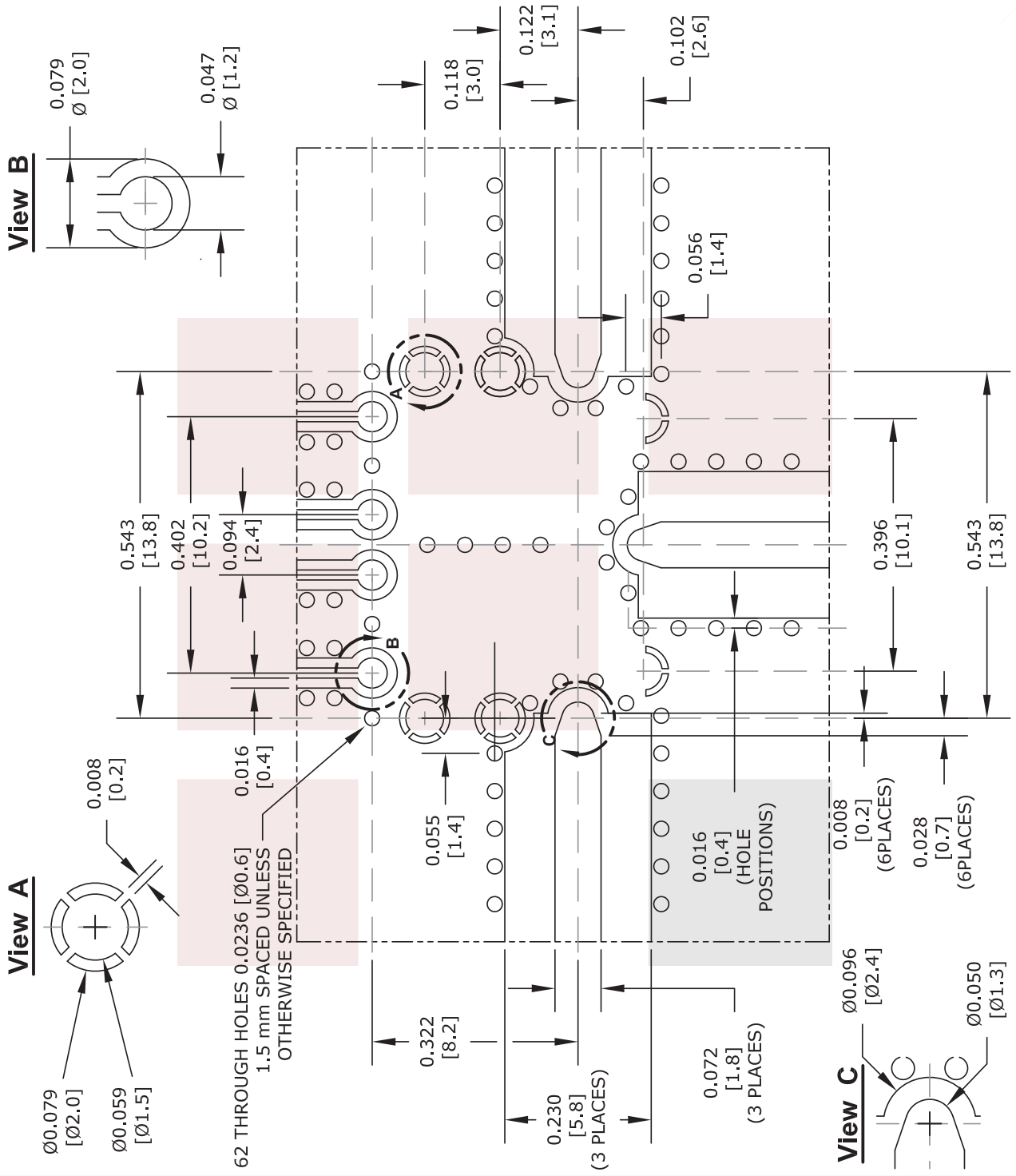


FAIRVIEW MICROWAVE INC. ALLEN, TX 75013 WWW.FAIRVIEWMICROWAVE.COM	NOTES: 1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL. 2. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME. 3. DIMENSIONS ARE IN INCHES [mm].				
TITLE SPDT Electro-Mechanical Relay Switch From DC to 3 GHz, 400 Watts with Latching, SMT	DWG NO SEMS-4089-SPDT-SM	CAGE CODE 3FKR5			
	CAD FILE 050615	SHEET	SCALE N/A	SIZE A	2233



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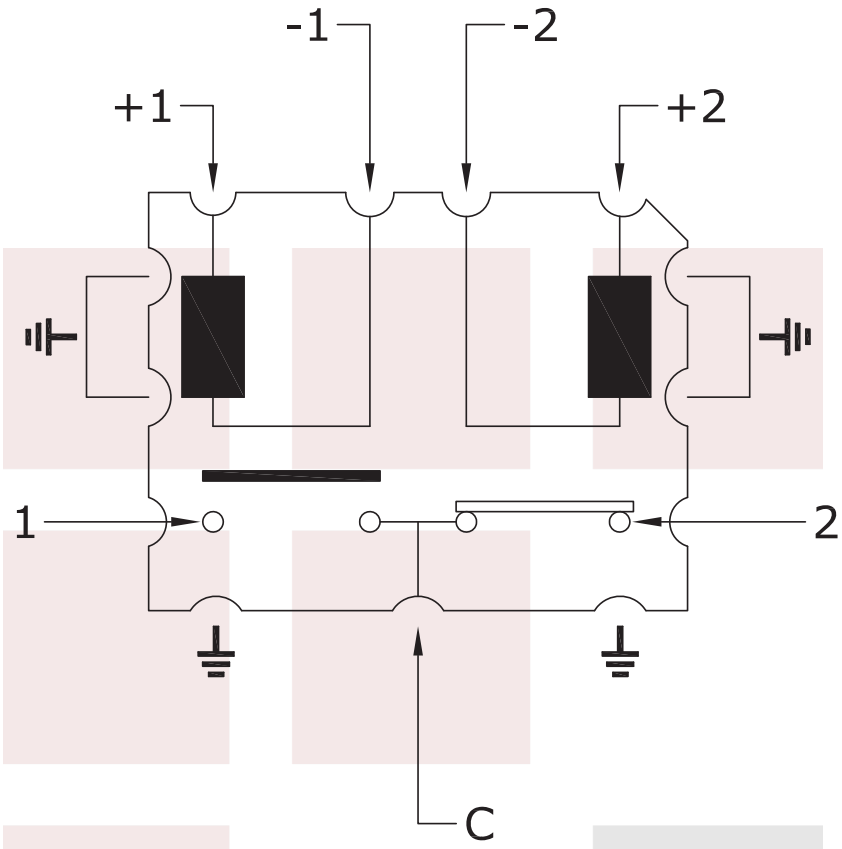

LATCHING MODEL
(TYPE 3)

Voltage		RF Continuity
-1	+1	C ◄► 1
-2	+2	C ◄► 2

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