

APPROVAL SHEET

RF Switch Series – RoHS Compliance

SPDT GPIO Switch

Halogens Free Product

Any 2G/3G/4G Band for TRx System

P/N: RFASWAM3489ATF09

*Contents in this sheet are subject to change without prior notice.

Approval Sheet

FEATURES

- Low Insertion Loss : 0.5dB typ. @ 2.7GHz
- High Isolation : 25dB typ. @ 2.7GHz
- Low control voltage : 1.35V to 3V
- High ESD tolerance of 1kV HBM at all pins
- Miniature footprint : 1.1 x 0.7 x 0.5 mm³ (QFN 6-Pin)
- Moisture Sensitive Level 3 (MSL3)

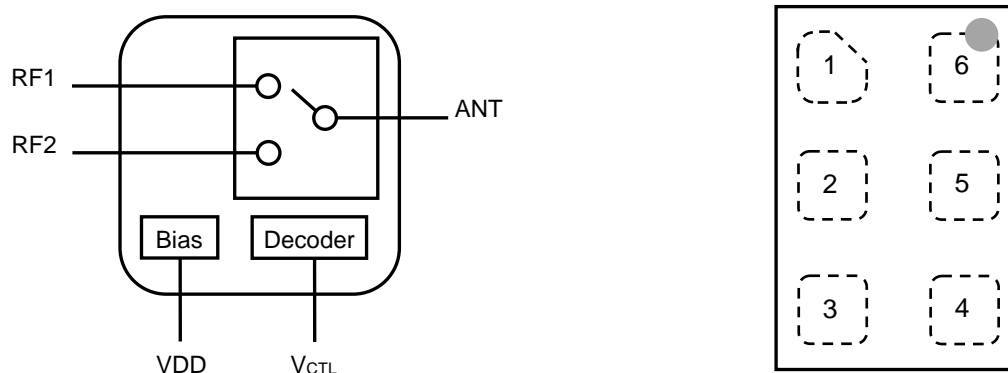
Description

- The RFASWAM3489ATF09 is a SOI (Silicon On Insulator) Single-Pole, Double-Throw(SPDT) high power switch that operating at 0.7-2.7 GHz in a 6-Lead QFN Package (1.1x0.7x0.5mm³).
- The RFASWAM3489ATF09 features very high isolation with very low DC power consumption.
- The RFASWAM3489ATF09 has ESD protection devices to achieve excellent ESD performances. No DC Blocking capacitors are required for all RF ports unless DC is biased externally.

Application

- Multi-mode 2G/3G, LTE application receive system.

Block Diagram and Pin Out (Top View)

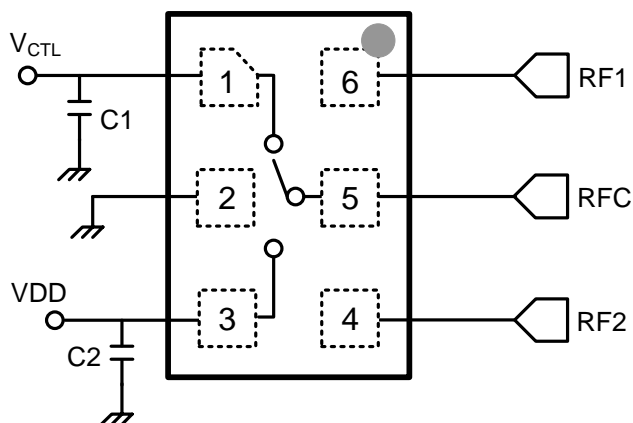


Pin Names and Descriptions

Pin	Name	Description	Pin	Name	Description
1	V _{CTL}	DC control voltage	4	RF2	RF path 2
2	GND	Ground	5	RFC	RF common port
3	VDD	DC power supply	6	RF1	RF path 1

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Application Circuit



Parts List

Parts No.	Value
C1-C2	100 pF

Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Units
RFx Input Power	P _{in}		+36	dBm
DC Supply Voltage	V _{DD}	+2.4	+5.0	V
DC Control Voltage	V _{CTL}	-0.5	+3.0	V
Operating temperature	T _{OP}	-40	+85	°C
Storage temperature	T _{STG}	-55	+150	°C
HBM ESD Voltage, All Pins	V _{ESD} ¹	-	+1000	V
MM ESD Voltage, All Pins	V _{ESD} ²	-	+100	V

Note 1 : Human Body Model ESD Voltage, Class 1C

Note 2 : Machine Model ESD Voltage, Class A

Exceeding absolute maximum ratings may cause permanent damage. Operation between operating range maximum and absolute maximum for extended periods may reduce reliability.

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Electrical Specifications

(Top= 25°C, VDD=2.8V, VCTL=0/1.8V, Characteristic Impedance ZO= 50 Ω, Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
RF Specifications						
Operating Frequency	f		0.7		2.7	GHz
Insertion Loss (RFC to RF1/2 port)	IL	0.7 ~ 0.96 GHz	-	0.38	-	dB
		1.71 ~ 2.17 GHz		0.40		dB
		2.17 ~ 2.7 GHz		0.50		dB
Isolation (RFC to RF1/2 port)	Iso	0.7 ~ 0.96 GHz	33	35	-	dB
		1.71 ~ 2.17 GHz	24	26		dB
		2.17 ~ 2.7 GHz	21	25		dB
On state match	VSWR	0.7 ~ 2.7 GHz	-	1.25	1.5	-
Input Power 0.1dB Compression Point	P _{0.1dB}	0.7 ~ 2.7 GHz	-	+36	-	dBm
DC Specification (Decoder)						
Supply Voltage	VDD		2.45	2.85	4.80	V
Supply Current	IDD	VDD= 2.8V	-	30	65	μA
Control Voltage(High)	V _{CTL(H)}		1.35	1.80	3.00	V
Control Voltage(Low)	V _{CTL(L)}		0	-	0.45	V
Control Current	I _{CTL}	V _{CTL} = 1.8V	-	-	5	μA
Switching Specification						
Switching speed	T _{SW}	50% V _{CTL} to 90/10% RF	-	1.3	5	μs

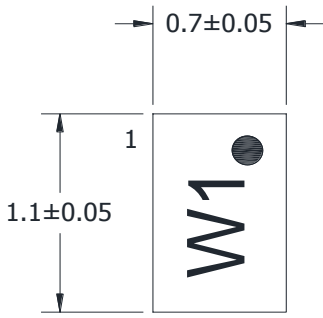
Note : All measurements made in a 50Ω system with 0/+1.8V control voltages, unless otherwise specified.

Logic Table for Switch On-Path (High=1.8V ,Low= 0V)

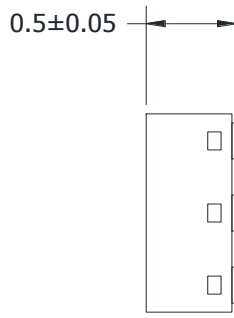
V _{CTL}	RF1	RF2
0	on	off
1	off	on

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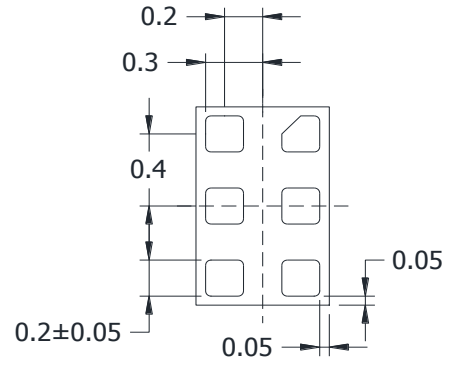
Package Dimensions



Top View



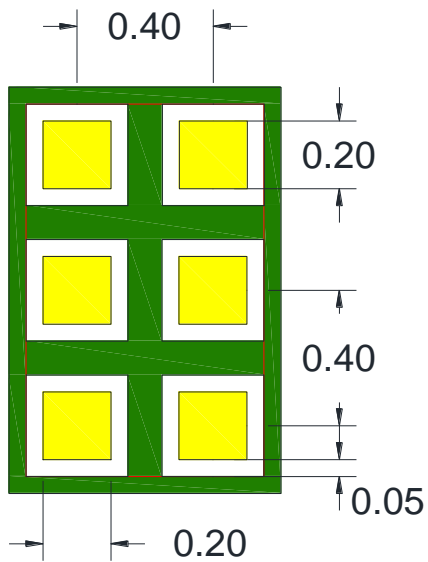
Side View



Bottom View

Unit: mm

Solder Land Pattern



- Land Pattern(Yellow Color)
- Solder Resist(Green Color)
- Package Outline(Red Line)

Unit : mm

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Reliability test

TEST	PROCEDURE / TEST METHOD	REQUIREMENT
Solderability JIS C 0050-4.6 JESD22-B102D	*Solder bath temperature : $255 \pm 5^{\circ}\text{C}$ *Immersion time : 5 ± 0.5 sec Solder : Sn3Ag0.5Cu for lead-free	At least 95% of a surface of each terminal electrode must be covered by fresh solder.
High temperature JIS C 0021	*Temperature : $90^{\circ}\text{C} \pm 2^{\circ}\text{C}$ *Test duration : $1000+24/-0$ hours Measurement to be made after keeping at room temperature for 24 ± 2 hrs	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within $-30 \sim 90^{\circ}\text{C}$.
Low temperature JIS C 0020	*Temperature : $-30^{\circ}\text{C} \pm 2^{\circ}\text{C}$ *Test duration : $1000+24/-0$ hours Measurement to be made after keeping at room temperature for 24 ± 2 hrs	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within $-30 \sim 90^{\circ}\text{C}$.
Temperature cycle JIS C 0025	1. 30 ± 3 minutes at $-30 \pm 3^{\circ}\text{C}$, 2. 10~15 minutes at room temperature, 3. 30 ± 3 minutes at $+90 \pm 3^{\circ}\text{C}$, 4. 10~15 minutes at room temperature, Total 100 continuous cycles Measurement to be made after keeping at room temperature for 24 ± 2 hrs	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within $-30 \sim 90^{\circ}\text{C}$.
High temperature operation life (HTOL)	*Temperature : 90°C *VDD = 4.8V *Time : $1000+24/-0$ hrs. Measurement to be made after keeping at room temperature for 24 ± 2 hrs	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within $-30 \sim 90^{\circ}\text{C}$.

Soldering condition

Typical examples of soldering processes that provide reliable joints without any damage are given in Figure 11.

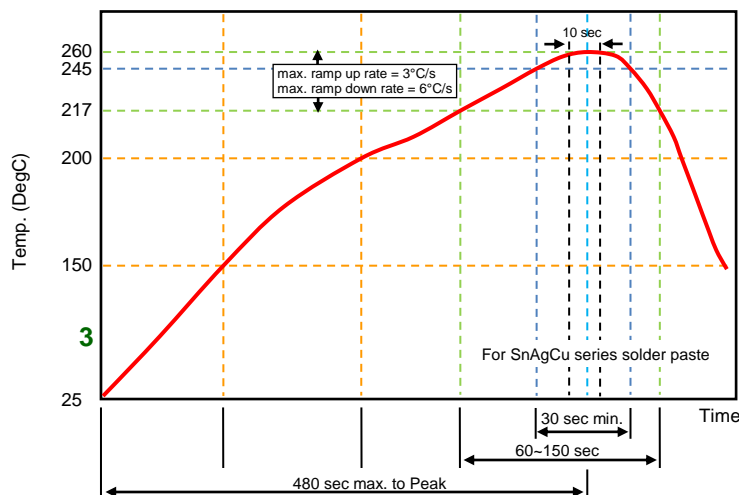


Figure 11. Infrared soldering profile

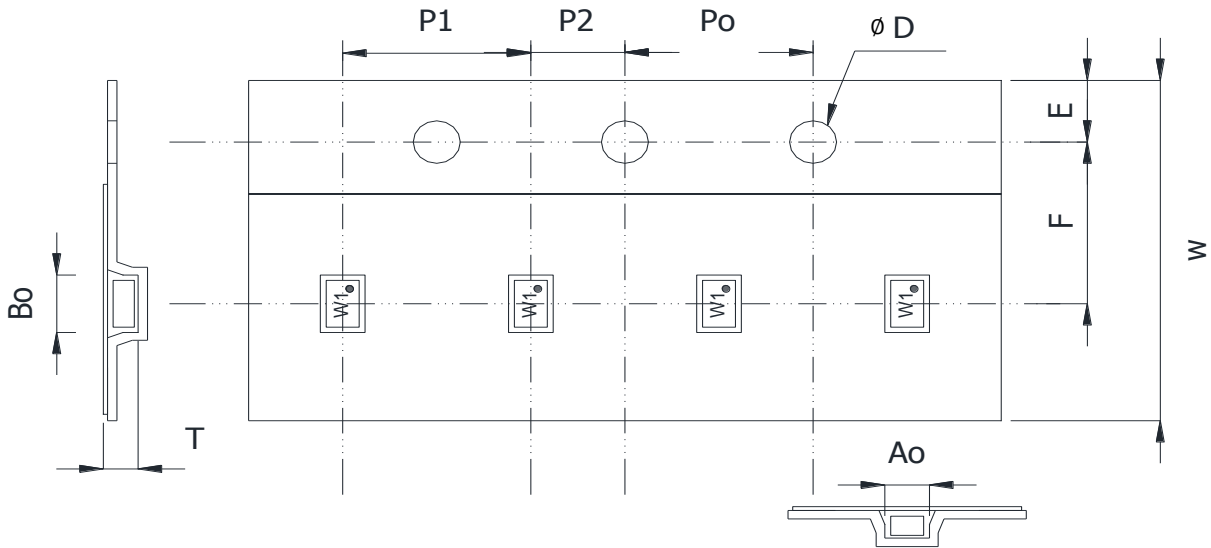
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Ordering code

RF	ASW	A	M3489A	T
RF module RF: Walsin RF Switch Device	Module type ASW: Antenna Switch	Application A: SPDT	Design Code	Packing T: Taping

Minimum Ordering Quantity: 3000 pieces per reel.

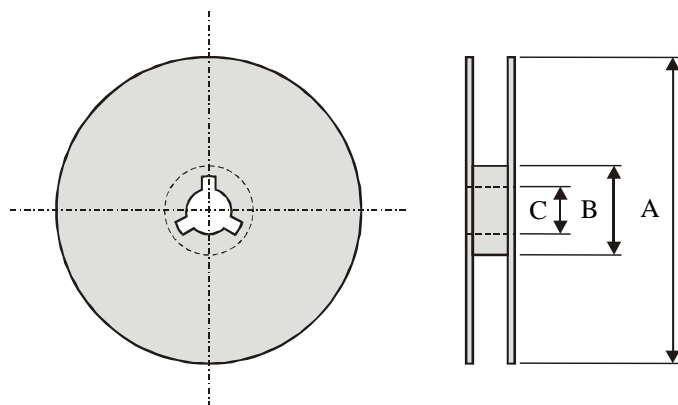
Packagin



Plastic Tape specifications (unit :mm)

Index	Ao	Bo	øD	T	W
Dimension (mm)	0.87 ± 0.05	1.27 ± 0.05	1.50 ± 0.10	0.60 ± 0.04	8.00 ± 0.10
Index	E	F	Po	P1	P2
Dimension (mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05

Reel dimensions



Index	A	B	C
Dimension (mm)	Φ 180.0±2	Φ 60.0±1	Φ 13.1±0.2

Taping Quantity : 3000 pieces per 7" reel

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Caution of handling

Limitation of Applications

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects, which might directly cause damage to the third party's life, body or property.

- (1) Aircraft equipment
- (2) Aerospace equipment
- (3) Undersea equipment
- (4) Medical equipment
- (5) Disaster prevention / crime prevention equipment
- (6) Traffic signal equipment
- (7) Transportation equipment (vehicles, trains, ships, etc.)
- (8) Applications of similar complexity and /or reliability requirements to the applications listed in the above.

Storage condition

- (1) Products should be used in 6 months from the day of WALSIN outgoing inspection, which can be confirmed.
- (2) Storage environment condition.
 - Products should be storage in the warehouse on the following conditions.
 - Temperature : -10 to +40°C
 - Humidity : 30 to 70% relative humidity
 - Don't keep products in corrosive gases such as sulfur. Chlorine gas or acid or it may cause oxidization of electrode, resulting in poor solderability.
 - Products should be storage on the palette for the prevention of the influence from humidity, dust and son on.
 - Products should be storage in the warehouse without heat shock, vibration, direct sunlight and so on.
 - Products should be storage under the airtight packaged condition.

单击下面可查看定价，库存，交付和生命周期等信息

[>>Walsin Technology\(华新科技\(华科\)\)](#)