

# PRELIMINARY DATA SHEET : CKRF2406XS03



## L, S-band Medium Power SPDT Switch

### Features

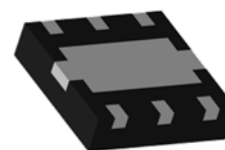
- Control voltage :  
 $VC(H) = 1.8 \text{ to } 5.0 \text{ V (3.0V TYP.)}$   
 $VC(L) = -0.2 \text{ to } 0.2 \text{ V (0V TYP.)}$
- Low insertion loss :  
 $L_{ins1} = 0.30 \text{ dB TYP. @ } f = 1.0 \text{ GHz}$   
 $L_{ins2} = 0.30 \text{ dB TYP. @ } f = 2.0 \text{ GHz}$   
 $L_{ins3} = 0.35 \text{ dB TYP. @ } f = 3.0 \text{ GHz}$
- High isolation :  
 $ISL1 = 32 \text{ dB TYP. @ } f = 1.0 \text{ GHz}$   
 $ISL2 = 27 \text{ dB TYP. @ } f = 2.0 \text{ GHz}$   
 $ISL2 = 23 \text{ dB TYP. @ } f = 3.0 \text{ GHz}$
- Handling power :  
 $P_{in(0.1dB)} = +30.0 \text{ dBm TYP. @ } f = 3.0 \text{ GHz,}$   
 $VC(H) = 3.0 \text{ V, } VC(L) = 0 \text{ V}$

### Package

- 6-pin Thin SON Package(XS03)  
 $(1.5\text{mm} \times 1.5\text{mm} \times 0.37\text{mm})$

### Description

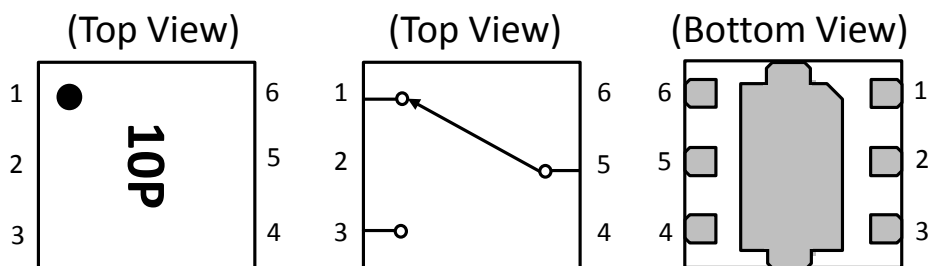
- The CKRF2406XS03 is a GaAs MMIC SPDT(Single Pole Double Throw) switch which was developed for wireless LAN



### Applications

- wireless LAN (IEEE802.11a/b/g/n), etc.

### Pin Configuration and Internal Block Diagram



Pin No.	Pin Name
1	RF1
2	GND
3	RF2
4	VC2
5	RFC
6	VC1

Remark Exposed pad : GND

### Ordering Information

Part Number	Order Number	Package	Marking	Supplying Form
CKRF2406XS03-C2	CKRF2406XS03-C2	6-pin TSON (Pb-Free)	10P	<ul style="list-style-type: none"> <li>• Embossed tape 8 mm wide</li> <li>• Pin 1, 6 face the perforation side of the tape</li> <li>• Qty 10 kpcs/reel</li> </ul>

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### Absolute Maximum Ratings

(T<sub>A</sub> = +25°C, unless otherwise specified)

Parameter	Symbol	Rating	Unit
Control Voltage	VC	6.0 <sup>Note 1</sup>	V
Input Power	P <sub>in</sub>	+33.0 <sup>Note 2</sup>	dBm
Operating Ambient Temperature	T <sub>A</sub>	-45~+85	°C
Storage Temperature	T <sub>stg</sub>	-55~+150	°C

- Note**
1.  $|VC1 - VC2| \leq 6.0V$
  2.  $3.0V \leq |VC1 - VC2| \leq 5.0V$

### Recommended Operating Range

(T<sub>A</sub> = +25°C, unless otherwise specified)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Operating Frequency	f	0.05	-	3.0	GHz
Switch Control Voltage (H)	VC(H)	+1.8	+3.0	+5.0	V
Switch Control Voltage (L)	VC(L)	-0.2	0	+0.2	V

### Truth Table

VC1	VC2	RFC-RF1	RFC-RF2
High	Low	ON	OFF
Low	High	OFF	ON

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### •Electrical Characteristics

( $T_A=+25^\circ\text{C}$ ,  $V_C(H)=3.0\text{V}$ ,  $V_C(L)=0\text{V}$ ,  $Z_0=50\Omega$ , DC Block Capacitance=56pF, unless otherwise specified)

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Insertion Loss	Lins1	$f = 0.05$ to $0.5$ GHz <sup>Note 1</sup>	-	0.30	0.50	dB
	Lins2	$f = 0.5$ to $1.0$ GHz	-	0.30	0.50	dB
	Lins3	$f = 1.0$ to $2.0$ GHz	-	0.30	0.50	dB
	Lins4	$f = 2.0$ to $2.5$ GHz	-	0.35	0.55	dB
	Lins5	$f = 2.5$ to $3.0$ GHz	-	0.35	0.55	dB
Isolation	ISL1	$f = 0.05$ to $0.5$ GHz <sup>Note 1</sup>	35	38	-	dB
	ISL2	$f = 0.5$ to $1.0$ GHz	29	32	-	dB
	ISL3	$f = 1.0$ to $2.0$ GHz	24	27	-	dB
	ISL4	$f = 2.0$ to $2.5$ GHz	22	25	-	dB
	ISL5	$f = 2.5$ to $3.0$ GHz	20	23	-	dB
Input Return Loss	RL <sub>in</sub> 1	$f = 0.05$ to $0.5$ GHz <sup>Note 1</sup>	15	20	-	dB
	RL <sub>in</sub> 2	$f = 0.5$ to $3.0$ GHz	15	20	-	dB
Output Return Loss	RL <sub>out</sub> 1	$f = 0.05$ to $0.5$ GHz <sup>Note 1</sup>	15	20	-	dB
	RL <sub>out</sub> 2	$f = 0.5$ to $3.0$ GHz	15	20	-	dB
0.1 dB Loss Compression Input Power <sup>Note 2</sup>	P <sub>in(0.1dB)</sub>	$f = 3.0$ GHz $V_C(H)=1.8\text{V}$ , $V_C(L)=0\text{V}$	-	+23	-	dBm
		$f = 3.0$ GHz $V_C(H)=3.0\text{V}$ , $V_C(L)=0\text{V}$	-	+30	-	dBm
0.5 dB Loss Compression Input Power <sup>Note 3</sup>	P <sub>in(0.5dB)</sub>	$f = 3.0$ GHz $V_C(H)=1.8\text{V}$ , $V_C(L)=0\text{V}$	-	+26	-	dBm
		$f = 3.0$ GHz $V_C(H)=3.0\text{V}$ , $V_C(L)=0\text{V}$	-	+32	-	dBm
2nd Harmonics	2f <sub>0</sub>	$f = 3.0$ GHz, P <sub>in</sub> =+20dBm	-	-85	-	dBc
3rd Harmonics	3f <sub>0</sub>	$f = 3.0$ GHz, P <sub>in</sub> =+20dBm	-	-85	-	dBc
Input 3rd Order Intercept Point	IIP3	$f = 2.5\text{GHz}$ 2-tone 1MHz Spacing	-	+58	-	dBm
Switch Control Speed	t <sub>sw</sub>	50% CTL to 90/10% RF	-	50	-	ns
Switch Control Current	I <sub>cont</sub>	Non RF	-	1	-	μA

**Note 1** DC block capacitance = 1,000pF at  $f=0.05$  to  $0.5$  GHz

**Note 2** P<sub>in(0.1dB)</sub> is the measured input power level when the insertion loss increases 0.1dB more than that of the linear range.

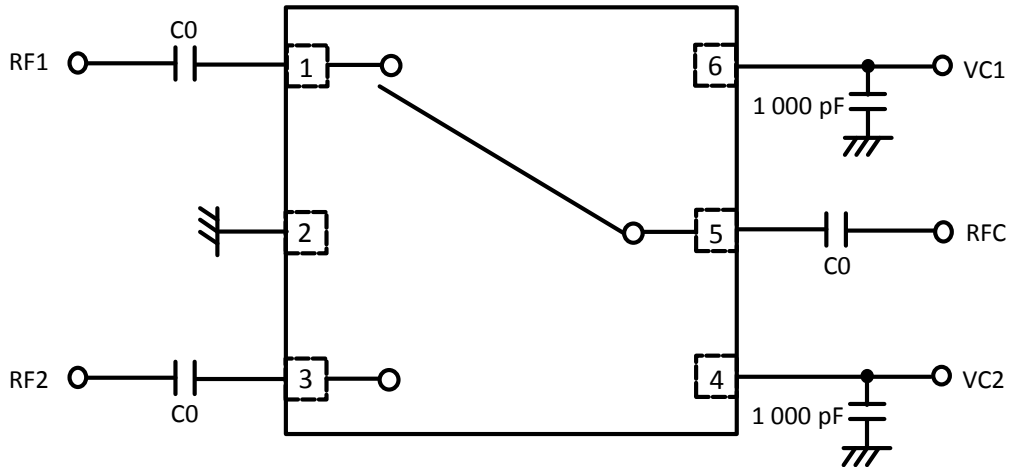
**Note 3** P<sub>in(0.5dB)</sub> is the measured input power level when the insertion loss increases 0.5dB more than that of the linear range.

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### Evaluation Circuit

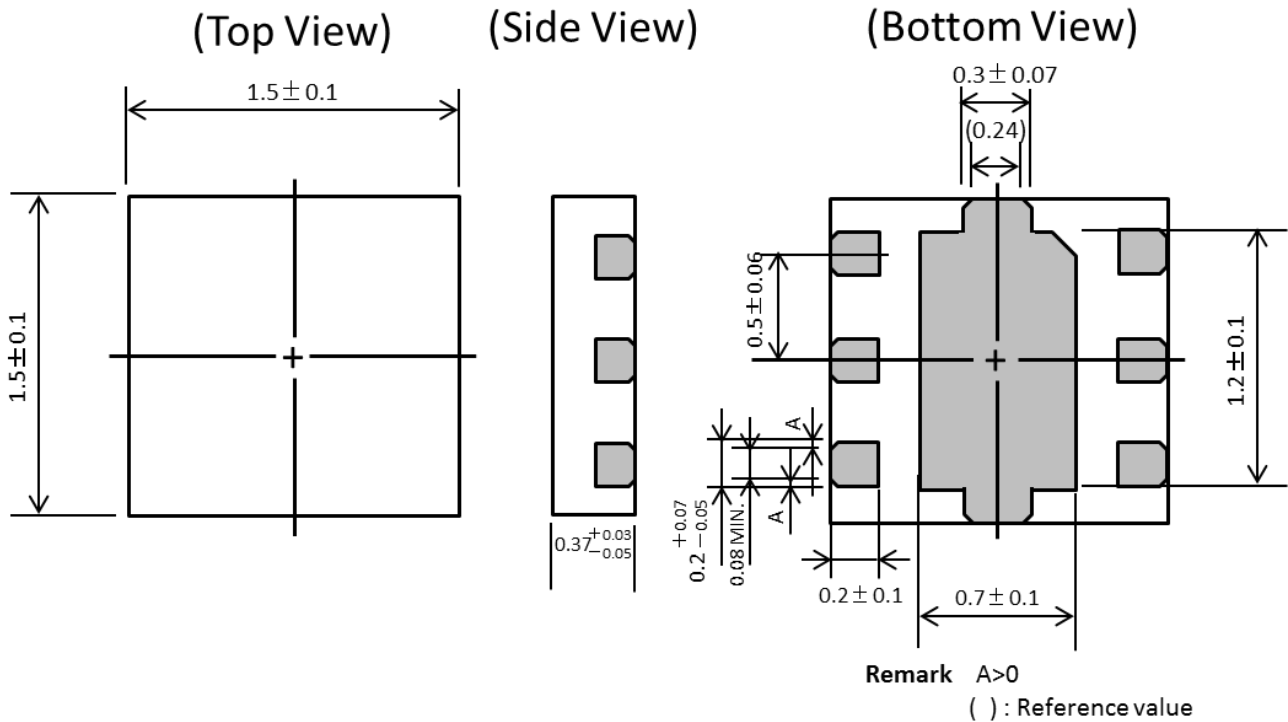


**Note** C0 : 0.05 to 0.5 GHz 1,000pF  
 ; 0.5 to 3.0 GHz 56pF

The application circuits and their parameters are for reference only and are not intended for use in actual design-ins. This device is used it is necessary to use DC Block Capacitance.

### Package Dimensions

6-pin TSON (Unit : mm)



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This product uses gallium arsenide (GaAs) of the toxic substance appointed in laws and ordinances. GaAs vapor and powder are hazardous to human health if inhaled or ingested.

- Do not dispose in fire or break up this product.
- Do not chemically make gas or powder with this product.
- When discard this product, please obey the law of your country.
- Do not lick the product or in any way allow it to enter the mouth.

[CAUTION]

Although this device is designed to be as robust as possible, ESD (Electrostatic Discharge) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions should be used at all times.

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