PRELIMINARY DATA SHEET : CKRF6381XS03

Dual-band wireless LANs(802.11 a/b/g/n/ac) and Diversity antenna switching

Features

- Control voltage :
  VC(H) = 1.8 to 5.0 V (3.0V TYP.)
  VC(L) = -0.2 to 0.2 V (0V TYP.)
- Low insertion loss :
  $L_{ins}1$ = 0.20 dB TYP. @ f = 0.1 to 1.0 GHz
  $L_{ins}2$ = 0.50 dB TYP. @ f = 1.0 to 2.5 GHz
  $L_{ins}3$ = 0.70 dB TYP. @ f = 2.5 to 4.9 GHz
  $L_{ins}4$ = 0.80 dB TYP. @ f = 4.9 to 6.0 GHz
- High isolation :
  ISL1 = 31 dB TYP. @ f = 0.1 to 1.0 GHz
  ISL2 = 23 dB TYP. @ f = 1.0 to 2.5 GHz
  ISL3 = 17 dB TYP. @ f = 2.5 to 4.9 GHz
  ISL4 = 14 dB TYP. @ f = 4.9 to 6.0 GHz
- Handling power :
  $P_{in(1dB)}$ = +38 dBm TYP. @ f = 6.0 GHz,
  VC(H) = 3.0 V, VC(L) = 0 V

Applications

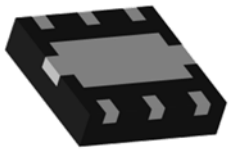
- Dual-band wireless LANs
  (802.11 a/b/g/n/ac) and Diversity antenna swiching

Package

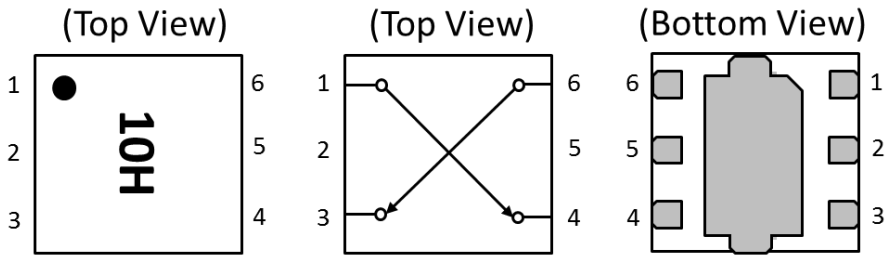
- 6-pin Thin SON Package (XS03)
  (1.5mm x 1.5mm x 0.37mm)

Description

- The CKRF6381XS03 is a pHEMT GaAs MMIC high power DPDT switch which was developed for Dual-band wireless LANs and Diversity antenna switching.



Pin Configuration and Internal Block Diagram



Pin No.	Pin Name
1	ANT2
2	VC2
3	RX
4	TX
5	VC1
6	ANT1

Remark Exposed pad : GND

Ordering Information

Part Number	Order Number	Package	Marking	Supplying Form
CKRF6381XS03-C2	CKRF6381XS03-C2	6-pin TSON (Pb-Free)	10H	・Embossed tape 8 mm wide ・Pin 1, 6 face the perforation side of the tape ・Qty 10 kpcs/reel

Absolute Maximum Ratings

(T_A = +25℃, unless otherwise specified)

Parameter	Symbol	Rating	Unit
Control Voltage	VC	6.0[Note 1]	V
Input Power	P_{in}	+38.0[Note 2]	dBm
Operating Ambient Temperature	T_A	-45～+85	℃
Storage Temperature	T_{stg}	-55～+150	℃

Note 1. |VC1 - VC2|≦6.0V

2. 3.0V≦|VC1 – VC2|≦5.0V

Recommended Operating Range

(T_A = +25℃, unless otherwise specified)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Operating Frequency	f	0.1	-	6.0	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	ANT1 to TX	ANT1 to RX	ANT2 to TX	ANT2 to RX
High	Low	OFF	ON	ON	OFF
Low	High	ON	OFF	OFF	ON

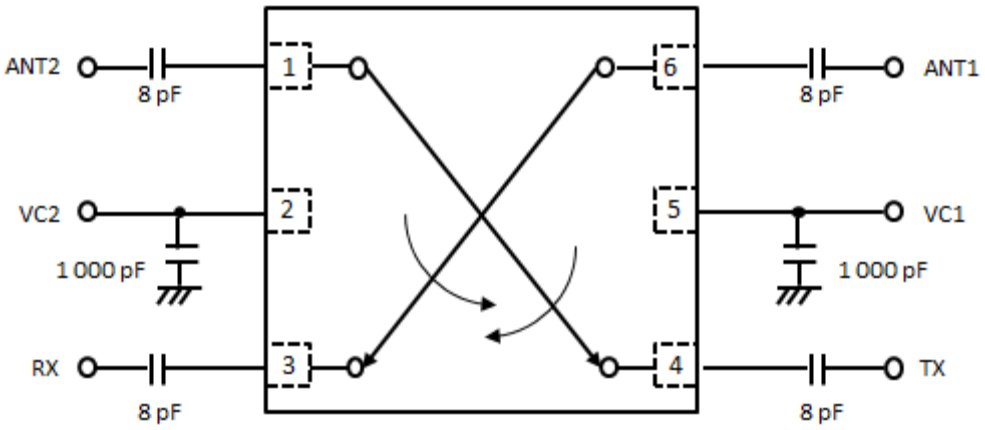
・Electrical Characteristics

(T_A=+25℃, VC(H)=3.0V, VC(L)=0V, Zo=50Ω, DC Block Capacitance=8pF, unless otherwise specified)

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Insertion Loss	Lins1	f = 0.1 to 1.0 GHz	-	0.20	0.40	dB
	Lins2	f = 1.0 to 2.5 GHz	-	0.50	0.70	dB
	Lins3	f = 2.5 to 4.9 GHz	-	0.70	0.95	dB
	Lins4	f = 4.9 to 6.0 GHz		0.80	1.10	dB
Isolation	ISL1	f = 0.1 to 1.0 GHz	28	31	-	dB
	ISL2	f = 1.0 to 2.5 GHz	19	23	-	dB
	ISL3	f = 2.5 to 4.9 GHz	13	17	-	dB
	ISL4	f = 4.9 to 6.0 GHz	10	14	-	dB
Return Loss 1	RL1	f = 0.1 to 4.0 GHz	15	20	-	dB
Return Loss 2	RL2	f = 4.0 to 6.0 GHz	10	15	-	dB
0.1 dB Loss Compression Input Power Note1	$P_{in(0.1\ dB)}$	f = 0.1 to 6.0 GHz	-	+35	-	dBm
1 dB Loss Compression Input Power Note2	$P_{in(1\ dB)}$	f = 0.1 to 6.0 GHz	-	+38	-	dBm
3rd Order Input Intercept Point	IIP3	Pin = +20dBm, f = 0.1 to 6.0 GHz, 2-tone 1MHz Spacing	-	+62	-	dBm
2nd Harmonic	2f0	Pin = +25dBm, f = 0.1 to 6.0 GHz	-	-85	-	dBc
3rd Harmonic	3f0	Pin = +25dBm, f = 0.1 to 6.0 GHz	-	-85	-	dBc
Switch Control Current	I_{cont}	No RF Signal	-	16	-	uA
Switch Control Speed	T_{sw}	50% CTL to 90/10% RF	-	100	-	ns

Note $P_{in(1dB)}$ is the measured input power level when the insertion loss increases 1dB more than that of the linear range.

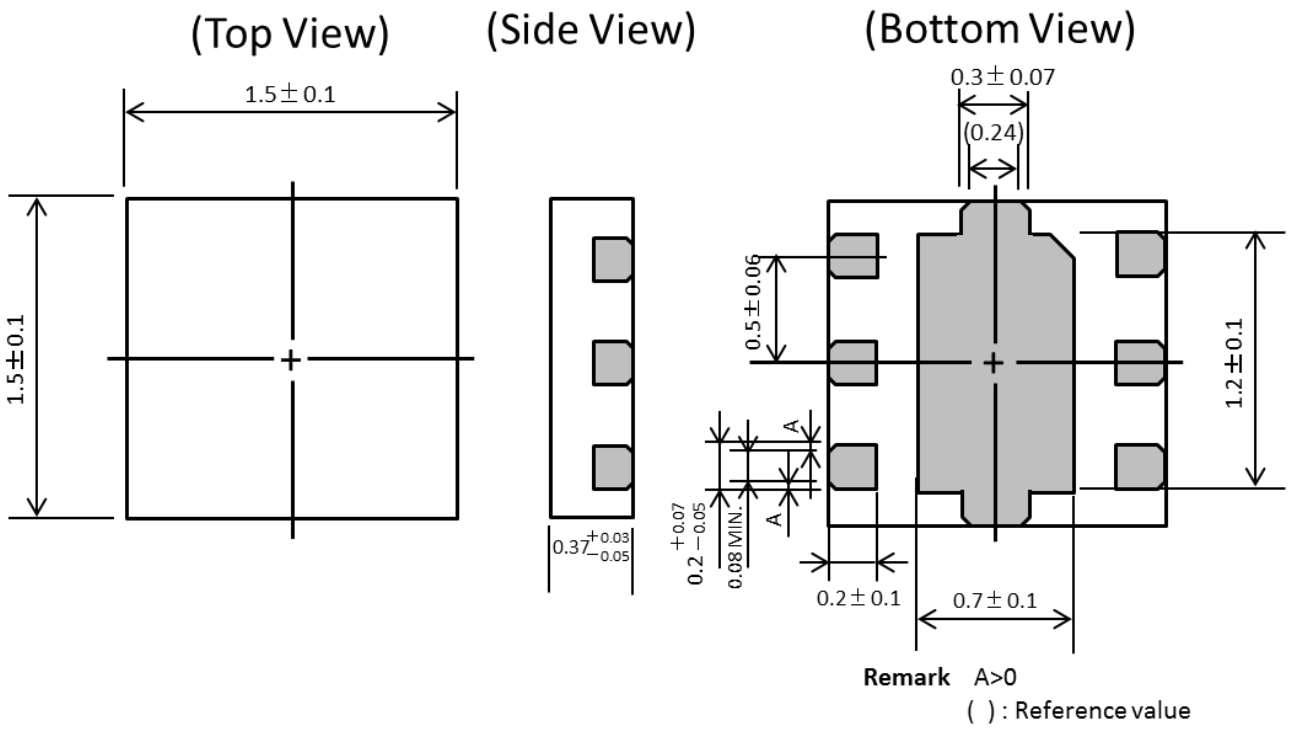
Evaluation Circuit



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 Thin SON Package (XS03) (Unit : mm)



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[Caution in the gallium arsenide (GaAs) product handling]

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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