DATA SHEET : CKRF2185XS02

6GHz Middle Power SPDT Switch for Wireless LAN

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 :
  $L_{ins}1$ = 0.35 dB TYP. @ f = 2.0 to 2.5 GHz
  $L_{ins}2$ = 0.40 dB TYP. @ f = 4.9 to 6.0 GHz
- High Isolation :
  ISL1 = 28 dB TYP. @ f = 2.0 to 2.5 GHz
  ISL2 = 26 dB TYP. @ f = 4.9 to 6.0 GHz
- Handling power :
  Pin (1dB) = +32 dBm TYP.
  @ VC(H) = 3.0 V, VC(L) = 0 V

Applications

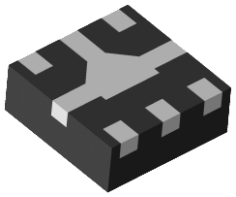
- Wireless LAN (IEEE 802.11 a/b/g/n)
- ISM band radios

Package

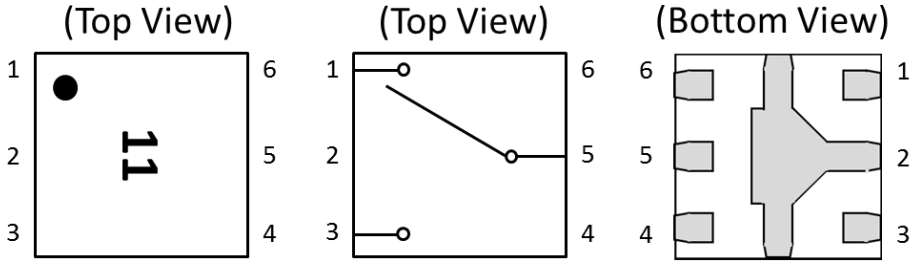
- 6-pin plastic Thin Small SON (XS02) Package (1.0mm x 1.0mm x 0.37mm)

Description

- The CFRF2185XS02 is a pHEMT GaAs FET Single Pole Double Throw (SPDT) Switch. This device can operate frequency from 2.0GHz to 6.0GHz, having the low insertion loss and high isolation.



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
CKRF2185XS02-C2	CKRF2185XS02-C2	6-pin plastic TSSON (XS02) (Pb-Free)	11	・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}	+33[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	2.0	-	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	RFC-RF1	RFC-RF2
High	Low	OFF	ON
Low	High	ON	OFF

Electrical Characteristics

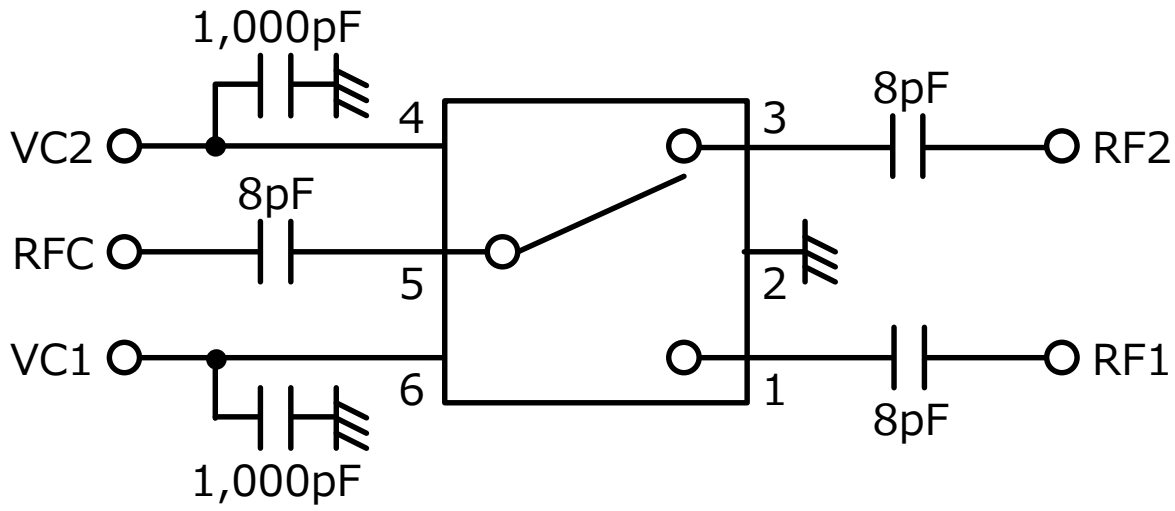
(T_A=+25℃, VC(H)=3.0V, VC(L)=0V, Zo=50Ω, DC Block Capacitance=8pF, unless otherwise specified)

Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit
Insertion Loss	$L_{INS}1$	f=2.0GHz to 2.5GHz	---	0.35	0.55	dB
	$L_{INS}2$	f=4.9GHz to 6.0GHz	---	0.40	0.60	dB
Isolation	ISL1	f=2.0GHz to 2.5GHz	25	28	---	dB
	ISL2	f=4.9GHz to 6.0GHz	23	26	---	dB
Input Return Loss	$RL_{IN}1$	f=2.0GHz to 2.5GHz	23	26	---	dB
	$RL_{IN}2$	f=4.9GHz to 6.0GHz	15	18	---	dB
Output Return Loss	$RL_{OUT}1$	f=2.0GHz to 2.5GHz	21	24	---	dB
	$RL_{OUT}2$	f=4.9GHz to 6.0GHz	15	18	---	dB
0.1dB Loss Compression Input Power Note 1	$P_{in(0.1dB)}$	f=2.5GHz, VC(H)=1.8V, VC(L)=0V	+20	+23	---	dBm
		f=2.5GHz, VC(H)=3.0V, VC(L)=0V	+26	+29	---	dBm
		f=6.0GHz, VC(H)=1.8V, VC(L)=0V	+19	+22	---	dBm
		f=6.0GHz, VC(H)=3.0V, VC(L)=0V	+26	+29	---	dBm
1dB Loss Compression Input Power Note 2	$P_{in(1dB)}$	f=2.5GHz, VC(H)=1.8V, VC(L)=0V	+24	+27	---	dBm
		f=2.5GHz, VC(H)=3.0V, VC(L)=0V	+29	+32	---	dBm
		f=6.0GHz, VC(H)=1.8V, VC(L)=0V	+22	+25	---	dBm
		f=6.0GHz, VC(H)=3.0V, VC(L)=0V	+29	+32	---	dBm
3rd Order Input Intercept Point	IIP_3	f=2.5GHz, 2-tone 5MHz Spacing	---	+55	---	dBm
Error Vector Magnitude	EVM	802.11a, 64QAM, 54Mbps, Pin≦+24.5dBm	---	2.5	---	%
		802.11g, 64QAM, 54Mbps, Pin≦+25.5dBm	---	2.5	---	%
Switching Speed	T_{SW}	50% CTL to 90/10% RF	---	50	150	ns
Switch Control Current	I_{CONT}	RF none	---	2	10	uA

Note 1. $P_{in(0.1dB)}$ is the measured input power level when the insertion loss increases 0.1dB more than that of the linear range.

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

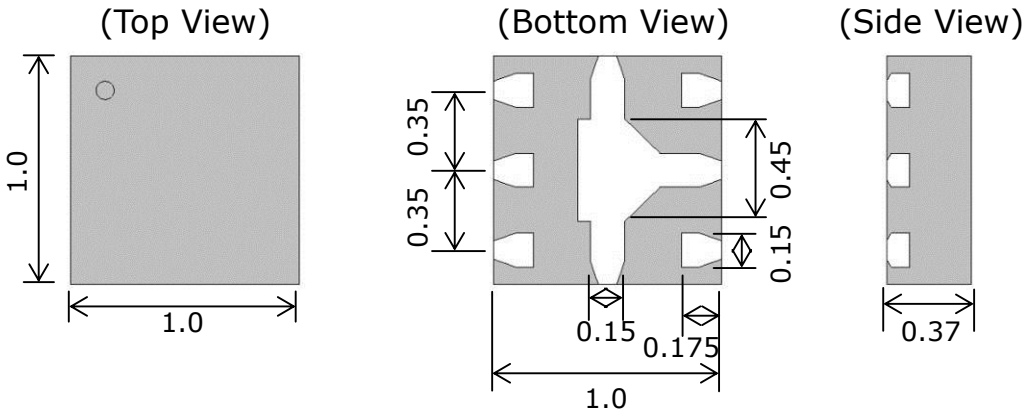
Evaluation Circuit



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.

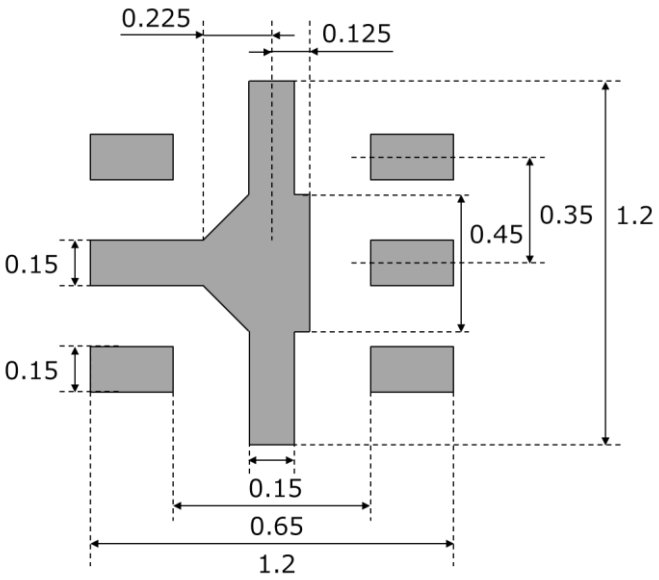
Package Dimensions

6-pin TSSON (Unit : mm)



PCB Layout Footprint

6-pin TSSON (Unit : mm)



The PCB Layout Footprint in this document is for reference only.

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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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