DATA SHEET : CKRF2214MM66

L, S-band Middle Power SPDT Switch

Features

- Control voltage :
  VC(H) = 1.8 to 5.3 V (3.0 V TYP.)
  VC(L) = -0.2 to 0.2 V (0 V TYP.)
- Low Insertion Loss :
  $L_{ins}1$ = 0.30 dB TYP. @ f = 0.05 to 0.5 GHz
  $L_{ins}2$ = 0.30 dB TYP. @ f = 0.5 to 1.0 GHz
  $L_{ins}3$ = 0.30 dB TYP. @ f = 1.0 to 2.0 GHz
  $L_{ins}4$ = 0.35 dB TYP. @ f = 2.0 to 2.5 GHz
  $L_{ins}5$ = 0.35 dB TYP. @ f = 2.5 to 3.0 GHz
- High Isolation :
  ISL1= 38 dB TYP. @ f = 0.05 to 0.5 GHz
  ISL2= 32 dB TYP. @ f = 0.5 to 1.0 GHz
  ISL3= 27 dB TYP. @ f = 1.0 to 2.0 GHz
  ISL4= 25 dB TYP. @ f = 2.0 to 2.5 GHz
  ISL5= 23 dB TYP. @ f = 2.5 to 3.0 GHz
- Handling power :
  $P_{in(0.5dB)}$ = +32 dBm TYP. @ f = 3.0 GHz,
  VC(H) = 3.0 V, VC(L) = 0 V

Applications

- Wireless LAN (IEEE 802.11 b/g)

Package

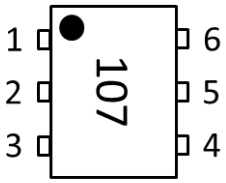
- 6-pin lead-less mini mold package
  (1.5mm x 1.1mm x 0.55mm)

Description

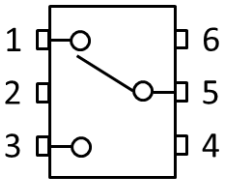
- The CKRF2214MM66 is a pHEMT GaAs SPDT (Single Pole Double Throw) switch. This device can operate frequency from 0.05 to 3.0GHz, having the low insertion loss and high isolation.

Pin Configuration And Internal Block Diagram

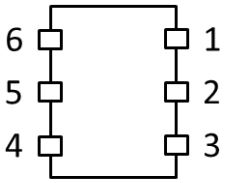
(Top View)



(Top View)



(Bottom View)



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

Ordering Information

Part Number	Order Number	Package	Marking	Supplying Form
CKRF2214MM66-C2	CKRF2214MM66-C2	・6-pin lead-less mini mold package (Pb-Free)	107	・Embossed tape 8 mm wide ・Pin 1, 6 face the perforation side of the tape ・Qty 9 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	$P_{in}1$	+33 Note 2	dBm
	$P_{in}2$	+29 Note 3	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, f≧0.4GHz

3. 3.0V≦|VC1 – VC2|≦5.0V, 0.4GHz≧f≧0.05GHz

Recommended Operating Range

(T_A=+25℃, 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	+5.3	V
Switch Control Voltage (L)	VC(L)	-0.2	0	+0.2	V

Truth Table

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

Electrical Characteristics 1

(T_A=+25℃, VC(H)=3.0V, VC(L)=0V, Zo=50Ω, DC Block Capacitance=56pF, unless otherwise specified)

Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit
Insertion Loss	$L_{INS}1$	f=0.05 to 0.5GHz Note 1	---	0.30	0.50	dB
	$L_{INS}2$	f=0.5 to 1.0GHz	---	0.30	0.50	dB
	$L_{INS}3$	f=1.0 to 2.0GHz	---	0.30	0.50	dB
	$L_{INS}4$	f=2.0 to 2.5GHz	---	0.35	0.55	dB
	$L_{INS}5$	f=2.5 to 3.0GHz	---	0.35	0.55	dB
Isolation	ISL1	f=0.05 to 0.5GHz Note 1	35	38	---	dB
	ISL2	f=0.5 to 1.0GHz	29	32	---	dB
	ISL3	f=1.0 to 2.0GHz	24	27	---	dB
	ISL4	f=2.0 to 2.5GHz	22	25	---	dB
	ISL5	f=2.5 to 3.0GHz	20	23	---	dB
Input Return Loss	RL_{in}	f=0.05 to 3.0GHz Note 1	15	20	---	dB
Output Return Loss	RL_{out}	f=0.05 to 3.0GHz Note 1	15	20	---	dB
0.1dB Loss Compression Input Power Note 2	$P_{in(0.1dB)}$	f=0.05～0.5GHz Note 1	---	+26	---	dBm
		f=0.5～3.0GHz	---	+30	---	dBm
0.5dB Loss Compression Input Power Note 3	$P_{in(0.5dB)}$	f=0.05～0.5GHz Note 1	---	+28	---	dBm
		f=0.5～3.0GHz	---	+32	---	dBm
2nd Harmonics	2f0	f=3.0GHz, P_{in}=+20dBm	---	-85	---	dBc
3rd Harmonics	3f0	f=3.0GHz, P_{in}=+20dBm	---	-85	---	dBc
3rd Order Input Intercept Point	IIP_3	f=2.5GHz, 2-tone 1MHz Spacing	---	+58	---	dBm
Error Vector Magnitude	EVM	802.11g, 64QAM, 54Mbps Pin≦+25dBm	---	2.5	---	%
Switch Control Current	I_{CONT}	RF none	---	1	10	uA
Switching Speed	T_{SW}	50% CTL to 90/10% RF	---	50	---	ns

Note 1. DC block capacitance = 1000pF at f=0.05 to 0.5GHz

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

3. $P_{in(0.5dB)}$ is the measured input power level when the insertion loss increases 0.5dB more than that of the linear range.

Electrical Characteristics 2

(T_A=+25℃, VC(H)=1.8V, VC(L)=0V, Zo=50Ω, DC Block Capacitance=56pF, unless otherwise specified)

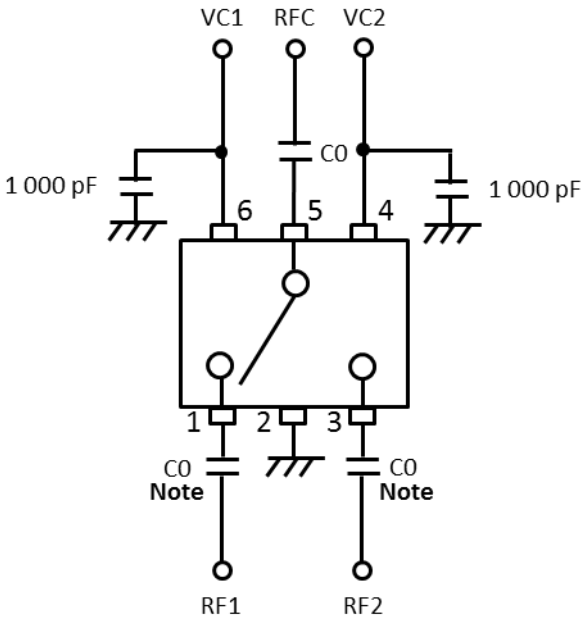
Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit
Insertion Loss	$L_{INS}1$	f=0.05 to 0.5GHz Note 1	---	0.30	0.50	dB
	$L_{INS}2$	f=0.5 to 1.0GHz	---	0.30	0.50	dB
	$L_{INS}3$	f=1.0 to 2.0GHz	---	0.30	0.50	dB
	$L_{INS}4$	f=2.0 to 2.5GHz	---	0.35	0.55	dB
	$L_{INS}5$	f=2.5 to 3.0GHz	---	0.35	0.55	dB
Isolation	ISL1	f=0.05 to 0.5GHz Note 1	35	38	---	dB
	ISL2	f=0.5 to 1.0GHz	29	32	---	dB
	ISL3	f=1.0 to 2.0GHz	24	27	---	dB
	ISL4	f=2.0 to 2.5GHz	22	25	---	dB
	ISL5	f=2.5 to 3.0GHz	20	23	---	dB
Input Return Loss	RL_{in}	f=0.05 to 3.0GHz Note 1	15	20	---	dB
Output Return Loss	RL_{out}	f=0.05 to 3.0GHz Note 1	15	20	---	dB
0.1dB Loss Compression Input Power Note 2	$P_{in(0.1dB)}$	f=0.05～0.5GHz Note 1	---	+19	---	dBm
		f=0.5～3.0GHz	---	+23	---	dBm
0.5dB Loss Compression Input Power Note 3	$P_{in(0.5dB)}$	f=0.05～0.5GHz Note 1	---	+22	---	dBm
		f=0.5～3.0GHz	---	+26	---	dBm
Switch Control Current	I_{CONT}	RF none	---	1	10	uA
Switching Speed	T_{SW}	50% CTL to 90/10% RF	---	50	---	ns

Note 1. DC block capacitance = 1000pF at f=0.05 to 0.5GHz

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

3. $P_{in(0.5dB)}$ is the measured input power level when the insertion loss increases 0.5dB more than that of the linear range.

Evaluation Circuit

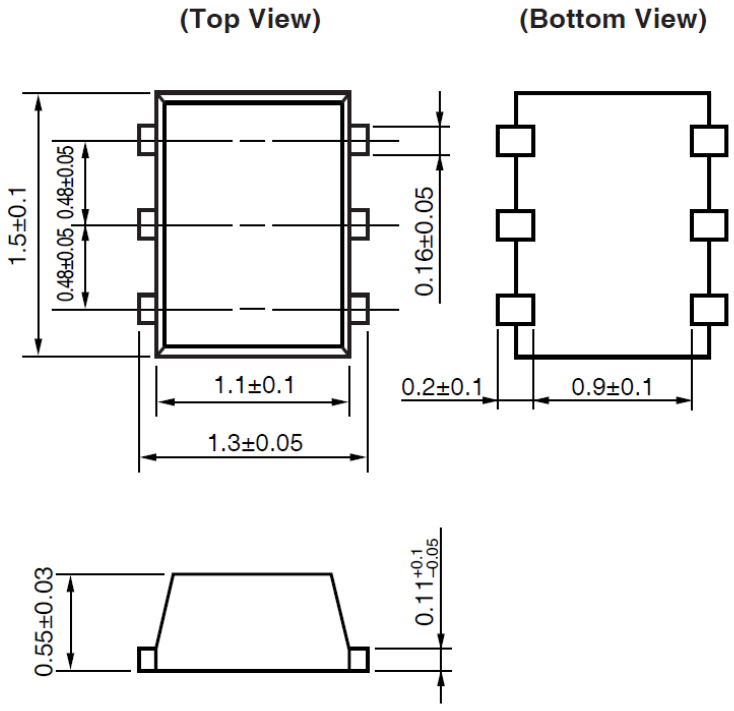


Note C0 : 0.05 to 0.5 GHz 1000pF
: 0.4 to 3.0 GHz 56pF

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.

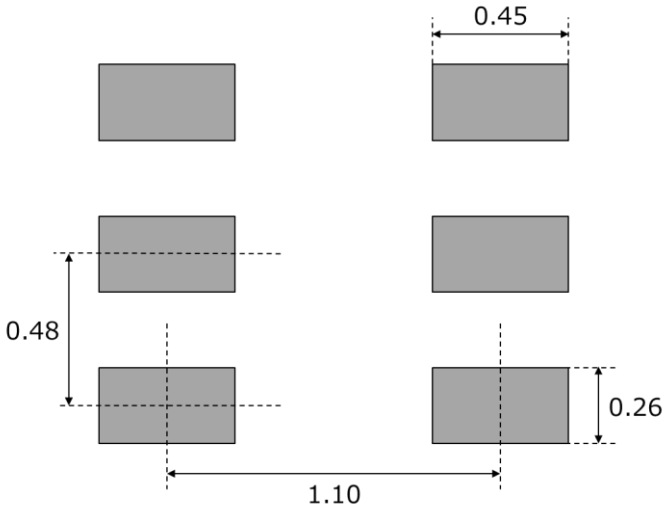
Package Dimensions

6-PIN LEAD-LESS MINIMOLD (1511 PKG) (UNIT:mm)



PCB Layout Footprint

6-PIN LEAD-LESS MINIMOLD (1511 PKG) (UNIT:mm)



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

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- Do not dispose in fire or break up this product.
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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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