

Product Overview

The MCSPT0036P47 is a symmetrical reflective Single Pole double Throws (SP2T) switch designed for broadband, high power switching applications. Its broadband behavior from 30MHz to 6.0GHz frequencies makes the MCSPT0036P47 an excellent switch for all the applications requiring low insertion loss, high isolation and high linearity within a small package size. Part can also be used below 30MHz with reduced power handling.

The MCSPT0036P47 is packaged into a compact Quad Flat No lead (QFN) 5x5mm 32 leads plastic package.

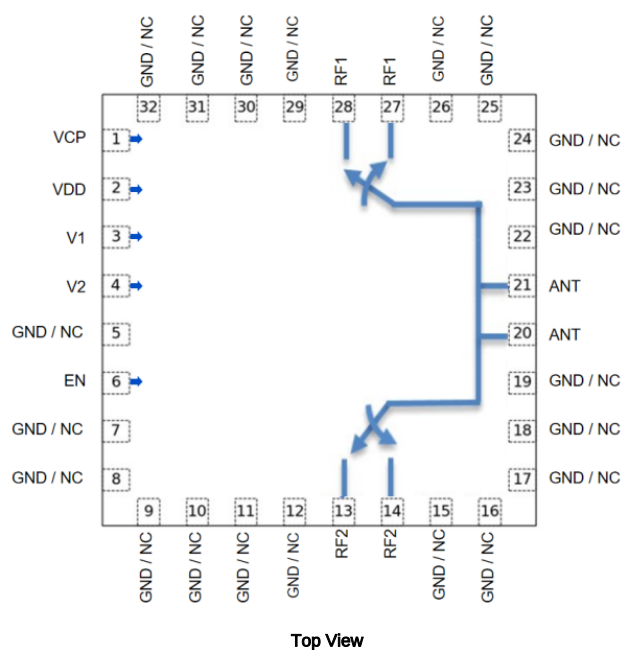
Applications

- Private mobile radio handsets
- Public safety handsets
- Cellular infrastructure
- LTE relays and micro-cells
- Satellite terminals
- Small cells

Key Features

- Operating frequency: 30MHz to 6GHz
- Low insertion loss: 0.3dB @ 1GHz
- High isolation: 42dB @ 1GHz
- 50W CW, 125W Peak Power
- No external DC blocking capacitors on RF lines
- Versatile 4.5-5.5V power supply

Functional Diagram



Ordering Information

Part No.	Description
MCSPT0036P47	30MHz-6GHz 50W CW GaN Broadband RF Switch SP2T, 1500pcs in one 7 ' Tape&Reel

Signal Descriptions

Pin	Name	Description
1	VCP	When EN=1 or Floating, the VCP is internal charge pump voltage output. When EN=0, the VCP is Negative Voltage supply pin.
2	VDD	DC power supply
3	V1	Switch control input 1
4	V2	Switch control input 2
5,7,8,9,10,11,16,17,18, 23,24,25,30,31,32	GND/NC	No internal connection, Grounding can better achieve heat dissipation.
6	EN	Charge pump enable. When EN=0, internal charge pump is disabled and external -18V supply will be supplied to VCP pin. When EN=1 or Floating, internal charge pump is enabled and VCP pin should be floated.
12,15,19,22,26,29	NC	No internal connection
13,14	RF 2	RF port 2
20,21	ANT	Antenna port
27,28	RF 1	RF port 1
33	Ground	Ground thermal pad

Absolute Maximum Ratings@Ta = +25°C

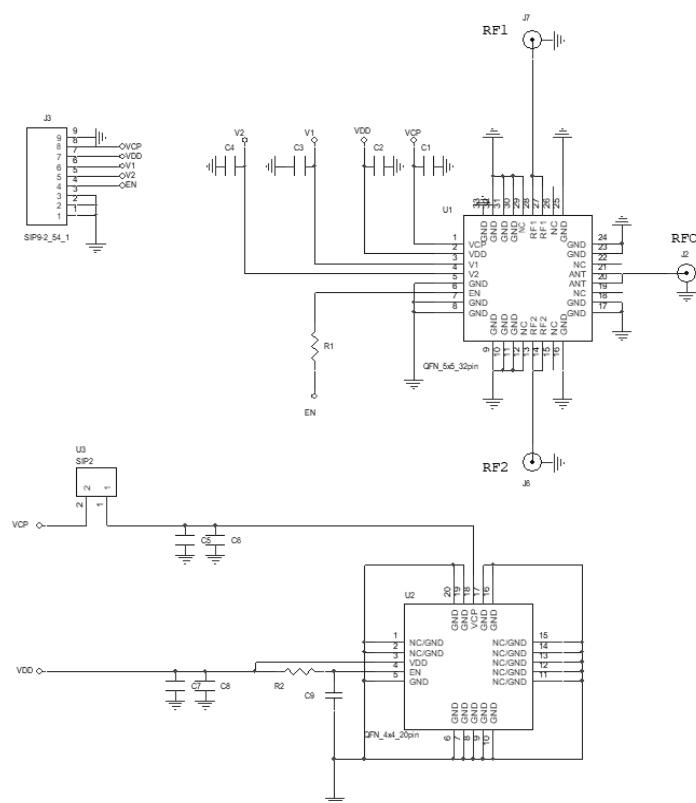
Parameter	Symbol	Absolute Maximum
Power Supply Voltage	VDD	4.5V to 5.5 V
Charge Pump Voltage	VCP	-20V to -17V
RF Input Power peak	Ppeak	53dBm @ 1.3GHz
RF Input Power CW	PCW	49dBm @ 1.3GHz
Hot Switching Power CW	PHS	47dBm @ 1.3GHz
Junction Temperature	Tj	+140°C
Operating Temperature	Top	-40°C to +100°C
Storage Temperature	Tst	-55°C to +150°C

Electrical Specifications@Ta = +25°C

Parameter	Test condition	Min	Typ	Max	Unit
Operating Frequency		30		6000	MHz
Insertion Loss, ANT-RFx	Freq=1GHz		0.3		dB
	Freq=2GHz		0.35		dB
	Freq=3GHz		0.4		dB
	Freq=4GHz		0.45		dB
	Freq=5GHz		0.55		dB
	Freq=6GHz		0.7		dB
Isolation, ANT-RFx	Freq=1GHz		42		dB
	Freq=2GHz		35		dB
	Freq=3GHz		31		dB
	Freq=4GHz		27		dB
	Freq=5GHz		24		dB

	Freq=6GHz		20		dB
Return Loss ANT-RFx	Freq=1GHz		25		dB
	Freq=2GHz		25		dB
	Freq=3GHz		25		dB
	Freq=4GHz		25		dB
	Freq=5GHz		20		dB
	Freq=6GHz		20		dB
P0.1 dB	1300MHz, CW	47			dBm
Peak P0.1 dB	1300MHz, 1% duty cycle, 1 mS period.		51		dBm
IIP3	Pin=30dBm/tone		70		dBm
Switching time	50% ctrl to 10/90% of the RF value is settled. C1=1nF		550		ns
Control Voltage	Power supply VDD	4.5	5	5.5	V
	Negative Voltage supply, VCP	-20	-18	-17	V
	All control pins high, Vih	4.5	5	5.5	V
	All control pins low, Vil	-0.3	0	0.5	V
Control Current	All control pins low, Iil				uA
	All control pins high, Iih				uA
Current Consumption, IDD	Active mode		1	3.6	mA

Bill of Materials



Note:

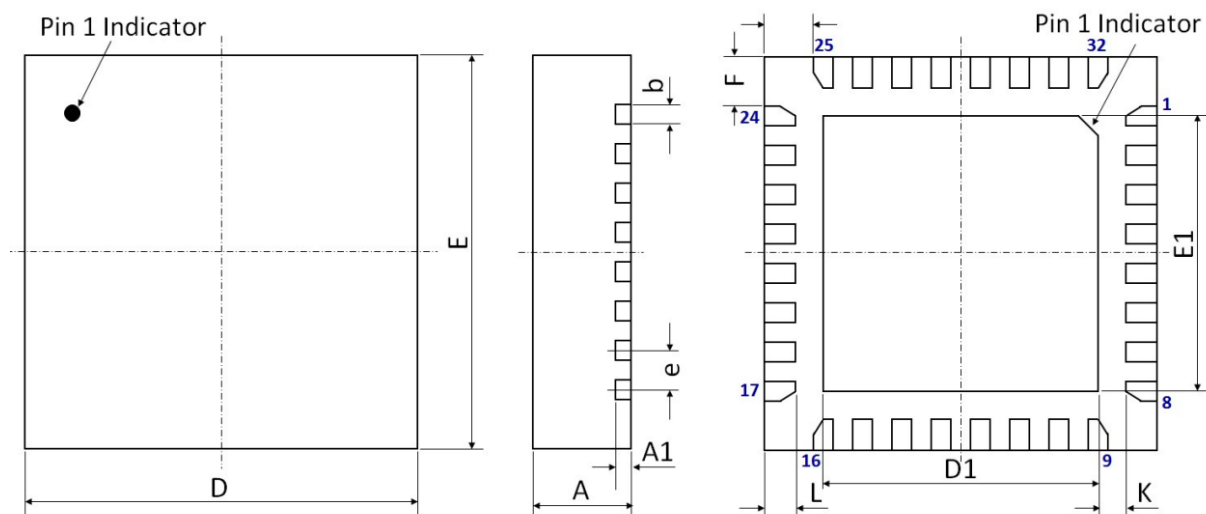
When EN=0, internal charge pump is disabled and external -18V supply will be supplied to VCP pin.
When EN=1 or Floating, internal charge pump is enabled and VCP pin should be floated.

Component	Description
U1	MCSPT0036P47
U2	MCNS6218
C1、C6、C8	1nF, 25 V, $\pm 10\%$, 0402
C2、C5、C7、C9	1uF, 25 V, $\pm 10\%$, 0402
C3、C4	100pF 25 V, $\pm 10\%$, 0402
R1	0 Ω , 0402
R2	500K Ω , $\pm 10\%$, 0402

Bias Table

V1	V2	Active RF Path
0	0	ANT-RF1
1	0	ANT-RF2
0	1	ALL OFF
1	1	ALL OFF

Device Package Information



Device Package Dimensions

Dimension (mm)	Value (mm)	Tolerance (mm)	Dimension (mm)	Value (mm)	Tolerance (mm)
A	0.85	± 0.05	E	5.00 BSC	± 0.05
A1	0.203	± 0.02	E1	3.20	± 0.06
b	0.25	$+0.05/-0.07$	F	0.625	± 0.05
D	5.00 BSC	± 0.05	G	0.625	± 0.05
D1	3.20	± 0.06	L	0.40	± 0.05
e	0.50 BSC	± 0.05	K	0.50	± 0.05