

# 20W Avg Broadband SP4T

**FEATURES**

- Low insertion loss
  - 0.55dB @ 800MHz
- High isolation
  - 37dB @ MHz
- High linear power handling
- No external DC blocking capacitors on RF lines
- Versatile 2.6-5.25V power supply

**APPLICATIONS**

- Private Mobile Radio handsets
- Public safety handsets
- LTE relays and microcells
- Satellite terminals

**DESCRIPTION**

The TS7341L is a symmetrical reflective Single Pole Four Throws (SP4T) switch designed for broadband, high power switching applications. Its broadband behavior from 30MHz to 2.5GHz frequencies makes the TS7341L an excellent switch for all the applications requiring low insertion loss, high isolation and high linearity within a small package size.

The TS7341L is packaged into a compact Quad Flat No lead (QFN) 4x4mm 32 leads plastic package.

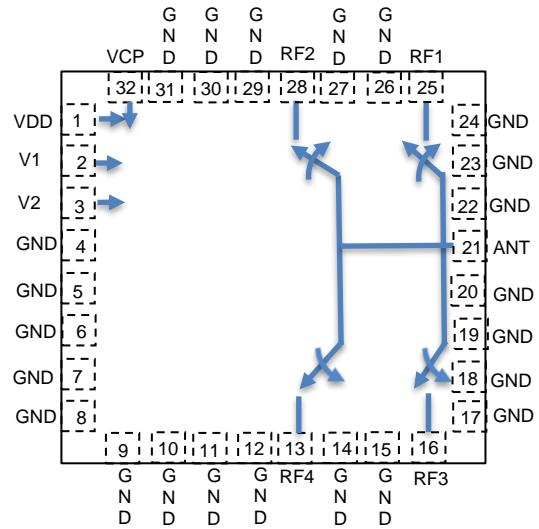


Figure 1: Functional Block Diagram (top view)

**ORDERING INFORMATION**

Base Part Number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
TS7341L	QFN 4 mm x 4 mm	Tape and Reel	3000	TS7341LMTRPBF

## PIN DESCRIPTION

PIN NUMBER	PIN NAME	DESCRIPTION
1	VDD	DC power supply
2	V1	Switch control input
3	V2	Switch control input
4,5,6,7,8,9,10,11,12,14,15,17,18,19,20,22,23,24,26,27,29,30,31	GND	Ground
13	RF4	RF Port 4
16	RF3	RF Port 3
21	ANT	Antenna Port
28	RF2	RF Port 2
25	RF1	RF Port 1
32	VCP	Input Pin. Connecting a SMD Capacitor (or capacitor in parallel with high value resistor) between this pin and ground enable faster switching time

The backside ground slug of the package must be grounded directly to the ground plane to ensure proper operation

## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNITS
Power supply voltage	VDD	2.6 to 5.5	V
Storage temperature Range	T <sub>st</sub>	-55 to +125	°C
Operating Temperature Range	T <sub>op</sub>	-40 to +85	°C
RF Input Power CW (25degC)	RFx	43	dBm

Exceeding one or a combination of the Absolute Maximum Ratings conditions may cause permanent damage to the device.

## SWITCH TRUTH TABLE

V2	V1	RF PATH
0	0	RFC-RF1
0	1	RFC-RF2
1	0	RFC-RF3
1	1	RFC-RF4

**Note: VDD should be applied first before V1 and V2.**

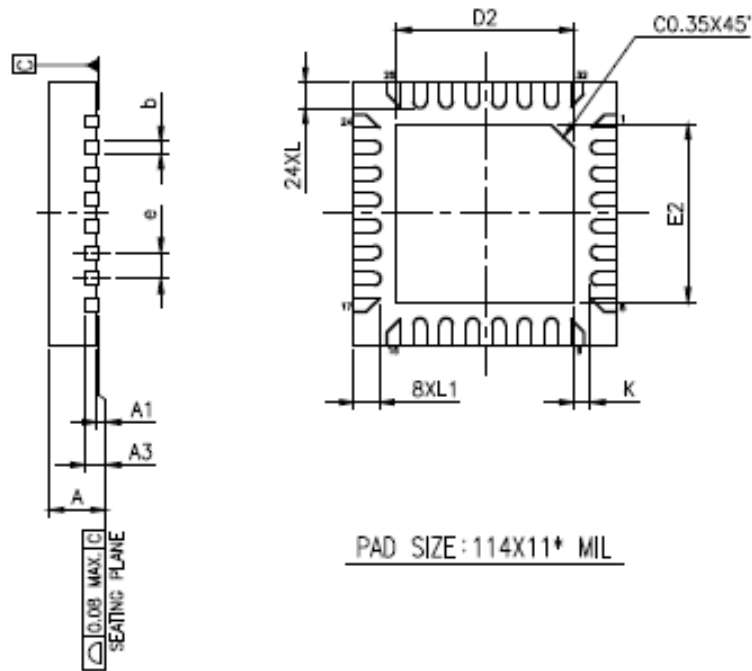
The switch can be operated with only 2 control lines V1 and V2. There is an internal pull-down to ground on the V1 and V2 control pins: default switch state at start-up without any control voltage applied will be RFC-RF1 on.

## ELECTRICAL SPECIFICATIONS

Temperature=25°C, VDD=2.7V, 50Ω source and load conditions

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Operating frequency		30		2500	MHz
Insertion loss	400MHz		0.4		dB
	800MHz		0.55		
	2.5GHz		0.9		
Isolation RFC-RF1,3	400MHz		43		dB
	800MHz		37		
	2.5GHz		25		
Return Loss RFC, RFx	400MHz		22		dB
	800MHz		17		
	2.5GHz		13		
Harmonic distortion					
H2	800MHz, Pin=35dBm		-80		dBc
H3	800MHz, Pin=35dBm		-79		dBc
IIP3	800MHz		70		dBm
P0.1dB	800MHz CW signal		43.5		dBm
Enhanced Switching time	50% ctrl to 10/90% of the RF value is settled. C1=1nF(refer to figure 4 schematic)		3.5		μs
Control voltage	Power Supply VDD	2.6	3.3	5.25	V
	V <sub>1</sub> , V <sub>2</sub> ctrl pins V <sub>ih</sub>	0.67*VDD	VDD	VDD+0.3	V
	All Control pins V <sub>il</sub>	-0.3		0.3*VDD	V
Control current	I <sub>il</sub> , V1 or V2 ctrl voltage =0.3*VDD		0		μA
	I <sub>ih</sub> , V1 or V2 ctrl voltage = VDD			7.5	μA
Current consumption	Active mode		225		μA

**Note 1:** No external DC blocking capacitors required on the RF terminals unless DC voltage is applied on an RF terminal.



JEDEC OUTLINE	N/A		
PKG CODE	VQFN(Y432)		
SYMBOLS	MIN.	NOM.	MAX.
A	0.80	0.85	0.90
A1	0.00	0.02	0.05
A3	0.203 REF.		
b	0.15	0.20	0.25
D	4.00 BSC		
E	4.00 BSC		
e	0.40 BSC		

E2			D2		
MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
2.65	2.70	2.75	2.65	2.70	2.75

L1			K		
MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
0.332	0.382	0.432	0.20	—	—

Figure 2: Package drawings

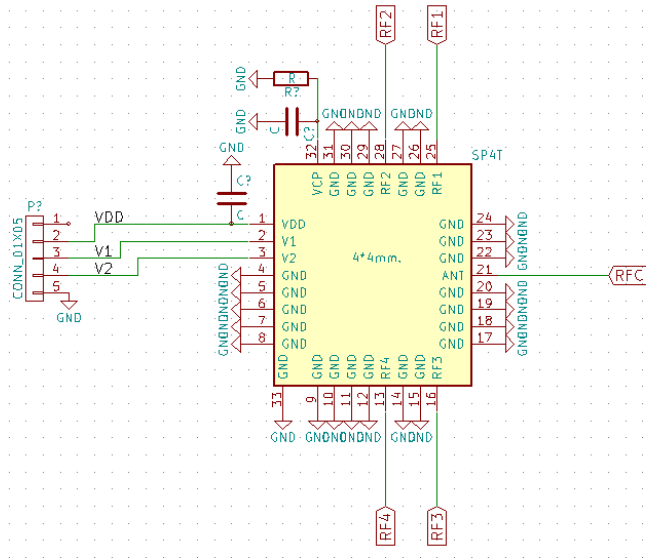


Figure 4: Evaluation board schematic

**QUALIFICATION INFORMATION†**

<b>Qualification Level</b>		Consumer	
<b>Moisture Sensitivity Level</b>		4x4 QFN	MSL1
	Human Body Model	Class 1A	
	Charged Device Model	Class TBD	
<b>RoHS Compliant</b>		Yes	

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