

50W CW, 316W Peak SPDT

FEATURES

- Low insertion loss (TX Path)
 - 0.65dB @ 2.7GHz
- High isolation (RX Path)
 - 45dB @ 2.7GHz
- 316W Peak Power Handling
- No external DC blocking capacitors on RF line
- Versatile 2.6-5.25V power supply

APPLICATIONS

- Cellular infrastructure
- Small cells
- LTE relays and microcells
- Satellite terminals

DESCRIPTION

The TS7529N is an asymmetrical reflective Single Pole Dual Throw (SPDT) switch designed for broadband, high peak power switching applications. Its broadband behavior from 700M to 4GHz frequencies makes the TS7529N an excellent switch for all the applications requiring low insertion loss, high isolation and high linearity within a small package size.

The TS7529N is packaged into a compact Quad Flat No lead (QFN) 5x5mm, 32 leads plastic package.

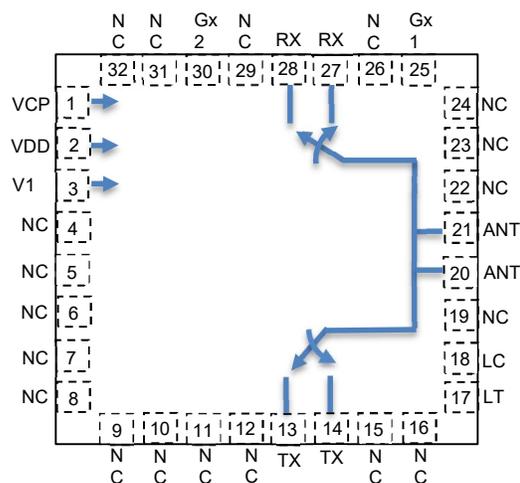


Figure 1: Functional Block Diagram (top view)

ORDERING INFORMATION

Base Part Number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
TS7529N	QFN 5x5mm	Tape and Reel	1000	TS7529NMTRPBF

PIN DESCRIPTION

PIN NUMBER	PIN NAME	DESCRIPTION
1	VCP	Connecting a 1nF Capacitor to ground enables faster switching time
2	VDD	DC power supply
3	V1	Switch control input
4,5,6,7,8,9,10,11,12,15,16,19,22,23,24,26,29,31,32	NC	No Connect. Can be Grounded for improved Thermals
13,14	TX	TX Path
17, 18	LT, LC	Tuning Inductor for high freq band
25, 30	Gx1, Gx2	Optional: Tuning to improve RX isolation
20,21	ANT	Antenna Port
27,28	RX	RX Port

The backside ground slug of the package must be grounded directly to the ground plane with multiple vias to ensure proper operation and thermal management.

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNITS
Power supply voltage	VDD	2.6 to 5.5	V
Storage temperature Range	T _{st}	-55 to +125	°C
Operating Temperature Range	T _{op}	-40 to +105	°C
RF Input power CW, 85 degC base plate	TX, ANT	40	W

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

SWITCH TRUTH TABLE

V1	RF PATH
0	ANT-RX
1	ANT-TX

Note: VDD should be applied first before V1.

There is an internal pull-down to ground on the V1 control pin: default switch state at start-up without any control voltage applied will be ANT-RX on.

ELECTRICAL SPECIFICATIONS

Temperature = 25°C, VDD=3.3V, 50Ω source and load conditions

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Operating frequency		700		4000	MHz
Insertion loss_TX	800MHz		0.40		dB
	2.6GHz		0.65		
	3.8GHz		TBD		

Insertion loss_RX	800MHz		0.6		dB
	2.6GHz		0.75		
	3.8GHz		TBD		
Isolation ANT-TX	800MHz		35		dB
	2.6GHz		22		
	3.8GHz		TBD		
Isolation ANT-RX	800MHz		50		dB
	2.6GHz		45		
	3.8GHz		TBD		
Return Loss RX (TX)	800MHz		28 (17)		dB
	2.6GHz		23 (17)		
	3.8GHz		TBD		
H2	800MHz, Pin=35dBm		-35		dBm
H3	800MHz, Pin=35dBm		-40		dBm
IIP3	800MHz		60		dBm
P0.1dB TX, ANT	2.6GHz CW signal		60		W
Peak P0.1dB TX, ANT	2.6GHz. Duty cycle 1% with 10us pulse width, 85degC		316		W
RX Isolation at Peak Power	2.6GHz		40		dB
Switching Time	50% ctrl to 10/90% of the RF value is settled. CP=1nF		2		μs
Control voltage	Power Supply VDD	2.6	3.3	5.5	V
	V1 ctrl pin V _{ih}	1.0	3.3	5.25	V
	All control pins V _{il}	-0.3		0.5	V
Control current	I _{il} , V1		0		μA
	I _{ih} , V1			7.5	μA
Current consumption	Active mode (VDD On)		160	200	μA

Note 1: All information above is based on individual freq tune. See schematic and tune elements on page 5.

PACKAGE INFORMATION

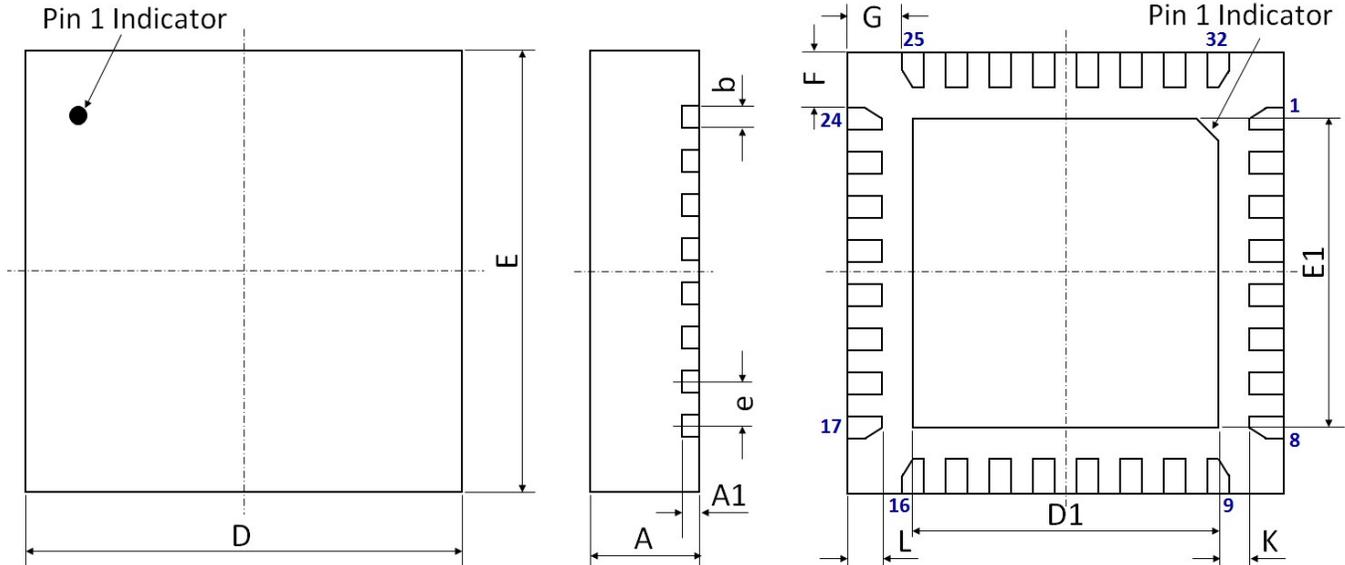


Figure 2 Device Package Drawing
(All dimensions are in mm)

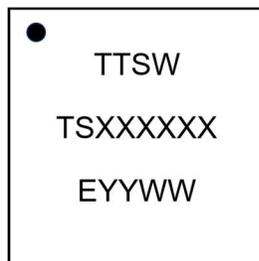
Device Package Dimensions

Dimension (mm)	Value (mm)	Tolerance (mm)	Dimension (mm)	Value (mm)	Tolerance (mm)
A	1.25	±0.05	E	5.00 BSC	±0.05
A1	0.203	±0.02	E1	3.10	±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	3.10	±0.06	L	0.40	±0.05
e	0.50 BSC	±0.05	K	0.50	±0.05

Note: Lead finish: Pure Sn without underlayer; Thickness: 7.5µm ~ 20µm (Typical 10µm ~ 12µm)

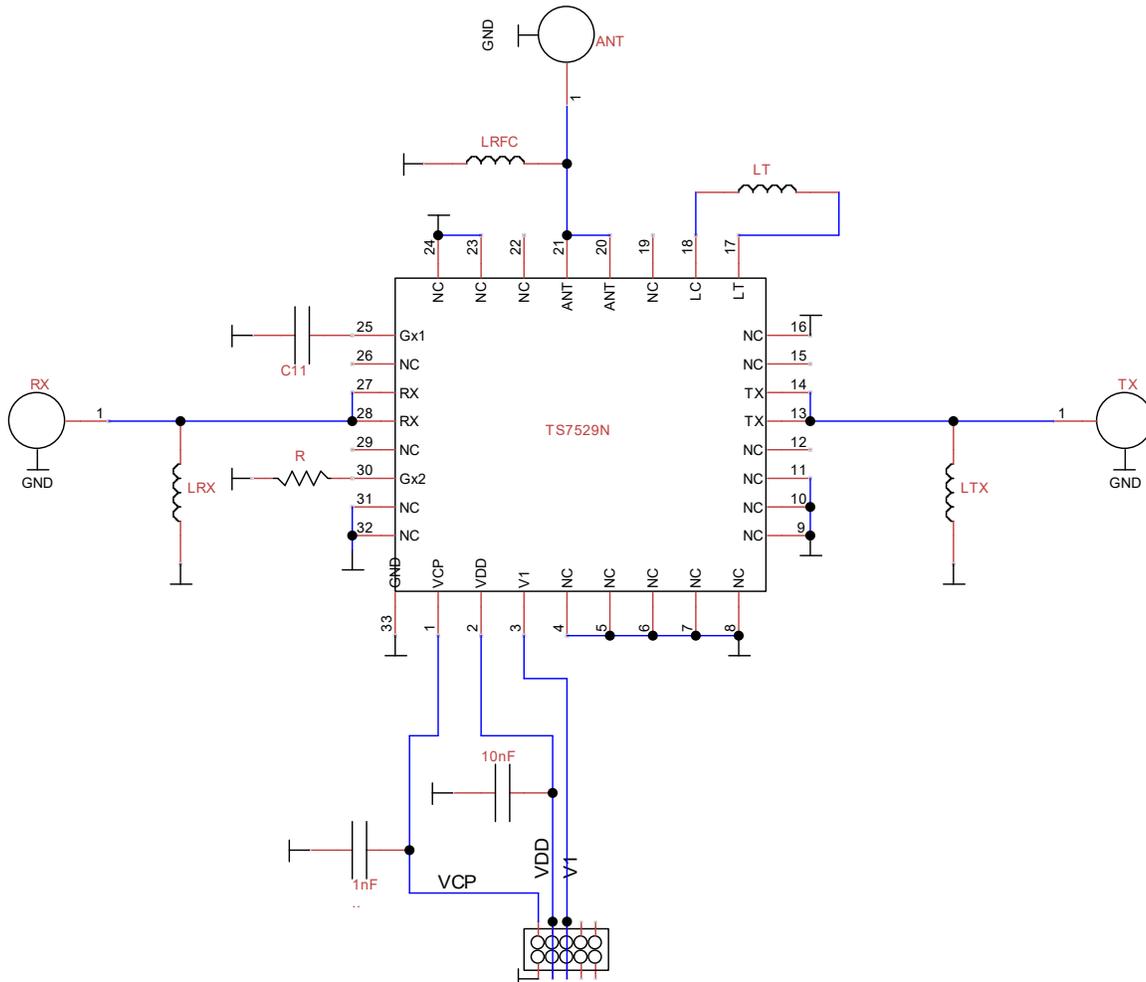
Attention:

Please refer to application notes [TN-001](#) and [TN-003](#) at <http://www.tagoretech.com> for PCB and soldering-related guidelines.

Top-marking specification:

- = Pin 1 indicator
- TTSW = Tagore Technology SWITCH
- TSXXXXXX = Part number (8 digits max)
- E = A fixed letter before the date code
- YY = Last two digits of assembly year
- WW = Assembly work week

SCHEMATIC



Freq	LT	LRFC	LTX	LRX	C11	R	CP
0.8 – 1GHz	27nH	Open	Open	Open	1.8pF	270K	1nF
2.5 – 2.7GHz	5.6nH	8.2nH	3.9nH	8.2nH	1.7pF	270K	1nF

Inductors : Coicraft 0603HP series close to IC
Capacitors : Murata GCM155R series

Figure 3: PCB schematic and Configuration

Typical Characteristics (Tuned for 2.5-2.7GHz band)

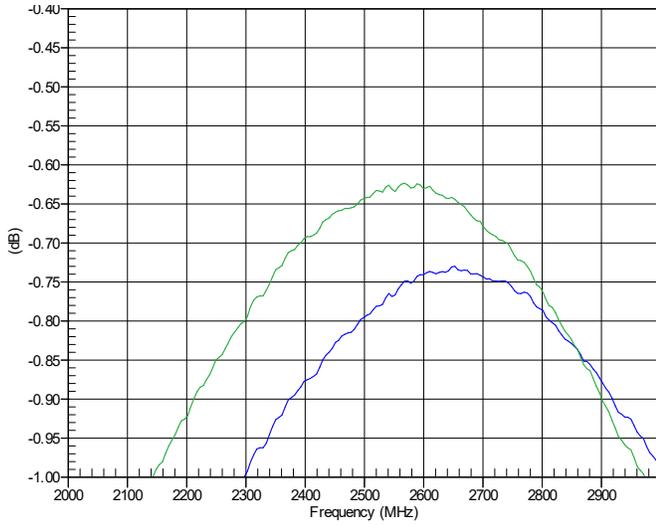


Figure 4 : TX, RX Insertion Loss

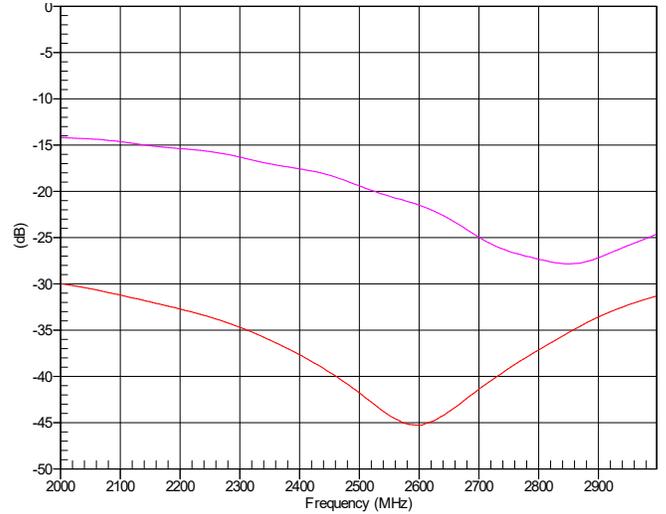


Figure 5 : TX, RX isolation

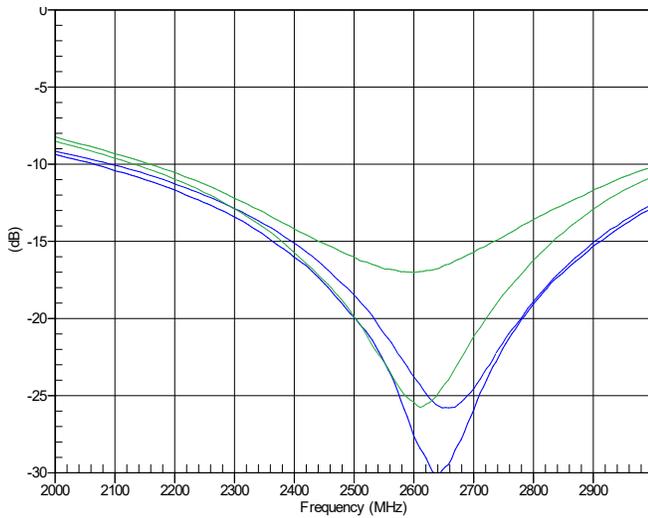


Figure 6 : TX, RX Return Loss

QUALIFICATION INFORMATION†

Qualification Level		Consumer	
Moisture Sensitivity Level		5x5 QFN	MSL1
	Human Body Model	Class 1A	
	Charged Device Model	NA	
RoHS Compliant		Yes	

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