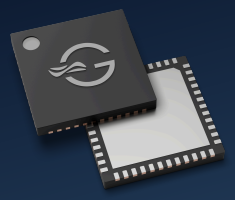
TAGORE

GaN T/R switch for cellular and IFF

TS8028N

A GaN transmit / receive switch for 100 W CW and 500 W peak from 0.5 to 5 GHz in one 5 × 5 mm chip.



100 W
CW (500 W peak)

0.5–5 GHz
UHF to C-band

0.23 dB
TX insertion loss at 800 MHz

52 dB
RX isolation at 800 MHz

What it does for your design

- **Built for T/R switching.** Low loss on the transmit path and high isolation to protect your receiver.
- **Fewer parts, low power signature.** PIN diode switches need a large bill of materials to generate their bias, and that bias draws power. Here it is built in, under 1 mW: ideal for secure communications that need a low power signature.
- **Handles LTE and 5G peaks.** 500 W peak (57 dBm) at 1% duty cycle.
- **Tune the isolation.** Tuning inductor pins let you place an isolation notch where you need it.
- **Use the supply you already have.** One 2.6 – 5.5 V rail, no negative supply and no DC blocking capacitors.
- **Fast switching.** 1.9 µs between transmit and receive.

Key specifications

Parameter	Typical
Frequency range	500 MHz – 5.0 GHz
TX insertion loss	0.23 dB @ 800 MHz · 0.42 dB @ 3.3 – 3.8 GHz
RX isolation	52 dB @ 800 MHz · 33 dB @ 3.3 – 3.8 GHz
Power handling	100 W CW · 500 W peak (1% duty)
Supply	2.6 – 5.5 V, no negative supply
Configuration	Asymmetric SPDT (TX / RX)
Switching time	1.9 µs
Package	32-pin QFN, 5.0 × 5.0 mm

Built for

Cellular infrastructure: small cells and macrocells · LTE and 5G transmit / receive switching · ADS-B and IFF systems

Why move from PIN diodes

A typical high-power T/R switch today
PIN diodes with a high-voltage bias network, many parts and power drawn all the time.

With the TS8028N
One 5 × 5 mm chip handles 500 W peaks from a single low-voltage supply.

Choose the right switch for your design

Part (click for datasheet)	Type	Power (CW)	Frequency	Package
TS8028N ↗	**SPDT, T/R**	**100 W · 500 W peak**	**500 MHz – 5.0 GHz**	**QFN 5 × 5**
TS8029N ↗	SPDT, T/R	100 W · 631 W peak	500 MHz – 5.0 GHz	QFN 5 × 5
TS8329K ↗	SPDT, T/R	100 W peak	500 MHz – 8.5 GHz	QFN 3 × 3
TSL8028N ↗	Switch + LNA	100 W	2.0 – 5.0 GHz	QFN 5 × 5

Need 500 W peaks for LTE or 5G? Choose the **TS8028N**. Need over 600 W peak? Choose the TS8029N. Want the switch and LNA in one part? Choose the TSL8028N.

Part numbers with an extra 0 have the charge pump disabled for ultra-quiet operation and need an external −18 V bias supply.

Get started

STEP 1
Read the datasheet
Scan the code or visit
tagoretech.com/Product_Doc/TS8028N.pdf

STEP 2
Order samples
TS8028N
TS8028N-EVB · evaluation board
From DigiKey, Richardson RFPD or your TagoreTech representative.

STEP 3
Talk to an expert
Our applications team will help you design it in.
support@tagoretech.com

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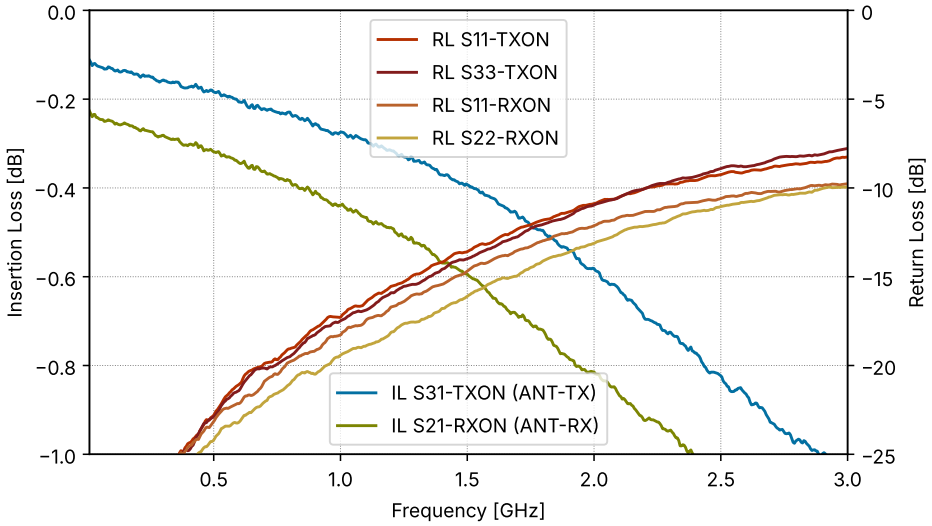
Typical performance

Measured curves from the TS8028N datasheet, T_A = 25 °C, 50 Ω.

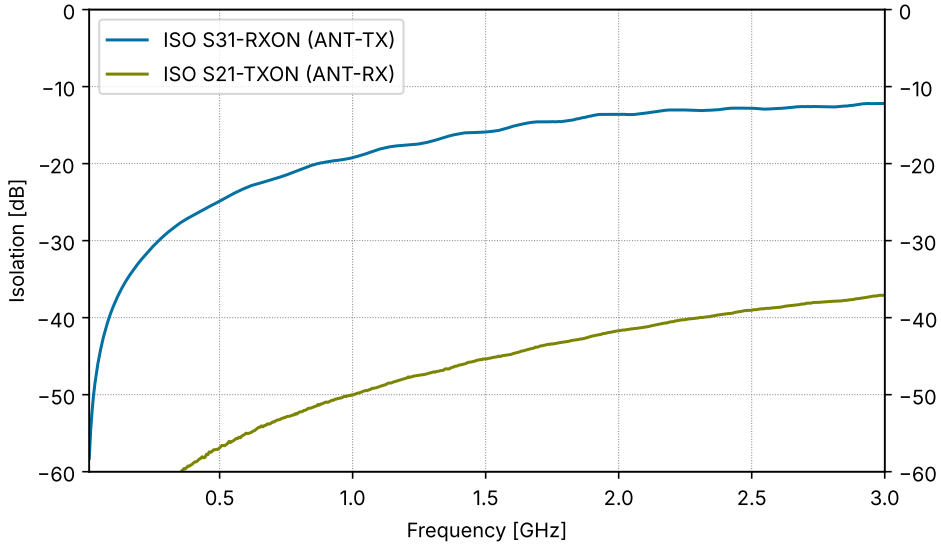
Insertion loss and return loss

ANT to TX and ANT to RX, unmatched



Isolation

The non-active port, ANT to TX and ANT to RX



Typical values

Parameter	800 MHz	2.2–3.0 GHz	3.3–3.8 GHz
TX insertion loss (dB)	0.23	0.40	0.42
RX isolation (dB)	52	36	33

Full data, S-parameters and evaluation board details in the datasheet at tagoretech.com/Product_Doc/TS8028N.pdf.

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