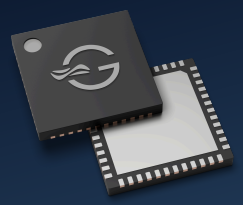
TAGORE

New

TS8381M

A GaN SP8T switch for 15 W from 1 MHz to 4 GHz in one 6 × 6 mm chip. Eight paths for filter banks, delay lines and band switching.



15 W
CW power

8 paths
Single pole eight throw

0.46 dB
Insertion loss at 1 GHz

0.5 µs
Switching time

What it does for your design

- **Eight paths, one part.** Replace a tree of smaller switches with one chip and keep the loss low.
- **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.
- **Built for filter and delay-line banks.** A flip bit (V5) makes switching between banks simple.
- **Use the supply you already have.** One 3.3 V or 5 V rail. The built-in charge pump makes the bias, no negative supply.
- **Wideband.** Works unmatched up to 3 GHz and with one simple match at the antenna port up to 4 GHz.
- **Every throw isolated.** Each path has a series and a shunt switch for clean isolation between bands.

Key specifications

Parameter	Typical
Frequency range	1 MHz – 4.0 GHz
Insertion loss	0.46 dB @ 1 GHz · 0.81 dB @ 3 GHz
Isolation	32 dB @ 1 GHz · 22 dB @ 3 GHz
Power handling	15 W CW
P0.1dB	42 dBm CW @ 800 MHz
Supply	2.6 – 5.25 V, no negative supply
Control	CMOS, with flip bit V5
Switching time	0.5 µs (t_{ON})
Package	48-pin QFN, 6.0 × 6.0 mm

Built for

Filter banks, delay-line banks and band switching · Private mobile and defence radios · Public safety handsets · Cellular infrastructure · Satellite terminals · Datalinks

Why use one SP8T

A switch tree today
Several smaller switches in cascade: more loss, more parts, more control lines and more board space.

With the TS8381M
One 6 × 6 mm chip selects any of eight paths, with low loss and one low-voltage supply.

Choose the right switch for your design

Part (click for datasheet)	Type	Power (CW)	Frequency	Package
TS8381M ↗	**SP8T**	**15 W**	**1 MHz – 4.0 GHz**	**QFN 6 × 6**
TS8361M ↗	SP6T	20 W	1 MHz – 4.0 GHz	QFN 6 × 6
TS8242FK ↗ / TS82420K ↗	SP4T	10 W	1 MHz – 6.0 GHz	QFN 3 × 3
TS8541L ↗ / TS85410L ↗	SP4T	50 W	1 MHz – 4.3 GHz	QFN 4 × 4

Need eight paths? Choose the **TS8381M**. Six paths at 20 W? Choose the TS8361M. Four paths are enough? Choose the TS8242FK, or the TS8541L for 50 W.

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/TS8381M.pdf

STEP 2
Order samples
TS8381M
TS8381M-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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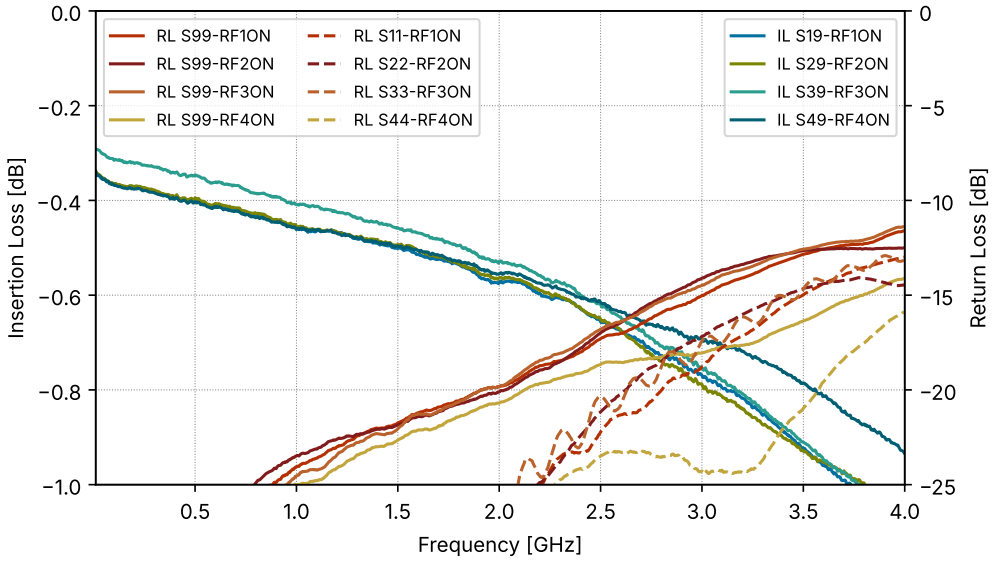
Typical performance

Measured curves from the TS8381M datasheet, T_A = 25 °C, 50 Ω.

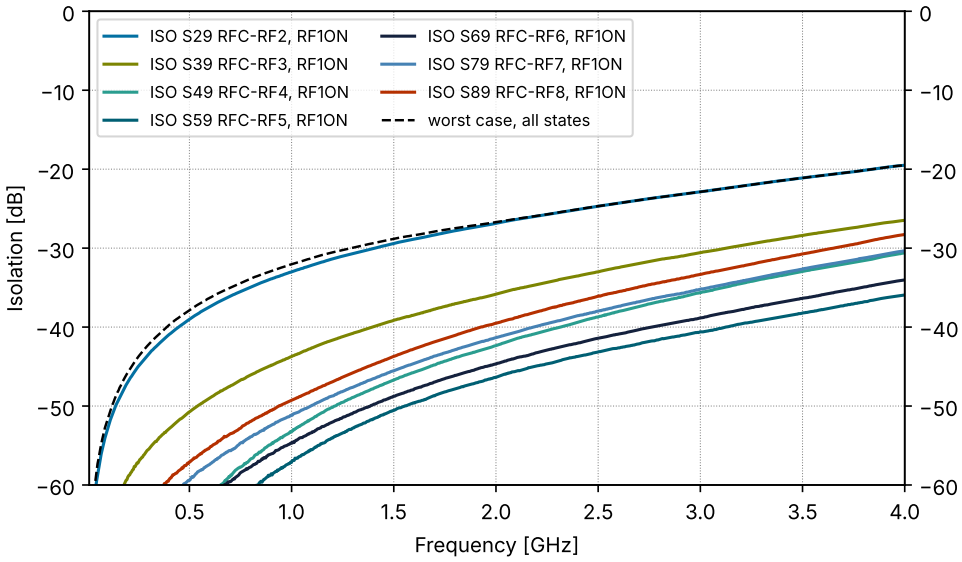
Insertion loss and return loss

RFC to RF1 – RF4, unmatched



Isolation

RFC to the off ports, RF1 on



Typical values

Parameter	30 MHz	1 GHz	2 GHz	3 GHz
Insertion loss (dB)	0.34	0.46	0.58	0.81
Isolation, RFC to off port (dB)	62	32	26	22

Full data, S-parameters and evaluation board details in the datasheet at tagoretech.com/Product_Doc/TS8381M.pdf.

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