

## GaN MMIC Switch Controls 100-W Pulses

[Microwaves and RF](#)

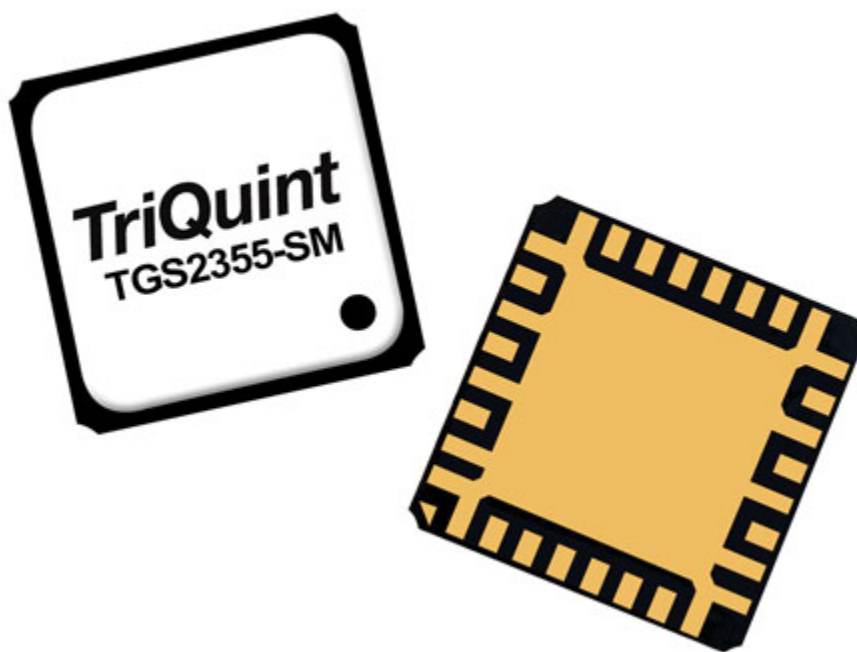
[Jack Browne](#)

Fri, 2014-09-26 16:05

This low-loss GaN-on-SiC SPDT switch can handle signals from 500 MHz to 6 GHz, both at CW power levels to 40 W and pulsed power levels to 100 W.

Gallium-nitride (GaN) semiconductor devices are quickly capturing the attention of high-frequency circuit designers for their excellent performance at high frequencies. In addition, many of these devices also offer good high-power signal-handling capabilities, such as the model TGS2355-SM monolithic-microwave-integrated-circuit (MMIC) single-pole, double-throw (SPDT) switch from TriQuint Semiconductor.

This compact SPDT switch operates from 500 MHz to 6 GHz, handling as much as 40 W continuous-wave (CW) input power and 100-W (+50 dBm) pulsed (20- $\mu$ s pulse width) input power across that frequency range. It also channels signals with low loss and good isolation and is a solid candidate for applications in communications systems, electronic-warfare (EW) systems, radar, and test-and-measurement equipment.



The TGS2355-SM reflective switch (see figure) is fabricated on the firm's gallium-nitride-on silicon-carbide (GaN-on-SiC) 0.25- $\mu$ m production semiconductor process. The high thermal conductivity of the SiC substrate material helps to channel heat generated within the active devices away from the semiconductors; it is then dissipated in other structures, such as a heat sink or surrounding circuit or system package materials. The GaN switch is rated for maximum channel temperature of +275°C.

The switch is turned on and off by means of control voltages of 0 and -40 VDC. It is supplied in an air-cavity, quad-flat-no-leads (QFN) package measuring just 5 × 5 × 1.42 mm that is lead free and RoHS compliant.

Related

[GaN MMICs For Small Cells Get A Doherty Power Boost](#)

[GaN MMIC Amps Power 6 To 18 GHz](#)

[GaN MMIC Amps Power 2 To 20 GHz](#)

The TGS2355-SM boasts the key features desirable in a broadband switch, in addition to its high power-handling capability, and these include low losses and high isolation. For example, the GaN SPDT switch is rated for less than 1.1-dB insertion loss from 500 MHz to 6 GHz, with typical insertion loss of 0.8 dB or less across that full frequency range. The low loss helps to maintain lower channel temperatures in the tiny switch even at the higher input power levels.

The return-loss performance is also outstanding for such a broadband, high-power switch, at better than 15 dB across the full frequency range. The TGS2355-SM offers better than 25-dB isolation between ports across the full operating frequency range, and provides better than 10-ns switching speed for critical high-speed applications.

Of course, the switch isn't the only big news to come out of the TriQuint camp: Following the completion of its merger with RF Micro Devices, the firm will be renamed Qorvo. The combined company will merge the different talents of the two companies, spanning various technologies and application areas. Bob Bruggeworth, currently president and chief executive officer of RFMD, will become CEO of the new entity. Bruggeworth notes: "As a new leader in RF solutions, Qorvo will offer the agility, innovation, and precision customers need for success in mobile, infrastructure, and defense markets."

TriQuint's current CEO, Ralph Quinsey, who will serve as non-executive chairman of Qorvo following closing of the merger, explains: "Qorvo is building from our foundation of true innovation to solve our customers' most difficult challenges. We do this so that their customers, whether mobile consumers or troops on the move, will be able to connect with loved ones, protect our security, or voyage to new lands."

The merger is expected to close later this year, with the new company traded publicly on the NASDAQ Global Stock Market. With the combined talents of these two companies, there should be many more outstanding product developments such as the TGS2355-SM SPDT GaN switch in the years to come.

**[TriQuint Semiconductor, Inc.](#), 2300 NE Brookwood Pkwy., Hillsboro, OR 97124; (503) 615-9000, FAX: (503) 615-8900**

**Source URL:** <http://mwrfr.com/triquint-semiconductor/gan-mmic-switch-controls-100-w-pulses>