

Sintered-Silver Packaging Technology Enhances Performance Of 650-V SiC FETs

[UnitedSiC](#) has added two new TO220-3L package options to its growing range of hard-switching UF3C FAST series of 650-V SiC FETs. The UF3C065030T3S offers an $R_{DS(ON)}$ value of 30 m Ω while the UF3C065080T3S provides an $R_{DS(ON)}$ of 80 m Ω . The three-leaded, industry-standard TO220-3L package features enhanced thermal characteristics made possible by a sintered-silver packaging technology developed by UnitedSiC.

The new devices will appeal to designers who are seeking more powerful performance in a three-lead TO220 package option for applications such as EV charging, PV inverters, switch mode power supplies, power factor correction modules, motor drives and induction heating.

These SiC FET products are based on a unique UnitedSiC cascode circuit configuration, in which a normally-on SiC JFET is co-packaged with a Si MOSFET to produce a normally-off SiC FET device (see the figure). The device's standard gate-drive characteristics allows a true "drop-in replacement" to Si IGBTs, Si FETs, SiC MOSFETs or Si superjunction devices on existing designs in which designers can expect a performance increase with lower conduction and switching losses, enhanced thermal properties and integrated gate ESD protection.

In the case of new designs, the UnitedSiC FETs deliver increased switching frequencies to gain substantial system benefits in both efficiency and reduction in size, and cost of passive components, such as magnetics and capacitors. The FAST Series devices offer not only ultra-low gate charge, but also what the company describes as the best reverse-recovery characteristics of any device of similar ratings. These devices are well suited for switching inductive loads when used with recommended RC-snubbers, and any application requiring standard gate drive.

The UnitedSiC UF3C FAST SiC series is available in TO247-3L, TO247-4L, TO220-3L and D2PAK7-3L packages, with four 1200-V and ten 650-V options. Prices are \$5.18 for the UF3C065080T3S, and \$13.79 for the UF3C065030T3S each at 1,000 pcs quantities. Stock is available from UnitedSiC's global distribution partners Mouser and Richardson Electronics, and other local distributors.

Visit the company website for datasheets on the [SiC FET cascodes](#) and for a [SiC FET User Guide](#) highlighting practical solutions and guidelines for using RC snubbers with fast switching SiC devices.

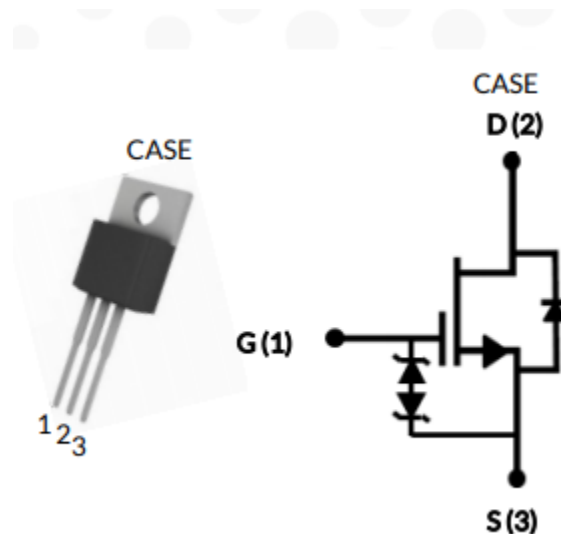


Figure. Offering $R_{DS(ON)}$ values of 30 m Ω and 80 m Ω , respectively, the UF3C065030T3S and UF3C065080T3S are cascode devices that co-package a normally-on SiC JFET with a Si MOSFET to produce a normally-off SiC FET device that operates with industry-standard gate drive. The introduction of these devices in TO220-3L packages with sintered-silver packaging technology provides enhanced thermal performance.