STMicroelectronics Boosts Accessibility and Value of Space-Grade Power Electronics

STMicroelectronics has introduced the first member of a family of power transistors that are fully qualified for use in electronic subsystems on board satellites and launchers.

According to the Satellite Industry Association, the global satellite industry is growing steadily and currently generates more than $160 billion in annual revenues 1. Although essential electronic equipment is built in various territories, including Europe and Asia, the majority of components certified for use in space originate from the USA. However, developed in conjunction with the support of the European Space Agency (ESA) and the Centre National d'Etudes Spatiales (CNES), ST's new family of radiation-hardened power MOSFETs is produced in Europe and fully qualified to ESCC (European Space Components Coordination) specifications.

ST's move will not only increase the global supply of space-qualified components, but will also overcome trade restrictions that can delay project completion or prevent access to certain devices and markets. "This new Rad-Hard Power MOSFET family has been developed to meet space requirements and is available for the first time from a European manufacturer," said Ian Wilson, General Manager of ST's Power Transistors Division.

The new radiation-hardened power MOSFET family spans current ratings from 6A to 80A and comprises five N-channel and P-channel devices, including: the STRH100N10 andSTRH8N10 and STRH40P10, which offer voltage ratings of 100V; and the STRH100N6 and STRH40N6 with voltage ratings of 60V. The 100-volt P-channel device has a current rating of 34A. With their low gate charge, a characteristic of ST's STripFET technology which enhances switching performance, they are ideal for use in DC power modules such as motor controllers and linear regulators, as well as line switches and e-fuses for current limiting.

Major features of ST space-qualified power MOSFETs:

· Fast switching performance
· 100% avalanche tested
· Hermetically sealed package
· Withstands 70/100 krad Total Ionizing Dose (TID)
· SEE radiation hardened

The STRHxxxN10, STRHxxxN6 and STRH40P10 family are available now to EM (Engineering Model) or ESCC flight quality level, in TO254-AA and TO-39 through-hole packages. An SMD.5 surface-mount configuration is also offered. The STRH100N10 is qualified to the ESCC 5205/021 specification and the other products are expected to be ESCC qualified in H2 2011.

About Space-Qualified Semiconductors:
The main requirement for space-qualified components is the ability to withstand the radiation present throughout space, from sources such as the Van Allen radiation belts, solar winds and flares, and galactic cosmic rays.

Radiation hardened, or rad-hard, devices are capable of operating in this environment with a long life time when submitted to gamma rays and to heavy Ions. In the case of MOSFETs, this is achieved by utilizing specific design and technology trimming to withstand exposure to radiation and to minimize the tendency for important parameters such as threshold voltage, leakage currents and dynamic characteristics to drift under exposure. Devices are subjected to tests such as Co60 gamma rays and exposure to Heavy Ions, which are formally defined in specifications such as ESCC22900 and ESCC25100. All electronic components must pass these tests to gain ESCC qualification.

To provide the global space industry with a new source of affordable, high-performing space-grade power MOSFETs, ST has trimmed its proven STripFET fabrication technology to be compatible with the technologies and processes for producing rad-hard components.

Further information on ST can be found at www.st.com [1].

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