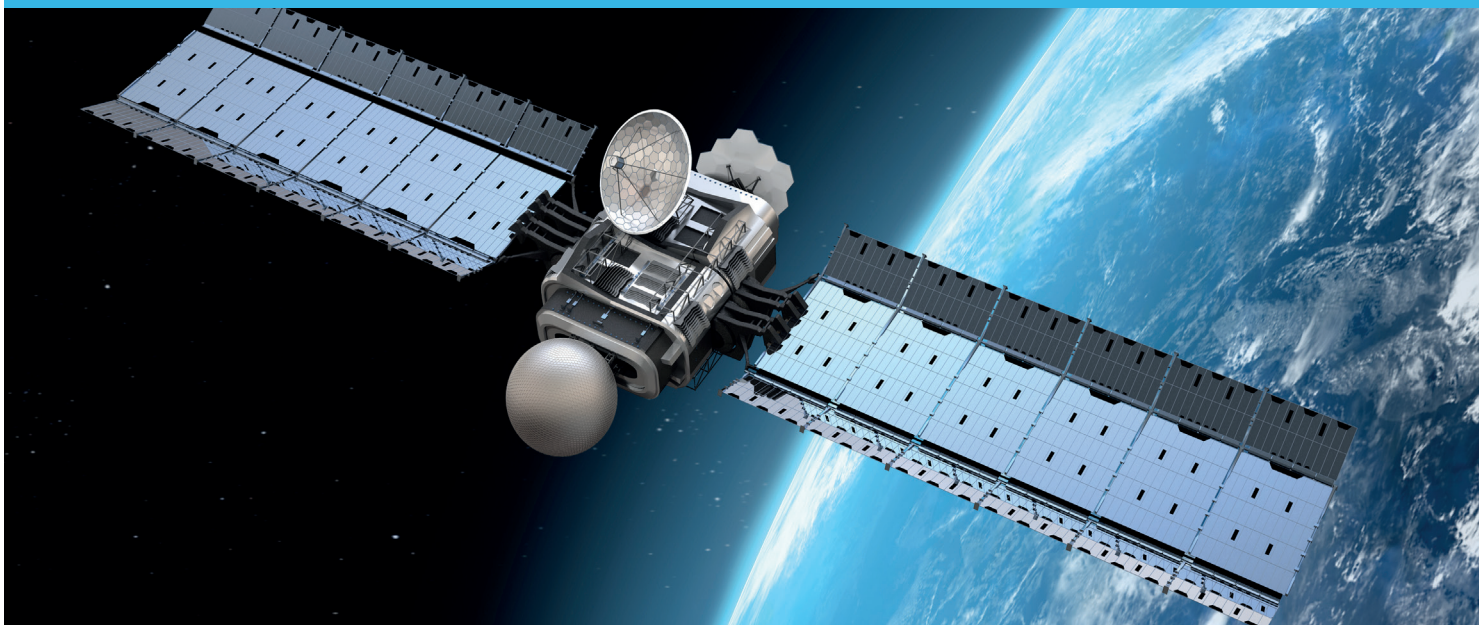
STRHMF16N20

Rad-hard 200 V, 16 A, 100 krad N-channel Power MOSFET



New multi-drain rad-hard power MOSFET technology offers a breakthrough in space power conversion and motor control applications

Designed to withstand extreme environmental conditions and severe radiation exposure, the STRHMF16N20 N-channel Power MOSFET is tailored for aerospace and other harsh environments.
Developed with our new multi-drain rad-hard power MOSFET technology, it provides strong immunity to the total ionizing dose (TID) and single event effects (SEE) as well as a high level of ruggedness, reliability and stable behavior.
Its superior RDS(on) performance and dynamic characteristics ensures an easy implementation in power conversion, POL, motor and thermal control, battery protection, and solenoid driver designs; making it ideal for on-board satellite applications.Available in an SMD.5 hermetic package, it is qualified per ESCC 5205/034 general specifications, fully manufactured in Europe and not submitted to ITAR regulations.

KEY FEATURES & BENEFITS

- Guaranteed 100 krad total ionizing dose
- No single event burnout (SEB) up to 62 Mev/(mg/cm²)
- Qualified per ESCC 5205/034 specifications
- Low $R_{DS(on)}$ and superior dynamic performance Superior stability in extended reliability test
- Very low drift under total Ionised dose exposure

KEY APPLICATIONS

- Space
  - Satellites
  - Probes
  - Spacecraft
  - Lander modules
  - Space observatories
  - Deep-space exploration
  - Launchers
- Hi-Rel industrial
  - Avionics
  - Submarine
  - Oil industry

The key requirement in space is the level of radiation hardness of electronics used in satellites, probes, spacecraft or launchers. The components in these vehicles must be able to withstand extreme particle interactions, solar and electromagnetic events, and very high-energy cosmic rays such as protons or photons.
Part of our new generation of rad-hard Power MOSFETs, the STRHMF16N20 offers significant advantages and guarantees stable and rugged performance in terms of Total Ionization Dose (TID) and Single Event Effects (SEE).

The most sensitive VGS(th) threshold goes up to 100 krad (Figure 1) at low dose rate condition as per ESCC 22900 specifications. Values are represented between the pre-radiation and the post radiation, recording an excellent 0.2V drift. All other characteristics including RDS(on), BVdss and the leakage Idss and Igss have no variation between pre- and post-radiation readings.

The Reverse Biased Safe Operating Area (RBSOA) guarantees the Single Event Effects (SEE) as per ESCC 25100 specifications and MIL-STD-750E test method 1080, in Single Event Burnout (SEB), Single Event Gate Rupture (SEGR) and Post Irradiation Gate Stress (PIGS). A wide coverage of breakdown voltage vs. negative gate bias is also shown (Figure 2).

Figure 1: Total Ionized dose

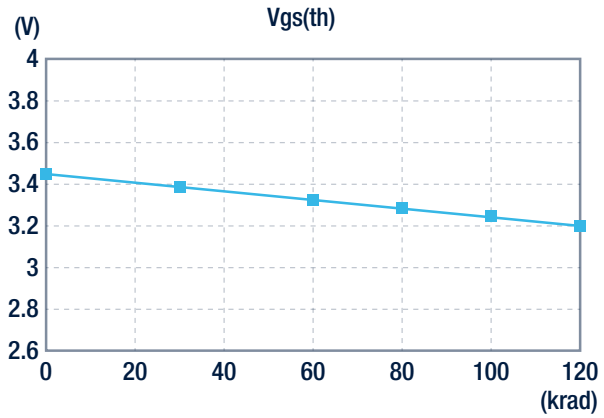
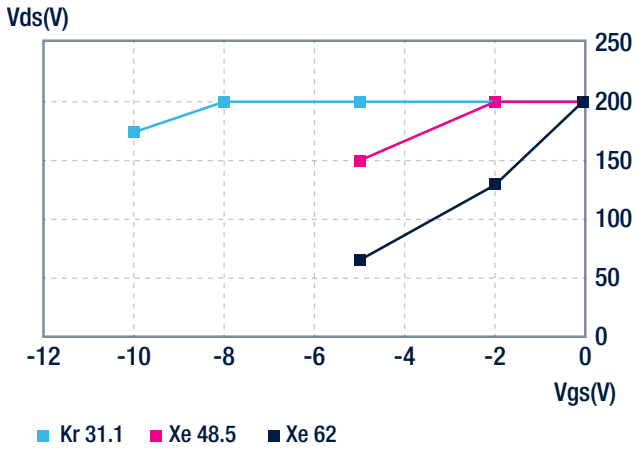


Figure 2: Single event effect (RBSOA)



Ordering information

Part number	ESCC specification	Screening type	Radiation level	Package	Weight	Lead finish	Marking	Packing
STRHMF16N20S1	-	Engineering model	-	SMD:5	1 g	Gold	STRHMF16N20S1	Strip pack
STRHMF16N20SG	5205/034	Flight model	100 krad				520503401	
STRHMF16N20ST						Solder dip	520503402	