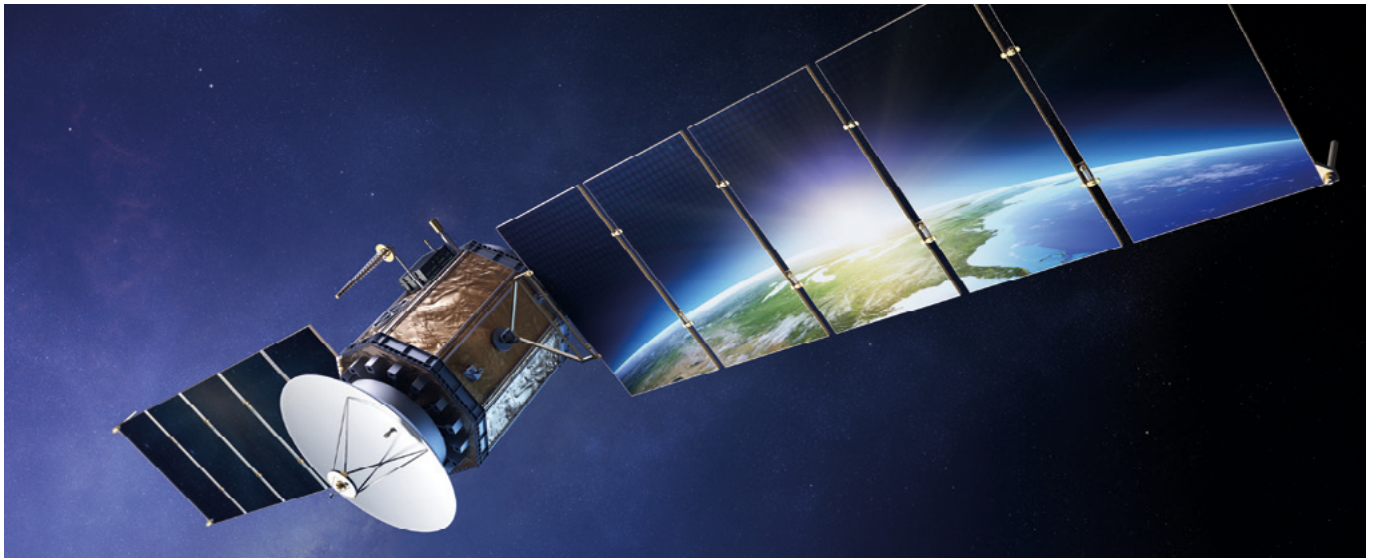


Rad-Hard product range European offering for Satellites



ST offers a large portfolio of rad-hard products, packaged, tested and qualified for space

In space for 40 years, the high quality of ST's aerospace products is recognized by agency audits & customer vendor surveys. ST continues to be the industry reference for the longevity of its space products as demonstrated by the transfer to its 6" fab of its rad-hard Logic portfolio. Based on this strong space legacy, ST is rapidly expanding its portfolio of rad-hard products in power, analog and high density, in full synergy with its product expertise and technologies portfolio.

KEY BENEFITS

- Wide product range
- Long term commitment to space
- ST is QML / JAN / ESCC certified
- Agency qualified products
- RHA⁽¹⁾ qualified products
- Hermetic packages & dice
- Grounded metallic lid⁽²⁾
- Complete ecosystem

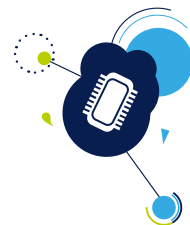
(1) Radiation Hardness Assurance

(2) AC & VCX Logic and recent products

ST SPACE ECOSYSTEM

All ST Rad-Hard products have a complete radiation report with Total Ionisation Dose (TID) and pertinent Single Event Effect (SEE) such as Single Event Latch-up (SEL) Single Event Brownout (SEB) and Single Event Transient (SET), the latter made in typical applicative configurations for users can perform relevant worst case analysis.

The ecosystem also includes macromodels and, for selected products, demoboards.



SPACE PRODUCTS

Schottky diodes & rectifiers: ESCC Qualified

- New SEE & TID characterized Schottky up to 150 V and rectifiers up to 400 V

Bipolar transistors: JANS & ESCC

- Hirel & 100 krad(Si) low dose rate
- 300V NPN and 600V NPN & PNP now sampling

MOSFET: ESCC Qualified

- N Channel: 50 krad(Si)
- P Channel: 100 krad(Si)

Logic ICs: QML-V or ESCC Qualified

- Newly qualified : 300 krad(Si), QML-V
 - AHC 200MHz+ Logic
 - AC & VCX series grounded lid variants
- HC Logic: ESCC, 50 krad(Si)
- CMOS4000B: ESCC, 100 krad(Si)
- Complete portfolio transferred to 6" for long-time support

LVDS: QML-V qualified

- Driver - Receiver - Transceiver
High speed Serializer & Deserializer
Crosspoint switch
- Cost-effective & high-performance series

Analog ICs: 100 / 300 krad(Si) QML-V qualified

- Latest qualifications:
 - RHF200: 420 MHz differential amplifier
 - RHRDAC1612: 16-bit ENOB D/A converter
 - RHFAD128: 8-channel 12-bit A/D converter
- Several products under development...

Power ICs: 100 / 300 krad(Si) QML-V qualified

- RHFL4913 / RHFL6000A: 300 krad(Si) Voltage regulators with best-in-class SET
- RHRPM442x series of dual low-side gate drivers with superior performance
- RHRPMPOL01 7A Point of Load with current sharing: EM available
- RHRPMICL1A highly configurable Integrated Current Limiter IC: EM available
- Several products under development

Technology Platforms

- 65 nm Rad-Hard ASIC platform
- 28FD-SOI Rad-Hard ASIC Platform
- Advanced imaging technologies for space components

Plastic for Space series: in development

- Optimized cost / Quality trade-off for Low Earth Orbit constellations



RAD-HARD PORTFOLIO OVERVIEW

Analog
ADC & DAC
Amplifiers
Comparators
Voltage references

Technology Platforms
Rad-Hard platforms : 65 & 28 nm
Rad-Capable Mixed Signal & RF
Imaging technologies

Interfaces
LVDS fail safe series
16 bit bus interfaces
Level shifters

Logic
AHC High Speed Logic : QML-V
AC / ACT : QML-V
HC / HCT : ESCC
CMOS4000B : ESCC

Power Management
Voltage regulators
PWM controllers
Gate drivers
Integrated Current Limiter *
Point of Load *
*EM available

Schottky Diodes & Rectifiers
1N58xx & 1N664x series
Power Schottky up to 150 V
Power Rectifiers up to 400 V

Bipolar transistors
ESCC & JANS series
Hirel & 100 krad
40 to 600 V

MOSFET transistors
N Channel 60 & 100 V
P Channel 100 V

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