RAD-HARD ICs IN PLASTIC PACKAGES

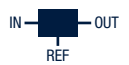
Optimized solution for LEO constellation mission profile

Rad-hard analog and power management ICs in plastic packages offer a lightweight, cost-effective solution for LEO satellite constellations

Leveraging over 45-year of space heritage and automotive-grade AEC-Q100 qualified production lines, ST expands its series of radiation-hardened power, analog and logics ICs in plastic packages tailored for the “Low Earth Orbit” (LEO) satellites market.

Compliant with ST’s LEO generic specification for ICs, these space-ready and automotive quality-based products offer an optimal balance of footprint size reduction, cost efficiency, quality assurance, radiation hardness, and high-volume manufacturing capability.

Available products for new-space

V-reg		
POL		
ADC		
LVDS		
Logic ICs		

BENEFITS

- Low cost of ownership
- Radiation proven
- Dedicated qualification level, screening and traceability
- Large quantity capacity
- Small packages with NiPdAu finishing
- AEC-Q100 based
- Single plant source

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Specificities of new LEO ICs

Quality assurance	Radiation hardness
• AEC-Q100 based framework • Statistical process control • Guaranteed single plant source • "ST-LEO-Generic-Specification for ICs"	• TID up to 50 krad(Si) · High dose rate (HDR) 40 krad(Si)/h · Low dose rate (LDR) 10 mrad(Si)/s • TNID @ 3.10^{11} proton/cm² • SEL-free guaranteed at 62.5 MeV.cm²/mg • SET characterized up to 62.5 MeV.cm²/mg

Generic characteristics	Product versions
• Plastic package with gold wires and NiPdAu finishing (whisker free) • Space compliant outgassing (RML recovery mass loss < 1%, CVM collected volatile condensable material < 0.1%) • Tested at 3 temperatures: -40/+25/+125°C	• Dummy samples: worst case final packaging for mounting qualification • Development samples: evaluation and development • Flight models: compliant with "ST-LEO-Generic-Specification for ICs"

New available LEO ICs, compliant with "ST-LEO-Generic-Specification for ICs"

V-Reg	Description	Radiation	Vcc (V)	Drop voltage	Temp (°C)
LEO3910	2 A positive low drop voltage regulator	TID (HDR, LDR) TNID SEL and SET	3 to 12	Vdrop 350 mV (at 400 mA)	-40 to +125
LEOPOL1	5 A step-down converter			Current sharing	

ADC	Description	Radiation	Vcc (V)	Icc max.	Temp (°C)
LEOAD128	8-Channel 1Msps 12-bit ADC, with 8-input MUX	TID (HDR) SEL	2.7 to 3.6	2 mA (at 1Msps clock)	-40 to +125

LVDS	Description	Radiation	Vcc (V)	Prop. delay (ns)	Temp (°C)
LEOLVDSRD	LVDS driver-receiver, 400 Mbps	TID (HDR) SEL	3 to 3.6	1.5/2.5 (D/R)	-40 to +125

Logics	Description	Radiation	Vcc (V)	Prop. delay (ns)	Temp (°C)
LEOAC00	Quad 2-input NAND gate	TID (HDR) SEL	2 to 6	8	-40 to +125
LEOAC08	Quad 2-input AND gate				
LEOAC14	Hex inverter				
LEOAC32	Quad 2-input OR gate				
LEOAC74	Dual D-type flip-flop				
LEOAC244	Octal bus buffer				

Ordering information

Order code	Package	Quality level
LEOAD128PT-D	TSSOP-20	Development sample
LEOLVDSRDPT-D		
LEOAC00PT-D		
LEOAC08PT-D		
LEOAC14PT-D		
LEOAC32PT-D		
LEOAC74PT-D		
LEOAC244PT-D		

Order code	Package	Quality level
LEO3910PDT	PowerSO-20	Flight model
LEOPOL1PDT	PowerSO-36	
LEOAD128PT	TSSOP-20	
LEOLVDSRDPT		
LEOAC00PT		
LEOAC08PT		
LEOAC14PT		
LEOAC32PT		
LEOAC74PT		
LEOAC244PT		

Note: LEO3910 and LEOPOL1 samples are orderable through flight model order code