

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

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)
LE03910	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
LE0POL1	5 A step-down converter			Current sharing	
ADC	Description	Radiation	Vcc (V)	Icc max.	Temp (°C)
LE0AD128	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)
LE0LVDSRD	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)
LE0AC00	Quad 2-input NAND gate	TID (HDR) SEL	2 to 6	8	-40 to +125
LE0AC08	Quad 2-input AND gate				
LE0AC14	Hex inverter				
LE0AC32	Quad 2-input OR gate				
LE0AC74	Dual D-type flip-flop				
LE0AC244	Octal bus buffer				

Ordering information

Order code	Package	Quality level
LE0AD128PT-D	TSSOP-20	Development sample
LE0LVDSRDPT-D		
LE0AC00PT-D		
LE0AC08PT-D		
LE0AC14PT-D		
LE0AC32PT-D		
LE0AC74PT-D		
LE0AC244PT-D		

Order code	Package	Quality level
LE03910PDT	PowerSO-20	Flight model
LE0POL1PDT	PowerSO-36	
LE0AD128PT	TSSOP-20	
LE0LVDSRDPT		
LE0AC00PT		
LE0AC08PT		
LE0AC14PT		
LE0AC32PT		
LE0AC74PT		
LE0AC244PT		

Note: LE03910 and LE0POL1 samples are orderable through flight model order code.

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