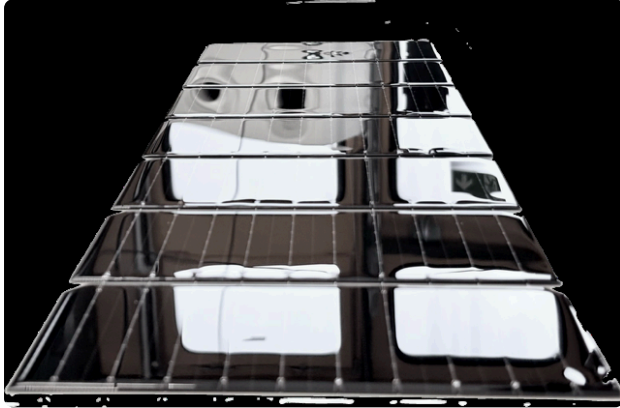


Silicon Solar Cell String Modules

ST102 series of pre-connected, cover-glass integrated silicon cells for space power applications



Representative ST102 string module

Cell efficiency class	20 % AM0
P_{mp} , ST102-10 module	41.6 W (BOL, AM0, 25 °C)
Cells in series	1...12
Module dimensions	184 mm × (94·N + 6) mm
Remaining factor P_{mp}	0.79 @ $1 \times 10^{14} \text{ e}^-/\text{cm}^2$
Design/test lifetime	7 years in LEO
Export status	Not controlled
MOQ / lead time	20 modules / ~2 months

01 Product description

Soltrac ST102 string modules are pre-connected strings of up to 12 radiation-resistant solar cell assemblies with integrated cover glass, tested and ready to bond onto rigid or flexible substrates. Redundant cell-to-cell interconnects, configurable termination and customizable cover glass thickness. Highly resistant to atomic oxygen and designed and tested for extended lifetime in LEO, ST102 is the ideal building block for cost-driven space power.

02 Key features and typical applications

Key features

- Custom radiation resistant silicon substrate
- High 20 % AM0 efficiency class solar cells
- Customizable cover glass thickness
- Tested for 7 years in LEO -> Typical loss factor 0.7-0.8
- Redundant cell interconnects providing debris impact resistance
- Highly ATOX resistant
- Highly affordable pricing and short lead times
- No export restrictions

Typical applications

- From individual satellites up to large-scale constellations
- Very low mass terrestrial aerospace applications
- Applications where the laydown of the modules is conducted by the customer

Ordering

ST102-NN-TTT

NN = number of cells in series (01 – 12)

TTT = cover glass thickness in μm

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03 Design and mechanical data

Cell technology	Silicon, radiation resistant substrate with thermal cycling resistant metallization
Number of cells in series (N)	1...12
Module dimensions (mm)	184 × (94·N + 6)
Cover glass	Integrated, customizable thickness
Cell-to-cell interconnect	Redundant
End termination	Configurable to customer demands
Electrical connection	Soldering according to ECSS-Q-ST-70-61C or welding recommended
Bonding to substrate	Silicone-based adhesive recommended
Substrate compatibility	Rigid and flexible substrates; tested on polyimide, FR-4 and CFRP
Mass	On request, configuration dependent

04 Electrical performance, BOL (AM0, 25 °C)

	Unit	ST102-10 module ¹
P _{mp}	W	41.6 ²
V _{mp}	V	5.74 ³
I _{mp}	A	7.24
Cell efficiency class (AM0)	%	20 % class
Temperature coefficients	-	On request

¹ Based on DAkkS-accredited ASTM E490-00a (2019) AM0 measurement, flight-configured modules.

² V_{oc} and P_{mp} scale with cell number; cells tightly binned.

³ Low-current / high-voltage option on request.

05 Radiation remaining factors

1 MeV electron fluence (e ⁻ /cm ²)	Remaining factor P _{mp}	P _{mp} ST102-10 module (W) ⁴
BOL	1.000	41.6
1 × 10 ¹⁴	0.790	32.9
5 × 10 ¹⁴	0.671	27.9
1 × 10 ¹⁵	0.618	25.7

⁴ Approx. values, 1 MeV electrons, without cover glass, AM0, 25 °C. EOL P_{mp} = BOL P_{mp} × remaining factor.

06 Quality, testing and traceability

Acceptance tests (per module)	Visual inspection, IV at AM0, EL inspection, dimensional check
Certification	DAkkS-accredited ASTM E490-00a (2019) AM0 measurement
Qualification status	ECSS aligned for LEO missions; data provided on request
Export status	Not controlled
MOQ / typical lead time	20 modules / 2 months