

XTE-SF (Standard Fluence) Space Qualified Triple Junction Solar Cell

- Based on 20+ years of heritage 3J devices
- Fully qualified under AIAA-S111 2014 Standard
- Targeting LEO to GEO mission fluences
- Best in class 32.2% BOL efficiency
- 27.9% EOL, 1E15 1MeV electron**
- Multiple Sizes Available (27cm² to >80cm²)
- Currently in Production

Operates 2° C Cooler
Than Other Space Grade Solar Cells



Cell Thickness = 80µm - 225 µm
Cell Mass = 50 - 84mg/cm²

XTE-SF Post 1 MeV e- Retention (US Standard AIAA S-111-2005)

Parameters*	BOL	1e14 (10-yr LEO)	5e14	1e15 (15-yr GEO)	1e16
Efficiency _{mp}	32.2%	0.93	0.88	0.84	0.66
V _{oc} (V)	2.750	0.92	0.88	0.86	0.78
J _{sc} (mA/cm ²)	18.6	1.00	1.00	0.99	0.94
V _{mp} (V)	2.435	0.92	0.88	0.86	0.76
J _{mp} (mA/cm ²)	17.8	1.00	0.99	0.98	0.88

* AM0 (135.3 mW/cm², 28°C), for 27 cm² cell size

(Fluence of 1 MeV electrons/cm²)

XTE-SF Post 1 MeV e- Retention (European standard-ECSS**)

Parameters*	BOL	1e14 (10-yr LEO)	5e14	1e15 (15-yr GEO)	1e16
Efficiency _{mp}	32.2%	0.93	0.89	0.87	0.72
V _{oc} (V)	2.750	0.93	0.90	0.88	0.80
J _{sc} (mA/cm ²)	18.6	1.00	1.00	0.99	0.96
V _{mp} (V)	2.435	0.93	0.90	0.87	0.79
J _{mp} (mA/cm ²)	17.8	1.00	1.00	0.99	0.91

** Photon and temperature annealing according to ECSS-E-ST-20-08C

(Fluence of 1 MeV electrons/cm²)



ENVIRONMENTAL MANAGEMENT SYSTEM
CERTIFIED BY DNV

ISO 14001

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Temperature Coefficients (15°C to 75°C)

Parameters			BOL	1e14	1e15	1e16
Open Circuit Voltage	$\Delta V_{oc}/\Delta T$	[mV/°C]	-5.6	-6.1	-6.5	-6.8
Short Circuit Current	$\Delta J_{sc}/\Delta T$	[$\mu A/cm^2/°C$]	11	9	10	11
Maximum Power Voltage	$\Delta V_{mp}/\Delta T$	[mV/°C]	-6.2	-6.4	-6.8	-6.8
Maximum Power Current	$\Delta J_{mp}/\Delta T$	[$\mu A/cm^2/°C$]	8	7	10	12

Standard Cell Sizes *Other cell Sizes Available*

Thermal Parameters	Value
Solar Absorptance	0.88
Emittance	0.85

