

# XTE-HF (High Fluence)

## Space Qualified Triple Junction Solar Cell

- Based on 20+ years of heritage 3J devices
- Fully qualified under AIAA-S111 2014 Standard
- Targeting MEO mission fluences
- 32.1% BOL efficiency
- 23.7% EOL, 1E16 1MeV electron\*\*
- Multiple Sizes Available (27cm<sup>2</sup> to >80cm<sup>2</sup>)
- Currently in Production

Operates 1° C Cooler  
Than Other Space Grade Solar Cells



Cell Thickness = 80µm - 225 µm  
Cell Mass = 50 - 84mg/cm<sup>2</sup>

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

Parameters*	BOL	1e14 (10-yr LEO)	5e14	1e15 (15-yr GEO)	1e16
Efficiency <sub>mp</sub>	32.1%	0.93	0.88	0.85	0.70
V <sub>oc</sub> (V)	2.782	0.92	0.89	0.87	0.79
J <sub>sc</sub> (mA/cm <sup>2</sup> )	18.0	1.00	1.00	1.00	0.97
V <sub>mp</sub> (V)	2.490	0.92	0.88	0.86	0.76
J <sub>mp</sub> (mA/cm <sup>2</sup> )	17.4	1.00	1.00	0.99	0.92

\* AM0 (135.3 mW/cm<sup>2</sup>, 28°C), for 27 cm<sup>2</sup> cell size

(Fluence of 1 MeV electrons/cm<sup>2</sup>)

### XTE-HF Post 1 MeV e- Retention (European standard-ECSS\*\*)

Parameters*	BOL	1e14 (10-yr LEO)	5e14	1e15 (15-yr GEO)	1e16
Efficiency <sub>mp</sub>	32.1%	0.93	0.89	0.87	0.74
V <sub>oc</sub> (V)	2.782	0.93	0.90	0.88	0.81
J <sub>sc</sub> (mA/cm <sup>2</sup> )	18.0	1.00	1.00	1.00	0.97
V <sub>mp</sub> (V)	2.490	0.93	0.90	0.88	0.79
J <sub>mp</sub> (mA/cm <sup>2</sup> )	17.4	1.00	1.00	0.99	0.94

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

(Fluence of 1 MeV electrons/cm<sup>2</sup>)



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]	-5.7	-6.1	-6.4	-6.8
Short Circuit Current	$\Delta J_{sc}/\Delta T$ [ $\mu\text{A}/\text{cm}^2/\text{°C}$ ]	10	10	12	12
Maximum Power Voltage	$\Delta V_{mp}/\Delta T$ [mV/°C]	-6.3	-6.5	-6.8	-7.0
Maximum Power Current	$\Delta J_{mp}/\Delta T$ [ $\mu\text{A}/\text{cm}^2/\text{°C}$ ]	8	8	11	11

### Standard Cell Sizes *Other cell sizes available*

Thermal Parameters	Value
Solar Absorptance	0.89
Emittance	0.85

