SPECTROLAB
A Boeing Company

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 (<85-cm²)
- Currently in Production

Operates 2° C Cooler Than Other Space Grade Solar Cells

Area Mass	Cell Thickness
50 mg/cm²	80 um thick Ge
84 mg/cm²	140 um thick Ge
130 mg/cm²	225 thick Ge

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/cm²)	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/cm²)	17.9	1.00	0.99	0.98	0.88

*** AM0 (135.3 mW/cm², 28ºC), 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/cm²)	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/cm²)	17.9	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)**

QUALITY MANAGEMENT SYSTEM
AS9100
CERTIFIED

ENVIRONMENTAL MANAGEMENT SYSTEM
CERTIFIED BY DNV
ISO 14001

Spectrolab, Inc. 12500 Gladstone Avenue, Sylmar, California 91342 USA
● Phone: 800.936.4888 ● Website: www.spectrolab.com ● Customer Service DLSYLCustomerService@Boeing.com

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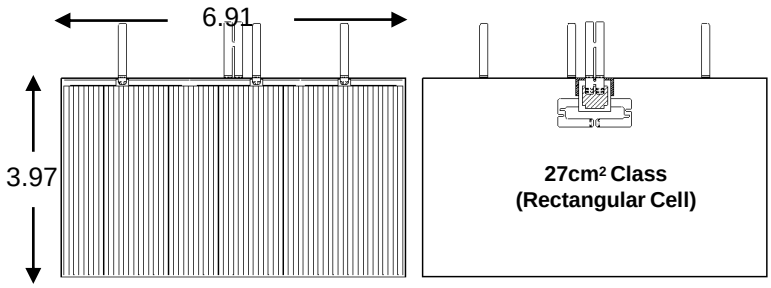
Temperature Coefficients (10ºC to 70ºC)

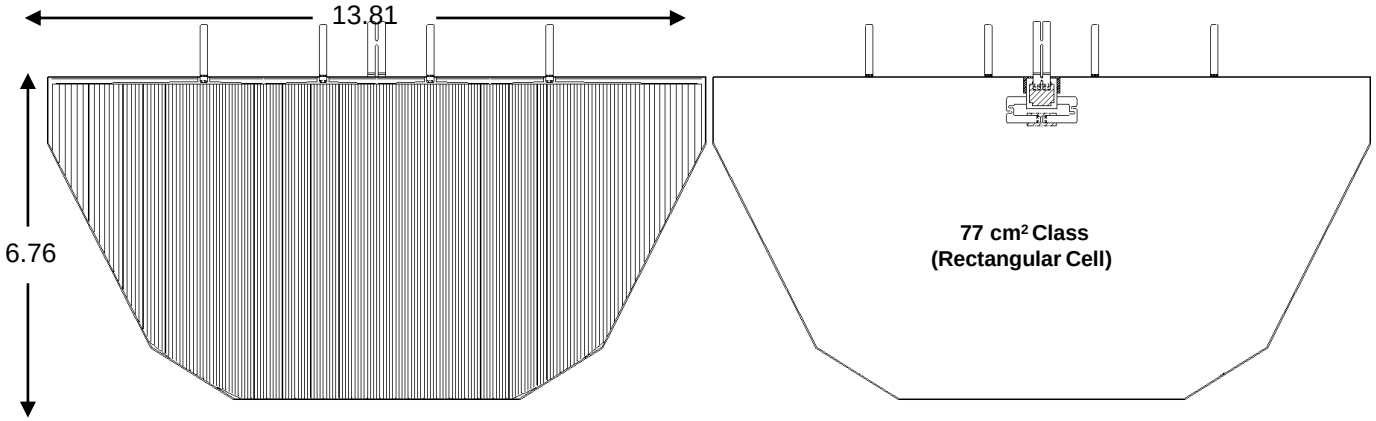
Parameters			BOL	1e14	1e15	1e16
Open Circuit Voltage	$\Delta V_{oc}/\Delta T$	[mV/ºC]	-5.6	-6.2	-6.7	-6.7
Short Circuit Current	$\Delta J_{sc}/\Delta T$	[μA/cm^2/ºC]	11	10	12	12
Maximum Power Voltage	$\Delta V_{mp}/\Delta T$	[mV/ºC]	-6.3	-6.4	-7.0	-7.0
Maximum Power Current	$\Delta J_{mp}/\Delta T$	[μA/cm^2/ºC]	6	8	11	12

Standard Cell Sizes

Other cell Sizes Available

Thermal Parameters	Value
Solar Absorptance	0.88
Emittance	0.85





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