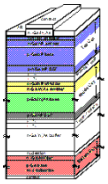
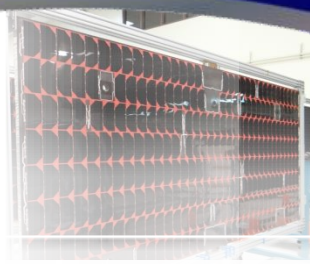
Celebrating 60 Years!

SPECTROLAB
A Boeing Company

XTJ PRIME



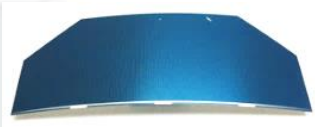


30.7% Triple Junction Space Grade Solar Cell

- Currently in full production
- Best in class - BOL & EOL
- AIAA-S111 & AIAA-S112 qualified
- Heritage upright lattice matched XTJ structure
- 26.7% EOL, 1E15 1MeV electron**
- Multiple sizes avilable (27cm² through 84cm²)

Cell Thickness = 80mm - 225mm

Cell Mass = 50 - 84mg/cm²



XTJ Prime Post 1 MeV e- Retention (US Standard AIAA S-111-2005)

Parameters*	BOL	1e14 (10-yr LEO)	5e14	1e15 (15-yr GEO)	1e16
$Efficiency_{mp}$	30.7%	0.94	0.88	0.85	0.65
V_{oc} (V)	2.715	0.94	0.89	0.87	0.78
J_{sc} (mA/cm²)	18.0	1.00	0.99	0.98	0.93
V_{mp} (V)	2.400	0.94	0.89	0.87	0.76
J_{mp} (mA/cm²)	17.5	1.00	0.99	0.97	0.86

* Production average of >90,000 cells; AM0 (135.3 mW/cm², 28°C) (Fluence of 1 MeV electrons/cm²)

XTJ Prime Post 1 MeV e- Retention (European standard-ECSS**)

Parameters*	BOL	1e14 (10-yr LEO)	5e14	1e15 (15-yr GEO)	1e16
$Efficiency_{mp}$	30.7%	0.94	0.90	0.87	0.70
V_{oc} (V)	2.715	0.94	0.90	0.88	0.80
J_{sc} (mA/cm²)	18.0	1.00	0.99	0.99	0.94
V_{mp} (V)	2.400	0.94	0.91	0.89	0.80
J_{mp} (mA/cm²)	17.5	1.00	0.99	0.98	0.88

** Photon and temperature annealing according to ECSS-E-ST-20-08C (Fluence of 1 MeV electrons/cm²)

AS9100 REGISTERED

ENVIRONMENTAL MANAGEMENT SYSTEM
CERTIFIED BY DNV
ISO 14001

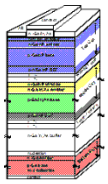
ISO 9001 2008

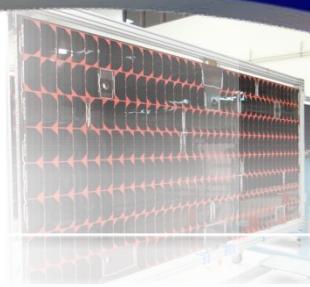
Spectrolab, Inc. 12500 Gladstone Avenue, Sylmar, California 91342 USA
● Phone: 818.365.4611 ● FAX: 818.361.5102 ● Website: www.spectrolab.com

Celebrating 60 Years!

SPECTROLAB
A Boeing Company

XTJ PRIME





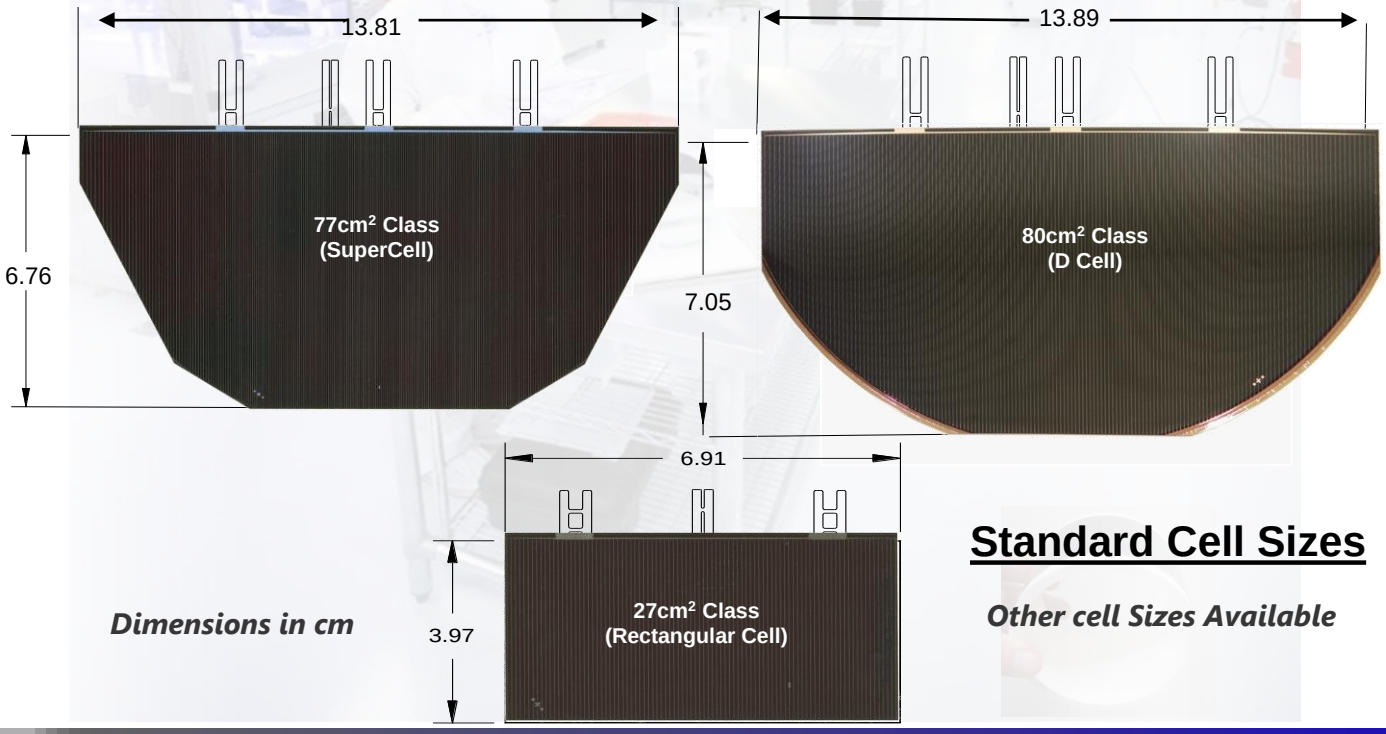
30.7% Triple Junction Space Grade Solar Cell

Temperature Coefficients (15°C - 125°C)

Parameters			BOL	1e14	5e14	1e15	1e16
Open Circuit Voltage	$\Delta V_{oc}/\Delta T$	[mV/°C]	-5.6	-5.8	-6.2	-6.4	-6.6
Short Circuit Current	$\Delta J_{sc}/\Delta T$	[μV/cm^2/°C]	10.0	10.0	10.3	10.8	11.8
Maximum Power Voltage	$\Delta V_{mp}/\Delta T$	[mV/°C]	-6.3	-6.4	-6.5	-6.6	-6.6
Maximum Power Current	$\Delta J_{mp}/\Delta T$	[μV/cm^2/°C]	5.0	6.5	8.9	9.5	12.1

Thermal Parameters	Value
Solar Absorptance	0.88
Emittance	0.85

Operates 2°C Cooler Than Other Space Grade Solar Cells



Dimensions in cm

Standard Cell Sizes

Other cell Sizes Available

Spectrolab, Inc. 12500 Gladstone Avenue, Sylmar, California 91342 USA
● Phone: 818.365.4611 ● FAX: 818.361.5102 ● Website: www.spectrolab.com