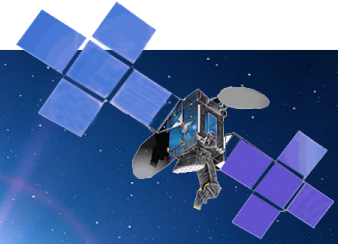


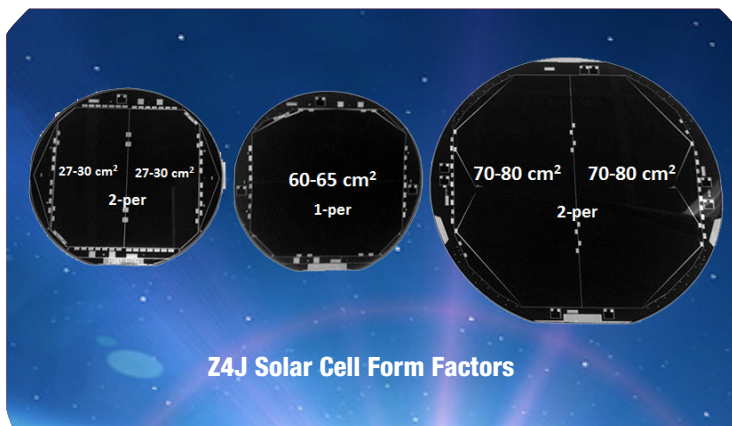
**The World Leader in
Space Power Solutions**

Over 3.5 million flight solar cells delivered!



Z4J Space Solar Cell

4-Junction Solar Cell for Space Applications



30.0%
Minimum Average Efficiency

Superior radiation hardness compared to other Germanium based solar cells

FEATURES & CHARACTERISTICS

- 4-junction n-on-p solar cell on germanium substrate
- Radiation hardened design with $P/P_0 = 0.90$ @ 1-MeV electron, $1E15$ e/cm² fluence
- For a typical GEO Telecom Mission, Z4J produces ~7% greater EOL power than ZTJ (1-MeV electron, $1E15$ e/cm² @ 55°C)
- Qualification & Characterization to the AIAA-S111-2014 Standards

Standard Features

- Compatible with corner-mounted silicon bypass diode for individual cell reverse bias protection
- Excellent mechanical strength for reduced attrition during assembly and laydown
- Weldable or solderable contacts
- Custom sizes available

Z4J Space Solar Cell

4-Junction Solar Cell for Space Applications

Bare Cell BOL Performance

Electrical Parameters @ AM0 (135.3 mW/cm ²), 28°C	
BOL Efficiency at Maximum Power Point	30.0%
Voc (V)	3.95
Jsc (mA/cm ²)	12.0
Vmp (V)	3.54
Jmp (mA/cm ²)	11.5

EOL Remaining Factors

Annealed to ECSS-E-ST-20-08C Rev.1 post-radiation annealing regiment

Fluence (e/cm ²)	Voc	Jsc	Vmp	Jmp	Pmp
3E13	0.98	1.00	0.98	1.00	0.98
1E14	0.96	1.00	0.97	1.00	0.97
5E14	0.93	1.00	0.93	0.99	0.92
1E15	0.91	0.99	0.91	0.98	0.90
2E15	0.90	0.98	0.89	0.97	0.86
5E15	0.87	0.94	0.86	0.90	0.78

Temperature Coefficients

Fluence (e/cm ²)	Voc (mV/°C)	Jsc (μA/cm ² /°C)	Vmp (mv/°C)	Jmp (μA/cm ² /°C)	Pmp (μW/cm ² /°C)
BOL	-9.6	6.6	-10.3	4.8	-103
1E14	-9.7	6.3	-10.4	4.7	-103
5E14	-10.1	6.6	-10.5	5.1	-104
1E15	-10.2	7.2	-10.3	5.5	-100
5E15	-10.5	9.9	-11.1	10.2	-89