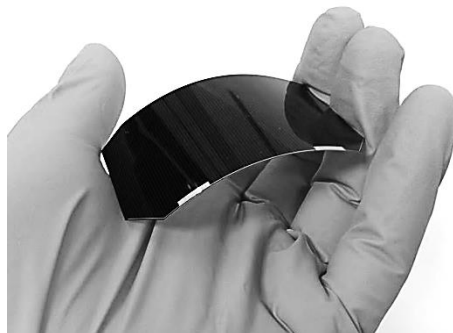
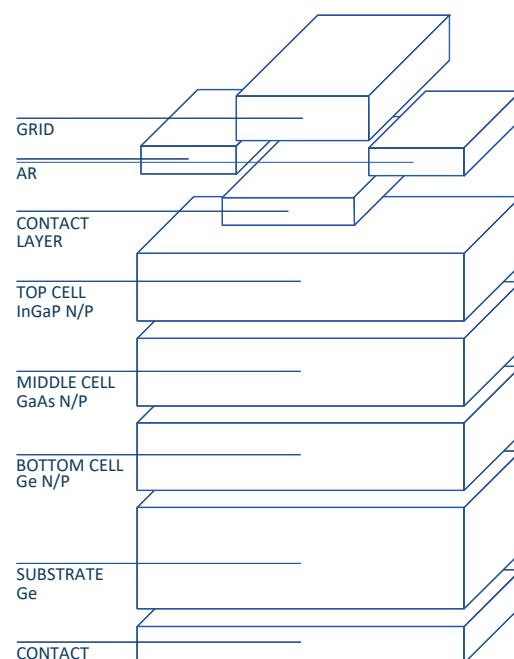


Thin Triple-Junction Solar Cell for Space Applications (CTJ30-Thin)

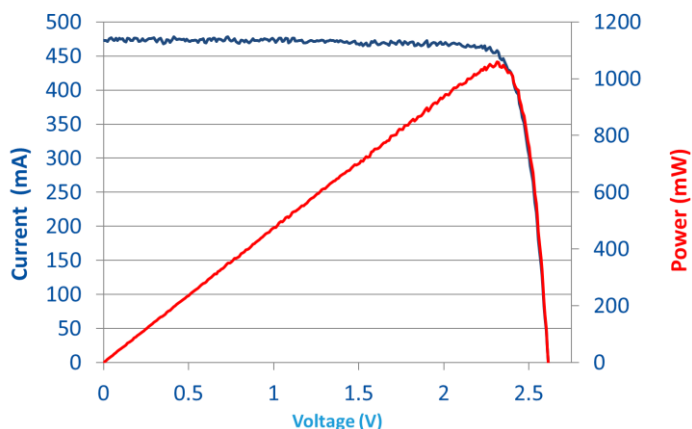


Features and characteristics

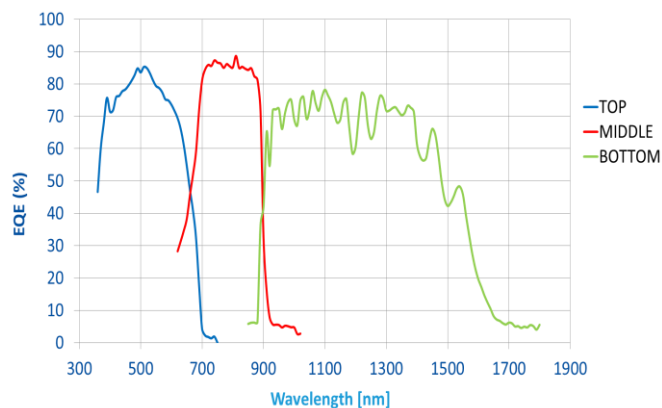
- > Efficiency 29%
- > Triple Junction Solar Cells InGaP/GaAs/Ge for Space Applications
- > Polarity N on P
- > Thickness $80\mu\text{m} \pm 20\mu\text{m}$
- > Very low solar cell mass ($50\text{mg}/\text{cm}^2$)
- > Fully qualified according to ECSS E ST20-08C rev.1 for LEO and GEO orbit
- > External By-pass diode for reverse bias protection
- > Weldable Contacts, Front and Back, based on gold coated silver layers
- > Standard sizes $6.9 \times 3.9\text{cm}^2$, area 26.5cm^2 ; $4 \times 8\text{cm}^2$ area 30.15cm^2
- > High Radiation Resistance
- > Good mechanical strength (Thermal Cycling degradation < 1%)
- > High flexibility to customization (sizes, other)



Typical Current-Voltage Characteristic (CELL SIZE 26.5cm^2 , EFFICIENCY 29% @ AM0, 25°C)



External Quantum Efficiency (BOL AVERAGE EXTERNAL QUANTUM EFFICIENCY)



Performance Data

(AVERAGE ELECTRICAL OUTPUT PARAMETERS @AM0, 1367 W/m², T=25°C)

	J_{SC} (mA/cm ²)	V_{OC} (V)	J_m (mA/cm ²)	V_m (V)	P_{max} (mW/cm ²)	Eff (%)
BOL	17.8	2.61	17.1	2.31	39.6	29.0

Temperature Coefficients

Electron Energy	Fluence (e/cm ²)	$\Delta J_{SC}/\Delta T$ ($\mu A/cm^2/^{\circ}C$)	$\Delta V_{OC}/\Delta T$ (mV/ $^{\circ}C$)	$\Delta J_{pmax}/\Delta T$ ($\mu A/cm^2/^{\circ}C$)	$\Delta V_{pm}/\Delta T$ (mV/ $^{\circ}C$)	$\Delta P_m/\Delta T$ ($\mu W/cm^2/^{\circ}C$)
0	BOL	14	-6.36	7	-6.4	-98
1 MeV	1E14	15	-6.56	8	-6.7	-99
1MeV	5E14	16	-6.80	9	-6.9	-98
1 MeV	1E15	14	-6.86	9	-6.9	-92

Radiation Degradation (Remaining Factors)

Electron Energy	Fluence (e/cm ²)	I_{SC}	V_{OC}	P_M
1 MeV	1E14	0.99	0.97	0.96
1 MeV	5E14	0.98	0.95	0.91
1 MeV	1E15	0.93	0.93	0.84
1 MeV	3E15	0.84	0.90	0.72

Proton Energy	Fluence (p/cm ²)	I_{SC}	V_{OC}	P_M
1MeV	1E+10	1.00	0.98	0.97
1MeV	5E+10	0.99	0.95	0.90
1MeV	1E+11	0.97	0.92	0.85
1MeV	3E+11	0.90	0.88	0.73
2MeV	1.5E+11	0.98	0.94	0.88

Qualification

Fully qualified according ECSS-E-ST-20-8C rev.1

- > Metal Contact thickness 5-10 μm
- > Degradation after reverse bias < 1%
- > Contact Pull Strength > 1000gr (9.8 N)
- > Humidity and Temperature < 1% after 6,000 cycles
- > Solar Absorptance 0.89

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