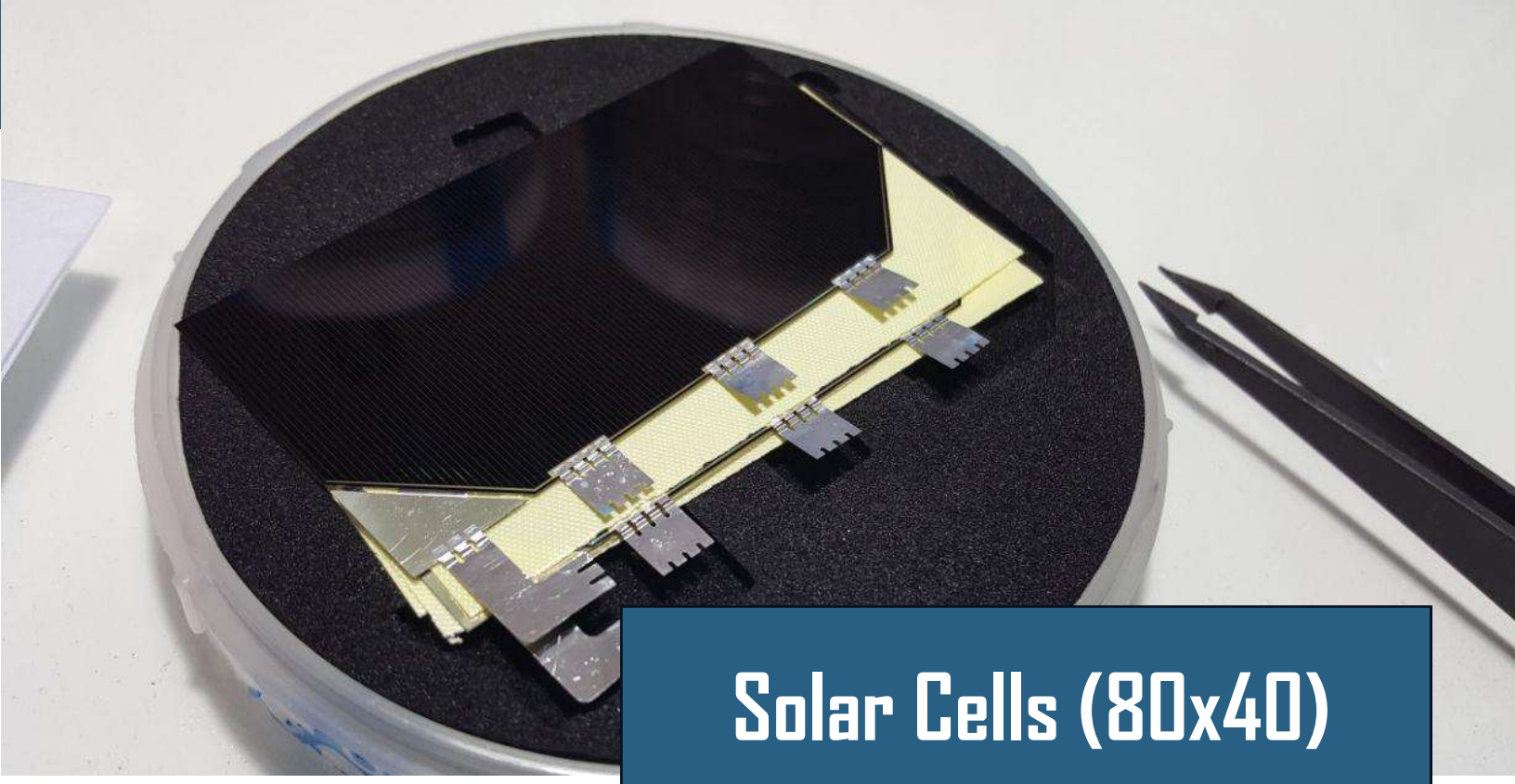

# Solar Cells (80x40)

## Triple-junction solar cells for space-grade panels

SmallSat Market
SmallSat Components Marketplace


**SUMMARY**

The EXA solar cells offer unparalleled high-temperature robustness with a remarkable x2 improvement in the temperature coefficient, ensuring robust performance in extreme temperature variations. EXA's solar cells achieve ultra-high efficiency and a lightweight design of 80-120 mg/cm², boasting an impressive efficiency of >30% and >27% (AM v 1.5, outdoor).


They seamlessly integrate with electronic systems, providing ~2.5V under one sun (AM0) and featuring an integrated by-pass diode for enhanced efficiency.

Proven reliability is a cornerstone of EXA's solar cell technology, crafted from high-purity III-V material for enduring performance with a lifespan exceeding 20 years. Backed by flight heritage in space missions, these solar cells have demonstrated exceptional resilience in the most demanding environments. Leveraging an existing supply chain, EXA ensures scalability, maintaining consistency and reliability in every solar cell.

Designed to meet the needs of both terrestrial and space applications, EXA's solar cells are the perfect choice for long-flight-duration spacecrafts. Their custom design options allow for flexibility with customizable shapes, sizes, and a sleek black appearance, ensuring seamless integration and conformability to diverse spacecraft designs.

We can serve small and large requests as we partially own the foundry where the cells are produced, from a few units to thousands of them.


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| MAIN ELECTRICAL PARAMETERS @ AM0 (135.3 mW.cm-2) and 25 °C | BOL | EOL (10^15 e.cm-2) |
|---|---|---|
| Open circuit voltage Voc (V) | 2.74 | 2.48 |
| Short-circuit curent density Jsc (mA.cm-2) | 17.2 | 16.7 |
| Voltage at MPP Vmp (V) | 2.49 | 2.26 |
| Current density at MPP Jmp (mA.cm-2) | 16.4 | 15.4 |
| Power per cell Pmp (W) | 1.23 | 1.05 |
| Cell Efficiency (%) | >30.0 | 25.7 |

| THERMAL COEFFICIENTS | BOL | EOL (10^15 e.cm-2) |
|---|---|---|
| dVoc / dT (mV.°C-1) | -5.9 | -6.2 |
| dJsc / dT (µA.cm-2.°C-1) | 14.8 | 14.6 |
| dVmp / dT (mV.°C-1) | -6.5 | -6.9 |
| dJmp /dT (µA.cm-2.°C-1) | 9.9 | 10.1 |

| BYPASS PROTECTION: EXTERNAL SI DIODE | |
|---|---|
| Vforward @ 620 mA (V) | 0.8V |
| Ireverse @ -4V, dark (µA) | 0.1 |

| FEATURES | |
|---|---|
| Active material | GaInP/GaAs/Ge |
| Substrate | Ge |
| ARC | TiOx/ Al2O3 |
| Cell electrode | Ag/Au |
| Cell polarity | N on P |

| DIMENSIONS | |
|---|---|
| Max. length L (mm) | 80.15 |
| Max. width W (mm) | 40.15 |
| Total CIC thickness (µm) | 300 |
| Coverglass thickness (µm) | 100 |
| Interconnector (Ag) thickness (µm) | 25 |
| Total area (cm2) | 30.15 |
| Total weight (mg/cm2) | <120 |

| TOLERANCES | |
|---|---|
| CIC size | +/- 0.1 mm |
| CIC thickness | +/- 50 µm |

| RELIABILITY | |
|---|---|
| Thermal cycling (-180 °C to 100 °C, 6 cycles) | ΔEff <1% |
| 96h at 95% RH and 60 °C | ΔEff <1% |

| THRESHOLD VALUES | |
|---|---|
| Solar Absorptance | <0.91 |
| Hemispherical radiative rate | 0.84 +/- 0.03 |
| Pull test | >7N at 0° |