

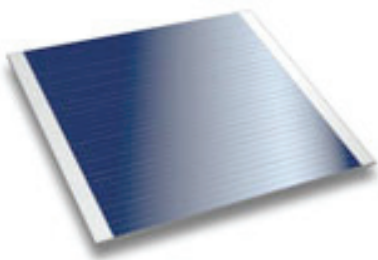
CTJ Photovoltaic Cell – 10 mm x 10 mm

Triple-Junction Solar Cell for Terrestrial Applications
Cell Optimized for 1000X Concentration



DATASHEET | OCTOBER 2011

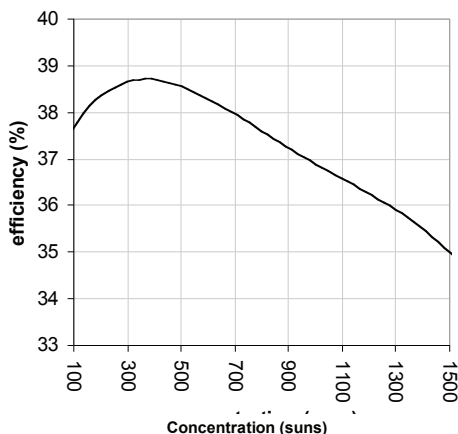
SOLAR POWER



Typical Current-Voltage Parameters at 50 W/cm², 25°C

Parameter	Value at 25°C, 50 W/cm ²
Efficiency (%)	38.5
Isc (Amps)	7.06
Imp (Amps)	6.92
Voc (Volts)	3.15
Vmp (Volts)	2.75

Efficiency vs. Concentration Characteristics



EMCORE's Concentrating Triple-Junction (CTJ) solar cells with n-on-p polarity are built on germanium substrates and incorporate a proprietary antireflective coating that provides low reflectance over a wavelength range of 0.3 to 1.8µm. These high-efficiency solar cells are optimized for terrestrial applications under concentrated incident illumination and high current densities.

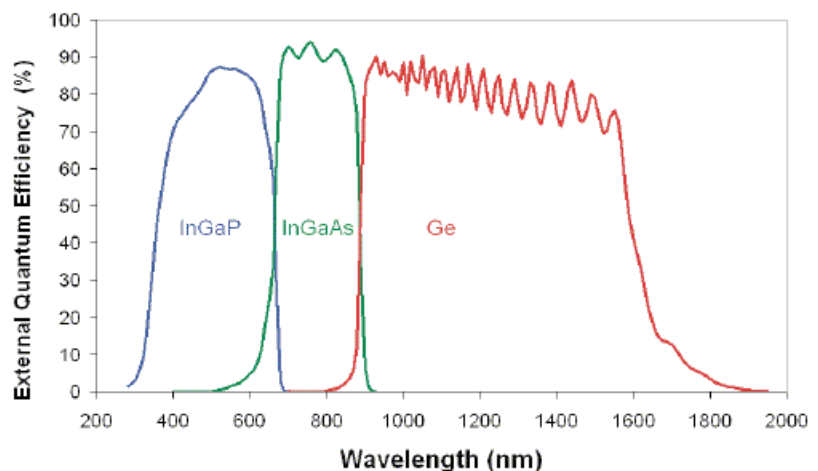
Features and Characteristics

- Series interconnected triple-junction solar cells monolithically integrated on germanium.
- Photovoltaic absorber materials and bandgap energies are 1.86eV InGaP, 1.40eV InGaAs, and 0.67eV Ge.
- Optimized for operation at 1000 suns and 25°C under ASTM G173-03 direct reference spectrum. Custom design is also available for variables such as cell size, operating intensity, spectrum, temperature.
- Weldable or solderable front and back contact metallization terminated in silver/gold alloy.
- All cells are flash tested at concentration at 25°C.
- A variety of shipping options are available, including waffle packs, tape and reel, or processed wafers.
- 300 MW/yr manufacturing capacity.

Nominal Temperature Coefficients at 50 W/cm²

Parameter	Absolute, 10°C to 100°C Range		Relative, at 25°C	
	Value	Unit	Value	Unit
Efficiency	-0.04	absolute %/°C	-1080	PPM/°C
Vmp	-4.5	milliVolts/°C	-1610	PPM/°C
Jmp	4.7	milliamps/cm ² /°C	570	PPM/°C
responsivity@Vmp	7.7	x10 ⁻⁵ Amps/Watt/°C	570	PPM/°C

Quantum Efficiency

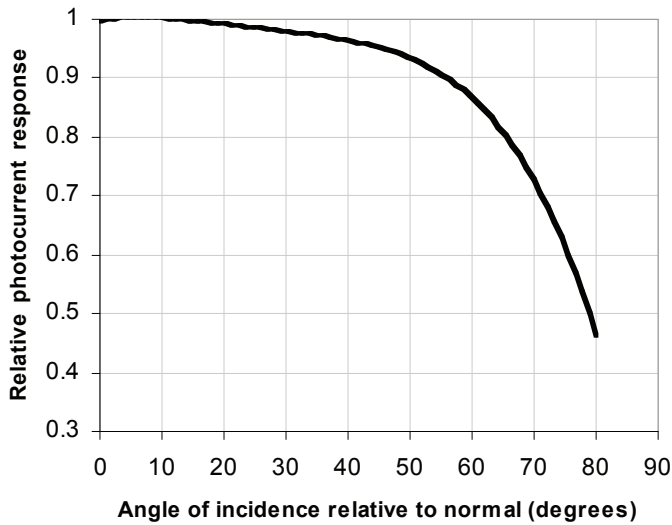


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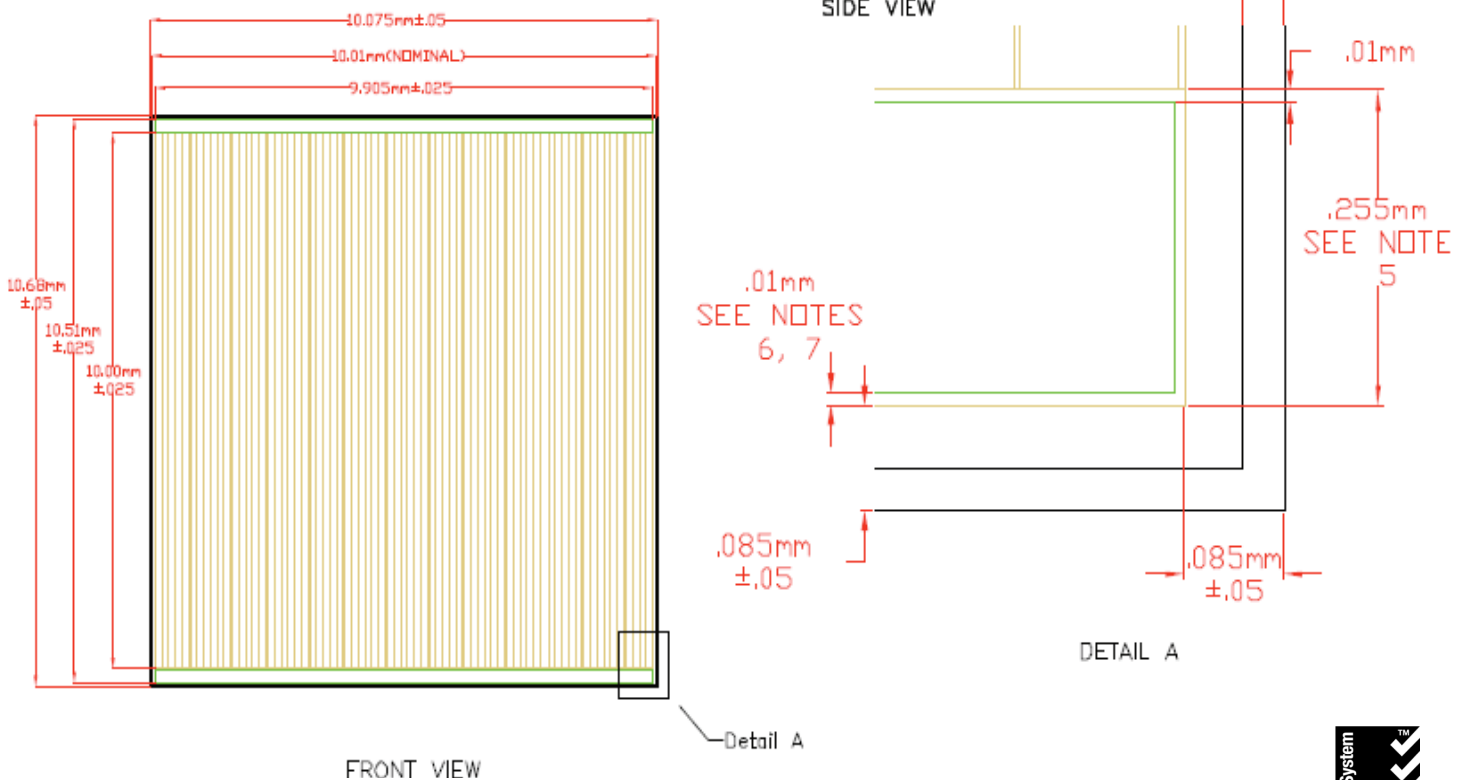
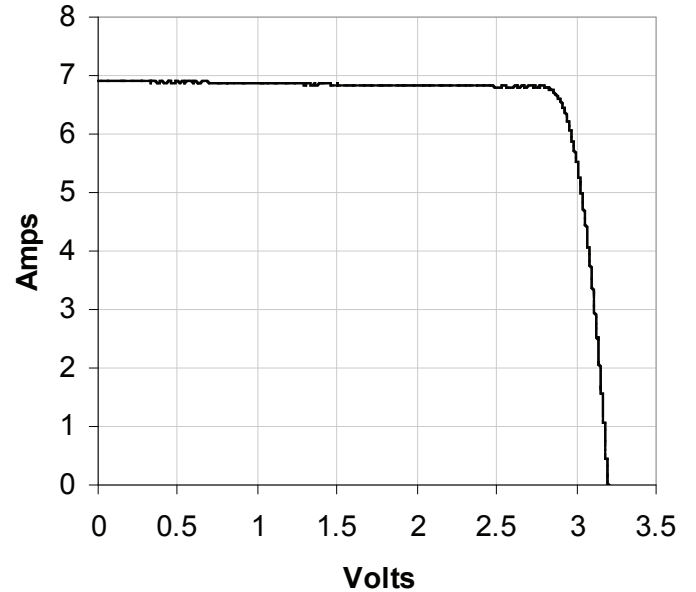
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Angular Acceptance Characteristics



Nominal Current-Voltage Characteristics



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