CPV Dense Array Solar Cells

C3MJ Third Generation CPV Technology

Product Description

Typical Aperture Area Efficiency 38.5%
Recommended operating temperature <110°C

Epitaxial Structure

Triple junction solar cell on Germanium substrate
GaInP (1.88 eV) / GaInAs (1.41 eV) / Ge (0.67 eV)

Metallization

Silver metallization on front busbar and grid fingers
Silver metallization with 500Å gold on back surface

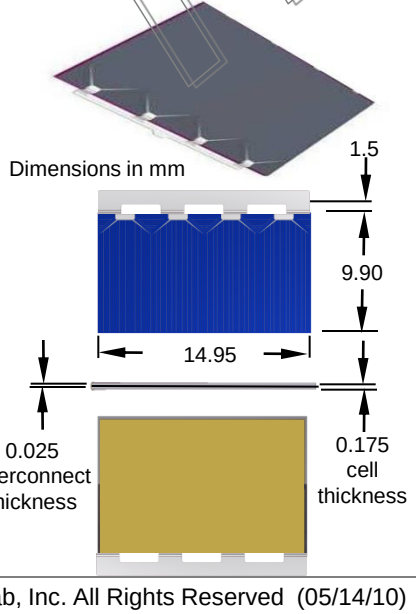
Qualification Tests Completed

Test	Test Conditions	Qty	Requirement
Performance Tests			
LIV	50 W/cm2 under ASTM 173G	100%	Avg η_{mp}>38.5%; Min η_{mp} > 36.2%
Temp Intensity	50, 75 & 100 W/cm^2, ASTM 173G at 10°C, 25°C, 65°C, and 110°C	20	Characterization
Weld Degradation	LIV test before and after weld	100% of scribed parts	NP_{mp} > 0.98
Spectral Response			Characterization
Angle of incidence	X25 or SR illumination source	10	Characterization
Solar Absorptance	Measure reflectance	10	Characterization
Accelerated Life Tests			
Damp Heat	85C, 85% RH for 2000 hours	30	NP_{mp} > 0.9
Thermal Cycle	IEEE 1513 (500 cycles –40°C to +110°C)	25	NP_{mp} > 0.9
High Temp Soak in Nitrogen	unbiased soak at 200°C and 250°C in Nitrogen	15 at each T	NP_{mp} > 0.95 after 25 yrs

* Full Qualification Report Is Available Upon Request

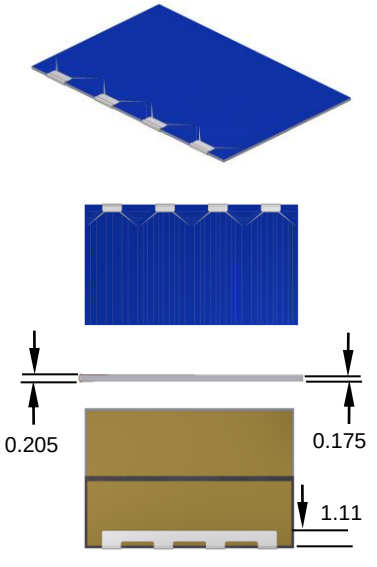
CSO-150-IC

Cell with welded interconnect



CP-150

Cell with coplanar back contact



Specifications Subject to Change without Notice.

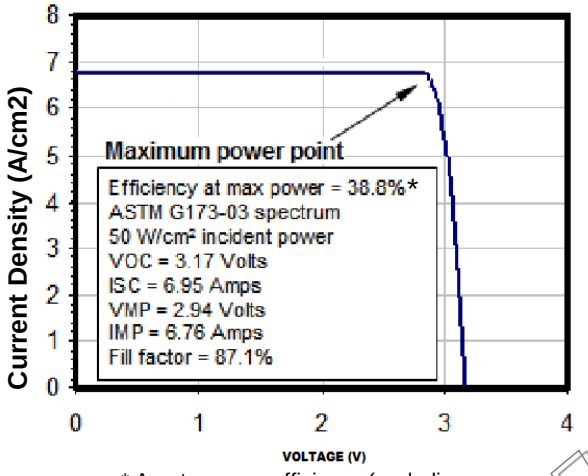
ISO9001:2000 REGISTERED

ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 14001

AS9100 REGISTERED

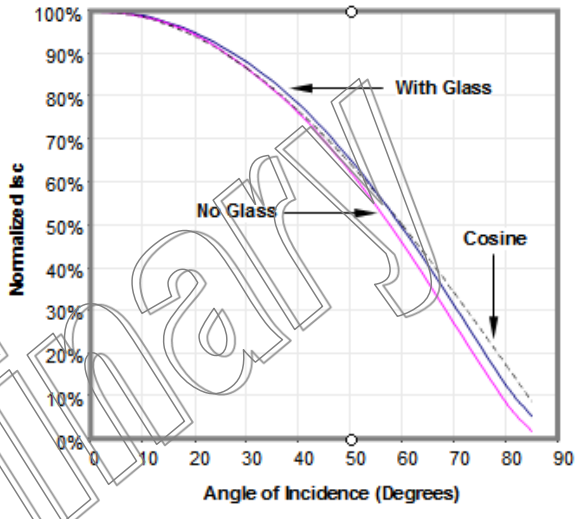
Spectrolab, Inc. 12500 Gladstone Avenue, Sylmar, California 91342 USA
● Phone 818.365.4611 ● FAX: 818.361.5102 ● Website : www.spectrolab.com

Typical Current-Voltage Characteristics

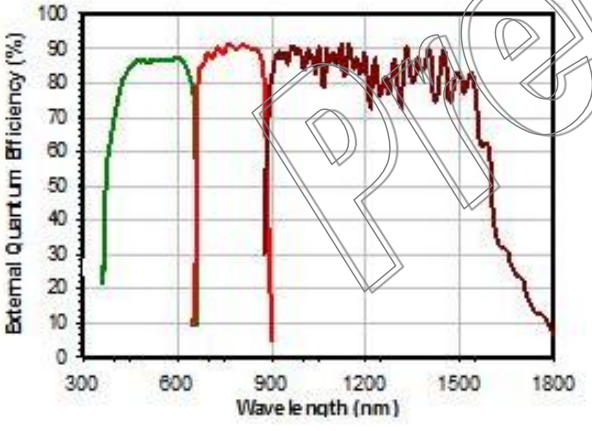


* Aperture area efficiency (excluding weld pads and inactive edges)

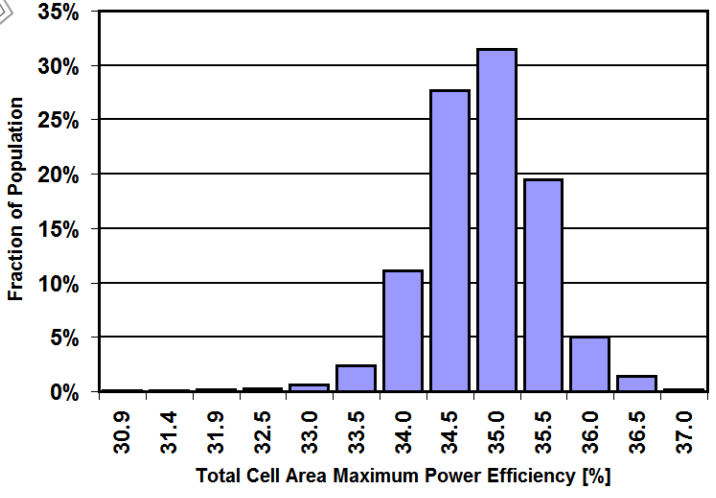
Response Versus Angle of Incidence



Spectral Response



Typical Population Efficiency Distribution (Total Area Efficiency)



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