CPV Point Focus Solar Cells

C3MJ Third Generation CPV Technology

Product Description

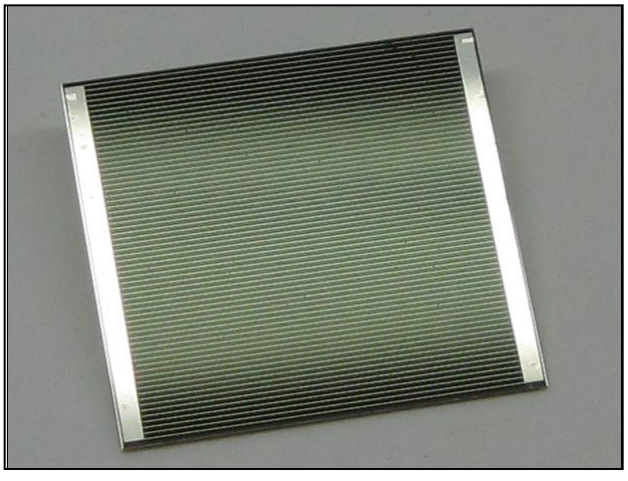
Typical Efficiency 38.5%
Recommended operating temperature <110°C

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

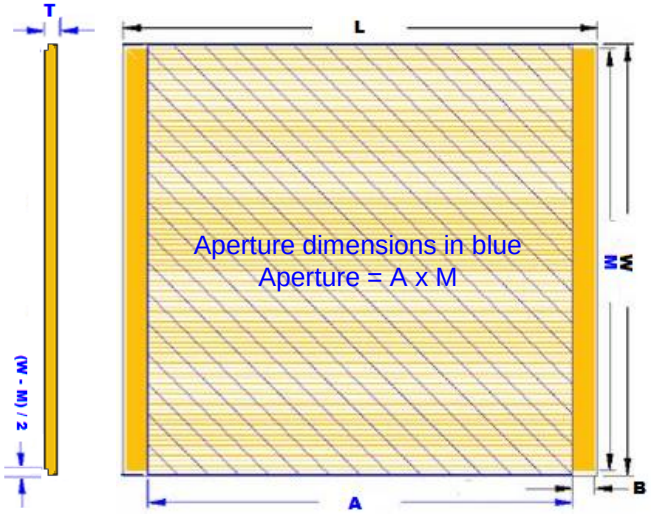


Qualification Tests Completed

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

Mechanical Dimensions

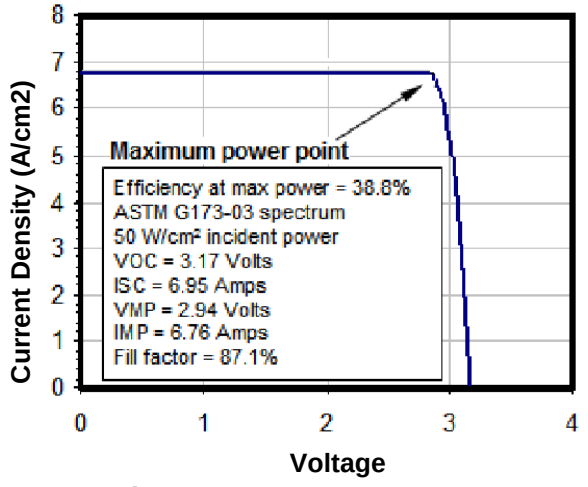


Product	Aperture Area	Aperture Dimensions (cm)			Mechanical Dimensions (cm)			Typical Efficiency
CPV Cell	(cm^2)	M	A	T	L	W	B	η
CDO-30 (045745)	0.308 cm^2	0.555	0.554	0.019	0.681	0.565	0.051	38.70 %
CDO-56 (045135)	0.564 cm^2	0.734	0.750	0.019	0.868	0.763	0.050	38.60 %
CDO-76 (045774)	0.763 cm^2	0.883	0.864	0.019	0.962	0.899	0.040	38.55 %
CDO-100 (045505)	0.969 cm^2	0.980	0.989	0.019	1.108	1.008	0.051	38.50 %
CDO-225 (045835)	2.226 cm^2	1.484	1.500	0.020	1.620	1.510	0.050	38.10 %

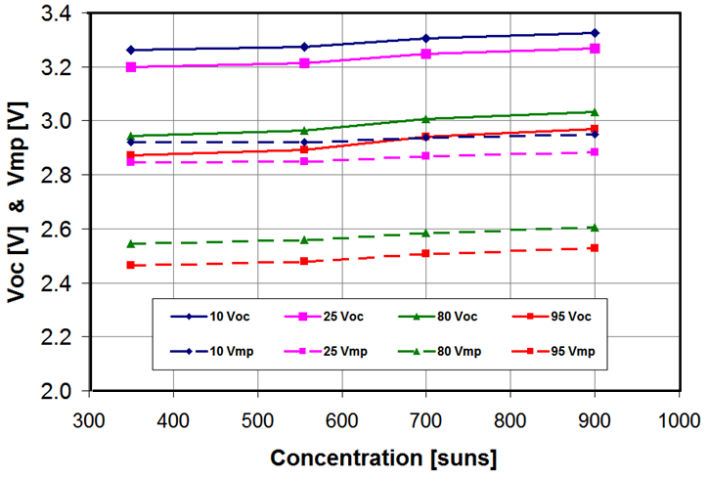
Specifications Subject to Change without Notice.

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

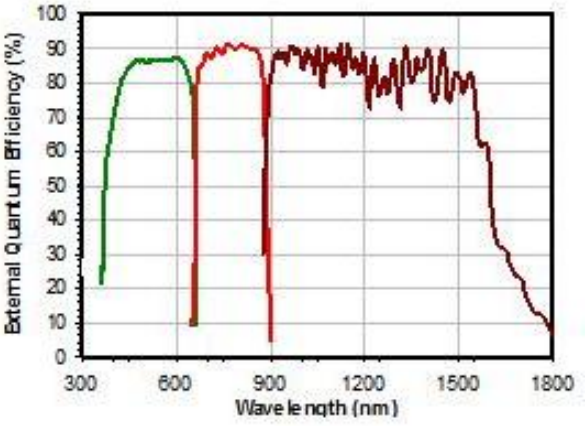
Typical Current-Voltage Characteristics

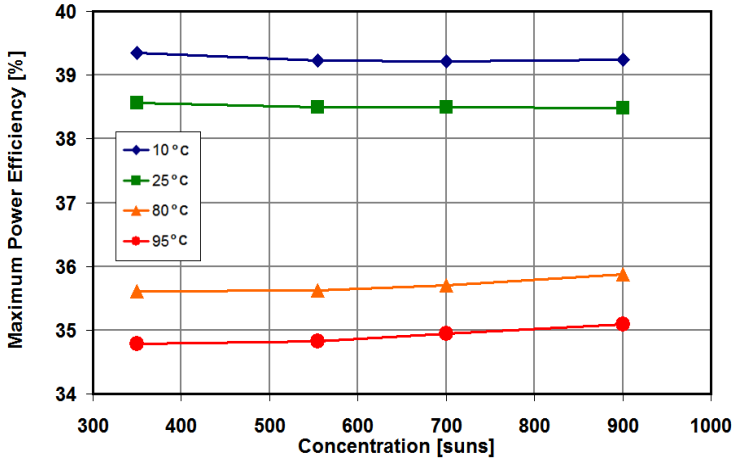


Typical Performance Over Temperature

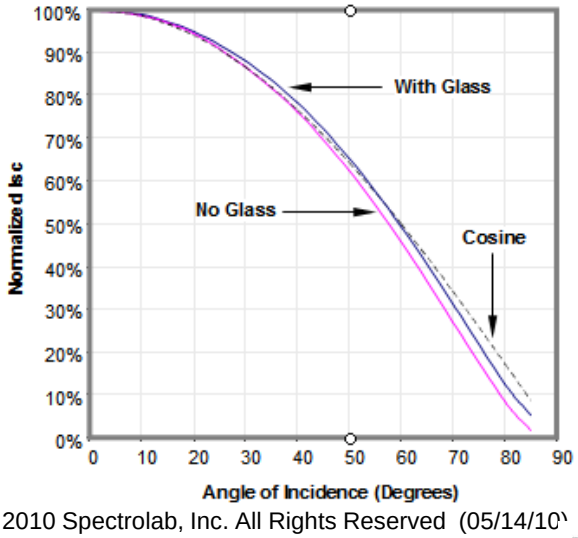


Spectral Response

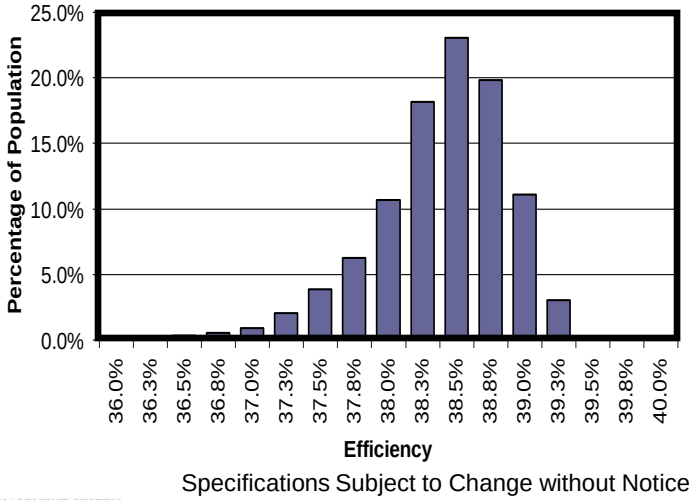




Response Versus Angle of Incidence



Typical Population Efficiency Distribution



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