

## CPV Point Focus Solar Cells C3MJ Third Generation CPV Technology

### Product Description

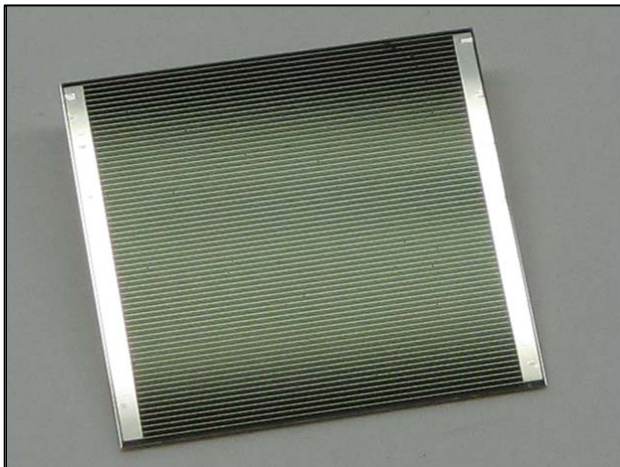
Typical Efficiency 38.5%  
Recommended operating temperature <110°C

### 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

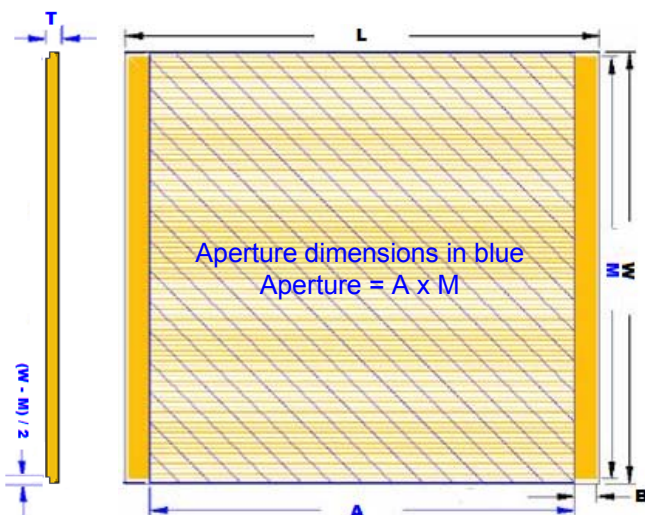


### Qualification Tests Completed

Test	Test Conditions	Qty	Requirement
<b>Performance Tests</b>			
LIV	50 W/cm <sup>2</sup> under ASTM 173G	100%	Avg $\eta_{mp}$ > 38.5%; Min $\eta_{mp}$ > 36.2%
Temp Intensity	50, 75 & 100 W/cm <sup>2</sup> , 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 <sub>mp</sub> > 0.98
Spectral Response			Characterization
Angle of incidence	X25 or SR illumination source	10	Characterization
Solar Absorptance	Measure reflectance	10	Characterization
<b>Accelerated Life Tests</b>			
Damp Heat	85C, 85% RH for 2000 hours	30	NP <sub>mp</sub> > 0.9
Thermal Cycle	IEEE 1513 (500 cycles -40°C to +110°C)	25	NP <sub>mp</sub> > 0.9
High Temp Soak in Nitrogen	unbiased soak at 200°C and 250°C in Nitrogen	15 at each T	NP <sub>mp</sub> > 0.95 after 25 yrs

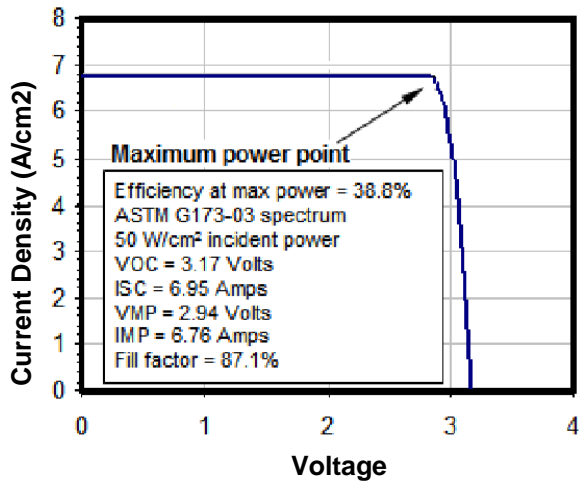
\* Full Qualification Report Is Available Upon Request

### Mechanical Dimensions

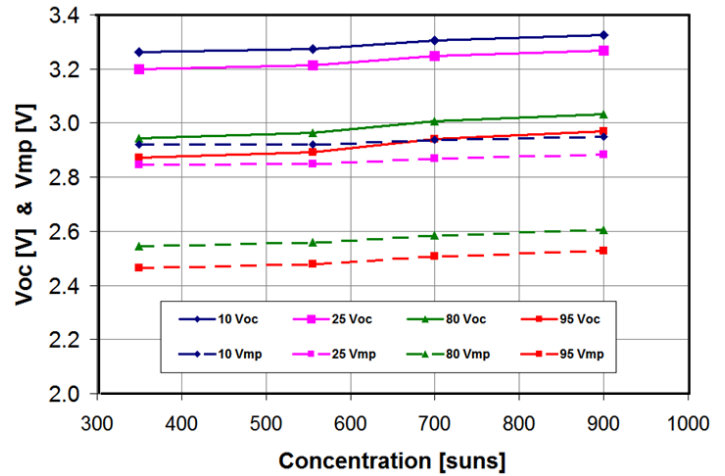


Product	Aperture Area (cm <sup>2</sup> )	Aperture Dimensions (cm)			Mechanical Dimensions (cm)			Typical Efficiency $\eta$
		M	A	T	L	W	B	
CPV Cell								
CDO-30 (045745)	0.308 cm <sup>2</sup>	0.555	0.554	0.019	0.681	0.565	0.051	38.70 %
CDO-56 (046120)	0.564 cm <sup>2</sup>	0.734	0.750	0.019	0.868	0.763	0.050	38.60 %
CDO-76 (045774)	0.763 cm <sup>2</sup>	0.883	0.864	0.019	0.962	0.899	0.040	38.55 %
CDO-100 (045805)	0.969 cm <sup>2</sup>	0.980	0.989	0.019	1.108	1.008	0.051	38.50 %
CDO-225 (045835)	2.226 cm <sup>2</sup>	1.484	1.500	0.020	1.620	1.510	0.050	38.10 %

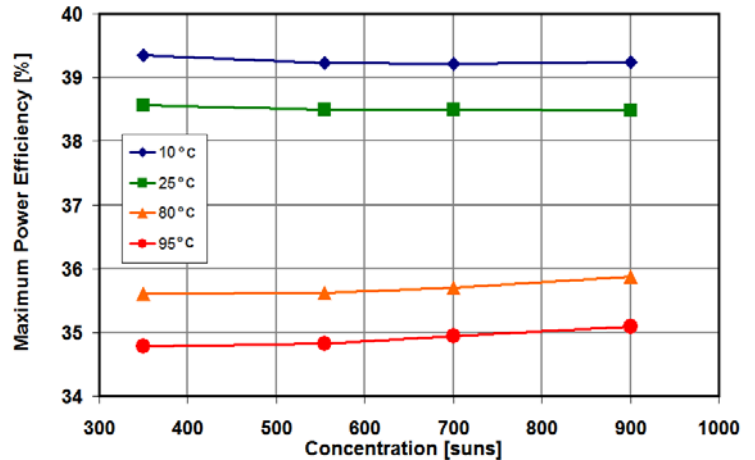
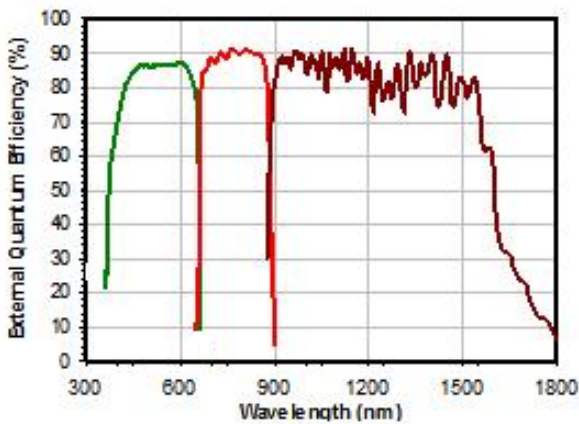
## Typical Current-Voltage Characteristics



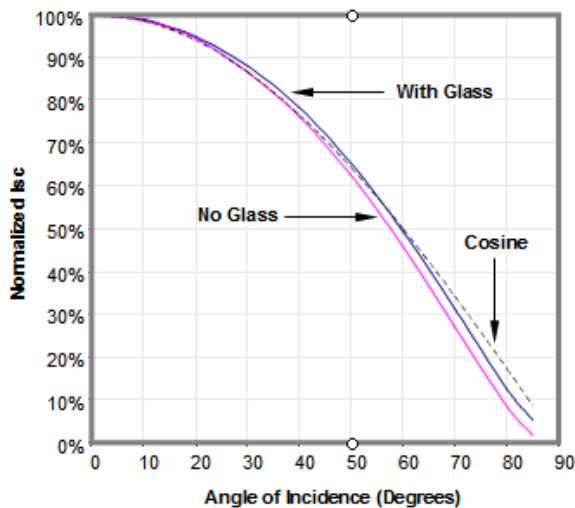
## Typical Performance Over Temperature



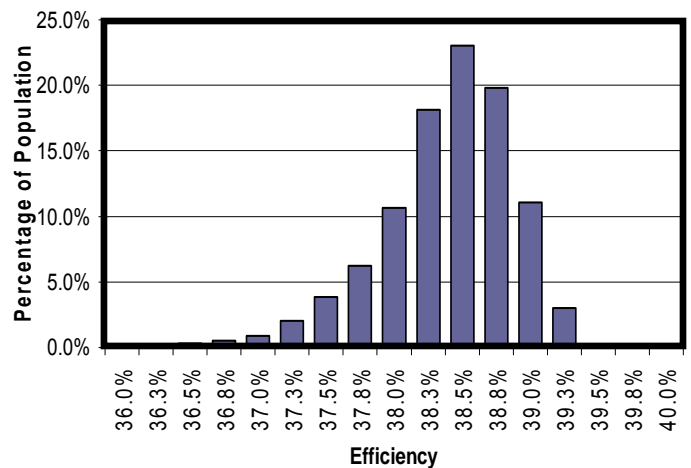
## Spectral Response



## Response Versus Angle of Incidence



## Typical Population Efficiency Distribution



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ENVIRONMENTAL MANAGEMENT SYSTEM  
 CERTIFIED BY DNV  
**ISO 14001**

Specifications Subject to Change without Notice.

**ISO 9001:2000**  
 REGISTERED

**AS 9100**  
 REGISTERED

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