

## CPV Small Aperture Point Focus Solar Cell C3MJ Third Generation CPV Technology

### Product Description

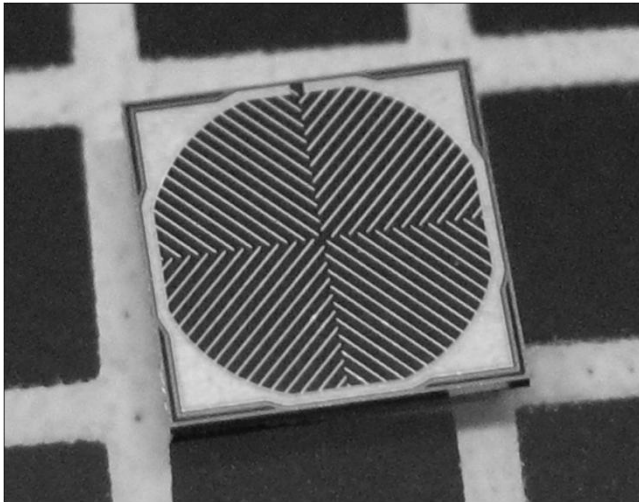
Typical Efficiency 38.5%  
Recommended operating temperature <110°C

### 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

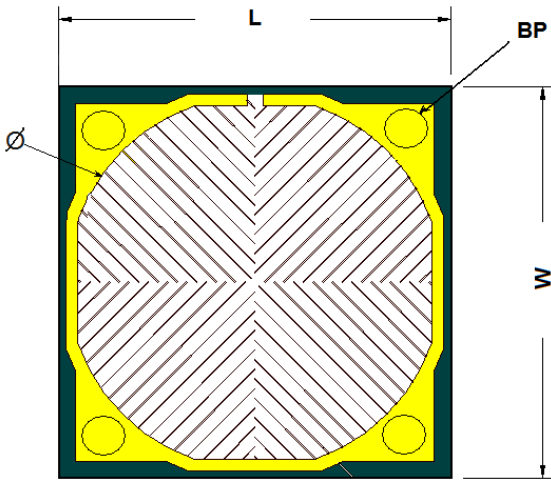


### Qualification Tests Completed

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	$NP_{mp}$ > 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	$NP_{mp}$ > 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

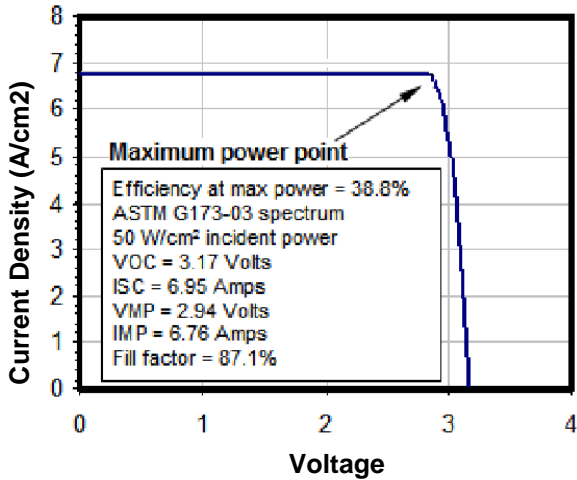
\* Full Qualification Report Is Available Upon Request

### Mechanical Dimensions

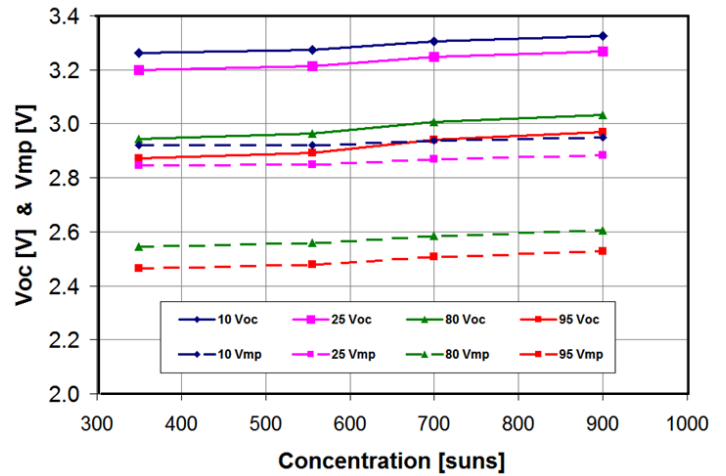


Product	Aperture Area (cm <sup>2</sup> )	Mechanical Dimensions (cm)			Bond Pad Max Dia. (cm)	Typical Efficiency $\eta$
		L	W	Ø		
CPV Cell	(cm <sup>2</sup> )	L	W	Ø	BP	$\eta$
WCA3000	0.0682 cm <sup>2</sup>	0.315	0.315	0.300	0.040	38.7 %
WCA 1300	0.013 cm <sup>2</sup>	0.144	0.144	0.130	0.025	38.7 %

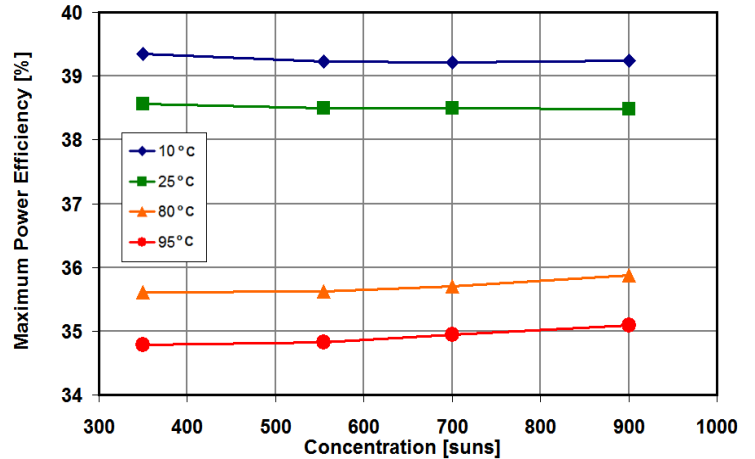
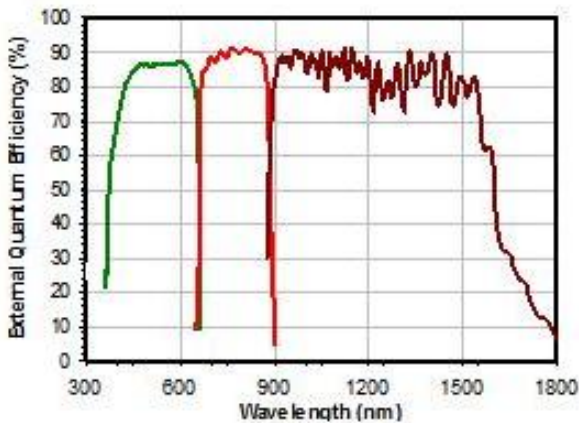
## Typical Current-Voltage Characteristics



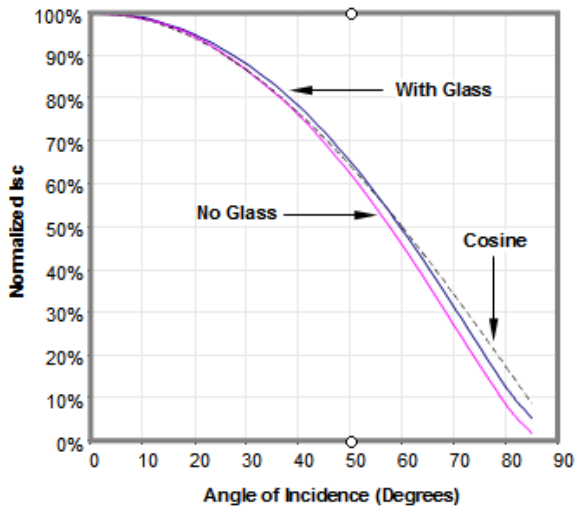
## Typical Performance Over Temperature



## Spectral Response



## Response Versus Angle of Incidence



## Typical Population Efficiency Distribution

