

ISO9001:2000 Registered • AS9100 Registered

A BOEING COMPANY

CDO-100-C3MJ Concentrator Solar Cell

Product Description

Device structure	C3MJ
Aperture area	98.9 mm ²
Minimum average efficiency	>38.5%
Recommended operating temperature	<110°C
Maximum process temperature	<350°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

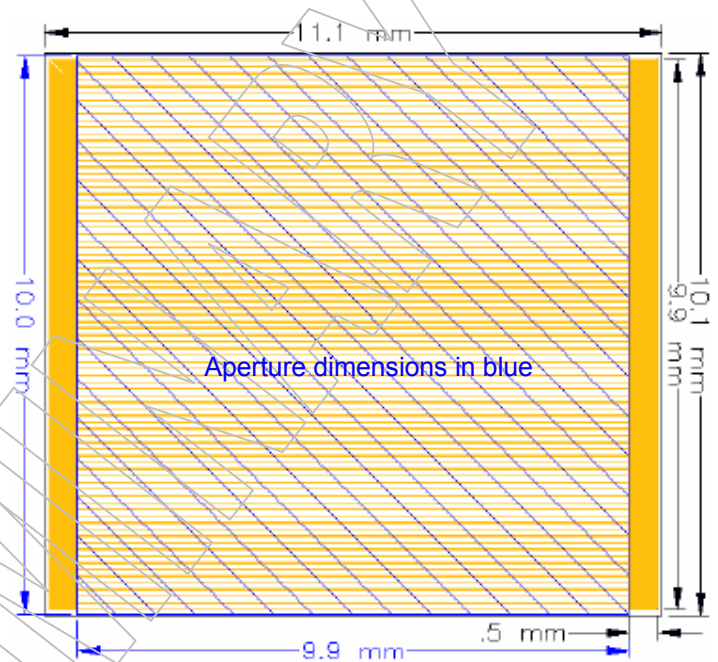
Testing

Cells are supplied fully tested and sorted into performance bins based on measured current at 2.68V load.

Packaging Format

Parts are supplied in waffle trays.

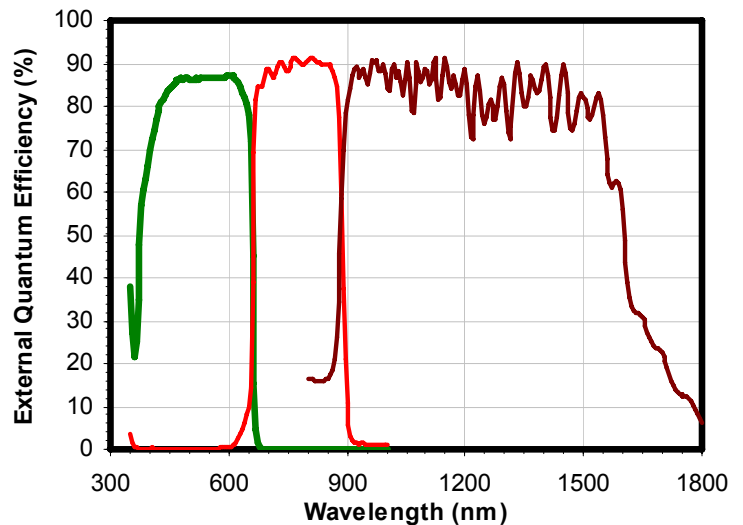
Mechanical Dimensions



Qualification Tests

Test	Test Conditions	Qty	Requirement
Performance Tests			
LIV	50 W/cm ² 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

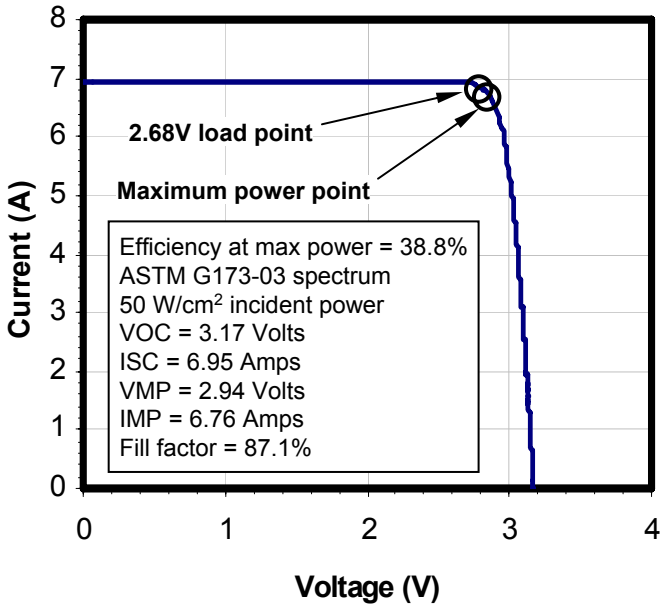
Spectral Response



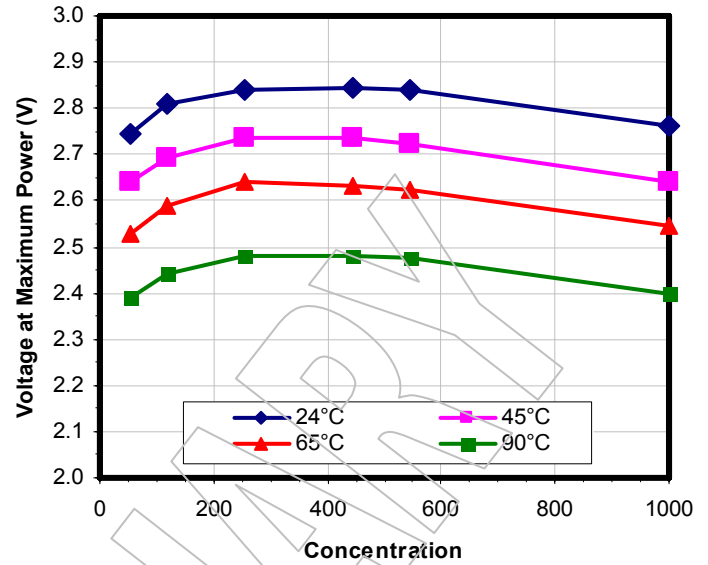
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Specifications subject to change without notice.

Typical Current-Voltage Characteristics

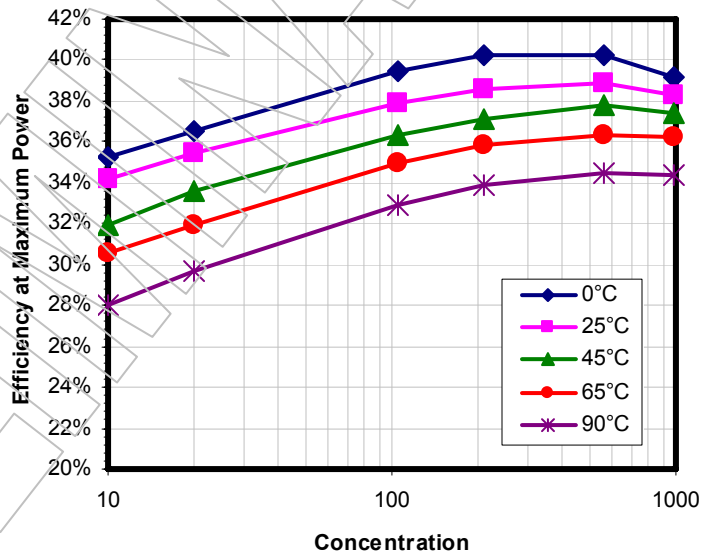


Typical Performance Over Temperature

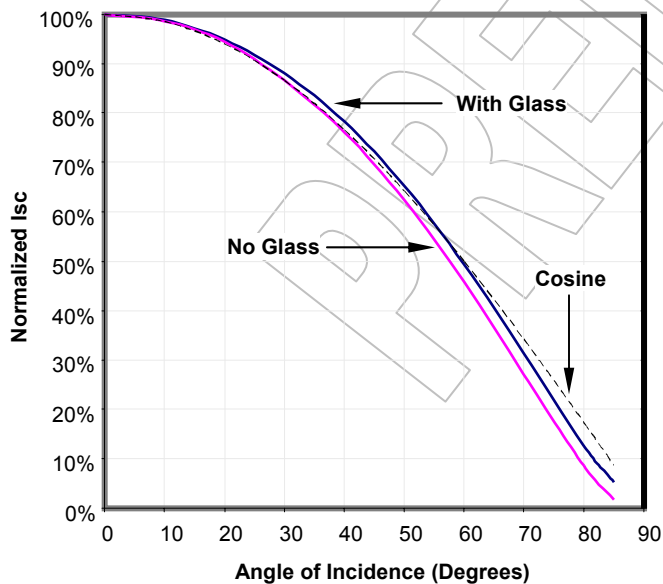


Performance Bins at 2.68V load,
50 W/cm² Intensity

Bin	Current (A)
1	6.26–6.46
2	6.46–6.66
3	6.66–6.86
4	6.86–7.06
5	7.06–7.26
6	7.26–7.46



Response Versus Angle of Incidence



Typical Population Efficiency Distribution

