MORE electricity

Our ES-A series panels have the best power tolerance in the industry (-0/+5 W) and consistently deliver more electricity than competitors in field tests.

GUARANTEED POWER
The minimum guaranteed power is the nameplate so you never get less power than you paid for.

INDEPENDENTLY VERIFIED POWER
Four independent test labs regularly check panel power so you get the power we promise.

ANTI-REFLECTIVE GLASS
Delivering 2–3% more electricity compared to panels with standard glass.

TEMPERATURE RATINGS OVER 90%
Maintaining up to 4% higher output than most other crystalline silicon panels under hot conditions.

HIGH RANKINGS IN FIELD TESTS
Long-term Photon and TÜV field tests prove Evergreen panels produce more electricity (kWh/kW).

LESS impact

String Ribbon™ panels have the smallest carbon footprint and fastest energy payback of any silicon-based solar panel ever made.

SMALLEST CARBON FOOTPRINT
Our String Ribbon™ wafers are made with a fraction of the emissions that result from making conventional silicon panels.

12-MONTH ENERGY PAYBACK
Our panels begin generating truly clean electricity faster than any other silicon-based panel on the market.

100% CARDBOARD-FREE REUSABLE PACKAGING
Reduces disposal costs and on-site manpower while eliminating tons of landfill.

LEAD-FREE SOLAR CELLS
Our panels make clean electricity and the way we make them is clean too.

1 Guaranteed upon initial delivery of the panel to the customer, maximum power up to 4.99 W above nameplate rating; 2 Evergreen power testers calibrated by taking the straight average of test data from NREL, TÜV Rheinland PTL, TÜV Rheinland Cologne and Fraunhofer ISE; 3 Based on comparing PTC/STC ratings of major competing multi-crystalline silicon panel brands published by the California Energy Commission in May 2009; 4 2008 Module Tests conducted by Photon and published in Photon International February 2009, TÜV Rheinland tests run from April to September 2008

5 Evaluation completed by the Energy Research Foundation of the Netherlands (ECN), May 2009

STRING RIBBON™ SOLAR PANELS OFFERING EXCEPTIONAL PERFORMANCE AND INDUSTRY-LEADING ENVIRONMENTAL CREDENTIALS. IN SHORT, MORE ELECTRICITY AND LESS IMPACT.

All Evergreen panels come with a 5 year workmanship and 25 year limited power warranty. For full details see the Evergreen Solar Limited Warranty available upon request or online. This product is certified to UL 1703, UL 4703, UL Fire Safety Class C, IEC 61215 Ed.2, IEC 61730 Class A, FSEC and KTL standards. String Ribbon is a trademark of Evergreen Solar, Inc. Evergreen Solar’s wafer manufacturing technology is patented in the United States and other countries. Copyright © Evergreen Solar, Inc 2009.

Made in the USA
The above drawing is a graphical representation of the product; for engineering quality drawings please contact Evergreen Solar. MC® is a registered trademark of Multi-contact AG. Product constructed with 114 multi-crystalline silicon String Ribbon™ solar cells, anti-reflective tempered solar glass, EVA encapsulant, polymer back-skin and a black anodized double-walled aluminum frame.

Product packaged 28 per pallet and tested to International Safe Transit Association (ISTA) Standard 2. All specifications in this product information sheet conform to EN 50380. See the Evergreen Solar Safety, Installation and Operation Manual, Mounting Guide and Inverter Selection Guide for further information on approved installation and use of this product.

Due to continuous innovation, research and product improvement, the specifications in this product information sheet are subject to change without notice. No rights can be derived from this product information sheet and Evergreen Solar assumes no liability whatsoever connected to or resulting from the use of any information contained herein.

### ELECTRICAL characteristics

**Standard Test Conditions (STC)**

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<td>210</td>
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<tr>
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<td>-0/+4.99</td>
<td>-0/+4.99</td>
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<td>Isc</td>
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**Nominal Operating Cell Temperature Conditions (NOCT)**

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<th>Imp</th>
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<td>153.8</td>
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</tbody>
</table>

**Low Irradiance**

The typical relative reduction of panel efficiency at an irradiance of 200 W/m² both at 25°C cell temperature and spectrum AM 1.5 is 6%.

**Temperature Coefficients**

| γPmp | -0.43 | %/°C |
| βVmp | -0.40 | %/°C |
| αImp | -0.03 | %/°C |
| βVoc | -0.31 | %/°C |
| αIsc | +0.05 | %/°C |

**System Design**

- Series Fuse Rating: 20 A
- Maximum DC System Voltage (UL): 600 V
- Maximum Combined Wind and Snow Load: 60 lbs/ft²

### MECHANICAL specifications

**Panel ID Label**

- **JUNCTION BOX** (IP65)
- **MC® Lockable Connectors** (TYPE 4; LOCKING SLEEVE NOT PROVIDED)
- **Black Anodized Aluminum Frame**
- **8x ø16 grounding holes**
- **12x frame drainage holes (not to be used for mounting)**
- **All dimensions in inches; panel weight 41 lbs (18.6 kg)**

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Product packaged 28 per pallet and tested to International Safe Transit Association (ISTA) Standard 2B. All specifications in this product information sheet conform to EN 50380. See the Evergreen Solar Safety, Installation and Operation Manual, Mounting Guide and Inverter Selection Guide for further information on approved installation and use of this product.

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### PARTNER

**Evergreen Solar Inc.**

Worldwide Headquarters

138 Bartlett Street, Marlboro, MA 01752, USA

T +1.508.357.2221  F +1.508.229.0747
info@evergreensolar.com

Customer Service Americas and Asia

Evergreen Solar Inc.

138 Bartlett Street, Marlboro, MA 01752, USA

T +1.508.357.2221  F +1.508.229.0747
sales@evergreensolar.com