



Reliability of CIGS Modules

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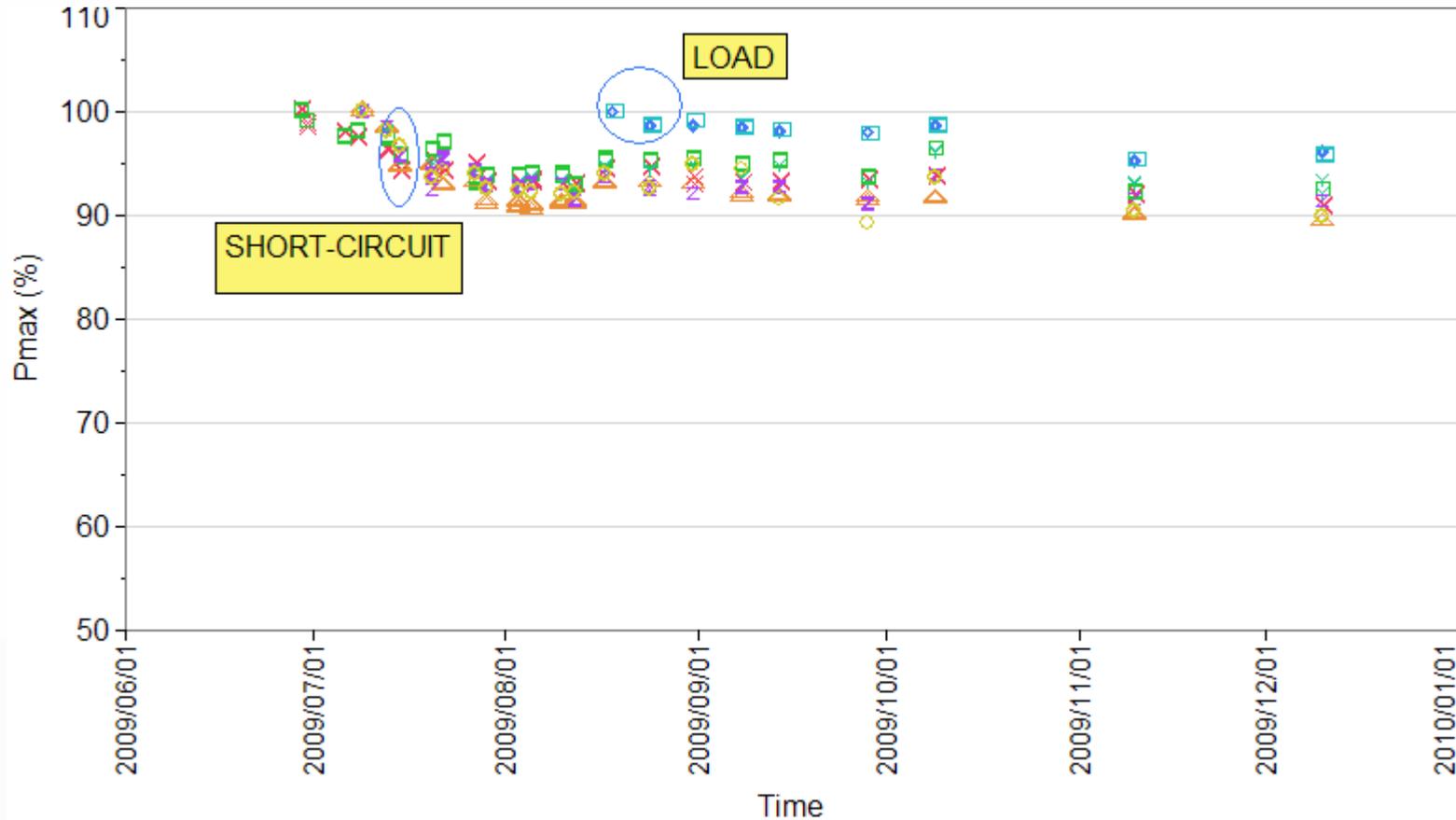
SoloPower Inc.
San Jose, California, USA

Long-term module performance

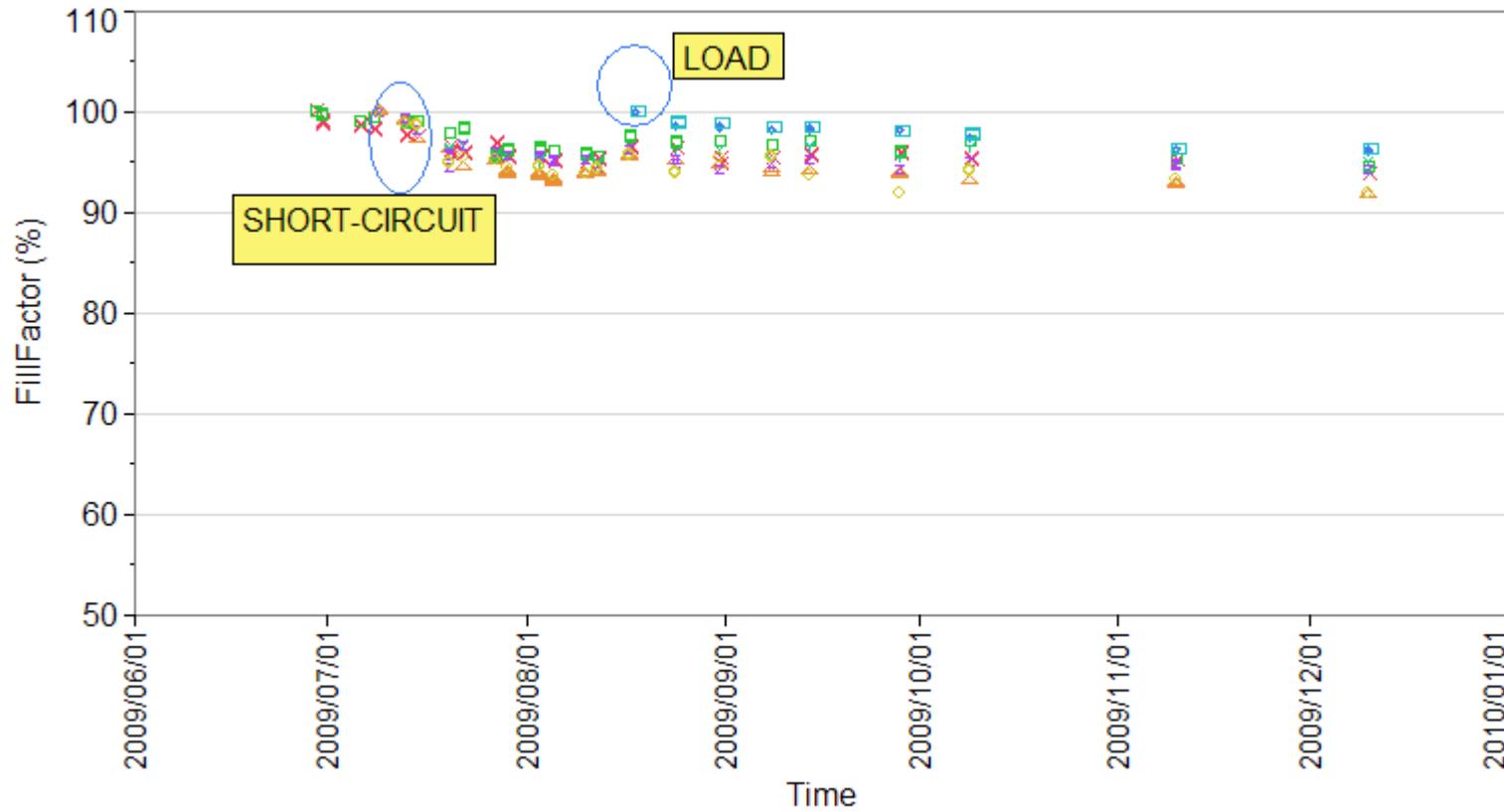


- ❑ Accelerated outdoor test: Short circuit test
- ❑ Short-circuit test: 20-25% higher current than I_{pm}
- ❑ Outdoor load test: Resistive load at P_{max}

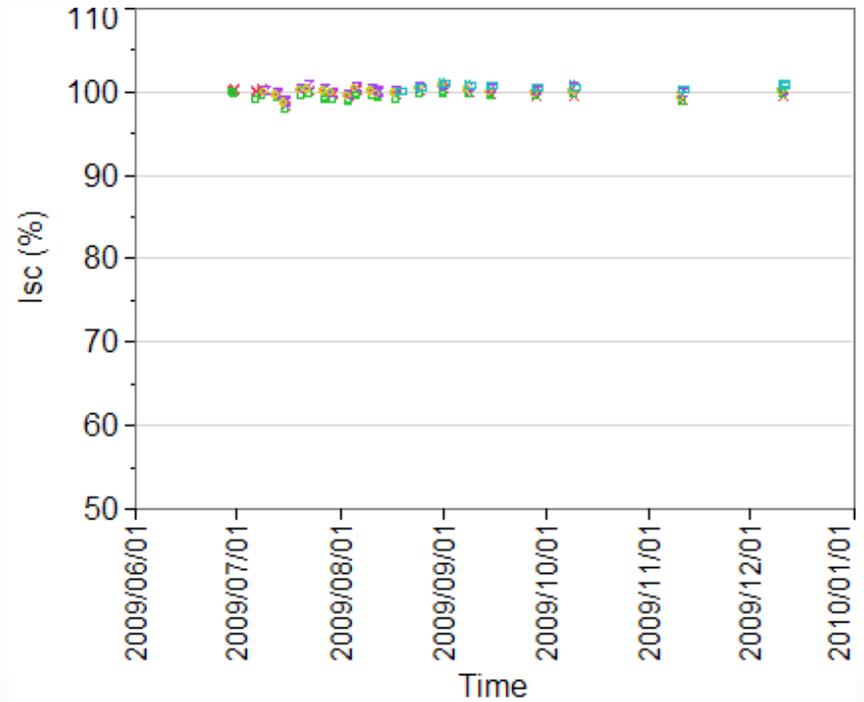
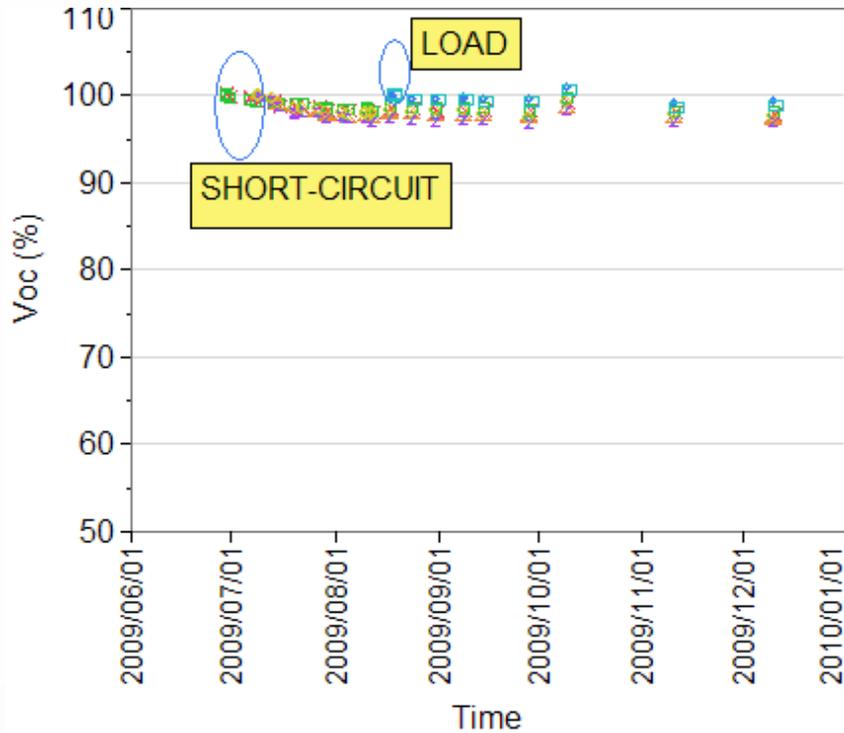
Modules in outdoor test



Modules in outdoor test



Modules in outdoor test



SoloPower CIGS Product



Current Product



SoloPanel Series 1
Features the solar cell that changes the energy equation

SoloPower's next-generation CIGS technology and innovative thin-film manufacturing techniques enable mass production of high-efficiency photovoltaic cells at a fraction of the cost of fabricating traditional silicon-based devices. The SoloPanel Series 1 (SP1) converts sunlight into solar energy with higher power density than competing thin film technologies.

The company's unique manufacturing process combines a capital-efficient and scalable production technique with a commitment to environmental vigilance. SoloPower's breakthrough electrodeposition-based CIGS technology brings the dream of almost endlessly replenishable solar energy a step closer to reality.

The flexible approach to renewable energy
Our proprietary electrodeposition-based manufacturing system utilizes a low cost, roll-to-roll process with very thin films. This enables us to produce flexible thin film solar cells, substantially shrinking our environmental footprint. Because our solar cells and panels are designed and manufactured to generate clean electricity for over 25 years, they will help the world's population avoid decades of continued dependence on fossil fuels, reducing the greenhouse gas emissions that can cause catastrophic climate change.

www.solopower.com
Designed and manufactured in California

SP1



Key Features

- Sixty (60) high efficiency CIGS solar cells optimize panel performance
- Back anodized aluminum frame provides robust and reliable operation—even under heavy snow loads of 5400 Pa
- Strengthened glass, sealed junction box and protective backsheet provide a reliable moisture barrier
- Each panel undergoes visual and electrical performance verification and testing at SoloPower prior to shipping
- A frame design compatible with standard mounting hardware and an IP65 J-box with locking quick connects allow ease of installation into most system configurations, ensuring maximum system performance
- Manufactured in a highly automated state-of-the-art plant
- Comes with a 5-year limited warranty for defects in materials and workmanship
- 25-year power output warranty guarantees energy output at 90% of nominal rated power for the first 10 years, and 80% through year 25



SOLOPOWER®

SP1-110
ELECTRICAL RATINGS

Peak Power (Pmax)	110	W
Operating Voltage (Vmp)	22.5	V
Operating Current (Imp)	4.9	A
Open Circuit Voltage (Voc)	34.0	V
Short Circuit Current (Isc)	5.8	A
Max. Series Fuse	10	A

Values at STC of 1000W/m² and 25°C cell temperature

Field Wiring: Use stranded Copper wire only.
14-10 AWG / 2.5 - 6 mm² insulated for 90°C min
Câblage sur site: utiliser seulement du fil de cuivre de 14-10 AWG / 2.5 - 6 mm² avec isolation pour 90°C minimum

**ELECTRICAL HAZARD
RISQUE ÉLECTRIQUE**

This module produces high voltages when exposed to light. Do not disconnect under load. Do not damage or scratch the rear surface of this module. Do not handle modules when they are wet.
Ce module produit des tensions élevées une fois exposé à la lumière. Ne déconnectez pas sous charge. N'endommagez pas ou ne touchez pas la surface arrière de ce module. Ne manipulez pas les modules quand ils sont humides.

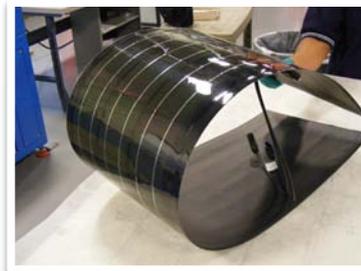


Conforms to IEC61646, IEC61730



Conforms to UL STD 1703
3180182
Max Mech. Load 5400 Pa
1000 VDC Max. System Voltage

www.solopower.com
Made in USA



Next Generation



SoloPanel SFX1 - Series
Features the photovoltaic solar cell that changes the energy equation

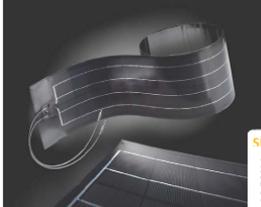
SoloPower's next-generation CIGS technology and innovative thin-film manufacturing techniques enable mass production of high-efficiency solar cells at a fraction of the cost of fabricating traditional silicon-based cells. The SoloPanel SFX1-Series converts sunlight into solar energy with higher power density than competing thin film technologies.

The company's unique manufacturing process combines a capital-efficient and scalable production capacity with a commitment to environmental vigilance. And SoloPower's breakthrough electrodeposited flexible CIGS photovoltaic cell brings the dream of almost endlessly replenishable solar energy in the form of light-weight flexible modules.

The flexible approach to renewable energy
Our proprietary electrodeposition manufacturing system utilizes a low cost, roll-to-roll process with very thin films. This enables us to produce very thin, flexible solar cells, substantially shrinking our environmental footprint. Because our solar cells and panels are designed and manufactured to generate clean electricity for over 25 years, they will help the world's population avoid decades of continued dependence on fossil fuels, reducing the greenhouse gas emissions that can cause catastrophic climate change.

www.solopower.com
Designed and manufactured in California

SFX1



Key Features

- Sixty (60) high efficiency CIGS solar cells optimize panel performance
- Flexible light-weight form factor enables easy installation and avoids roof penetration
- Weather proof front sheet, sealed junction box and protective backsheet provide a reliable moisture barrier
- Each panel undergoes visual and electrical performance verification and testing at SoloPower prior to shipping
- Peel and stick mounting adhesive and an IP65 J-box with locking quick connects allow ease of installation into most system configurations
- Designed for minimum power loss due to shadowing, ensuring maximum system performance
- Manufactured in a highly automated state-of-the-art plant
- Comes with a 5-year limited warranty for defects in materials and workmanship
- 20-year power output warranty guarantees energy output at 90% of nominal rated power for first 10 years, and 80% through year 20

UL and IEC Certified

Flexible and light weight

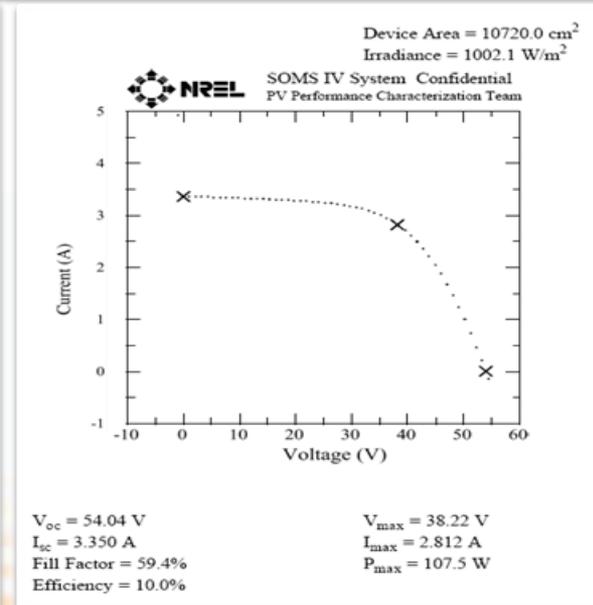
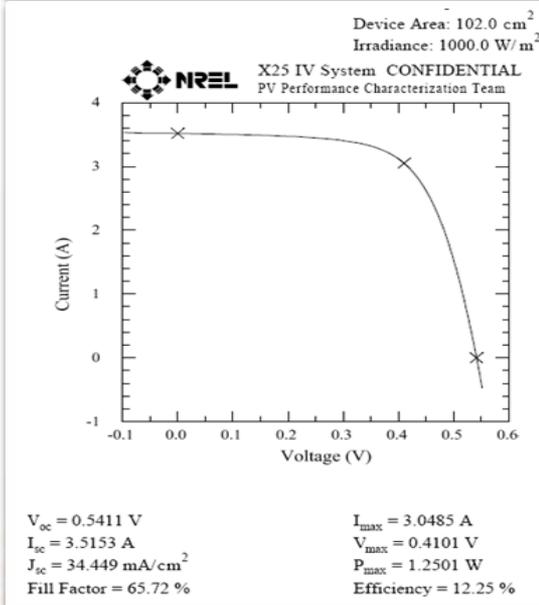
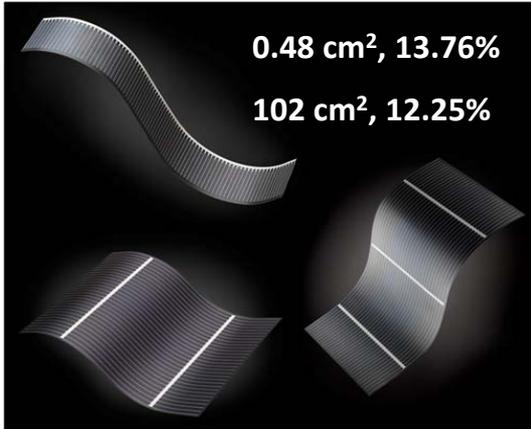
SoloPower Product Line



CIGS Cells

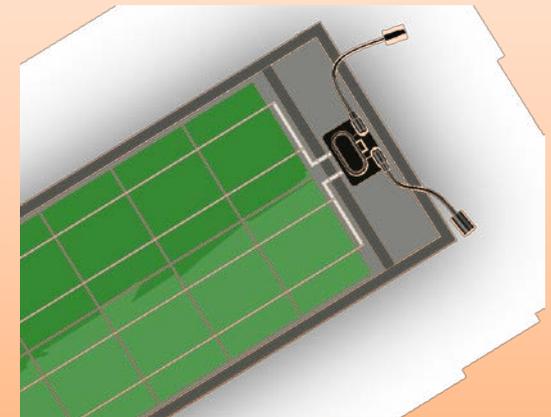
Flat Plate Modules

Flexible Modules



SoloPower SFX1 Module

- Advanced polymer packaging
- Light weight (~1 lbs/sq.feet)



Summary - Module Performance



- ❑ Module power stabilizes after few weeks
- ❑ Stable power up to 6 months under accelerated test
- ❑ No change to Isc
- ❑ UL and IEC certified