



- **21.5% efficiency**

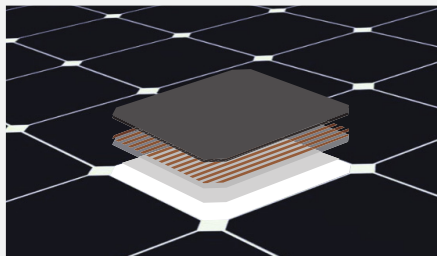
Ideal for roofs where space is at a premium or where future expansion might be needed.

- **Maximum performance**

Designed to deliver the most energy in demanding real world conditions, in partial shade and hot rooftop temperatures.^{1,2,3}

- **Premium aesthetics**

SunPower® Signature™ Black X-Series panels blend harmoniously into your roof. The most elegant choice for your home.



Moxeon® Solar Cells: Fundamentally better.

Engineered for performance, designed for durability.

Engineered for peace of mind

Designed to deliver consistent, trouble-free energy over a very long lifetime.^{4,5}

Designed for durability

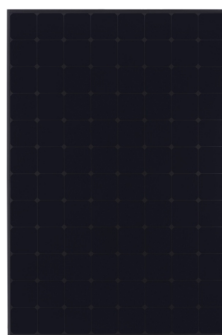
The SunPower Moxeon Solar Cell is the only cell built on a solid copper foundation. Virtually impervious to the corrosion and cracking that degrade Conventional Panels.^{4,5}

Same excellent durability as E-Series panels.

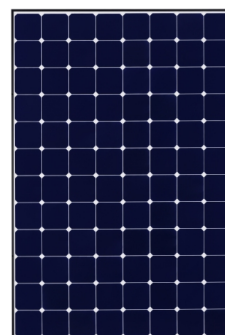
#1 Ranked in Fraunhofer durability test.¹⁰

100% power maintained in Atlas 25+ comprehensive PVDI Durability test.¹¹

UNMATCHED PERFORMANCE, RELIABILITY & AESTHETICS



SIGNATURE™ BLACK
X21 - 335 PANEL



X21 - 345 PANEL



HIGHEST EFFICIENCY⁶

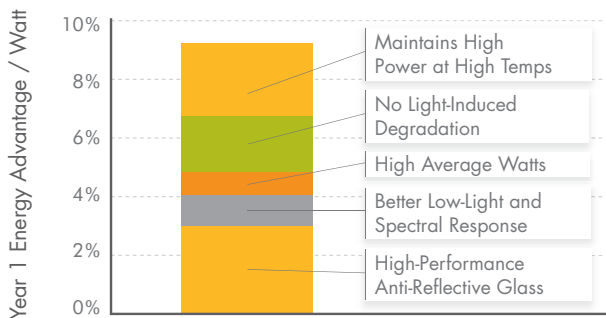
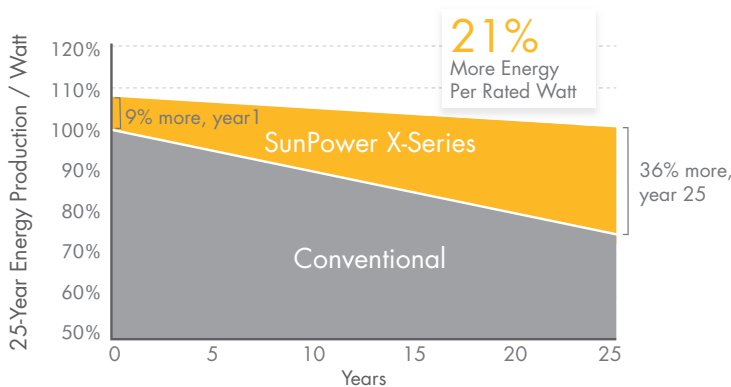
Generate more energy per square foot

X-Series residential panels convert more sunlight to electricity producing 44% more power per panel,¹ and 75% more energy per square foot over 25 years.^{3,4}

HIGHEST ENERGY PRODUCTION⁷

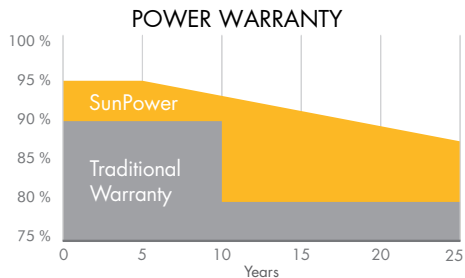
Produce more energy per rated watt

High year one performance delivers 8-10% more energy per rated watt.³ This advantage increases over time, producing 21% more energy over the first 25 years to meet your needs.⁴

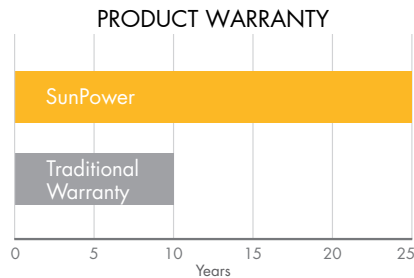


Awarded to SunPower E-Series. X-Series delivers even more energy.⁷

SUNPOWER OFFERS THE BEST COMBINED POWER AND PRODUCT WARRANTY



More guaranteed power: 95% for first 5 years, -0.4%/yr. to year 25.⁸



Combined Power and Product defect 25 year coverage that includes panel replacement costs.⁹

ELECTRICAL DATA

	X21-335-BLK	X21-345
Nominal Power ¹² (P _{nom})	335 W	345 W
Power Tolerance	+5/-0%	+5/-0%
Avg. Panel Efficiency ¹³	21.1%	21.5%
Rated Voltage (V _{mpp})	57.3 V	57.3 V
Rated Current (I _{mpp})	5.85 A	6.02 A
Open-Circuit Voltage (V _{oc})	67.9 V	68.2 V
Short-Circuit Current (I _{sc})	6.23 A	6.39 A
Max. System Voltage	600 V UL & 1000 V IEC	
Maximum Series Fuse	15 A	
Power Temp Coef.	-0.30% / °C	
Voltage Temp Coef.	-167.4 mV / °C	
Current Temp Coef.	3.5 mA / °C	

OPERATING CONDITION AND MECHANICAL DATA

Temperature	- 40°F to +185°F (- 40°C to +85°C)
Max load	Wind: 50 psf, 2400 Pa, 245 kg/m ² front & back Snow: 112 psf, 5400 Pa, 550 kg/m ² front
Impact resistance	1 inch (25mm) diameter hail at 52 mph (23 m/s).
Appearance	Class A+
Solar Cells	96 Monocrystalline Moxeon Gen III
Tempered Glass	High transmission tempered Anti-Reflective
Junction Box	IP-65 Rated
Connectors	MC4 Compatible Connectors
Frame	Class 1 black anodized (highest AAMA rating)
Weight	41 lbs (18.6 kg)

TESTS AND CERTIFICATIONS

Standard tests	UL1703 (Type 2 Fire Rating), IEC 61215, IEC 61730
Quality tests	ISO 9001:2008, ISO 14001:2004
EHS Compliance	RoHS, OHSAS 18001:2007, lead free
Ammonia test	IEC 62716
Salt Spray test	IEC 61701 (passed maximum severity)
PID test	Potential-Induced Degradation free: 1000V ¹⁰
Available listings	UL, CEC, TUV, MCS

REFERENCES:

- All comparisons are SPR-X21-345 vs. a representative conventional panel: 250W, approx. 1.6 m², 15.3% efficiency.
- PVEvolution Labs "SunPower Shading Study," Feb 2013.
- Typically 8-10% more energy per watt, BEW/DNV Engineering "SunPower Yield Report," Jan 2013, with CFV Solar Test Lab Report #12063, Jan 2013 temp. coef. calculation;
- SunPower 0.25%/yr degradation vs. 1.0%/yr conv. panel. Campeau, Z. et al. "SunPower Module Degradation Rate," SunPower white paper, Feb 2013; Jordan, Dirk "SunPower Test Report," NREL, Oct 2012.
- "SunPower Module 40-Year Useful Life" SunPower white paper, Feb 2013. Useful life is 99 out of 100 panels operating at more than 70% of rated power.
- Highest of over 3,200 silicon solar panels, Photon Module Survey, Feb 2014.
- 1% more energy than E-Series panels, 8% more energy than the average of the top 10 panel companies tested in 2012 (151 panels, 102 companies), Photon International, Feb 2013.
- Compared with the top 15 manufacturers. SunPower Warranty Review, Feb 2013.
- Some exclusions apply. See warranty for details.
- X-Series same as E-Series, 5 of top 8 panel manufacturers from 2013 report were tested, 3 additional silicon solar panels for the 2014. Ferrara, C., et al. "Fraunhofer PV Durability Initiative for Solar Modules: Part 2". Photovoltaics International, 77-85. 2014.
- Compared with the non-stress-tested control panel. X-Series same as E-Series, tested in Atlas 25+ Durability test report, Feb 2013.
- Standard Test Conditions (1000 W/m² irradiance, AM 1.5, 25° C).
- Based on average of measured power values during production.

