

SHINSUNG E&G SOLAR MODULE 5BB



**SHINSUNG
E&G**



Solar System



We provide 'One Stop Solution' covering installation of high efficiency solar cells, high performance solar modules and power plants. Our product stability and quality have been verified in various conditions by domestic and international certification bodies (Korea Energy Agency, TÜV, UL, CE Marking, etc.)



Consulting



Engineering



Construction



O&M

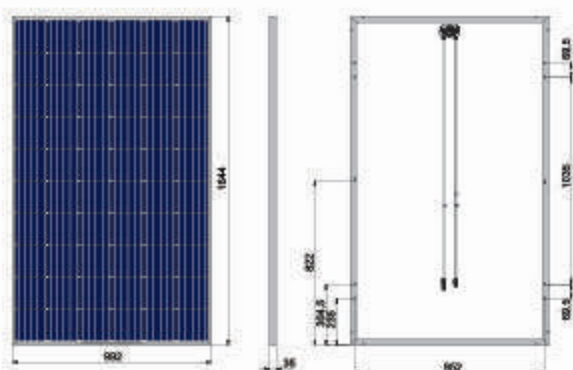
Solar panels convert sunlight into electricity. The electricity generated from solar system is used for home appliances, lights, and devices through an inverter and your electrical panel. Shinsung E&G provides one of the most efficient solar systems based on its technical knowledge about the core components of solar cells and modules.

5BB

60cell



MONO



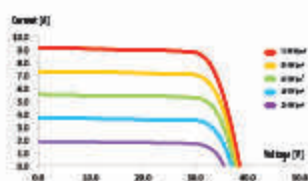
Item	SS-BM290	SS-BM295	SS-BM300
Peak Power(Wp)	290	295	300
Open Circuit Voltage(V)	38.74	38.92	39.10
Short Circuit Current(A)	9.90	9.97	10.04
Voltage at Pmax(V)	30.90	31.07	31.29
Current at Pmax(A)	9.43	9.51	9.59
Efficiency(%)	17.78	18.09	18.40
Dimension(mm)	992 X 1,644 X 35		
Weight(Kg)	18.4±0.1		

※ All data is tested under STC(Standard Test Conditions). Above data may be changed without prior notice.
 ※ Peak power tolerance 0~+3.0%

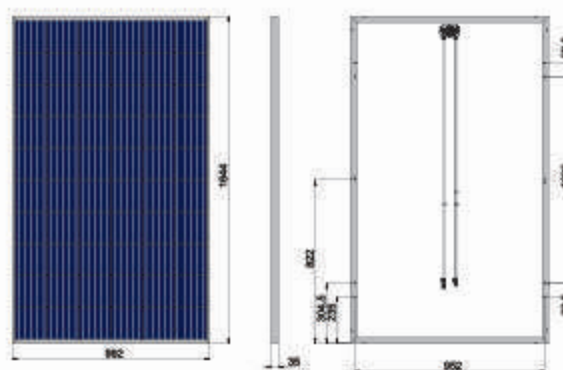
• Temperature Coefficient (Cell)

NOCT	45±3(°C)
$\alpha \Delta ISC$	0.0476(°C/degree)
$\beta \Delta VOC$	-0.3070(°C/degree)
$\gamma \Delta Pmax$	-0.3753(°C/degree)

• I-V Curve



MULTI



Item	SS-BP260	SS-BP265	SS-BP270
Peak Power(Wp)	260	265	270
Open Circuit Voltage(V)	37.84	38.08	38.32
Short Circuit Current(A)	9.17	9.24	9.33
Voltage at Pmax(V)	29.96	30.13	30.47
Current at Pmax(A)	8.74	8.82	8.90
Efficiency(%)	15.94	16.25	16.56
Dimension(mm)	992 X 1,644 X 35		
Weight(Kg)	18.4±0.1		

※ All data is tested under STC(Standard Test Conditions). Above data may be changed without prior notice.
 ※ Peak power tolerance 0~+3.0%

• Temperature Coefficient (Cell)

NOCT	45±3(°C)
$\alpha \Delta ISC$	0.049(°C/degree)
$\beta \Delta VOC$	-0.333(°C/degree)
$\gamma \Delta Pmax$	-0.42(°C/degree)

• I-V Curve



• Mechanical Characteristics

Solar Cells	156.75 x 156.75mm
Front Glass	Low Iron Tempered Glass
Junction Box	JM13D: IP67 / 3Bypass Diode
Output Cable	4mm ² Cable, MC 4(Compatible) Type
Frame	AL Alloy Type(Anodized)

• Tested Operation Conditions

Max Load	Mono: 550kgf/m ² (5400Pa) Multi: 734kgf/m ² (7200Pa)
Impact Resistance	25mm, 23m/s
Operating temperature	-40~+85°C
System Voltage	1,000V

• Safety Ratings & Warranties

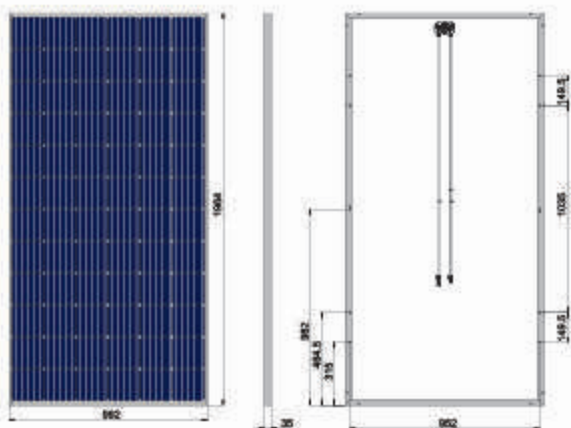
Fire Safety Classification	Class "C"
Application classes	Class "A"
Salt-mist Corrosion Test	Tested
Visible Light Reflected	Mono (~ 5.00%), Multi(~ 5.00%) For more information, please contact us.
Warranty	10 Years limited Product Warranty 10 Years limited Power Warranty : 90% 25 Years limited Power Warranty : 80%
Certifications	IEC 61215 / IEC 61730

5BB

72cell



MONO



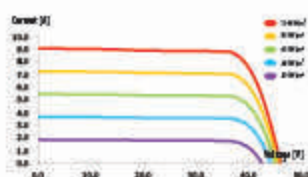
Item	SS-DM350	SS-DM355	SS-DM360
Peak Power(Wp)	350	355	360
Open Circuit Voltage(V)	46.78	46.99	47.20
Short Circuit Current(A)	9.84	9.91	9.98
Voltage at Pmax(V)	37.82	38.02	38.23
Current at Pmax(A)	9.26	9.35	9.43
Efficiency(%)	17.96	18.22	18.48
Dimension(mm)	992 X 1,964 X 35		
Weight(Kg)	21.6±0.1		

※ All data is tested under STC(Standard Test Conditions). Above data may be changed without prior notice.
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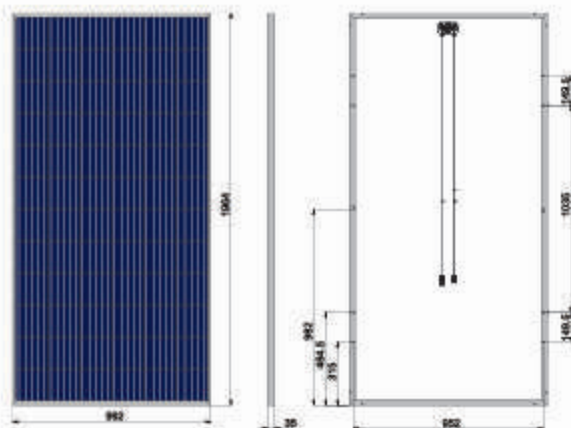
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$\beta \Delta$ VOC	-0.3070(%/degree)
$\gamma \Delta$ Pmax	-0.3753(%/degree)

• I-V Curve



MULTI



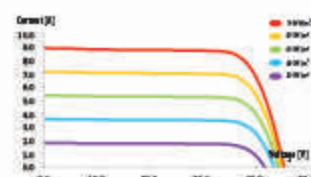
Item	SS-DP315	SS-DP320	SS-DP325
Peak Power(Wp)	315	320	325
Open Circuit Voltage(V)	45.3	45.51	45.72
Short Circuit Current(A)	9.12	9.2	9.28
Voltage at Pmax(V)	36.72	36.92	37.12
Current at Pmax(A)	8.6	8.68	8.76
Efficiency(%)	16.17	16.42	16.68
Dimension(mm)	992 X 1,964 X 35		
Weight(Kg)	21.6±0.1		

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• Temperature Coefficient (Cell)

NOCT	45±3(°C)
$\alpha \Delta$ ISC	0.049(%/degree)
$\beta \Delta$ VOC	-0.333(%/degree)
$\gamma \Delta$ Pmax	-0.42(%/degree)

• I-V Curve



• Mechanical Characteristics

Solar Cells	156.75 x 156.75mm
Front Glass	Low Iron Tempered Glass
Junction Box	JM13D: IP67 / 3Bypass Diode
Output Cable	4mm ² Cable, MC 4(Compatible) Type
Frame	AL Alloy Type(Anodized)

• Tested Operation Conditions

Max Load	Mono: 550kgf/m ² (5400Pa) Multi: 734kgf/m ² (7200Pa)
Impact Resistance	25mm, 23m/s
Operating temperature	-40~+85°C
System Voltage	1,000V

• Safety Ratings & Warranties

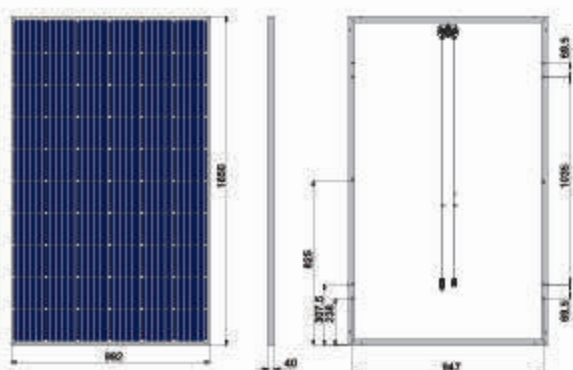
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Application classes	Class "A"
Salt-mist Corrosion Test	Tested
Visible Light Reflected	Mono (~ 5.00%), Multi(~ 5.00%) For more information, please contact us.
Warranty	10 Years limited Product Warranty 10 Years limited Power Warranty : 90% 25 Years limited Power Warranty : 80%
Certifications	IEC 61215 / IEC 61730

5BB

60cell/72cell



60Cell MONO



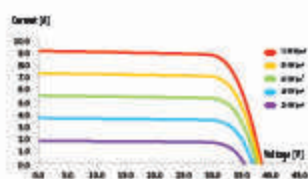
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Short Circuit Current(A)	9.90	9.97	10.04
Voltage at Pmax(V)	30.90	31.07	31.29
Current at Pmax(A)	9.43	9.51	9.59
Efficiency(%)	17.72	18.02	18.33
Dimension(mm)	992 X 1,650 X 40		
Weight(Kg)	18.8±0.2		

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 ※ Peak power tolerance 0~+3.0%

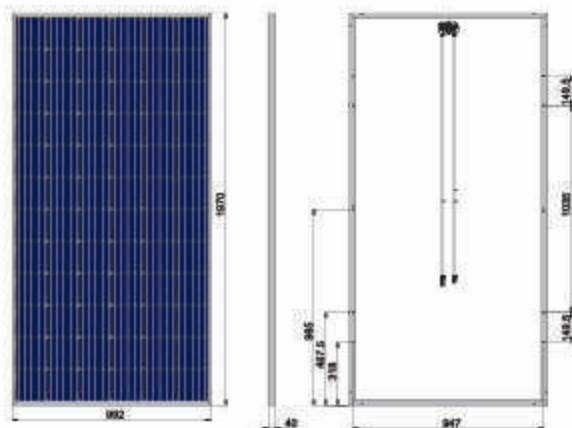
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α Δ ISC	0.0476(%/degree)
β Δ VOC	-0.3070(%/degree)
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• I-V Curve



72Cell MONO



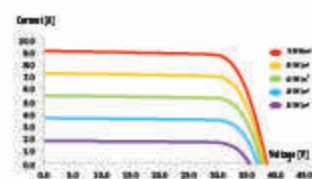
Item	SS-DM350	SS-DM355	SS-DM360
Peak Power(Wp)	350	355	360
Open Circuit Voltage(V)	46.78	46.99	47.20
Short Circuit Current(A)	9.84	9.91	9.98
Voltage at Pmax(V)	37.82	38.02	38.23
Current at Pmax(A)	9.26	9.35	9.43
Efficiency(%)	17.91	18.17	18.42
Dimension(mm)	992 X 1,970 X 40		
Weight(Kg)	21.8±0.2		

※ All data is tested under STC(Standard Test Conditions). Above data may be changed without prior notice.
 ※ Peak power tolerance 0~+3.0%

• Temperature Coefficient (Cell)

NOCT	45±3(°C)
α Δ ISC	0.0476(%/degree)
β Δ VOC	-0.3070(%/degree)
γ Δ Pmax	-0.3753(%/degree)

• I-V Curve



• Mechanical Characteristics

Solar Cells	156.75 x 156.75mm
Front Glass	Low Iron Tempered Glass
Junction Box	JM13B: IP67 / 3Bypass Diode & Smart J/Box
Output Cable	4mm ² Cable, MC 4(Compatible) Type
Frame	AL Alloy Type(Anodized)

• Tested Operation Conditions

Max Load	40 lbs/ft ²
Impact Resistance	25mm, 23m/s
Operating emperature	-40~+85 °C
System Voltage	1,500V (Smart J/Box: 1000V)

• Safety Ratings & Warranties

Fire Safety Classification	Type 1
Salt-mist Corrosion Test	Tested
Visible Light Reflected	Mono (~ 5.00%), Multi (~ 5.00%) For more information, please contact us.
Warranty	10 Years limited Product Warranty 10 Years limited Power Warranty : 90% 25 Years limited Power Warranty : 80%
Certifications	UL 1703

Shinsung E&G was established in 1977 and has started PV business, the key field of renewable energy since 2007. Currently, we have obtained 600MW annual capacity of solar cells at Jeungpyeong factory and 200MW annual capacity of solar module at Eumseong factory. In the first half of 2017, we newly developed a high-efficiency PERC solar cell achieved 21.7% efficiency rate through our mass producing. Shinsung E&G will continue its efforts to make a difference in the global solar Industry.



OUR WORK



HISTORY

- **1977** • Establishment of Shinsung Industry
- **1991** • Awarded with Iron Tower Order of Industrial Service Merit
- **1998** • Received 10 Million Dollars Exporting Award
- **2005** • Awarded with Gold Tower Order of Industrial Service Merit
- **2007** • Launching solar cell business
- **2008** • Split of Shinsung into three independent companies
• Shinsung Holdings, Shinsung BNG and Shinsung FA
• Change listing and resume listing on the stock market
- **2009** • Opened Solar Energy Promotion Center
• Achieved ISO 9001, ISO 14001, IEC 61215, IEC 61730
- **2010** • Developed the world's first 19.6% in solar energy conversion efficiency of solar cell
• Received 30 Million Dollars Exporting Award
• Received Prime Minister Commendation
• Received the President Commendation in Outstanding Job Creating Company
- **2011** • Changed the company name to Shinsung Solar Energy
• Expansion of solar cell line (total 350MW)
• Entered module industry (total 150MW)
• Established 'solar cell → module → installation' system
• Received the top Korean certification in 250W, 255W and 260W module efficiency
- **2012** • Achieved research performance of 20.03% for energy conversion efficiency in solar cells
• Launched solar energy EPC business
• Certified to OHSAS 18001
- **2013** • Registered Program-CDM Business with the UN
• Received 0% in efficiency reduction ratio of PID test
• Program CDM business registered by UN Achieved 0% of efficiency reduction on PID test
- **2014** • '50 Million-dollar Export Tower' Award
- **2015** • '100 Million-dollar Export Tower' Award
- **2016** • Achieved research performance of 20.29% for energy conversion efficiency in solar cells
• Improving production lines by the end of 2016 (Solar cells : 600MW, Modules : 200MW)
• Shinsung Solar Energy affiliated with ShinsungENG, ShinsungFA
- **2017** • Changed the company name to Shinsung E&G Co., Ltd
• Succeed in mass producing of mono-crystalline PERC solar cells with 21.7% efficiency

Global green energy leader

Solar energy is emerging as an alternative energy to human.



High efficiency

Shinsung E&G guarantees the highest output through mass production of high efficiency products such as photovoltaic technology recognized by the world, solar cells with more than 20% efficiency and modules with more than 16% efficiency

Stable construction

Shinsung E&G establishes production equipment in a perfect and rapid manner from equipment order, installation to mass production setting for new photovoltaic business operators, providing a stable production line, and guarantees high output based on the construction of high efficiency power plants for plant operators.

Follow-up management

Shinsung E&G establishes round-the-clock service support system to minimize problems for customers and realizes customer satisfaction with before sales and after-sales services.

Technology support

Shinsung E&G's photovoltaic experts provide knowhow on mass production technology of high efficiency solar cells and modules and offer education on photovoltaic power plants management through one to one technology training support with customer's technicians.



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