

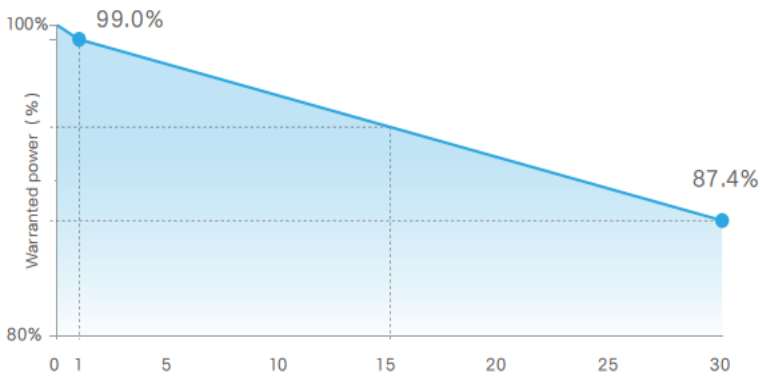
SG-48TW4D  
445-465W

N-type TOPCon Solar Single-glass Module  
Maximum Efficiency 23.3%

Quality Certification



Product Warranty



25 Year  
Warranty for Materials and Processing

30 Year  
Warranty for Extra Linear Power Output

First Year Power Degradation<1%

Year 2-30 Power Degradation<0.4%

Power warranty applies at STC condition or only applies to the front side of the module

Product Performance

**Superior Low Irradiation Performance**  
Higher power output in the morning and evening, cloudy days, haze and other low-light scenarios

**Superior Temperature Coefficient**  
Generating 1%-2% more power than P-type modules in high temperature regions

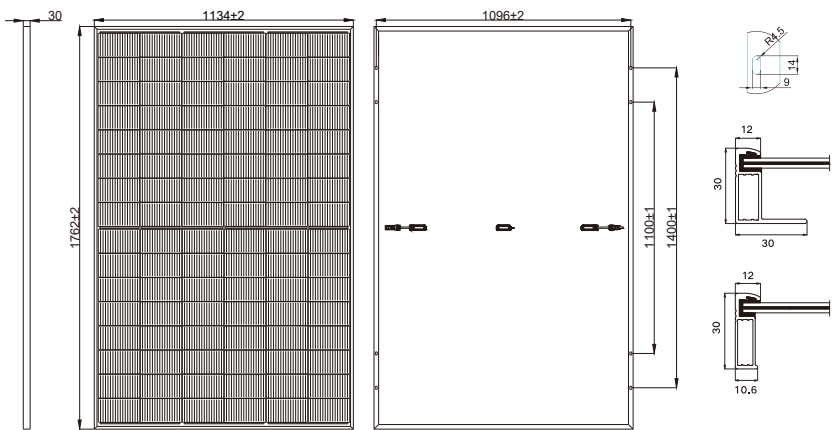
**Smaller Size**  
A lightweighted design for convenient transportation and installation

**Non-destructive Laser Cutting Technology**  
Achieving better cell strength, lower micro-cracks risk for better product reliability

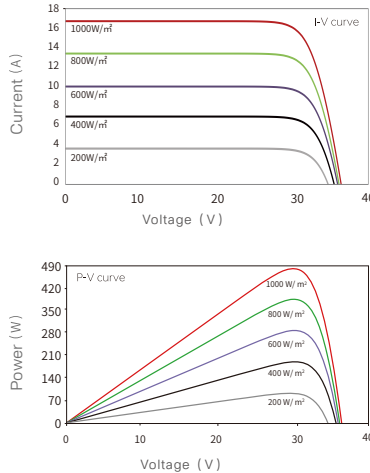
**Lower LCOE**  
Effectively reduce system BOS costs and shorten the return on investment cycle

**Superior Mechanical Load Capacity**  
Heavy snow load up to 5400 Pa  
wind load up to 2400 Pa

Engineering Drawings



I-V and P-V Curves Temperature: (25 ± 2) °C



Electrical Characteristics

| Module Type                      | SG-48TW4D - 445 | SG-48TW4D - 450 | SG-48TW4D - 455         | SG-48TW4D - 460 | SG-48TW4D - 465 |
|----------------------------------|-----------------|-----------------|-------------------------|-----------------|-----------------|
| Maximum Power Pmax (W)           | 445             | 450             | 455                     | 460             | 465             |
| Voltage at Maximum Power (Vmp/V) | 29.72           | 29.92           | 30.12                   | 30.32           | 30.52           |
| Current at Maximum Power (Imp/A) | 14.99           | 15.06           | 15.12                   | 15.18           | 15.24           |
| Open Circuit Voltage (Voc/V)     | 35.58           | 35.78           | 35.98                   | 36.18           | 36.38           |
| Short Circuit Current (Isc/A)    | 15.94           | 16.00           | 16.06                   | 16.12           | 16.18           |
| Module Efficiency (%)            | 22.3            | 22.5            | 22.8                    | 23.0            | 23.3            |
| Pmax/Voc/Isc Tolerance           | ±3%             |                 | Maximum System Voltage  | DC1500V         |                 |
| Maximum Series Fuse Rating       | 30A             |                 | Operating Temperature   | -40°C~+70°C     |                 |
| Fire Rating                      | Class C         |                 | Power Sorting Tolerance | 0~+5W           |                 |

STC: Irradiance 1000W/m², Cell Temperature 25°C, AM=1.5

Mechanical Characteristics

|                  |                                                                                                               |
|------------------|---------------------------------------------------------------------------------------------------------------|
| Cell Type        | N- type mono-crystalline                                                                                      |
| Cell Orientation | 96 (2 x 48)                                                                                                   |
| Dimension        | 1762 x 1134 x 30mm                                                                                            |
| Weight           | 20.0kg                                                                                                        |
| Glass            | Single glass,3.2mm coated tempered glass                                                                      |
| Frame            | Anodized aluminum alloy                                                                                       |
| Junction Box     | IP68 rated                                                                                                    |
| Output Cables    | 4mm², (+): 1200mm, (-): 1200mm or customized length                                                           |
| Connector Type   | Z4S-abcd(Zerun)/PV-ZH202B(Zhonghuan)/PV-HT03(x=0,1 or 2)(Haitian)/PV-KST4-EV02A/xy, PV-KBT4-EV02A/xy(Staubli) |
| Mechanical Load  | +5400Pa (Front side) /-2400Pa (Rear side)                                                                     |

Temperature Characteristics

|                                  |           |
|----------------------------------|-----------|
| Temperature Coefficients of Pmax | -0.30%/°C |
| Temperature Coefficients of Voc  | -0.25%/°C |
| Temperature Coefficients of Isc  | 0.046%/°C |
| Temperature Rating [T98]max      | 70°C      |

Packaging Configuration

|                  |                                                       |
|------------------|-------------------------------------------------------|
| Pallet Dimension | 1792 x 1140 x 1249 mm                                 |
| Packing Detail   | 36pcs/pallets, 72 pcs/stack, 936 pcs/ 40'HQ container |