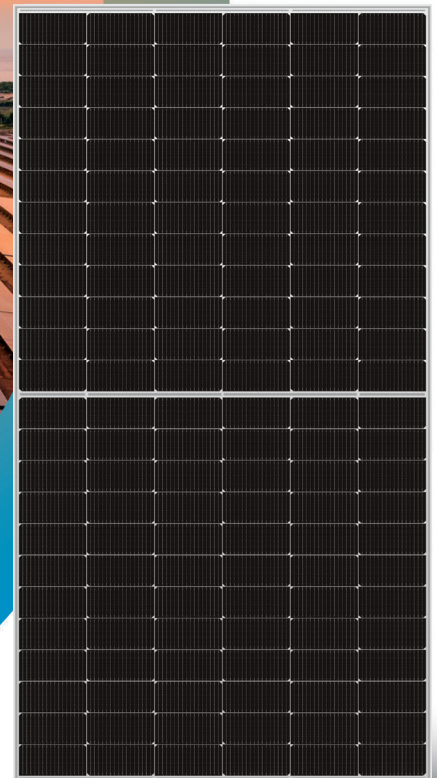




YOUR RELIABLE  
PARTNER FOR  
SOLAR ENERGY  
SINCE 1992



# EMMVEE CRAFTING SMART AND ADVANCED SOLAR ENERGY SOLUTIONS



## TITANIUM DUO

### G12R N-TYPE TOPCon BIFACIAL GLASS TO GLASS MODULE



Committed to Quality,  
Punctuality, and  
Customer Support  
since 1992.



Over 15 Years of Sustainable Power  
with Photovoltaic Modules, New High  
WP Modules United with Quality and  
Efficiency



With presence in Green  
Energy Projects Across  
the Globe



Our Mission: Delivering Clean, Reliable  
Energy while Reducing Carbon Footprint  
through wide range of Residential and  
Commercial Solar Offerings.

# 132 CUT CELL G12R N-TYPE TOPCON BIFACIAL GLASS TO GLASS MODULE

## TECHNICAL SPECIFICATION

Electrical data at 1000W/m<sup>2</sup>, 25°C and A.M1.5 (STC in accordance with IEC 60904-3)

| Model Name                        | E610HCBG132-T | E615HCBG132-T | E620HCBG132-T | E625HCBG132-T | E630HCBG132-T | E635HCBG132-T |
|-----------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Rated Power at STC*               | 610           | 615           | 620           | 625           | 630           | 635           |
| Power Tolerance                   | 0 - +5Wp      | 0 - +5Wp      | 0 - +5Wp      | 0 - +5Wp      | 0 - +5Wp      | 0 - +5Wp      |
| Module Efficiency at STC          | 22.58%        | 22.77%        | 22.95%        | 23.14%        | 23.32%        | 23.51%        |
| Open Circuit Voltage-VOC (Volts)* | 48.88         | 49.01         | 49.14         | 49.30         | 49.43         | 49.56         |
| Short Circuit Current-ISC (AMPS)* | 15.89         | 15.96         | 16.04         | 16.11         | 16.19         | 16.26         |
| Max Power Voltage-VPM(Volts)      | 40.59         | 40.69         | 40.82         | 40.95         | 41.05         | 41.18         |
| Max Power Current-IPM (AMPS)      | 15.05         | 15.13         | 15.19         | 15.27         | 15.35         | 15.42         |

At low irradiance (200W/M<sup>2</sup> 25°C and AM15) the module yields at least 95% of the STC efficiency.

\*Test Uncertainty ±3%

Electrical data at NOCT at 800 W/m<sup>2</sup>, 20 °C ambient temperature, 1 m/s Wind Velocity

| Model Name                        | E610HCBG132-T | E615HCBG132-T | E620HCBG132-T | E625HCBG132-T | E630HCBG132-T | E635HCBG132-T |
|-----------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Rated Power at STC*               | 463.25        | 466.80        | 470.15        | 474.00        | 477.80        | 481.50        |
| Module Efficiency at STC          | 17.15%        | 17.28%        | 17.41%        | 17.55%        | 17.69%        | 17.83%        |
| Open Circuit Voltage-VOC (Volts)* | 46.68         | 46.80         | 46.93         | 47.08         | 47.21         | 47.33         |
| Short Circuit Current-ISC (AMPS)* | 12.81         | 12.87         | 12.93         | 12.99         | 13.05         | 13.11         |
| Max Power Voltage-VPM(Volts)      | 38.47         | 38.57         | 38.69         | 38.81         | 38.91         | 39.03         |
| Max Power Current-IPM (AMPS)      | 12.04         | 12.10         | 12.15         | 12.21         | 12.28         | 12.34         |

At low irradiance (200W/M<sup>2</sup> 25°C and AM15) the module yields at least 95% of the STC efficiency.

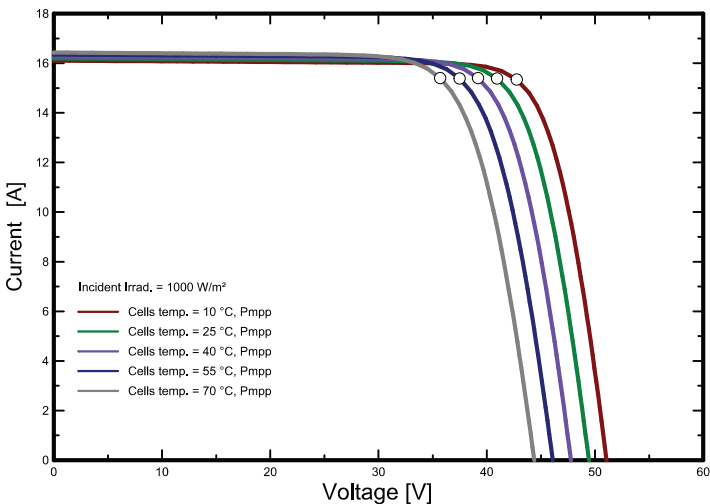
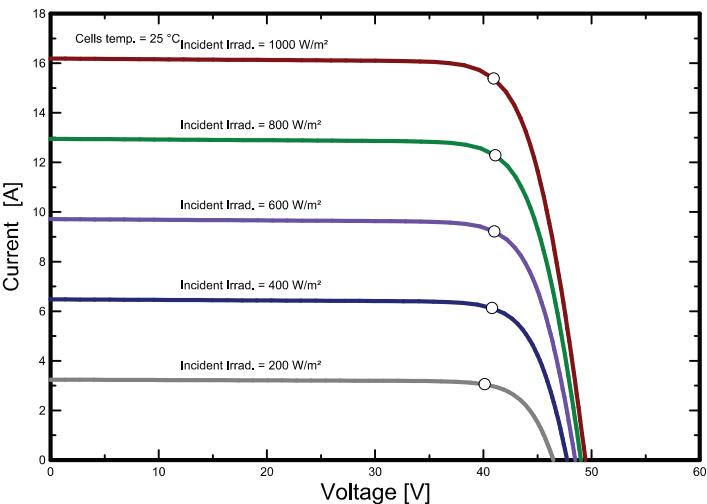
\*Test Uncertainty ±3%

Bifacial Gain\*\*

| Model Name   | E610HCBG132-T |        | E615HCBG132-T |        | E620HCBG132-T |        | E625HCBG132-T |        | E630HCBG132-T |        | E635HCBG132-T |        |
|--------------|---------------|--------|---------------|--------|---------------|--------|---------------|--------|---------------|--------|---------------|--------|
| % Power Gain | Pmax          | Eff %  | Pmax          | Eff %  | Pmax          | Eff %  | Pmax          | Eff %  | Pmax          | Eff %  | Pmax          | Eff %  |
| 5%           | 640.50        | 23.71% | 645.75        | 23.91% | 651.00        | 24.10% | 656.25        | 24.29% | 661.50        | 24.49% | 666.75        | 24.68% |
| 10%          | 671.00        | 24.84% | 676.50        | 25.04% | 682.00        | 25.25% | 687.50        | 25.45% | 693.00        | 25.66% | 698.50        | 25.86% |
| 15%          | 701.50        | 25.97% | 707.25        | 26.18% | 713.00        | 26.40% | 718.75        | 26.61% | 724.50        | 26.82% | 730.25        | 27.03% |
| 20%          | 732.00        | 27.10% | 738.00        | 27.32% | 744.00        | 27.54% | 750.00        | 27.77% | 756.00        | 27.99% | 762.00        | 28.21% |
| 25%          | 762.50        | 28.23% | 768.75        | 28.46% | 775.00        | 28.69% | 781.25        | 28.92% | 787.50        | 29.15% | 793.75        | 29.39% |

\*\*Note: Bifacial power gain will depend on plant design, tilt angle, structure height, Rear Surface condition, GCR, array shadow and Albedo.

### IV CURVE



# TECHNICAL SPECIFICATION

## Permissible Operating Conditions

|                                            |                                              |
|--------------------------------------------|----------------------------------------------|
| Operating Temperature Range                | -40° C to 85° C                              |
| Max.system Voltage                         | 1500V DC                                     |
| Maximun Snow Load Capacity                 | 5400Pa Snow Load and 2400Pa Wind Load        |
| Resistance Against Hail                    | Max 24mm with impact Speed of 83km/h (52Mph) |
| Protection Class Against Electrical Shock  | II                                           |
| Application Class                          | A                                            |
| Fire Safety Class                          | Class C                                      |
| Maximum Reverse Current/Series fuse rating | 35A                                          |
| Bifaciality                                | 80± 5%                                       |

## Thermal Data

|                                          |             |
|------------------------------------------|-------------|
| Temp. Coefficient Open-circuit Voltage   | -0.25% /°C  |
| Temp. Coefficient Short circuit current  | 0.045%/°C   |
| Temp. Coefficient Rated Power            | -0.29% /°C  |
| NOCT (Normal operating cell temperature) | 45°C ± 2 °C |

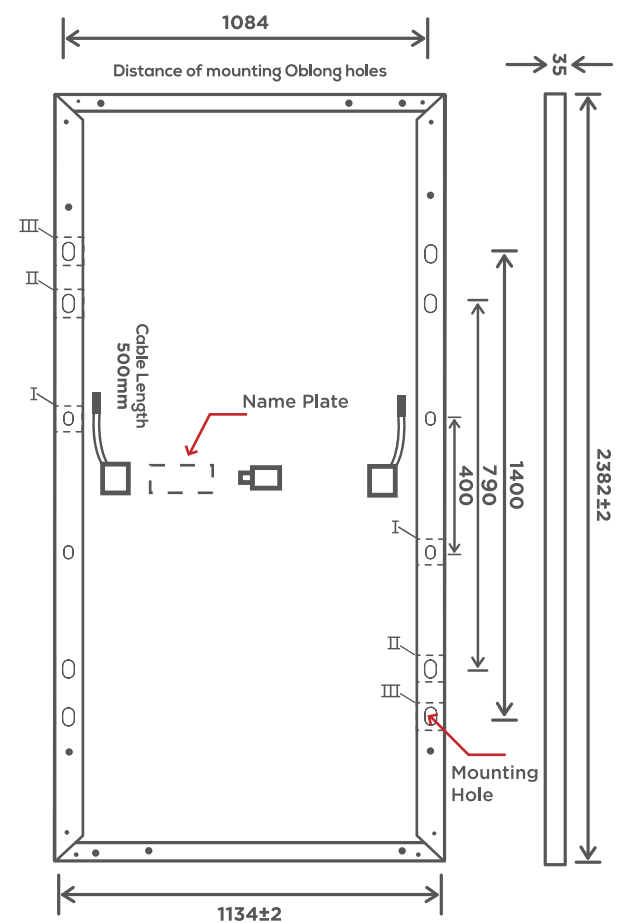
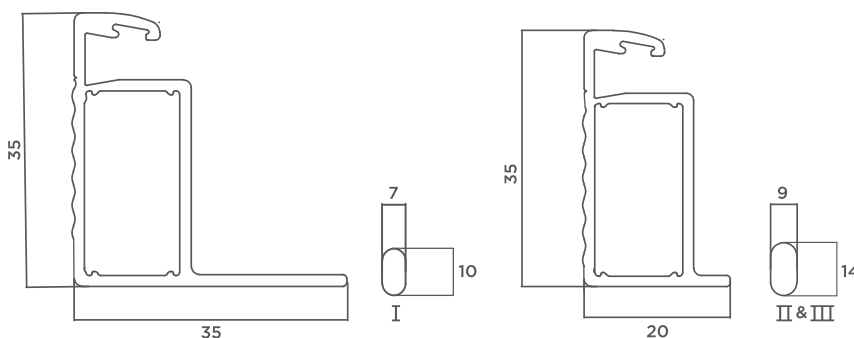
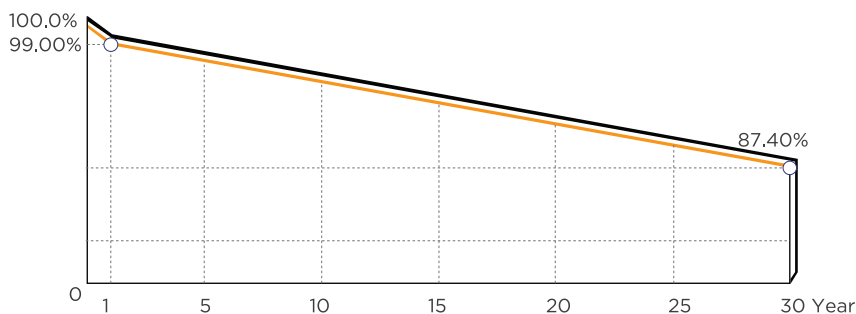
## Mechanical Data

|                               |                                                           |
|-------------------------------|-----------------------------------------------------------|
| Number of Cells and Cell Type | N Type TopCon132 Cut cell 105 X 182mm (4.13 X 7.16inch)   |
| Dimensions:(LXWXH)            | 2382mm X 1134mm X 35mm (93.86inch X 44.65inch 1.37inch)   |
| Weight                        | 34kg(74.96lb)                                             |
| Front Glass                   | 2mm AR Coated Semi Tempered Glass                         |
| Embedding                     | EVA/POE/EPE                                               |
| Back Glass                    | 2mm Semi Tempered Glass                                   |
| Junction Box                  | 3 Split Junction Box IP68                                 |
| Number of Bypass Diodes       | 3                                                         |
| Cables                        | 4mm <sup>2</sup> (12AWG) length 500 ±10mm(19.68 ±0.5inch) |
| Connectors                    | MC4 Compatible                                            |

## Warranty

|                      |          |
|----------------------|----------|
| Product Warranty     | 12 Years |
| Performance Warranty | 30 Years |

## MODULE DEGRADATION CURVE



|                             |             |
|-----------------------------|-------------|
| <b>1ST YEAR DEGRADATION</b> | <b>1.0%</b> |
|-----------------------------|-------------|

|                                    |              |
|------------------------------------|--------------|
| <b>YEAR 2-30 POWER DEGRADATION</b> | <b>0.40%</b> |
|------------------------------------|--------------|

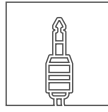
|                 |        |
|-----------------|--------|
| END OF 30 YEARS | 87.40% |
|-----------------|--------|



## FEATURES



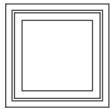
AR Coated High  
Transmission  
Glass



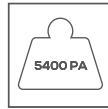
MC4  
Compatible  
Connectors



PID  
Resistance



Anodised  
Aluminium  
Frame

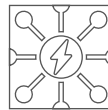


Snow Load  
Resistance  
upto 5400 Pa

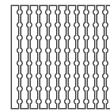
## BENEFITS



Low LCOE,  
Faster Payback  
Period



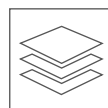
Best In Class  
Efficiency  
upto 23%



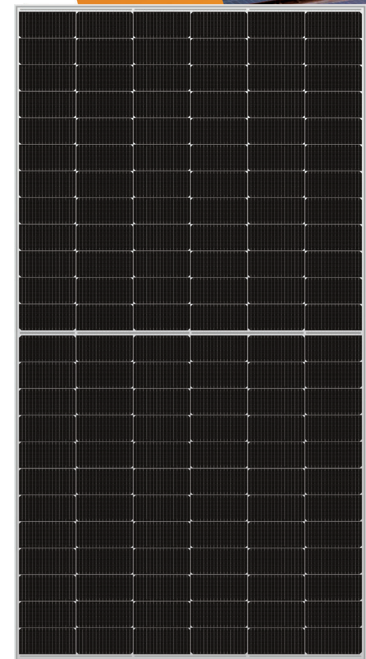
Multi-Bus Bar  
Technology for  
Better Current  
Collection



Lowest  
Guaranteed First  
Year and Annual  
Degradation



Well-Composed  
Components  
Stress to Reduce  
Micro Cracks



Product under testing for IEC AND BIS standard



**Corporate Office:** No. 13/1, International Airport Road, Bettahalasur Post, Bengaluru-562 157, India

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