



MBB Half-cell Monofacial Black-frame Module (54)

# TW400~420MAP

## M10-108-H-S (Black Frame)

### PRODUCT FEATURES



High Power Output  
Low LCOE



Maximum Power  
420W\*



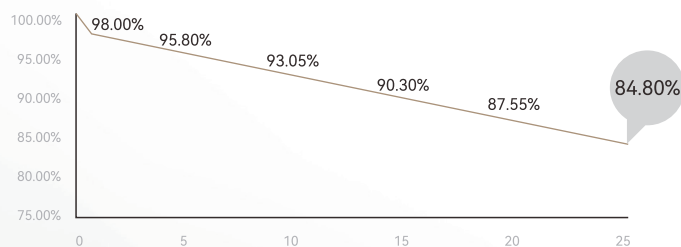
High  
Reliability



Low  
LID

### POWER WARRANTY

1st year <2%, 0.55% power degradation per year from 2 to 25 years



25-year warranty for materials



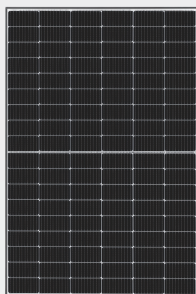
25-year warranty for linear power output

### MANAGEMENT SYSTEM AND PRODUCT CERTIFICATION

ISO45001: 2018/Occupational Health and Safety Management System

ISO14001: 2015/Environment Management System

ISO9001: 2015/Quality Management System



Front



Rear



## Electrical Characteristics (STC)

Module type: TW\*\*\*MAP-108-H-S (Black Frame)

|   |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|
| Maximum power: Pmax (W)   | 400   | 405   | 410   | 415   | 420   |
| Open circuit voltage: Voc (V)   | 37.08 | 37.23 | 37.38 | 37.53 | 37.68 |
| Short circuit current: Isc (A)  | 13.77 | 13.87 | 13.92 | 13.95 | 13.98 |
| Voltage at maximum power point: Vmp (V)   | 30.58 | 30.73 | 30.88 | 31.03 | 31.18 |
| Current at maximum power point: Imp (A)   | 13.08 | 13.18 | 13.28 | 13.38 | 13.47 |
| Module efficiency: $\eta$ (%)   | 20.5  | 20.7  | 21.0  | 21.3  | 21.5  |
| STC: Irradiance 1000W/m <sup>2</sup> , Cell Temperature 25°C, Air Mass1.5, Measuring tolerance: $\pm 3\%$ |       |       |       |       |       |

## Electrical Characteristics (NMOT)

|  |       |       |       |       |       |
|--|-------|-------|-------|-------|-------|
| Maximum power: Pmax (W)  | 302.8 | 306.6 | 310.3 | 314.1 | 317.9 |
| Open circuit voltage: Voc (V)  | 34.72 | 34.86 | 35    | 35.15 | 35.29 |
| Short circuit current: Isc (A)   | 10.82 | 10.9  | 10.97 | 11.05 | 11.12 |
| Voltage at maximum power point: Vmp (V)  | 28.76 | 28.9  | 29.04 | 29.18 | 29.32 |
| Current at maximum power point: Imp (A)  | 10.52 | 10.6  | 10.68 | 10.76 | 10.84 |
| NMOT: Irradiance 800W/m <sup>2</sup> , Ambient Temperature 20 °C, Air Mass1.5, Wind Speed 1m/s |       |       |       |       |       |

## Mechanical Parameters

|                |  |
|----------------|--|
| Cells          | P-TPC  |
| Orientation    | 108 (6×18)   |
| Size           | 1722±2×1134±2×30mm   |
| Weight         | 20.5kg   |
| Glass          | 3.2mm AR coated heat strengthened glass                              |
| Backsheet      | White  |
| Frame          | Anodized aluminum alloy black frame                                  |
| Junction Box   | IP68, 3 diodes   |
| Cable          | 4.0mm <sup>2</sup> , Landscape:1200/1200mm, length can be customized |
| Connector      | MC4 Compatible or MC4 original                                       |
| Wind/Snow Load | 2400Pa/5400Pa  |
| Packaging      | 36pcs per pallet , 936pcs per 40'HC                                  |

## Operating Parameters

|                            |             |
|----------------------------|-------------|
| Operational Temperature    | -40°C~+85°C |
| Maximum System Voltage     | 1500V DC    |
| Maximum Series Fuse Rating | 25A         |
| Power Output Tolerance     | 0~+5W       |

## Temperature Ratings

|                                |            |
|--------------------------------|------------|
| Temperature Coefficient (Pmax) | -0.34%/°C  |
| Temperature Coefficient (Voc)  | -0.27%/°C  |
| Temperature Coefficient (Isc)  | +0.045%/°C |
| NMOT                           | 45±2°C     |

## Drawings (Unit: mm)

