THE TALLMAX™
FRAMED 144 HALF-CELL MULTI-BUSBAR MODULE

144-Cell MONOCRystalline MODULE

390-415W POWER OUTPUT RANGE

20.4% MAXIMUM EFFICIENCY

0~+5W POSITIVE POWER TOLERANCE

Founded in 1997, Trina Solar is the world’s leading total solution provider for solar energy. With local presence around the globe, Trina Solar is able to provide exceptional service to each customer in each market and deliver our innovative, reliable products with the backing of Trina as a strong, bankable brand. Trina Solar now distributes its PV products to over 100 countries all over the world. We are committed to building strategic, mutually beneficial collaborations with installers, developers, distributors and other partners in driving smart energy together.

Comprehensive Products and System Certificates
- IEC61215/IEC61730/UL1703/IEC61701/IEC62716
- ISO 9001: Quality Management System
- ISO 14001: Environmental Management System
- ISO14064: Greenhouse Gases Emissions Verification
- OHSAS 18001: Occupation Health and Safety Management System

High power output
- Reduce BOS cost with high power bin and 1500V system voltage
- New cell string layout and split J-box location reduces the energy loss caused by inter-row shading
- Lower resistance of half-cut cells and increased MBB (Multi Busbar) reflectance ensure higher power

High energy generation, low LCOE
- Excellent 3rd party validated IAM and low light performance with cell process and module material optimization
- Low $P_{max}$ temp coefficient (-0.36%) increases energy production
- Better anti-shading performance and lower operating temperature

Certified to perform in highly challenging environments
- High PID resistance through cell process and module material control
- Resistant to salt, acid, sand, and ammonia
- Certified to 5400 Pa positive load and 2400 Pa negative load

Easy to install, wide application
- Frame design enables compatibility with standard installation methods
- Deployable for ground mounted and rooftop projects
- Safe and easy to transport, handle, and install

PRODUCTS | COLOR OF FRAME | POWER RANGE
--- | --- | ---
TSM-DE1SM(II) | Silver | 390-415W

PERFORMANCE WARRANTY
10 Year Product Warranty · 25 Year Power Warranty

From the 2nd year to the 25th year, the average annual power decline will be no more than 0.6%.

Trina standard

100% 97.0%
90.0%
83.1%
Years 2 5 10 15 20 25

Guaranteed Power
### ELECTRICAL DATA (STC)

<table>
<thead>
<tr>
<th>Peak Power Watts-P_{MAX} (Wp)</th>
<th>390</th>
<th>395</th>
<th>400</th>
<th>405</th>
<th>410</th>
<th>415</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Output Tolerance-P_{MAX} (W)</td>
<td>0~+5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Power Voltage-V_{MPP} (V)</td>
<td>40.0</td>
<td>40.1</td>
<td>40.3</td>
<td>40.5</td>
<td>40.7</td>
<td>40.9</td>
</tr>
<tr>
<td>Maximum Power Current-I_{SC} (A)</td>
<td>9.75</td>
<td>9.86</td>
<td>9.92</td>
<td>10.0</td>
<td>10.07</td>
<td>10.15</td>
</tr>
<tr>
<td>Open Circuit Voltage-V_{OC} (V)</td>
<td>48.5</td>
<td>48.7</td>
<td>49.0</td>
<td>49.2</td>
<td>49.4</td>
<td>49.6</td>
</tr>
<tr>
<td>Short Circuit Current-I_{SC} (A)</td>
<td>10.30</td>
<td>10.37</td>
<td>10.45</td>
<td>10.52</td>
<td>10.59</td>
<td>10.66</td>
</tr>
<tr>
<td>Module Efficiency ηm (%)</td>
<td>19.2</td>
<td>19.4</td>
<td>19.7</td>
<td>19.9</td>
<td>20.2</td>
<td>20.4</td>
</tr>
</tbody>
</table>

**Notes:**
- STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
- Measurements tolerance ±3%.

### ELECTRICAL DATA (NMOT)

<table>
<thead>
<tr>
<th>Maximum Power-P_{MAX} (Wp)</th>
<th>295</th>
<th>299</th>
<th>302</th>
<th>306</th>
<th>310</th>
<th>314</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Power Voltage-V_{MPP} (V)</td>
<td>37.6</td>
<td>37.8</td>
<td>38.0</td>
<td>38.2</td>
<td>38.4</td>
<td>38.6</td>
</tr>
<tr>
<td>Maximum Power Current-I_{SC} (A)</td>
<td>7.84</td>
<td>7.90</td>
<td>7.95</td>
<td>8.01</td>
<td>8.07</td>
<td>8.13</td>
</tr>
<tr>
<td>Open Circuit Voltage-V_{OC} (V)</td>
<td>45.7</td>
<td>45.9</td>
<td>46.2</td>
<td>46.4</td>
<td>46.6</td>
<td>46.8</td>
</tr>
<tr>
<td>Short Circuit Current-I_{SC} (A)</td>
<td>8.30</td>
<td>8.35</td>
<td>8.42</td>
<td>8.47</td>
<td>8.53</td>
<td>8.58</td>
</tr>
</tbody>
</table>

**Notes:**
- NMOT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

### MECHANICAL DATA

- **Solar Cells:** Monocrystalline
- **Cell Orientation:** 144 cells (6 × 24)
- **Module Dimensions:** 2024 × 1004 × 35 mm (79.69 × 39.53 × 1.38 inches)
- **Weight:** 22.8kg (50.3lb)
- **Glass:** 3.2 mm (0.13 inches), High Transmission, AR Coated Heat Strengthened Glass
- **Encapsulant Material:** EVA
- **Backsheet:** White
- **Frame:** 35 mm (1.38 inches) Anodized Aluminium Alloy
- **Cables:** Photovoltaic Technology Cable 4.0mm² (0.006 inches²)
  - Portrait: N 140mm/P 285mm (5.51/11.22 inches)
  - Landscape: N 1400 mm/P 1400 mm (55.12/55.12 inches)
- **Connector:** Trina TS4

### TEMPERATURE RATINGS

- **NMOT (Nominal Module Operating Temperature):** 41°C (±3°C)
- **Temperature Coefficient of P_{MAX}:** -0.36%/°C
- **Temperature Coefficient of V_{OC}:** -0.26%/°C
- **Temperature Coefficient of I_{SC}:** 0.04%/°C

**Notes:**
- Do not connect Fuse in Combiner Box with two or more strings in parallel connection.
- NMOT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

### WARRANTY

- 10 year Product Workmanship Warranty
- 25 year Power Warranty

**Notes:**
- Please refer to product warranty for details.

### MAXIMUM RATINGS

- **Operational Temperature:** -40~+85°C
- **Maximum System Voltage:** 1500V DC (IEC)
- **Maximum System Voltage:** 1500V DC (UL)
- **Max Series Fuse Rating:** 20A

### PACKAGING CONFIGURATION

- Modules per box: 30 pieces
- Modules per 40’ container: 660 pieces

---

**CAUTION:** READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

© 2019 Trina Solar Limited. All rights reserved. Specifications included in this datasheet are subject to change without notice.

Version number: TSM_DE15M(II)_EN_2019_C

www.trinasolar.com