



# V-Series Modules

## 5BB Monocrystalline Solar Modules

Peak Power: 295-310Wp

### High Quality

- Powered by TSEC premium grade solar cells.
- The solar cell passed UL/ITRI PID test conditions (temperature 85°C, humidity 85%, -1500V, 300hrs)
- The solar module passed ITRI PID test conditions (temperature 85°C, humidity 85%, ±1000V, 300hrs)

### High Reliability

- CNS 15114 mechanical load test 5400Pa
- IEC 61215:2016 mechanical load test 3600Pa (safety factor 1.5)
- Salt mist corrosion testing up to 56 days by ITRI, follow severity 6 in IEC61701(CNS 15196) standard.

### Strict Quality Control

- Current sorting for hot spot protection.
- 3-stage EL tests at pre-lamination, before framing and before delivery.
- Positive tolerance 0~4.99W

### Module Characteristics

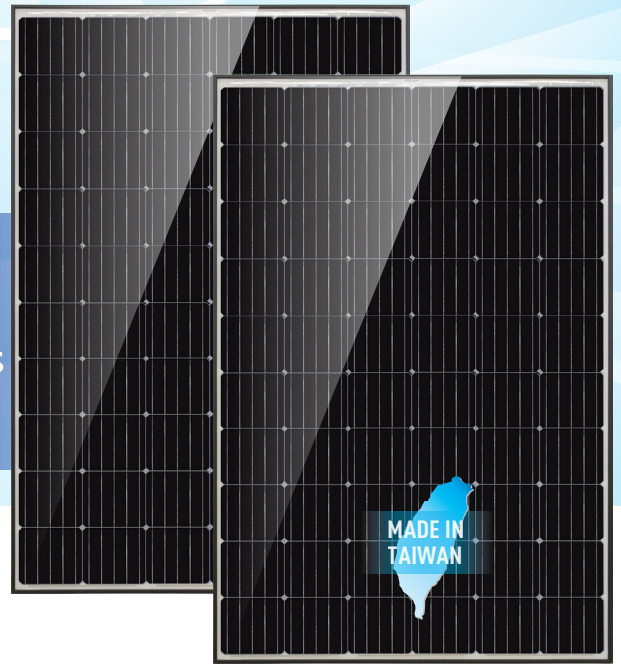
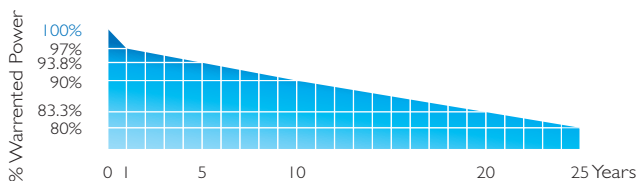
Dimension	1,650 x 992 x 40 mm
Weight	18.5 Kg

### Certifications

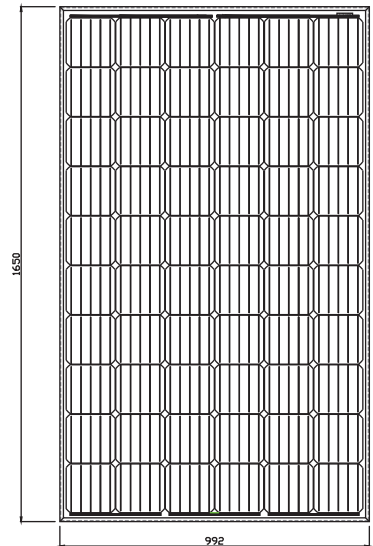
- IEC 61215:2016、IEC 61730-1:2016 & IEC 61730-2:2016
- ISO 9001:2008 Quality management system
- ISO 14001:2015 Standards for environmental management system
- ISO 50001:2011 Energy management system
- OHSAS 18001:2007 International standards for occupational health and safety

### Warranty

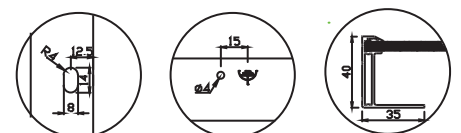
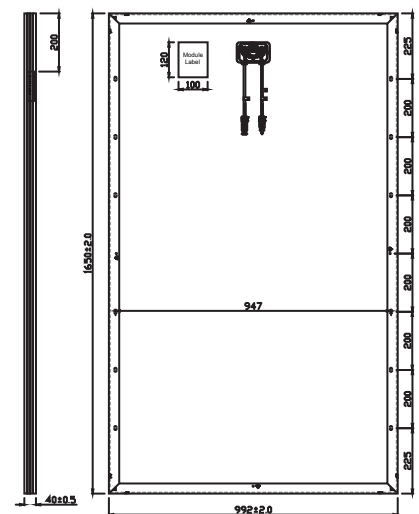
- 10-year materials and workmanship warranty.
- 25-year linear power warranty.



Module Front Side



Module Rear Side



# V-Series 310W

## 5BB Monocrystalline Solar Module



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### Performance Under Standard Test Conditions

Model Name			TS60-6M3-295	TS60-6M3-300	TS60-6M3-305	TS60-6M3-310
Max. power at STC	$P_{max}$	W	295	300	305	310
Max. power voltage	$V_{mp}$	V	31.69	32.15	32.56	32.87
Max. power current	$I_{mp}$	A	9.31	9.33	9.37	9.43
Open circuit voltage	$V_{oc}$	V	38.87	39.25	39.50	40.25
Short circuit current	$I_{sc}$	A	9.92	9.94	9.95	9.97
F.F. (%)		%	76.51%	76.88%	77.63%	77.96%
Module Conversion Eff.		%	18.02%	18.33%	18.63%	18.94%
Module Effective Conversion Eff.		%	20.12%	20.46%	20.81%	21.15%

\* Under Standard Test Condition (1,000W/m<sup>2</sup>, 25°C, AM 1.5): Power Tolerance  $\pm 3\%$

\* Module Conversion Eff. (%) =  $[\text{Max power at STC}(w) / (\text{Solar Module Area}(m^2) \times 1000 (w/m^2))] \times 100\%$

\* Module Effective Conversion Eff. (%) =  $[\text{Max power at STC}(w) / (\text{Solar Cell Total Area}(m^2) \times 1000 (w/m^2))] \times 100\%$

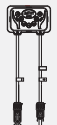

### Thermal Characteristics

Normal Operating cell temperature	NMOT	°C	45±2
TC $I_{sc}$	$\alpha_{sc}$	%/°C	+0.073
TC $V_{oc}$	$\beta_{Voc}$	%/°C	-0.33
TC $P_{max}$	$\delta$	%/°C	-0.44

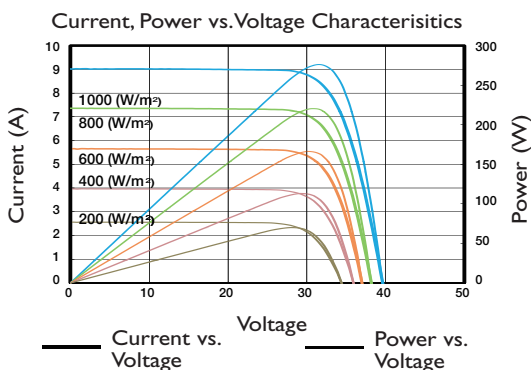
### System Integration Parameters

Max. system voltage	1000V
Module fire resistance class	Class C
Application class (Safety class II)	Class A
series fuse rating	15 A
Number of bypass diodes	3
Temperature range	-40 to +85°C
Max. mechanical load	5400 pa(VPC) 3600 Pa (IEC 61215 : 2016)

### Component Material

Cell type	Monocrystalline / 156.75 x 156.75mm
Cell per module	5BB / 60 pcs
Front	Low-iron glass / Tempered
Encapsulant Film	Ethylene Vinyl Acetate(EVA)
Rear	Backsheet
Frame	6063T5 Anodized aluminum (silver/black)
Junction Box	IP68 Type 1  Type 2 
Connector	MC4 Compatible
Cable	1000mm / 12 AWG / 4mm <sup>2</sup>

### IV Curve



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