

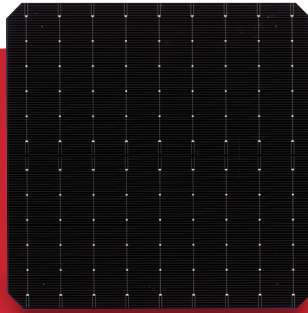
V-Cell

Halfcut Series



TSSB9

Mono c-Si Solar Cell
(Bi-Facial)



Physical Characteristics

Dimensions 166mm X 166mm \pm 0.5mm
Diagonal 223mm \pm 0.5mm

Thickness(Si) 170 μ m \pm 50 μ m

Front(-) Alkaline texturized surface with silicon nitride anti-reflecting coating

9 X 0.07mm \pm 0.05mm bus bars

Distance between bus bars : 18mm

Back(+) Local aluminum back surface field

9 X12 soldering pads, 1.3mm \pm 0.3mm wide bus bars

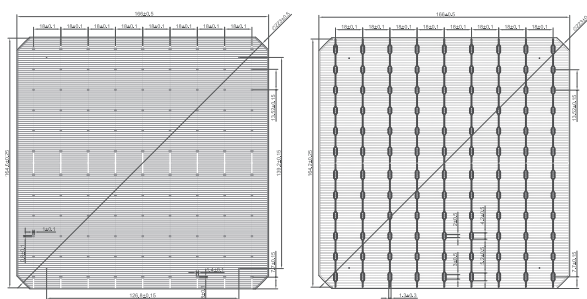
Distance between bus bars : 18mm

Features

- High Cell-To- Module ratio through precise cell conversion efficiency sorting, classified efficiency grade by both minimum power and current.
- Excellent electrical long-term stability and reliability by using of best raw materials and through strict quality inspection control.
- Low breakage rate by using high qualified and stable wafers.
- High quality homogeneous appearance by sorting into defined color classes.
- 100% screened for reverse current and shunt resistance.
- Excellent passivation quality of the rear side compared to the traditional solar cell is clearly visible in the long wavelength regime.
- The best solution for PV module with above 360W outputs.

Quality Control and Professional Service

- Regular calibration of test equipment using Fraunhofer ISE reference cell.
- Environmental friendly due to REACH-SVHC and RoHS compliances.
- Professional on-site service and support for module certification.
- Regular light source AAA class calibration for stable conversion efficiency.
- Lowest LID by periodic monitoring and superior wafer incoming control.



Electrical Characteristics

Efficiency Code		233	232	231	230	229	228	227	226	225	224	223	222	221	220	219
Efficiency	Eff(%)	23.30	23.20	23.10	23.00	22.90	22.80	22.70	22.60	22.50	22.40	22.30	22.20	22.10	22.00	21.90
Power	Pmpp(W)	6.39	6.36	6.33	6.31	6.28	6.25	6.22	6.20	6.17	6.14	6.11	6.09	6.06	6.03	6.00
Max. Power Current	Imp(A)	10.831	10.825	10.820	10.807	10.791	10.776	10.762	10.746	10.734	10.719	10.700	10.678	10.660	10.648	10.634
Short Circuit Current	Isc(A)	11.448	11.428	11.411	11.399	11.385	11.372	11.360	11.348	11.335	11.322	11.305	11.284	11.270	11.259	11.241
Max. Power Voltage	Vmpp(V)	0.590	0.588	0.585	0.583	0.582	0.580	0.578	0.576	0.575	0.573	0.571	0.570	0.568	0.566	0.565
Open Circuit Voltage	Voc(V)	0.693	0.691	0.690	0.688	0.687	0.686	0.684	0.683	0.682	0.680	0.679	0.678	0.676	0.674	0.672

Standard test condition: AM1.5, 1000W/m², 25°C
Average accuracy of all tests is +/-1.5% rel.

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www.tsecpv.com

Temperature Coefficients

Current Temperature Coefficient	$\alpha(I_{SC})$	0.0414%/K
Voltage Temperature Coefficient	$\beta(V_{OC})$	-0.2847%/K
Power Temperature Coefficient	$\gamma(P_{max})$	-0.3451%/K

Standard test condition: AM1.5, 1000W/m², 25°C

Processing Recommendations

Solder Joint

Copper ribbons coated with 15~25µm:
62%Sn/36%Pb/2%Ag or 60%Sn/40%Pb

Standard test condition: AM1.5, 1000W/m², 25°C

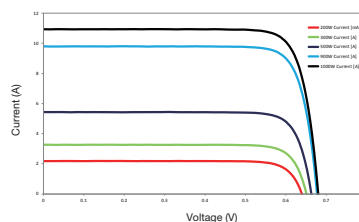
Solderability

Peel Strength Minimum

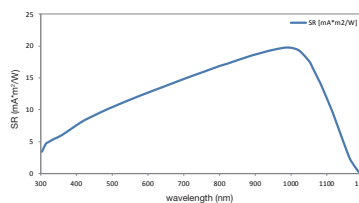
> 1.25 N/mm

Soldering results may differ due to different flux, ribbons, soldering methods, and parameters.

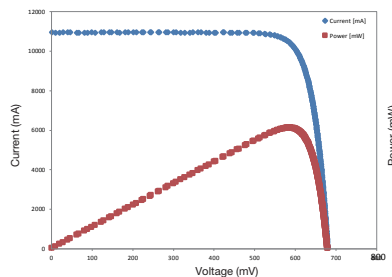
Typical Current-Voltage Curve



Typical Spectral Response

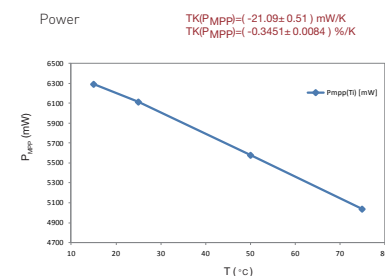
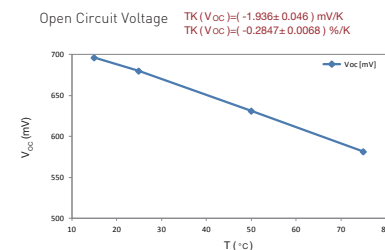
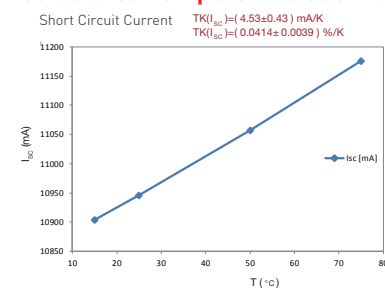


Typical IV-Power Curve



* All data measured under standard testing condition (STC):
1000 W/m², AM 1.5, 25 °C.
* All figures bear ±2% tolerance.
* Reference cell are under testing by Fraunhofer ISE in Freiburg.

Calculated Temperature Coefficients



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