

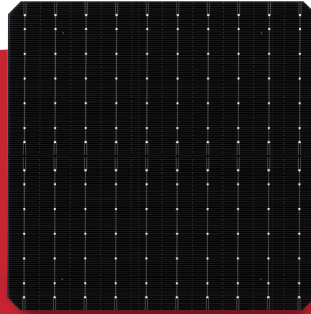
V-Cell

Halfcut Series



TSSCN

Mono c-Si Solar Cell
(Bi-Facial/Ares)



Physical Characteristics

Dimensions	182mm X 182mm ± 0.5mm
Diagonal	247mm± 0.5mm
Thickness(Si)	170μm ± 50μm
Front(-)	Alkaline texturized surface with silicon nitride anti-reflecting coating 10 X 0.12mm ± 0.1mm bus bars Distance between bus bars : 18mm
Back(+)	Local aluminum back surface field 10 X 8 soldering pads, 1.3mm±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 440W(6x20) and 530W(6x24) outputs.

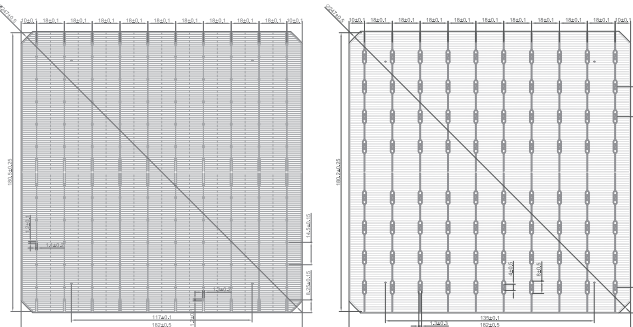
Quality Control and Professional Service

- 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		234	233	232	231	230	229	228	227	226	225	224	223	222
Efficiency	Eff[%]	23.40	23.30	23.20	23.10	23.00	22.90	22.80	22.70	22.60	22.50	22.40	22.30	22.20
Power	Pmpp[W]	7.73	7.69	7.66	7.63	7.59	7.56	7.53	7.49	7.46	7.43	7.40	7.36	7.33
Max. Power Current	Imp[A]	13.191	13.145	13.116	13.075	13.055	13.037	13.024	13.012	13.001	12.989	12.976	12.955	12.928
Short Circuit Current	Isc[A]	13.902	13.841	13.825	13.810	13.796	13.781	13.768	13.755	13.743	13.729	13.715	13.687	13.653
Max. Power Voltage	Vmpp[V]	0.586	0.585	0.584	0.583	0.582	0.580	0.578	0.576	0.574	0.572	0.570	0.568	0.567
Open Circuit Voltage	Voc[V]	0.692	0.692	0.691	0.689	0.688	0.687	0.686	0.684	0.683	0.681	0.679	0.677	0.675

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



TSSCN

Mono c-Si Solar Cell
(Bi-Facial/Ares)

Temperature Coefficients

Current Temperature Coefficient	$\alpha(I_{SC})$	0.0423%/K
Voltage Temperature Coefficient	$\beta(V_{OC})$	-0.2903%/K
Power Temperature Coefficient	$\gamma(P_{max})$	-0.3535%/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

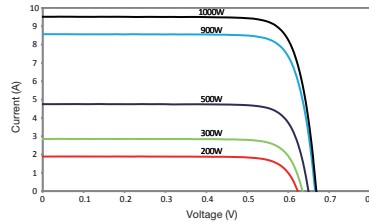
Solderability

Peel Strength Minimum

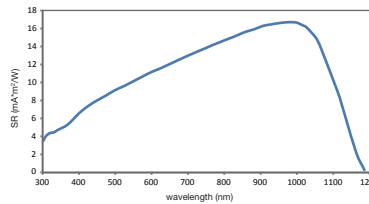
> 1.25 N/mm

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

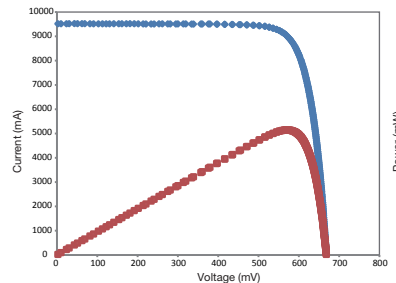
Typical Current-Voltage Curve



Typical Spectral Response



Typical IV-Power Curve



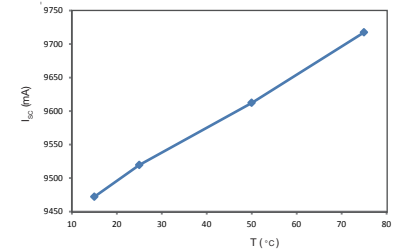
* All data measured under standard testing condition (STC):
1000 W/m², AM 1.5, 25 °C.

* All figures bear ±2% tolerance.

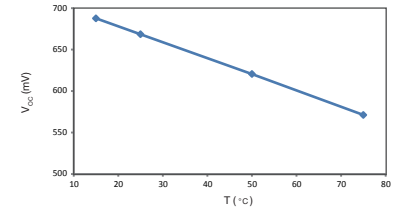
* Reference cell are under testing by Fraunhofer ISE in Freiburg.

Calculated Temperature Coefficients

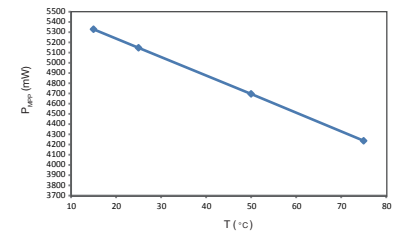
Short Circuit Current $TK(I_{SC}) = (4.03 \pm 0.37) \text{ mA/K}$
 $TK(I_{SC}) = (0.0423 \pm 0.0039) \text{ \% / K}$



Open Circuit Voltage $TK(V_{OC}) = (-1.941 \pm 0.045) \text{ mV/K}$
 $TK(V_{OC}) = (-0.2903 \pm 0.0068) \text{ \% / K}$



Power $TK(P_{MPP}) = (-18.19 \pm 0.43) \text{ mW/K}$
 $TK(P_{MPP}) = (-0.3535 \pm 0.0084) \text{ \% / K}$



TSEC Corporation

Taipei Headquarters

8F, No.225, Sec. 3, Beixin Rd., Xindian Dist.,
New Taipei City 23143, Taiwan, R.O.C

t 886 2 2912 2199 f 886 2 2917 5399 m sales@tsecpv.com

Hsinchu Plant

No.85, Guangfu N. Rd., Hukou Township, Hsinchu County 30351,
Taiwan, R.O.C. (Hsinchu Industrial Park)

t 886 3 696 0707 f 886 3 696 0708

Specifications are subject to change without prior notice.
TSEC reserves the rights of final interpretation
and revision of datasheet.