



## Black22 Series

### Features Performance and Quality

- Industry-Leading efficiency of P-type mono-crystalline silicon solar cell
- Robust reliability performance for potential module benefit beyond 25 years
- Compatible with present mainstream module manufacturing process
- Standard cells calibrated by Fraunhofer ISE
- 100% in-line optical and electrical inspection

## NSAW 158.75mm Monocrystalline Silicon Solar Cell (PID FREE) Pattern Code **5BB-34S32**

### PHYSICAL CHARACTERISTICS

**Dimensions** 158.75mm\*158.75mm±0.25mm

**Thickness (Si)** 160µm +20/-10µm

**Front** 5 bus-bars width 0.7 mm ± 0.15mm  
Distance between bus-bars: 31.2 mm ± 0.15mm

**Back** 5 Bus-bars width 2 mm ± 0.15mm  
Distance between bus-bars: 31.2mm ± 0.15mm

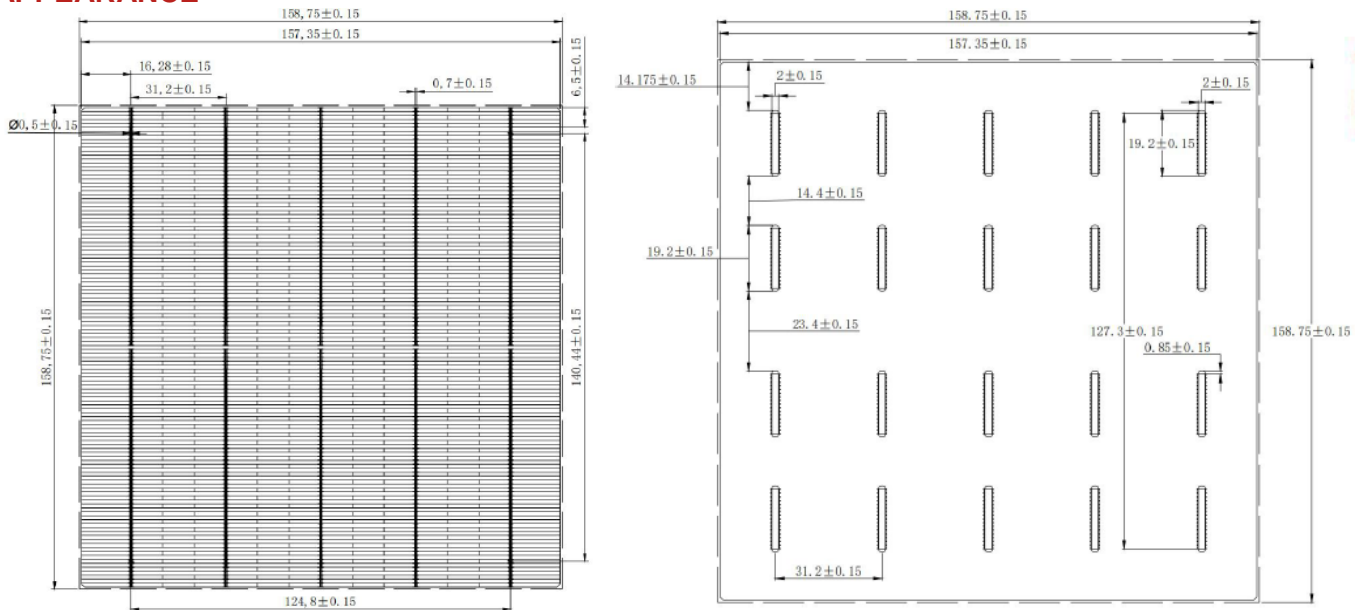
### ELECTRICAL CHARACTERISTICS

Code	22.6	22.5	22.4	22.3	22.2	22.1	22.0	21.9	21.8	21.7	21.6	21.5
Pmpp (W)	5.695	5.670	5.645	5.619	5.594	5.569	5.544	5.519	5.493	5.468	5.443	5.418
Umpp (V)	0.581	0.580	0.579	0.578	0.577	0.576	0.574	0.573	0.571	0.569	0.567	0.565
Impp (A)	9.788	9.768	9.743	9.726	9.681	9.665	9.652	9.634	9.618	9.613	9.594	9.593
Voc (V)	0.670	0.670	0.669	0.669	0.668	0.668	0.667	0.667	0.666	0.666	0.665	0.664
Isc (A)	10.210	10.185	10.163	10.141	10.120	10.098	10.082	10.058	10.031	10.007	9.979	9.970
FF	83.13	83.02	82.97	82.85	82.63	82.50	82.36	82.27	82.15	82.06	81.96	81.85

Temperature coefficients : Current : +0.06%/K , Voltage : -0.36%/K , Power : -0.36%/K

The above data are average figures presently measured. Accuracy of eff. measurement is ±0.1%.  
Reference data are calibrated by Fraunhofer ISE Freiburg.

### APPEARANCE



## IV curve

