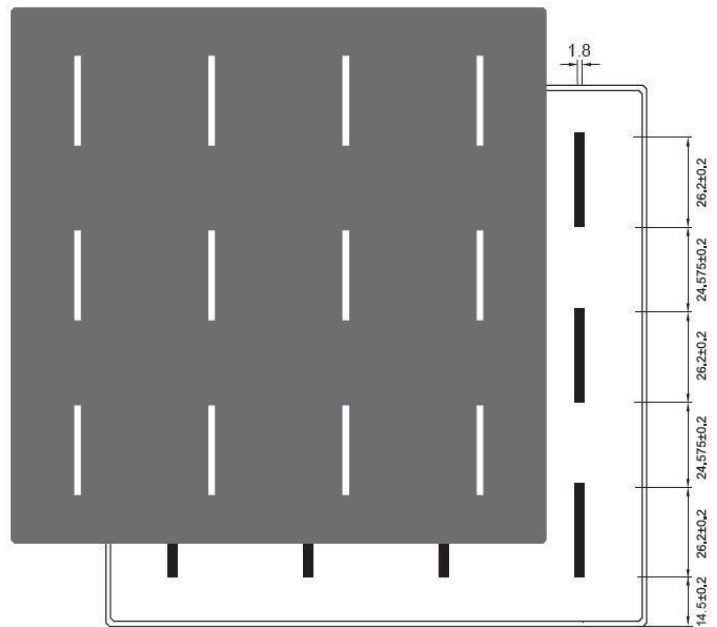


### Marble Series 4BB

#### PHYSICAL CHARACTERISTICS

<b>Color</b>	Stone Elegance   Emerald Green   Disco Pink   Sparkling Gold   Metallic Gold   Diamond Blue
<b>Dimension</b>	156.75 mm x 156.75 mm +/- 0.25 mm
<b>Thickness (si)</b>	200 um +/- 20um
<b>Front</b>	Silicon nitride anti-reflection coating Four 1.0 +/- 0.1 mm wide bus bars with distance 39 mm
<b>Back</b>	Full surface aluminum back surface field Four 1.8 +/- 0.1 mm discontinuous soldering pads



#### TYPICAL ELECTRICAL CHARACTERISTICS

Efficiency Code		1800	1780	1760	1740	1720	1700
Efficiency Range	[%]	18.1-17.9	17.9-17.7	17.7-17.5	17.5-17.3	17.3-17.1	17.1-16.9
Average Power	[W]	4.42	4.37	4.32	4.27	4.22	4.17
Power Range	[W]	4.45-4.39	4.39-4.34	4.34-4.30	4.30-4.25	4.25-4.20	4.20-4.15
Short Circuit Current	I <sub>sc</sub> [A]	8.88-8.81	8.81-8.74	8.74-8.68	8.68-8.61	8.61-8.57	8.57-8.52
Open Circuit Voltage	V <sub>oc</sub> [mV]	629-627	627-625	625-623	623-621	621-619	619-617
Maximum Power Current	I <sub>MPP</sub> [A]	8.30-8.24	8.24-8.18	8.18-8.14	8.14-8.09	8.09-8.03	8.03-7.96
Maximum Power Voltage	V <sub>MPP</sub> [mV]	536-534	534-531	531-528	528-525	525-523	523-521

Efficiency Code		1680	1660	1640	1620	1600
Efficiency Range	[%]	16.9-16.7	16.7-16.5	16.5-16.3	16.3-16.1	16.1-15.9
Average Power	[W]	4.12	4.07	4.03	3.98	3.93
Power Range	[W]	4.15-4.10	4.10-4.05	4.05-4.00	4.00-3.95	3.95-3.91
Short Circuit Current	I <sub>sc</sub> [A]	8.52-8.47	8.47-8.43	8.43-8.38	8.38-8.33	8.33-8.28
Open Circuit Voltage	V <sub>oc</sub> [mV]	617-615	615-613	613-611	611-609	609-607
Maximum Power Current	I <sub>MPP</sub> [A]	7.96-7.90	7.90-7.86	7.86-7.81	7.81-7.75	7.75-7.69
Maximum Power Voltage	V <sub>MPP</sub> [mV]	521-519	519-516	516-513	513-510	510-508

Efficiency Code		1580	1560	1540	1520	1500
Efficiency Range	[%]	15.9-15.7	15.7-15.5	15.5-15.3	15.3-15.1	15.1-14.9
Average Power	[W]	3.88	3.83	3.78	3.73	3.68
Power Range	[W]	3.91-3.86	3.86-3.81	3.81-3.76	3.76-3.71	3.71-3.33
Short Circuit Current	I <sub>sc</sub> [A]	8.28-8.23	8.23-8.19	8.19-8.13	8.13-8.08	8.08-8.03
Open Circuit Voltage	V <sub>oc</sub> [mV]	607-604	604-602	602-600	600-598	598-596
Maximum Power Current	I <sub>MPP</sub> [A]	7.69-7.63	7.63-7.58	7.58-7.51	7.51-7.45	7.45-7.38
Maximum Power Voltage	V <sub>MPP</sub> [mV]	508-505	505-502	502-500	500-498	498-496

\*The above data are presently measured average. Data calibrated by Fraunhofer ISE Freiburg STC: 1000W/m<sup>2</sup>, AM1.5, 25°C  
All figures bear ±1.5% tolerance.

## POWER RANGE AT CELL LEVEL

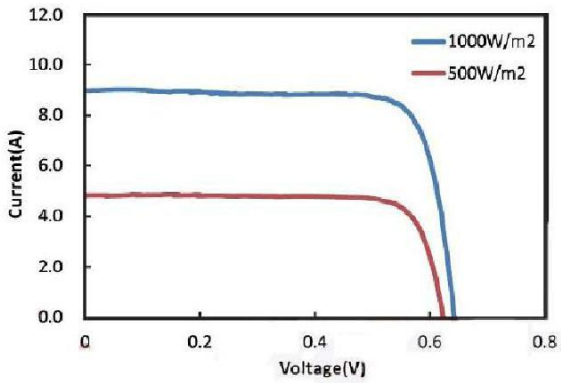
Color	Stone Elegance	Emerald Green (a.k.a. Rebel Green)	Disco Pink
Efficiency range(%)	17.80-16.60	18.00-16.60	17.60-16.40
Power range(W)	4.37-4.07	4.42-4.07	4.32-4.03
Power in majority	4.27	4.27	4.27

Color	Diamond Blue	Sparkling Gold	Metallic Gold
Efficiency range(%)	18.40-17.60	17.20-15.80	17.20-15.80
Power range(W)	4.52-4.32	4.22-3.88	4.22-3.88
Power in majority	4.37	4.07	4.07

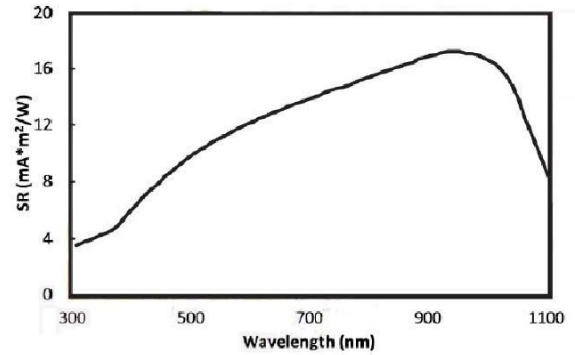
## TYPICAL TEMPERATURE COEFFICIENTS

Current temperature coefficient $\alpha(I_{sc})$	0.0438%/°C
Voltage temperature coefficient $\beta(V_{oc})$	-0.3250%/°C
Power temperature coefficient $\gamma(P_{max})$	-0.3946%/°C

### I-V CURVE



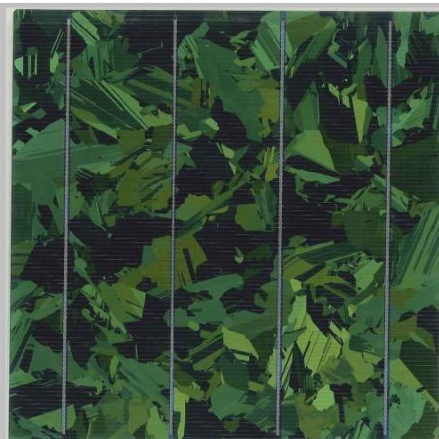
### SPECTRAL RESPONSE



Note: LOF Solar Corp reserves the rights of final interpretation and revision of this datasheet.



**Stone Elegance**



**Emerald Green**



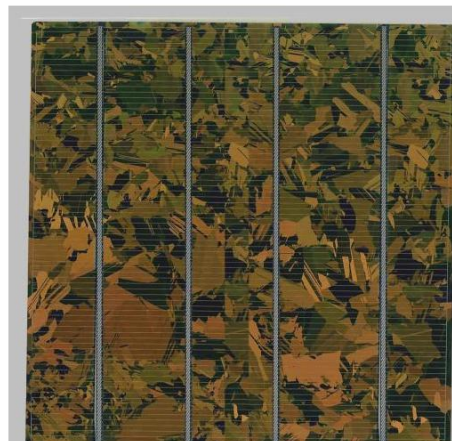
**Sparkling Gold**



**Diamond Blue**



**Disco Pink**



**Metallic Gold**

Note: Macsun Solar Corp reserves the rights of final interpretation and revision of this datasheet.

