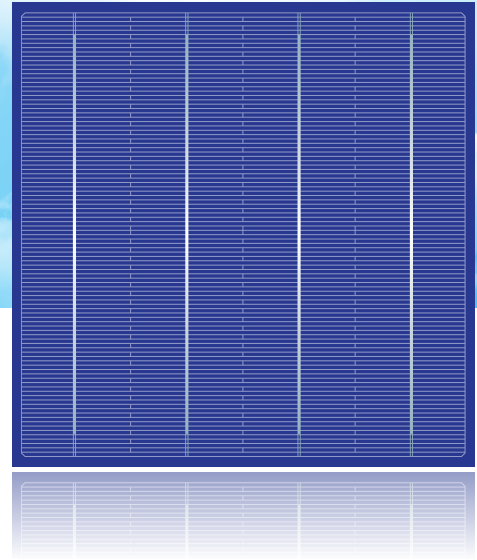


SAPPHIRE

M-156-4 ver. D

6" Multicrystalline Solar Cell



Features

- High-efficiency solar cells with an isotropically etched surface
- Silicon nitride anti-reflection coating
- Silver front contact bars and full surface aluminum back contact field

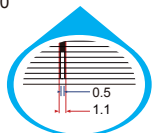
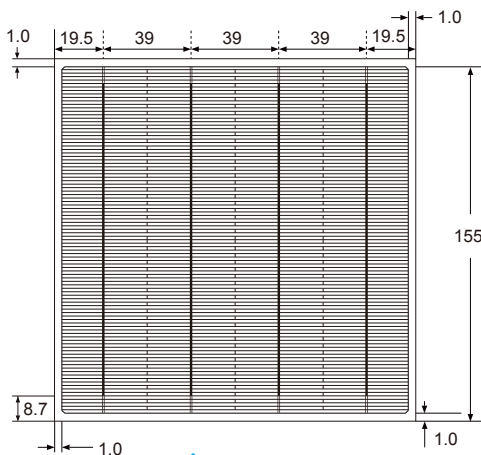
Performance and Quality

- Proper handling from incoming inspection through production, outgoing inspection and packaging
- 100% checked for reverse current and visual appearance
- Calibrated against Fraunhofer ISE
- RoHS compliance
- **100% PID Resistance**

Packaging

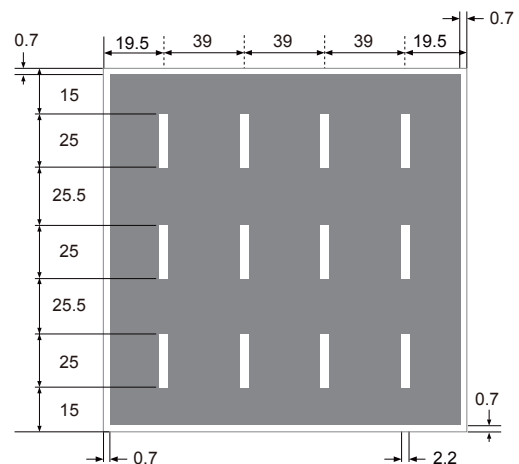
- Minimize the risk of broken cells with special design
- Label with product information

Cell Layout



Physical Characteristics

Dimension	156 mm x 156 mm ± 0.5 mm
Thickness (si)	180 μm - 20 / + 30 μm 200 μm ± 30 μm
Front Side (-)	Silicon nitride anti-reflection coating 1.1 mm silver busbar
Back Side (+)	Full surface aluminum back surface field 2.2 mm (silver) discontinuous soldering pads



M-156-4 ver.D / 6" Multicrystalline Solar Cell

Electrical Characteristics

Class M-156	Efficiency Range (%)	Rated Power (Wp)	*Maximum Power Current (A)	*Short Circuit Current (A)	*Maximum Power Voltage (V)	*Open Circuit Voltage (V)
180	18.0~18.1	4.380	8.415	8.950	0.524	0.631
181	18.1~18.2	4.405	8.435	8.971	0.525	0.632
182	18.2~18.3	4.429	8.456	8.991	0.527	0.633
183	18.3~18.4	4.453	8.477	9.012	0.528	0.635
184	18.4~18.5	4.478	8.497	9.033	0.530	0.636
185	18.5~18.6	4.502	8.518	9.054	0.531	0.637
186	18.6~18.7	4.526	8.539	9.074	0.532	0.638
187	18.7~18.8	4.551	8.559	9.095	0.534	0.639
188	18.8~18.9	4.575	8.580	9.116	0.535	0.641
189	18.9~19.0	4.600	8.600	9.137	0.537	0.642
190	19.0~19.1	4.624	8.621	9.157	0.538	0.643
191	19.1~19.2	4.648	8.642	9.178	0.539	0.644
192	19.2~19.3	4.673	8.662	9.199	0.541	0.645
193	19.3~19.4	4.697	8.684	9.219	0.542	0.646
194	19.4~19.5	4.721	8.705	9.240	0.544	0.648
195	19.5~19.6	4.746	8.726	9.261	0.545	0.649
196	19.6~19.7	4.770	8.746	9.282	0.546	0.650
197	19.7~19.8	4.794	8.767	9.302	0.548	0.651

Test condition: 1000 W / m², AM 1.5, 25 °C Power measuring tolerance: ± 1.5 % rel. *Data & drawing for reference only.

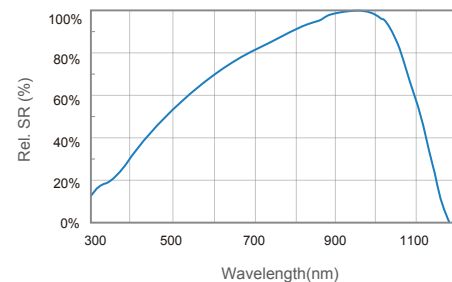
Temperature coefficients

Current (%/K)	0.0425
Voltage (%/K)	-0.3111
Power (%/K)	-0.3960

Light Intensity Dependence

Intensity [W/m ²]	V _{mpp}	I _{mpp}
1000	1.000	1.000
900	0.997	0.904
500	0.975	0.499
300	0.952	0.297
200	0.927	0.195

Spectral Response



IV-Curve

