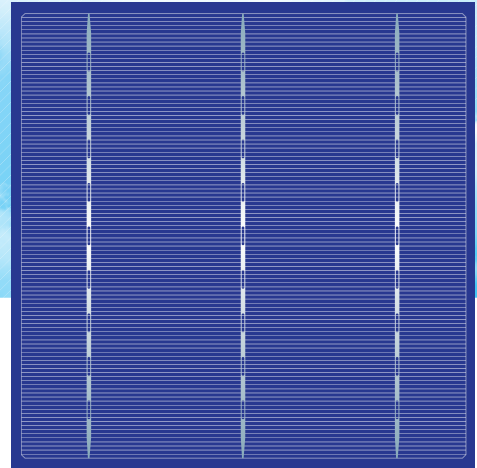




SAPPHIRE

**M-156-3** ver. N  
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

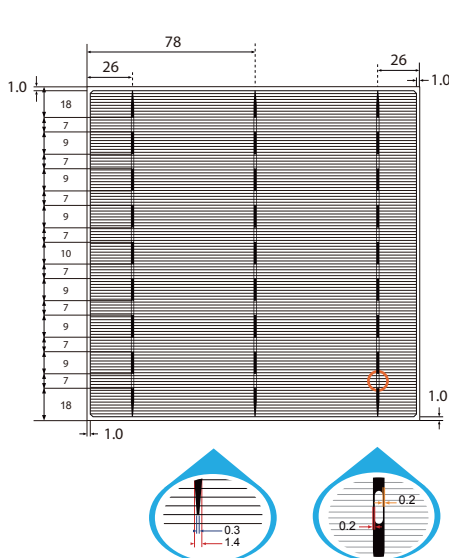
**Performance and Quality**

- 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**

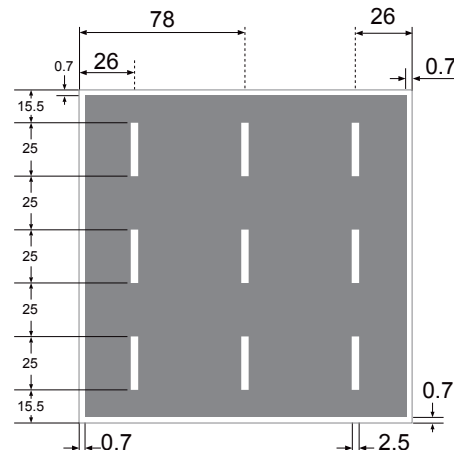
- Minimize the risk of broken cells with special design
- Label with product information

**Cell Layout**



**Physical Characteristics**

|                |  |
|----------------|--|
| Dimension      | 156 mm x 156 mm ± 0.5 mm   |
| Thickness (si) | 180 μm - 20 / + 30 μm<br>200 μm ± 30 μm  |
| Front Side (-) | Silicon nitride anti-reflection coating<br>1.4 mm silver busbar                          |
| Back Side (+)  | Full surface aluminum back surface field<br>2.5 mm (silver) discontinuous soldering pads |



# M-156-3 ver. N / 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            | 8.361                      | 9.043                      | 0.527                      | 0.629                     |
| 181         | 18.1~18.2            | 4.405            | 8.386                      | 9.056                      | 0.528                      | 0.631                     |
| 182         | 18.2~18.3            | 4.429            | 8.411                      | 9.069                      | 0.529                      | 0.632                     |
| 183         | 18.3~18.4            | 4.453            | 8.436                      | 9.083                      | 0.530                      | 0.634                     |
| 184         | 18.4~18.5            | 4.478            | 8.461                      | 9.096                      | 0.531                      | 0.635                     |
| 185         | 18.5~18.6            | 4.502            | 8.486                      | 9.109                      | 0.533                      | 0.637                     |
| 186         | 18.6~18.7            | 4.526            | 8.510                      | 9.123                      | 0.534                      | 0.638                     |
| 187         | 18.7~18.8            | 4.551            | 8.535                      | 9.136                      | 0.535                      | 0.640                     |
| 188         | 18.8~18.9            | 4.575            | 8.560                      | 9.150                      | 0.536                      | 0.641                     |
| 189         | 18.9~19.0            | 4.600            | 8.585                      | 9.163                      | 0.538                      | 0.642                     |
| 190         | 19.0~19.1            | 4.624            | 8.610                      | 9.176                      | 0.539                      | 0.644                     |
| 191         | 19.1~19.2            | 4.648            | 8.635                      | 9.190                      | 0.540                      | 0.645                     |
| 192         | 19.2~19.3            | 4.673            | 8.659                      | 9.202                      | 0.541                      | 0.647                     |
| 193         | 19.3~19.4            | 4.697            | 8.683                      | 9.217                      | 0.542                      | 0.648                     |
| 194         | 19.4~19.5            | 4.721            | 8.708                      | 9.230                      | 0.544                      | 0.650                     |

Test condition: 1000 W / m<sup>2</sup>, AM 1.5, 25 °C Power measuring tolerance: ± 1.5 % rel. \*Data & drawing for reference only.

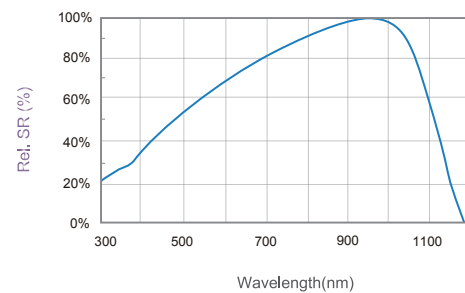
## Temperature coefficients

|               |         |
|---------------|---------|
| Current (%/K) | 0.0473  |
| Voltage (%/K) | -0.3166 |
| Power (%/K)   | -0.397  |

## Light Intensity Dependence

| Intensity [W/m <sup>2</sup> ] | V <sub>mpp</sub> | I <sub>mpp</sub> |
|-------------------------------|------------------|------------------|
| 1000                          | 1.000            | 1.000            |
| 900                           | 0.997            | 0.900            |
| 500                           | 0.976            | 0.498            |
| 300                           | 0.954            | 0.295            |
| 200                           | 0.934            | 0.197            |

## Spectral Response



## IV-Curve

