

## ARTisun™ 156.72 Series Monocrystalline Photovoltaic Cells

### High Efficiency at Low Cost is Our Heritage

You know cell efficiency is important in PV. It impacts the entire value chain: from raw materials to balance-of-system (BOS) costs. That's why you should choose Suniva's *ARTisun* series. Our team has over a century of experience in making leading-edge photovoltaic cells and systems. Our monocrystalline cells offer some of the highest efficiencies available on the market today, and we are committed to leading our industry with innovations to produce high efficiency at low cost. Most cell vendors rarely achieve efficiencies in excess of 17%, especially at a reasonable cost. For Suniva, it's routine.



### Expertly Crafted

Great solar cells start with the best materials. From wafers to pastes, the Suniva team of world class experts understand how to work with materials, and more importantly, how to make materials work better by optimizing processing conditions. There is an art to forming each part of the cell: the front surface texturing; the emitter, the anti-reflection (AR) coating and both front and rear contacts. Suniva scientists have spent their careers understanding what it takes to extract the maximum performance from the device and deliver superior power from each cell.

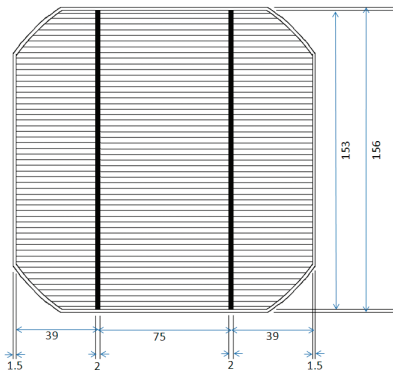
### Quality You Can Trust

Our relentless dedication to tight process monitoring and control results in uncompromising quality and product performance. Minimized process variations means fewer bins; more reliable cell matching, and better performing modules. With *ARTisun* cells you get:

- Consistently higher efficiencies & low LIDs:
  - More power from less area; lower BOS costs
- Excellent low-light level performance:
  - Applicability over range of geography & climates
- Visual/electrical characterization for each cell:
  - Reliable performance; reduced warranty costs
- Consistent appearance from mono wafer:
  - Visually pleasing look for module



## Reference Dimensions: ARTisun™ 156.72 Series Monocrystalline Photovoltaic Cells



Scaled drawing,  
front of wafer



Scaled drawing,  
back of wafer

## Wafer Specifications & Geometry

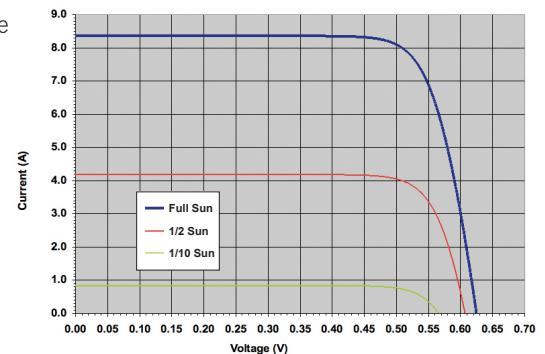
Parameter	Value
Crystal Growth Technique	Czochralski
Crystal Type	Monocrystalline
Crystal Orientation	<100>
Dopant Species	Boron
Wafer Shape	Pseudo-Square
Cell Configuration	Front, Rear Screen Print; Aluminum Back Surface Field (BSF)
Visual Appearance	Uniform dark blue (Silicon Nitride AR coating with fine pyramidal texture)

Parameter	Value
Wafer Type	P
Wafer Size	156.0 +/- 0.5mm cut from 195.0 diameter +/- 0.5 mm
Wafer Area	236.5 cm <sup>2</sup>
Minimum Square Area Covered	155.0 x 155.0 mm
Maximum Square Area Covered	157.0 x 157.0 mm
Bevel Edge Length	Not applicable
Bevel Edge Angle	Not applicable
Wafer Thickness	200 microns

## Cell Electrical Properties<sup>1</sup> Quality Assurance & Response Curves

Parameter	Value
Cell Efficiency	17.2%
Power (P <sub>max</sub> )	4.07 W
Current @ 0.5V	≥ 8.10 A
Short-Circuit Current (I <sub>sc</sub> )	8.35 A
Open-Circuit Voltage (V <sub>oc</sub> )	0.625 V
Temp. Dependence: P <sub>max</sub>	-0.4%/°C
Temp. Dependence: I <sub>sc</sub>	2.5 mA/°C
Temp. Dependence: V <sub>oc</sub>	-2.1 mV/°C

I-V Curve



<b>Corner Chip</b>	No more than 3, each < 5mm (length) x 0.5mm (depth)
<b>Cracks &amp; Pin-holes</b>	None visible to the naked eye
<b>Average Grain Size</b>	Not applicable

<sup>1</sup> All electrical parameters valid under standard testing conditions (STC): intensity-1000 W/m<sup>2</sup>; Spectrum-AM1.5 Global; Temperature-25 °C