Spectrolab

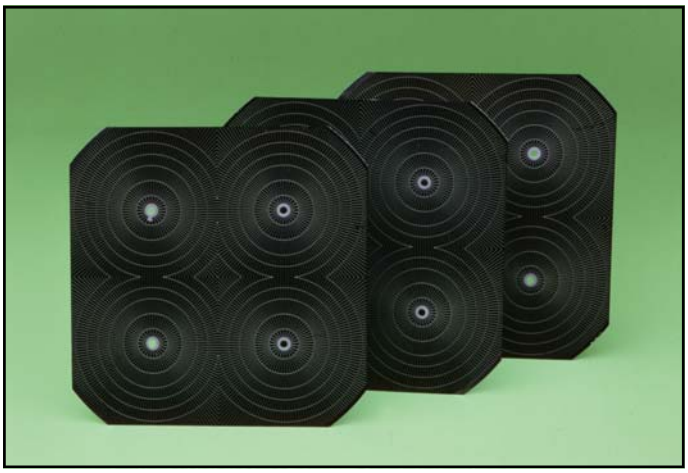
Photovoltaic Products

www.spectrolab.com

Silicon K6700B Wrapthru Solar Cells

Features

- High Conversion Efficiency
  - Beginning of Life and End of life
- High state-of-the-art reliability
- Optimized operating temperature
- Hardened applications
  - Space environmental effects: military and commercial
  - Terrestrial power
  - Consumer products
- Low Cost
  - Standard Products
  - Custom Products



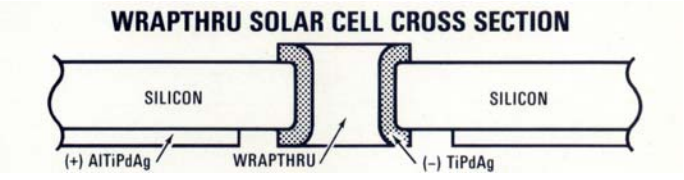
Product Description

Standard/Special Product	Standard
Resistivity (p-type)	10 Ohm-cm
Crystal Orientation	1 - 0 - 0
Method of Growth	Czochralski
Shallow Junction	0.15 Micron
Metallization (Front)	TiPdAg Wrapthru
Metallization (Back)	AlTiPdAg Wrapthru
Anti-Reflective Coating	Multi-Layer
Back Surface Reflector	Gridded Back
Back Surface Field	Boron
Scupltured Front Surface	No
Thickness	200 Microns
Sizes	Up to 8x8 cm
Weldable	Yes
Solderable	Sn62 Solder (QQ-S-571)
Note: other variations are available upon request	

Typical Qualification Test Results

Nominal Degradation

Test	Description	Results
Humidity	+45°C, 90% RH Min., 30 Days	<1.5%
Thermal Cycle	+80°C to –180°C, 3000 Cycles	<2.5%
Thermal Shock	**+**140°C to –185°C, 5 Cycles	<1.5%
Thermal Soak	+140°C for 168 Hrs., $5x10^{-5}$ torr	<1.5%
Radiation	Characterized thru $5x10^{14}$ 1 MeV e/cm^2	——
Pull Test	90° Pull, Standard Tab	>250 gm



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Typical Electrical Parameters
{AM0 Sunlight (135.3 mW/cm^2), 28°C}

J_{sc}= 41.9 MilliAmperes/cm²
J_{mp}= 38.4 MilliAmperes/cm²
V_{mp}= 0.500 Volts
P_{mp}= 19.2 MilliWatts/cm²
V_{oc}= 0.618 Volts
Cff= 0.74
Efficiency 14.2% Minimum Average

Radiation Degradation
(Fluence e/cm^2 1 MeV Electrons)

Parameter	1x10^{13}	1x10^{14}	5x10^{14}
Isc/Isc$_0$	0.99	0.94	0.85
Imp/Imp$_0$	0.99	0.95	0.85
Vmp/Vmp$_0$	0.95	0.88	0.82
Voc/Voc$_0$	0.96	0.89	0.84
Pmp/Pmp$_0$	0.94	0.84	0.70

Thermal Properties

Solar Absorptance= 0.65 (CMX)
Solar Absorptance= 0.63 (Fused Cilica)
Emittance (Normal)= 0.85 (CMX)
Emittance (Normal)= 0.81 (Fused Cilica)

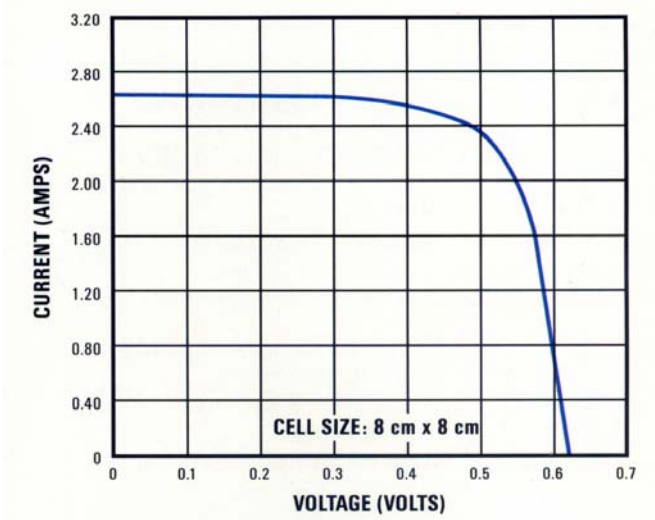
Weight

55 Milligrams/ cm² (Bare)

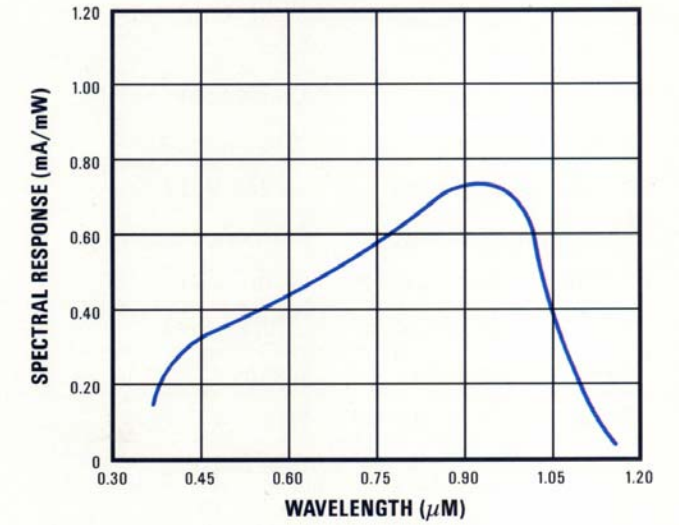
Temperature Coefficients

Isc= +20.0 MicroAmperes/cm²
Vmp= -2.15 MilliVolts/°C
Voc= -1.96 MilliVolts/°C

Typical I-V Characteristic Curve
AM0 Sunlight (135.3 mW/cm²), 28°C



Spectral Response



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