30% Triple Junction GaAs Solar Cell

Type: TJ Solar Cell 3G30C - Advanced

Large Area: 80mm x 80mm

This cell type is an InGaP/GaAs/Ge on Ge substrate triple junction solar cell (efficiency class 30% advanced). The cell has an active area of 60.36cm^2 and is equipped with an improved grid-design. The advanced large version of the 3G30C cell offers best EOL-values in this class and is also available in various customized cell designs with a side length of up to 85mm.

3G30C - Advanced

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AZUR SPACE Solar Power GmbH
Theresienstr. 2
74072 Heilbronn
phone: +49 7131 67 2603
telefax: +49 7131 67 2727
e-mail: info@azurspace.com
website: www.azurspace.com

MANAGEMENTSYSTEM
DIN EN ISO 9001:2000
DIN EN ISO14001:2005
OHSAS 18001:1999
DQS certficated; Reg. 062403

Space

30% Triple Junction GaAs Junction Solar Cell
Type: TJ Solar Cell 3G30C – Advanced (80mm x 80mm)

Design and Mechanical Data

Base Material	GaInP/GaAs/Ge on Ge substrate
AR-coating	TiO_x/Al_2O_3
Dimensions	80 x 80 mm^2 ± 0.1 mm
Cell Area	60.36 cm^2
Average Weight	≤ 86 mg/cm^2
Thickness (without contacts)	150 ± 20 µm
Contact Metallization Thickness (Ag/Au)	4 – 10 µm
Grid Design	Grid system with 3 contact pads

Electrical Data

		BOL	2,5E14	5E14	1E15
Average Open Circuit V_{oc}	[mV]	2700	2616	2564	2522
Average Short Circuit I_{sc}	[mA]	1041	1038	1029	1004
Voltage at max. Power V_{mp}	[mV]	2411	2345	2290	2246
Current at max. Power I_{mp}	[mA]	1007	1005	999	972
Average Efficiency η_{bare} (1367 W/m^2)	[%]	29.4	28.6	27.7	26.5
Average Efficiency η_{bare} (1353 W/m^2)	[%]	29.7	28.9	28.1	26.7

Standard: CASOLBA 2005 (05-20MV1, etc); Spectrum: AMO WRC = 1367 W/m^2; T = 28 °C @fluence 1MeV [e/cm^2]

Acceptance Values

Voltage V_{op}	2350 mV
Min. average current $I_{op\ avg}$ @ V_{op}	1010 mA
Min. individual current Iop min @ V_{op}	948 mA

Temperature Gradients

			BOL	2E14	5E14	1E15
Open Circuit Voltage	$\Delta V_{oc}/\Delta T\uparrow$	[mV/°C]	- 6.2	- 6.5	- 6.6	- 6.7
Short Circuit Current	$\Delta I_{sc}/\Delta T\uparrow$	[mA/°C]	0.36	0.33	0.35	0.38
Voltage at max. Power	$\Delta V_{mp}/\Delta T\uparrow$	[mV/°C]	- 6.7	- 6.8	- 7.1	- 7.2
Current at max. Power	$\Delta I_{mp}/\Delta T\uparrow$	[mA/°C]	0.24	0.20	0.24	0.28

@fluence 1MeV [e/cm^2]

Threshold Values

Absorptivity	≤ 0.91 (with CMX 100 AR)
Pull Test	> 1.6 N with 12.5µm welded Ag stripe, pulled at 45°

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Space