Q CELLS
YIELD SECURITY
- ANTI PID TECHNOLOGY (APT)
- HOT-SPOT PROTECT (HSP)
- TRACEABLE QUALITY (TRA.Q™)

EUPD RESEARCH
TOP BRAND PV
MODULES
GERMANY
2012

FULL-SQUARE MONOCRYSTALLINE SOLAR CELL

Q6LMXP3-G3

High module performance and oustanding esthetics

Q6LMXP3-G3 is the new high performance generation of monocrystalline solar cells from Q CELLS. Combining a reduced embedding loss, increased long-term stability and outstanding appearance the cell was particularly optimised for a lasting high performance. Made in Germany, **Q6LMXP3-G3** is the reliable engine for just any module.

MORE MODULE OUTPUT

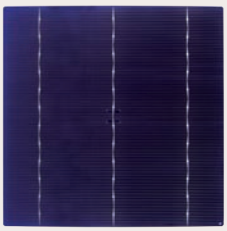
- **NEW!** Improved cell design: **Less embedding loss** and **more energy output**.
- **NEW!** Optimised busbar layout: **Increased active area** and **more yield**.
- Full-square format: **Additional 2 % energy output** compared to pseudo-square mono cells.

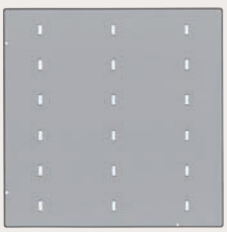
BETTER APPEARANCE

- Homogeneous black design: **Perfect solution for highly aesthetical modules.**

MORE EXCLUSIVE YIELD SECURITY

- **NEW!** Optimised finger design: **Long-term stability.**
- Anti PID Technology (APT)[1]: **Prevention of potential-induced degradation** ensuring **secure yields.**
- Hot-Spot Protect (HSP): **Performance safety** and **increased fire safety.**
- Traceable Quality (Tra.Q™): **First traceable and forgery proof solar cell on the market.**





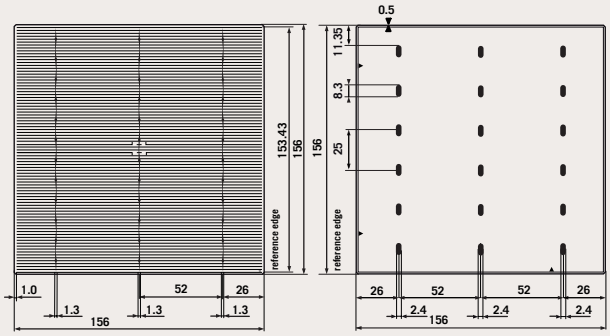
[1] APT test conditions: Cells at -1000 V against grounded, with conductive metal foil covered module surface, 25 °C, 168 h (TÜV test conditions)

Q CELLS

a Hanwha company

MECHANICAL SPECIFICATIONS

Product	Monocrystalline solar cell
Format	156 mm × 156 mm ±0.5 mm Diameter: 220 ±0.5 mm
Average thickness (Si)	200 µm ±30 µm
Front surface (–)	3 x 12 soldering pads (silver), 1.3 mm ±0.2 mm wide, Alkaline textured surface, Dark blue anti-reflecting coating (Siliziumnitrid)
Back surface (+)	3 x 6 soldering pads, 2.4 mm ±0.3 mm wide (silver), aluminium backside metallisation



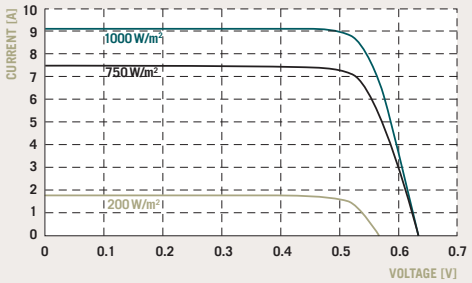
ELECTRICAL CHARACTERISTICS KENNGRÖSSEN

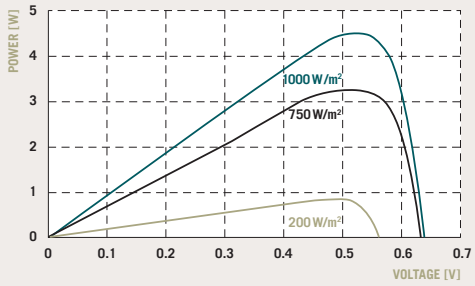
PERFORMANCE AT STANDARD TEST CONDITIONS, STC: 1000 W/m², 25 °C, AM 1.5 G (IEC 60904-3 ED.2)

POWER CLASS			4.43	4.48	4.53	4.58	4.62	4.67	4.72	4.77	4.82
Nominal power	P_{MPP}	[W]	≥4.43	≥4.48	≥4.53	≥4.58	≥4.62	≥4.67	≥4.72	≥4.77	≥4.82
Ø Short Circuit Current	I_{SC}	[A]	9.07	9.11	9.15	9.19	9.23	9.27	9.31	9.35	9.39
Ø Open Circuit Voltage	V_{OC}	[mV]	632	634	636	637	639	641	642	643	644
Efficiency*	η	[%]	≥18.2	≥18.4	≥18.6	≥18.8	≥19.0	≥19.2	≥19.4	≥19.6	≥19.8

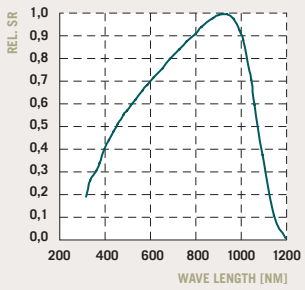
* Measurement tolerances: ±1.5% rel. (P_{MPP}); ±0.2% abs. (η); ±5% rel. (I_{SC}, V_{OC})

TYPICAL CURRENT-VOLTAGE AND POWER-VOLTAGE CURVES





SPECTRAL RESPONSE



INTENSITY DEPENDENCE

INTENSITY W/m²	V_{MPP}*	I_{MPP}*
1000	1.000	1.0
800	0.996	0.8
500	0.984	0.5
400	0.976	0.4
300	0.966	0.3
200	0.947	0.2
100	0.911	0.1

* Ratio of V_{MPP} (I_{MPP}) at reduced intensity V_{MPP} (I_{MPP}) at 1000 W/m²

TEMPERATURE COEFFICIENTS

Power	–0.42%/K
Current	+0.05%/K
Voltage	–0.33%/K

PROCESSING RECOMMENDATION

Solder joint	Copper ribbons coated with 10 – 15 µm: 62% Sn / 36% Pb / 2% Ag
Cells per bypass diode	Maximum 20 cells per bypass diode

* We recommend an electro luminescence based outgoing inspection as well as a visual inspection of the cell distances.

STORAGE REMARKS

With the sealing foil around the cell boxes damaged, broken or opened, we recommend:
- to keep the cells at room temperature and in a dry and clean atmosphere.
- to process the cells within 10 days after opening the seal.

QUALIFICATIONS AND CERTIFICATES

Hanwha Q CELLS is certified according to:
ISO 9001:2008 (Quality Management)
Germany (VDE): 5008771/QM/UM/12.10
Malaysia (SIRIM): MY-AR 5278
ISO 14001:2009 (Environmental Management)
Germany (VDE): 5008771/QM/UM/12.10

PARTNER

Hanwha Q CELLS GmbH
Sonnenallee 17-21, 06766 Bitterfeld-Wolfen, Germany | **TEL** +49 (0)3494 66 99-23444 | **FAX** +49 (0)3494 66 99-23000 | **EMAIL** sales@q-cells.com | **WEB** www.q-cells.com

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