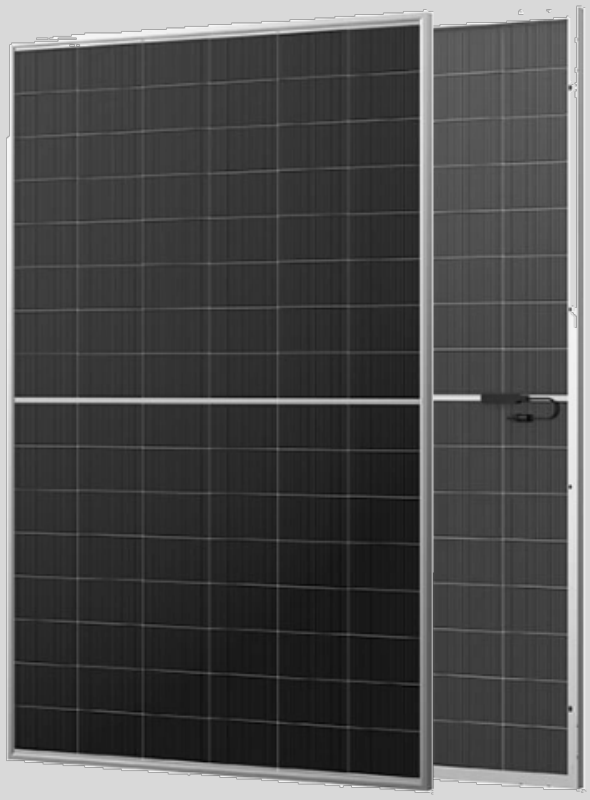
ABS-096GGS-G12R
450W – 470W
TOPCon Half-Cut PV Module
Glass/Glass-Silver Frame

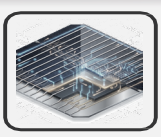


470W MAXIMUM POWER OUTPUT

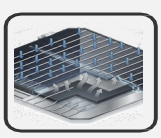
0 to+5W POSITIVE POWER SORTING

23.52% MAXIMUM EFFICIENCY

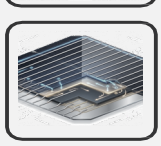
KEY FEATURES



HIGH POWER DENSITY
Module efficiency up to 23.52% at STC



MECHANICAL TEST LOADS
Front: 5,400 Pa. Rear: 2,400 Pa.
Subject to specified mounting configuration.



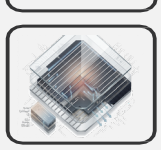
TOPCon CELL TECHNOLOGY
Half-cut cells with 16-busbar interconnection



BIFACIAL POWER GENERATION
Rear irradiance can increase output.

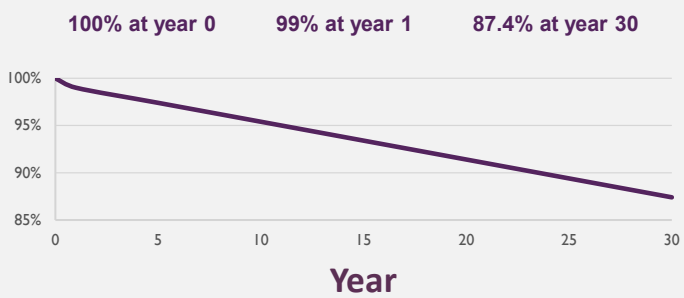


TEMPERATURE PERFORMANCE
Pmax temperature coefficient: −0.30%/°C.



GLASS / GLASS CONSTRUCTION
2.0 mm front glass and 2.0 mm rear glass.

30-YEAR LINEAR POWER WARRANTY



30-year linear power warranty
99% at year 1 · 87.4% at year 30

Maximum degradation: 1% in year 1, then 0.40 percentage points/year. Subject to limited warranty terms.

15-year product warranty
Covers defects in materials and workmanship.

THE IDEAL SOLUTION FOR



STANDARDS and CERTIFICATIONS

IEC 61215 | IEC 61730 | IEC 61701 | IEC 62716 | IEC 60068-2-68

UL 61730 | MCS | CEC | ISO 9001 | ISO 14001 | ISO 45001

ADVANTAGES

MADE IN UAE
Manufactured in Abu Dhabi, United Arab Emirates.

A RELIABLE INVESTMENT
Products up to 470Wp, 30 years of warranty.

ENCOURAGING INNOVATION
European production technology

Address: Abundance Solar Panels Industries – L .L .C Plot No 7-8, KHIA5, KEZAD, Abu Dhabi, UAE
Website: www. bronzesolar.com

ABS-MOD/TDS096GGS-G12R/Rev-00
Date-31.10.2026

ABS-096GGS-G12R-450-470W

ENGINEERING DRAWINGS & TECHNICAL PARAMETERS

BRONZE SOLAR

ELECTRICAL CHARACTERISTICS (STC/NMOT/BNPI)

Models	Maximum Rating Power (Pmax) (W)			Open Circuit Voltage (Voc) (V)			Maximum Power Voltage (Vmp) (V)			Short Circuit Current (Isc) (A)			Maximum Power Current (Imp) (A)			Module Efficiency
	STC	NMOT	BNPI	STC	NMOT	BNPI	STC	NMOT	BNPI	STC	NMOT	BNPI	STC	NMOT	BNPI	%
ABS-096GGS-G12R-450	450	336.4	500	35.71	33.58	35.90	29.74	27.75	29.92	15.75	12.71	17.73	15.19	12.16	16.72	22.52%
ABS-096GGS-G12R-455	455	340.1	505	35.80	33.66	36.00	29.90	27.90	30.12	15.80	12.75	17.77	15.28	12.24	16.79	22.77%
ABS-096GGS-G12R-460	460	343.8	510	35.90	33.75	36.08	30.11	28.09	30.24	15.83	12.77	17.83	15.34	12.28	16.86	23.02%
ABS-096GGS-G12R-465	465	347.6	515	36.00	33.85	36.18	30.31	28.28	30.41	15.87	12.81	17.88	15.40	12.33	16.94	23.27%
ABS-096GGS-G12R-470	470	351.3	520	36.08	33.92	36.28	30.54	28.49	30.63	15.92	12.85	17.98	15.45	12.37	17.00	23.52%

STC: 1,000 W/m² front, cell temperature 25 °C, AM1.5. BNPI: 1,000 W/m² front + 135 W/m² rear; other conditions require confirmation.

NMOT: 800 W/m², ambient 20 °C, wind 1 m/s, module operating near maximum power.

Electrical measurement uncertainty: ±3% for Pmax, Voc, Vmp, Isc and Imp at STC and NMOT. Pmax is the nominal power class. Power-class assignment and numerical rounding may cause slight differences between nominal Pmax and Vmp × Imp. Positive sorting applies to measured STC power.

ILLUSTRATIVE BIFACIAL POWER GAIN

Models		450 W	455 W	460 W	465 W	470 W
10%	Power (W)	495	501	506	512	517
15%	Power (W)	518	523	529	535	541
20%	Power (W)	540	546	552	558	564
25%	Power (W)	563	569	575	581	588

Assumed power gain relative to front-side STC rating. Calculated output = nominal power × (1 + Power gain). Actual gain depends on rear irradiance, albedo, mounting height, spacing and shading. These figures are not guaranteed site yields.

OPERATING CONDITION

Front test load	5,400 Pa
Rear test load	2,400 Pa
Maximum system voltage	1,500 V DC
Maximum series fuse	30 A
Operating temperature	−40 to +85 °C
Protection class	Class II
Fire classification	Class C

TEMPERATURE CHARACTERISTICS

Nominal Module Operating Temperature	43°C ± 2°C
Temperature Coefficient of Isc	+0.05 % / °C
Temperature Coefficient of Voc	-0.25 % / °C
Temperature Coefficient of Pmax	-0.30 % / °C

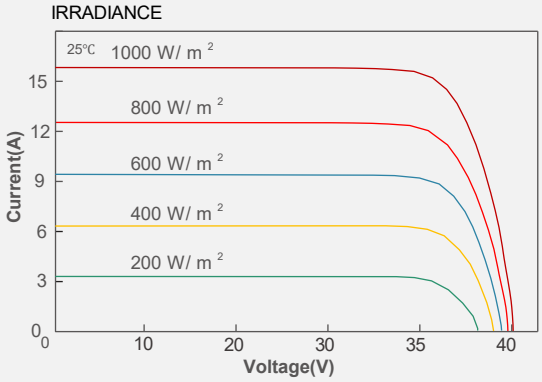
Loads apply to the specified mounting configurations. Test loads are not allowable design loads.

MECHANICAL DATA

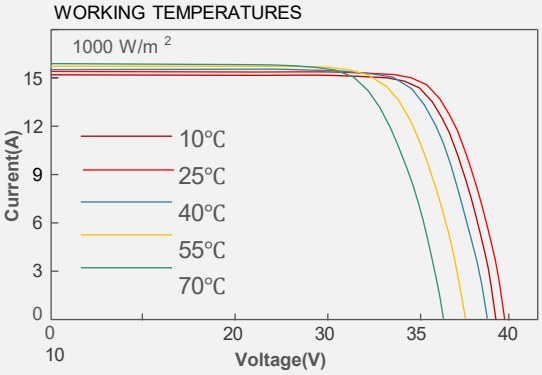
Solar cell	TOPCon half-cut, 182.2 × 105 mm, 16BB
Number of half-cells	096 (6 × 16)
Dimensions	1,762 × 1,134 × 30 mm (69.37 × 44.65 × 1.18 in)
Weight	24 kg (±3%)
Front Glass	2.0 mm, High Transmission, Low Iron, Tempered ARC Glass
Encapsulant	Front: EPE multilayer film / Rear: EVA
Back Glass	2.0 mm Semi Tempered Glass with Glaze
Frame	Silver-anodized aluminium alloy, 6005-T6
Junction box	Dhash JB 12Y, 30 A; IP68; 1,500 V DC; 3 bypass diodes
Connectors	Dhash DS01
Output cable	4 mm²; 400 mm or 1,300 mm, per order
Packaging	36 modules/pallet; 936 modules/40-foot HC container

IV-CURVES

CURRENT-VOLTAGE CURVE UNDER DIFFERENT IRRADIANCE

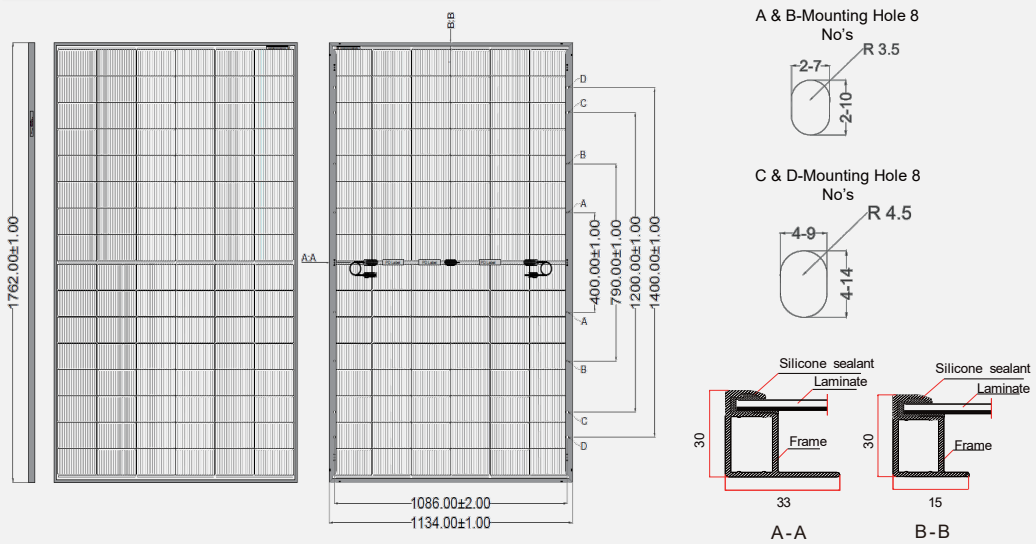


CURRENT-VOLTAGE CURVE UNDER DIFFERENT WORKING TEMPERATURES



Typical I–V characteristics are presented for reference purpose only.

DIMENSIONS OF PV MODULE (mm)



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