

COTECH SOLAR · Back-Contact

CSBC54-460~485

N-Type Back-Contact All-Black Module · 108 half-cells

485 W_p

MAXIMUM
POWER OUTPUT

24.3 %

MAXIMUM
EFFICIENCY

Premium all-black design

- Pure all-black — no front gridlines
- Clean aesthetic for residential & C&I rooftops
- Black anodized frame and uniform appearance

Top efficiency & power

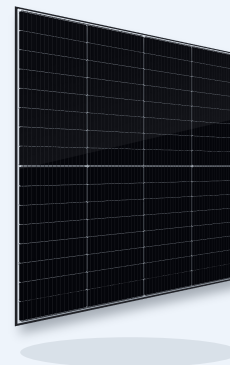
- Back-contact cells reach up to 24.3% efficiency
- Busbars moved to the rear — more active front area
- Highest energy density per square metre

High reliability & yield

- 15-year product & 30-year linear power warranty
- Superior shade tolerance and low-light output
- Low temperature coefficient $-0.28\%/^{\circ}\text{C}$ · PID / salt-mist resistant

Key specifications

Maximum power	460 – 485 W _p
Module efficiency	up to 24.3 %
Open-circuit voltage	40.80 – 41.60 V
Cell type	N-type back-contact (BC), 182mm
No. of cells	108 (6×18) half-cut
Dimensions (mm)	1762 × 1134 × 30
Weight	22.5 kg
Bifaciality	Mono-facial



Back-Contact

0BB shadeless cells

All-Black

premium rooftop look

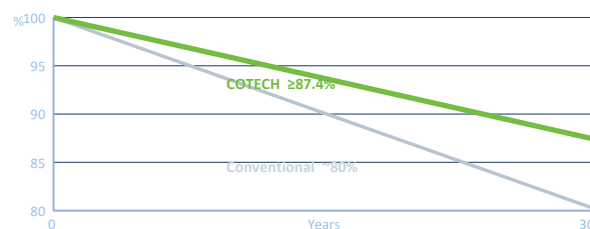
Bifacial

High-density layout

Glass · Glass

dual-glass 2.0 mm

PERFORMANCE WARRANTY



15-yr product

30-yr power

QUALITY ASSURANCE



EL & flash tested

100% inspected, binned & traceable

APPLICATIONS



Residential



C & I



Utility



Off-grid

QUALITY SYSTEM

ISO 9001

ISO 14001

ISO 45001

CERTIFICATION & QUALIFICATION

IEC 61215

IEC 61730

IEC 61701

IEC 62716

UL 61730

CE

TÜV

ISO 9001/14001/45001

TESTED

✓ Damp heat

✓ Thermal cycling

✓ Humidity-freeze

✓ PID

✓ Salt mist

✓ Ammonia

✓ Mechanical load

✓ Hail



Electrical characteristics at STC

Parameter	460	465	470	475	480	485
Maximum power P_{max} (W)	460	465	470	475	480	485
Open-circuit voltage V_{oc} (V)	40.80	40.96	41.12	41.28	41.44	41.60
Short-circuit current I_{sc} (A)	13.90	13.96	14.02	14.08	14.14	14.20
Voltage at P_{max} V_{mp} (V)	34.60	34.76	34.92	35.08	35.24	35.40
Current at P_{max} I_{mp} (A)	13.29	13.38	13.46	13.54	13.62	13.70
Module efficiency η_m (%)	23.02	23.27	23.52	23.77	24.02	24.27

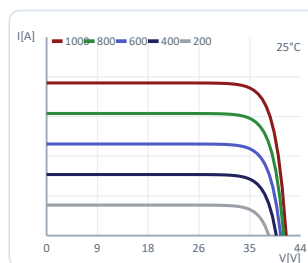
Electrical characteristics at NMOT

Parameter	460	465	470	475	480	485
Maximum power P_{max} (W)	347.3	351.1	354.9	358.6	362.4	366.2
Open-circuit voltage V_{oc} (V)	38.03	38.17	38.32	38.47	38.62	38.77
Short-circuit current I_{sc} (A)	11.15	11.20	11.24	11.29	11.34	11.39
Voltage at P_{max} V_{mp} (V)	32.11	32.26	32.41	32.55	32.70	32.85
Current at P_{max} I_{mp} (A)	10.54	10.61	10.67	10.74	10.80	10.86

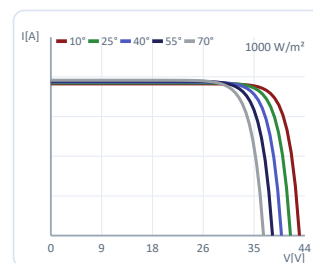
STC 1000 W/m² · 25 °C · AM1.5 — NMOT 800 W/m² · 20 °C · AM1.5 · 1 m/s — Power tolerance 0 ~ +3 %

Parameter	Value
Solar cell	N-type back-contact (BC), 182mm
Cell size	182 × 91 mm
No. of cells	108 (6×18) half-cut
Busbar	Back-contact (busbar-free front)
Dimensions	1762 × 1134 × 30 mm
Weight	22.5 kg
Front / back glass	2.0 mm tempered AR / clear backsheet
Encapsulant	POE
Frame	Black anodized aluminium alloy, 30 mm
Junction box	IP68, 3 bypass diodes
Connector	MC4-compatible · EVO2
Output cable	4 mm ² , 300/200 mm
Parameter	Value
NMOT	43 ± 2 °C
Temp. coeff. of P_{max}	-0.28 %/°C
Temp. coeff. of V_{oc}	-0.24 %/°C
Temp. coeff. of I_{sc}	+0.045 %/°C
Operating temperature	-40 °C ~ +85 °C

I-V curve · irradiance



I-V curve · temperature



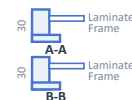
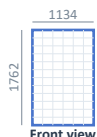
Low-light performance — relative efficiency

Irradiance (W/m ²)	1000	600	400	200
Relative efficiency (%)	100.0	100.4	100.1	98.3

Maximum ratings

Parameter	Value
Max system voltage	1500 V DC (IEC/UL)
Max series fuse	25 A
Max test load (front / back)	5400 Pa / 2400 Pa
Application / safety class	Class A / Class II
Fire rating	Class C

Mechanical drawing (mm)

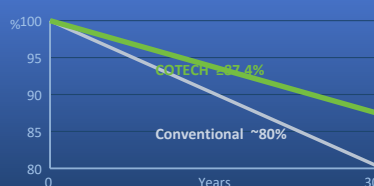


Linear power warranty

15 yr product warranty

30 yr linear power output warranty

1st-year ≤1% · annual ≤0.4% · ≥87.4% at year 30



Packaging

Pieces / pallet	36
Pieces / 20'GP	144
Pieces / 40'HC	792
Pallet size	1800 × 1150 × 1180 mm