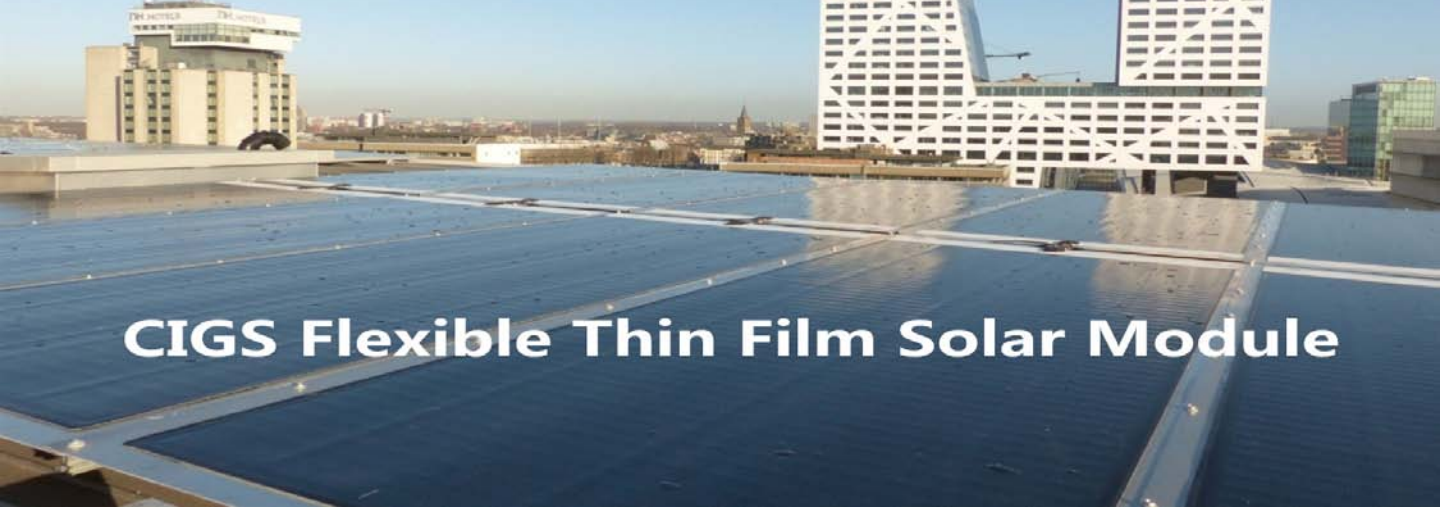

BILLION POWER

Your one stop Supplier for all kinds of Solar Modules and BOS.

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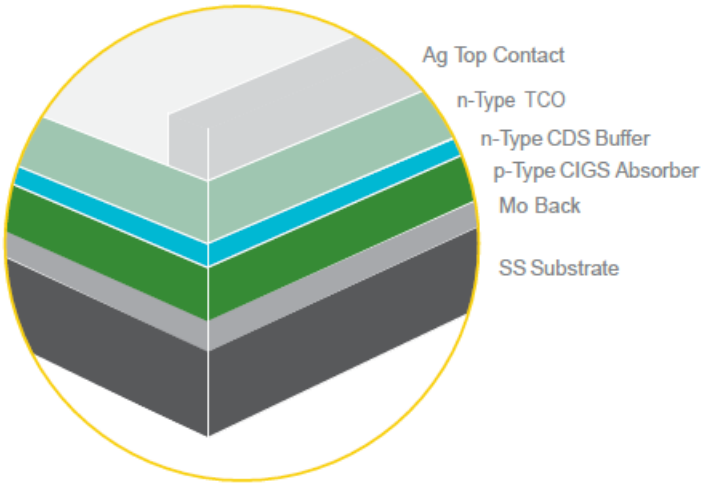
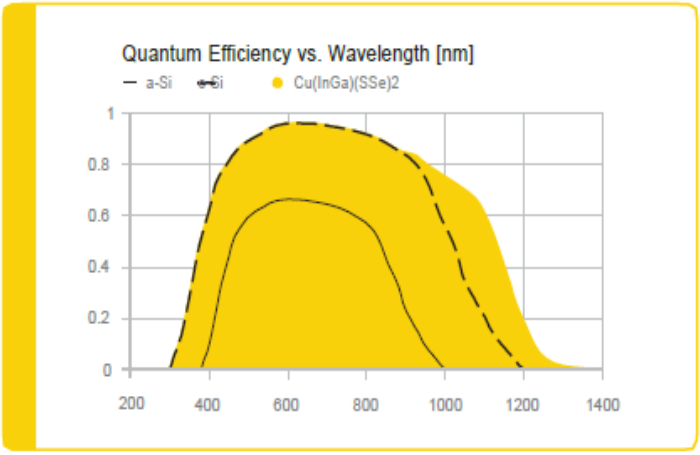
CIGS TECHNOLOGY



CIGS Dissected

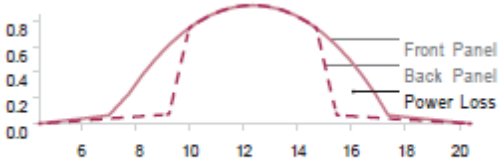
Co-evaporated CIGS on 0.001"-thick, 1km-long stainless steel foil is the basis of our proprietary roll-to-roll manufacturing process. This record setting method for flexible thin film photovoltaic cells results in lower material usage , lower manufacturing costs, and higher efficiency.

Efficiency



The Problem with Tilt

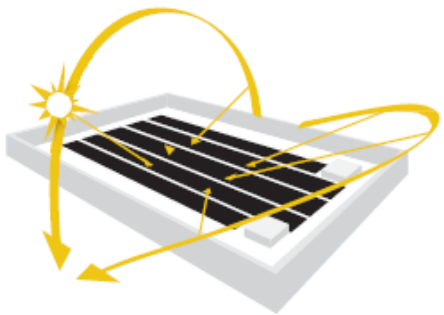
Solar panels are typically mounted at a fixed tilt angle, representing a trade-off between summer and winter production. Adjacent rows of tilted panels must be spaced to avoid shading; this spacing, however, reduces the amount of power on the roof. Inadequate spacing can result in significant power losses (see below).



Yield vs. hour of day in December

Flat Panel Advantage

Billion power's Power FLEX modules enable simpler, more versatile, and higher power density solutions for limited area roof-top installations. The result is higher net energy production per rooftop.



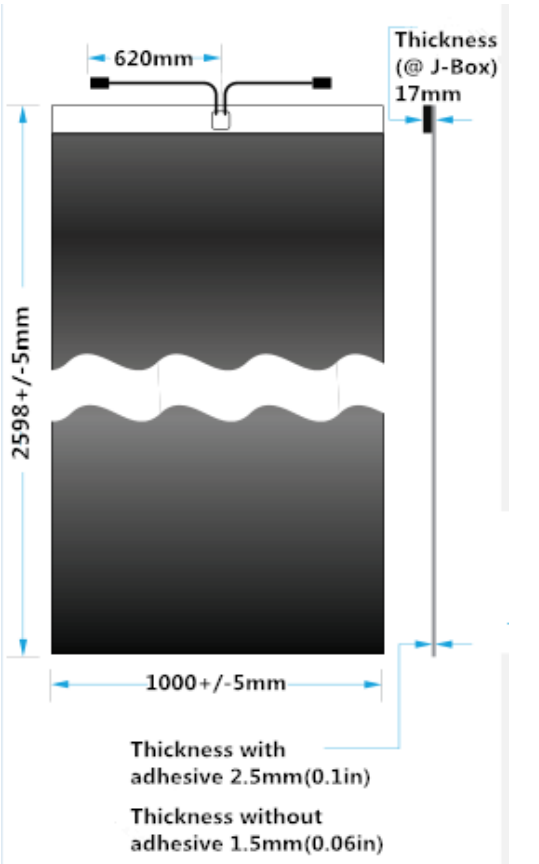
BP-M-FLEX Solar Module

The BP-M-FLEX Series module is a CIGS based flexible thin-film PV module that provides high power density for many types of roof applications. The panels are the highest efficiency, flexible, thin-film product on the market today, with >16% cell efficiency.

The BP-M-FLEX Series module bonds to the roof surface with a simple peel-and-stick adhesive. This adhesive approach eliminates the need for racking and reduces labor and logistics cost to provide a 20% lower BOS cost than traditional glass solar systems. The BP-M-FLEX Series module is IEC 61646 & IEC 61730, UL 1703 and Class A over TPO: Slope 2.5:12 certified.

Key Features:

- Record efficiency levels in a CIGS flexible form factor
- Low installed weight at less than 2.4kg/m 2 (<0.5lb/sq ft)
- No penetrations, ballast or racking required
- Applicable for high wind load and high seismic hazard areas
- Bypass reduces PV system shading losses
- Directly bonds to many approved surfaces



Electrical Specifications:

Module Type		BP-M-F340	BP-M-F350	BP-M-F360	BP-M-F370	BP-M-F380
Nominal Power (Pmpp)	[W]	340	350	360	370	380
Aperture Efficiency (η)	[%]	14.8%	15.3%	15.7%	16.1%	16.6%
Power Output Tolerance	[W]	+10/-0	+10/-0	+10/-0	+10/-0	+10/-0
Maximum Power Voltage (Vmpp)	[V]	29.3	29.9	30.4	31.0	31.5
Maximum Power Current(Impp)	[A]	11.61	11.72	11.83	11.94	12.06
Open Circuit Voltage(Voc)	Voc[V]	37.5	37.9	38.3	38.6	39.0
Short Circuit Current(Isc)	Isc[A]	13.54	13.55	13.56	13.57	13.58
Maximum Series Fuse Rating	[A]	25				
Max. system voltage (IEC/UL)	[V]	1000/600				
Standard Test Conditions (STC): 1000 W/m 2 , 25° C cell temperature, AM 1.5 spectrum						

Temperature Characteristics:

NOCT	[˚C]	48
Temperature Coefficient of Pmpp	[%/˚C]	-0.38
Temperature Coefficient of Voc	[%/˚C]	-0.28
Temperature Coefficient of Isc	[%/˚C]	0.008

Warranty and Certification:

Warranty	5 year workmanship; 10/25 year power output
Certification	UL 1703, IEC 61646, IEC 61730, UL Class A over TPO-slope up to 2.5''

Mechanical Specifications:

Length	2598 mm (102.3 in)
Width	1000 mm (39.4 in)
Thickness, Maximum at J–Box*, Module	17 mm (0.7 in), 2.5mm (0.1 in)
Weight (Module without adhesive)	5.1 kg (11.1 lb)
Weight (Module with adhesive)	6.2 kg (13.7 lb)
Weight/Area (Module without adhesive)	2.0 kg/m² (0.4 lb/ft²)
Weight/Area (Module with adhesive)	2.4 kg/m² (0.5 lb/ft²)
Junction Box Type	IP68
Cable Connections	MC4 Compatible
Cell Type	Copper Indium Gallium Diselenide (CIGS)
Packaging Info	15 modules per crate, 75 modules per pallet, 300 modules per 20‘ ISO container, 1200 modules per 40‘ ISO container

*2.5 mm (0.1 in) for the rest of the module with adhesive
*1.5 mm (0.06 in) for the rest of module without adhesive

Flexible modules benefits:

•The low weight of the modules

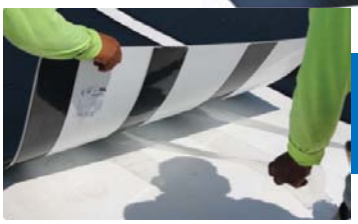
•No roof penetrations, eliminating the worry of leakage and damage to valuable contents within the building

•An aesthetically pleasing solar solution, preserving the original look of the metal roof by blending into the space between the seams.

•Superior wind resistance and a seismic advantage over traditional rack-and-panel systems where their higher profile increases the likelihood of damage in a hurricane or earthquake

Layout Modules

Clean & Prep TPO



Peel & Stick Modules to TPO

Application:

Commercial Roof



Residential Rooftop



Transportation


Carports

Communication Base Station System

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