EXEGER™

PRODUCT BRIEF

POWERFOYLE HYBRID 1.4.1

Powerfoyle™

Powerfoyle Hybrid solar cells are ideal for developing solar-powered products that use indoor and outdoor light such as headphones, trackers, IoT devices, consumer electronics and more.

At Exeger, we have reinvented the dye-Sensitized Solar Cell [DSC] with a new architecture that improves performance, provides greater flexibility and offers seamless integration possibilities.

High performance in indoor and outdoor light

Unaffected by partial shading

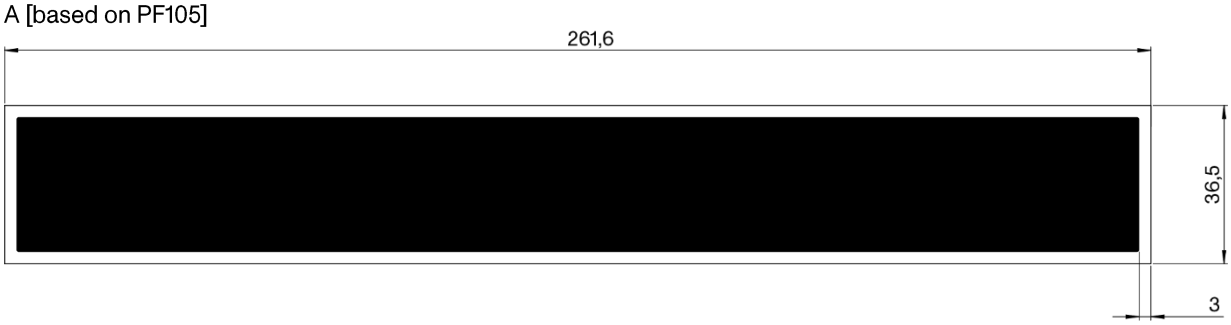
Surface textures

Flexible and durable

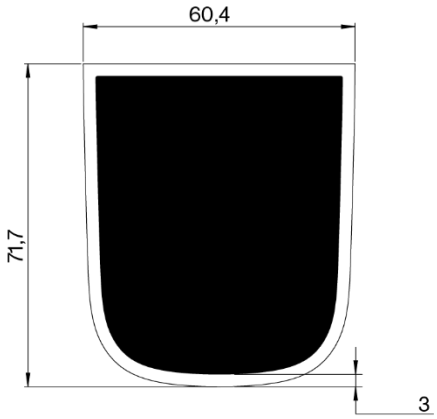
Environmentally-conscious

Design freedom

A [based on PF105]



B [based on PF107]



NOTES

Unless otherwise stated, all data shown is for 25° C and is based on initial measurements directly after manufacturing. The light source used for measurements and data is YUJI D50 and the lux level is calibrated with DIG LUX 9500.

TYPICAL CURRENT TO BATTERY AT 3.7 V

Size Absorber Area [cm^2]	500 Lux [mA]	5 000 Lux [mA]	50 000 Lux [mA]	100 000 Lux [mA]
78.0 A [PF105]	0.22	3.2	25.8	39.2 *indication*
33.5 B [PF107]	0.08	1.3	12.0	18.2 *indication*

Values calculated from typical power density and overall boost converter efficiency.

Typical performance variation is ±10% and is design dependent.

SPECIFICATIONS

	Min	Max
Illuminance range [lux]		
Attuned range	500	30 000
Working range	100	100 000
Temperature range [°C]		
Ideal operating temperature	0	40
Maximum temperature range -	-40	60
Spectral response [nm]		
Attuned range "	400	750
Ideal absorbance	400	650
Weight* per cm^2 [g]	0.16	0.21
Thickness+ [mm]	1.3±0.2	
Typical dimensional tolerances [mm]	±0.3	
Typical bend radius#	A [PF105]: >60 mm B [PF107]: >200 mm	

- <20% average performance reduction after 500h at 65°C /85%RH in darkness

" Visible light

* Depends on cell size

+ Depends on top layer and texture Excluding contact point and fpc.

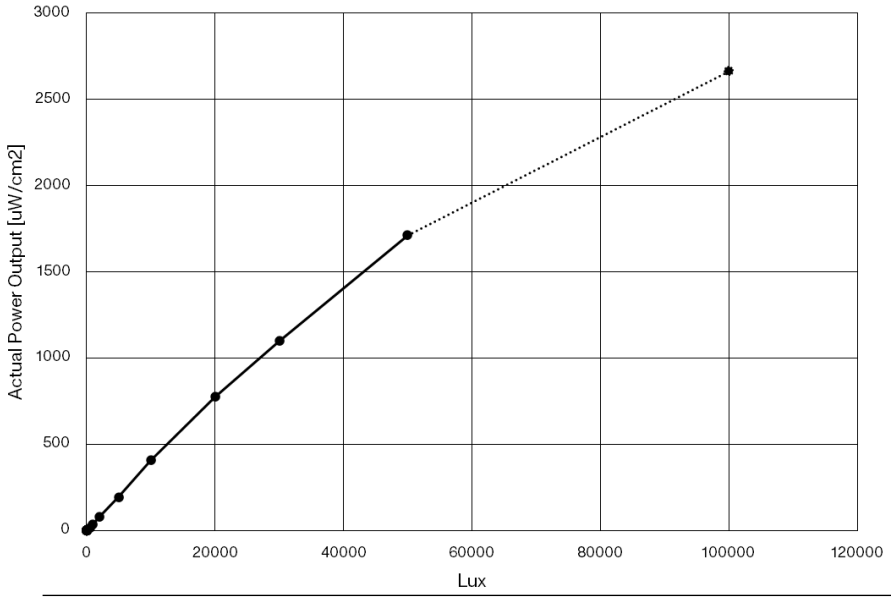
Depends on design, especially aspect ratio

TEMPERATURE DEPENDENCY

Lux	Temp Coeff Power [%/°C]	Temp Coeff Vmpp [%/°C]	Range, cell temperature [°C]
200	-2,4	-1,1	18-27
500	-1,2	-0,9	
1000	-0,8	-0,6	
2000	-0,5	-0,6	
5000	-0,4	-0,4	
10000	0,0	0,0	
20000	0,1	-0,2	25-35
30000	0,2	-0,4	
50000	0,5	0,0	

Measured on A [PF105]. Temperature coefficient calculated versus cell performance at 25°C.

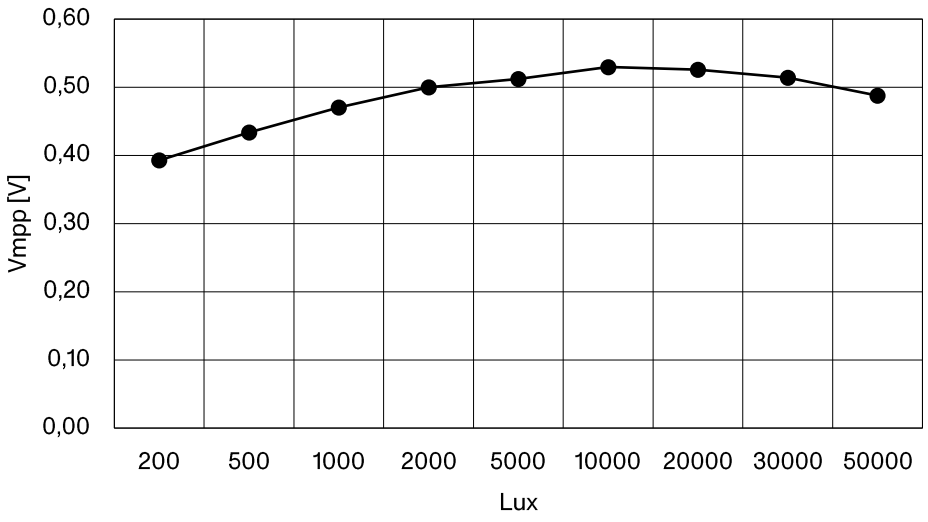
POWER DENSITY [TYPICAL CELL PERFORMANCE]



Same values as graph

Lux	Actual Power output [uW/cm2]
200	5.4
500	15.5
1 000	36.1
2 000	77.9
5 000	193.4
10 000	405.6
20 000	775.5
30 000	1098.5
50 000	1710.3
100 000	2658.7 *indication*

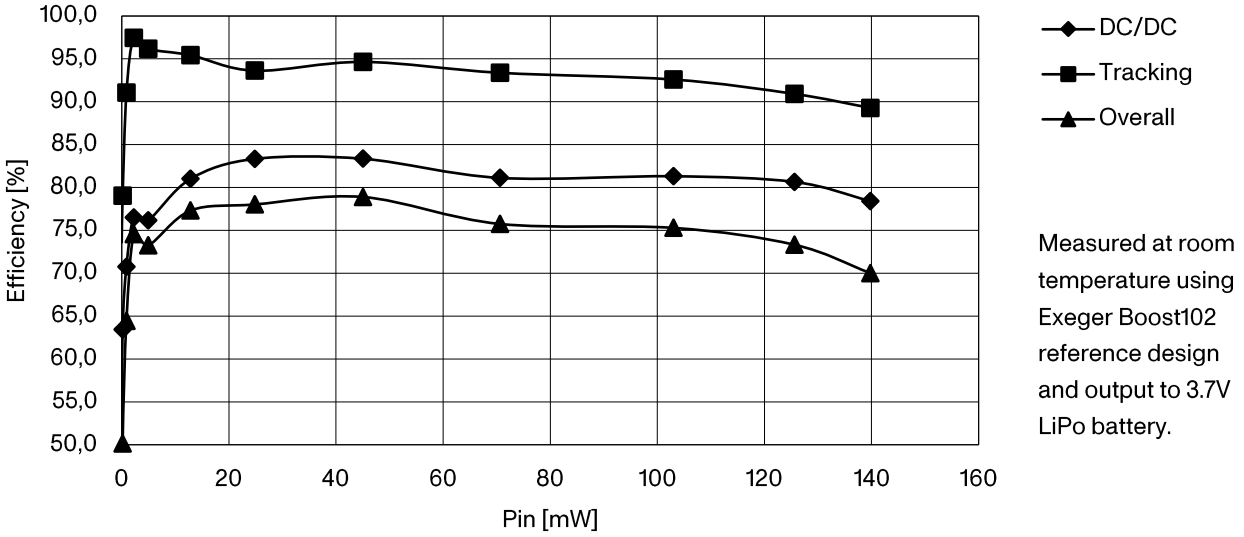
MAXIMUM POWER POINT VOLTAGE [TYPICAL CELL PERFORMANCE]



Same values as graph

Lux	Maximum Power Point Voltage [V]
200	0.39
500	0.43
1 000	0.47
2 000	0.50
5 000	0.51
10 000	0.53
20 000	0.53
30 000	0.51
50 000	0.49

BOOST CONVERTER EFFICIENCY [TYPICAL PERFORMANCE]



Measured at room temperature using Exeger Boost102 reference design and output to 3.7V LiPo battery.

Same values as graph

Pin [mW]	DC/DC [%]	Tracking [%]	Overall [%]
0.09	46.9	73.6	34.5
0.26	63.4	79.0	50.1
0.97	70.8	91.1	64.4
2.35	76.5	97.4	74.5
5.03	76.2	96.2	73.2
12.95	81.0	95.4	77.3
24.96	83.3	93.6	78.0
45.18	83.4	94.6	78.9
70.74	81.1	93.4	75.7
103.12	81.3	92.6	75.3
125.75	80.6	90.9	73.3
139.90	78.4	89.3	70.0