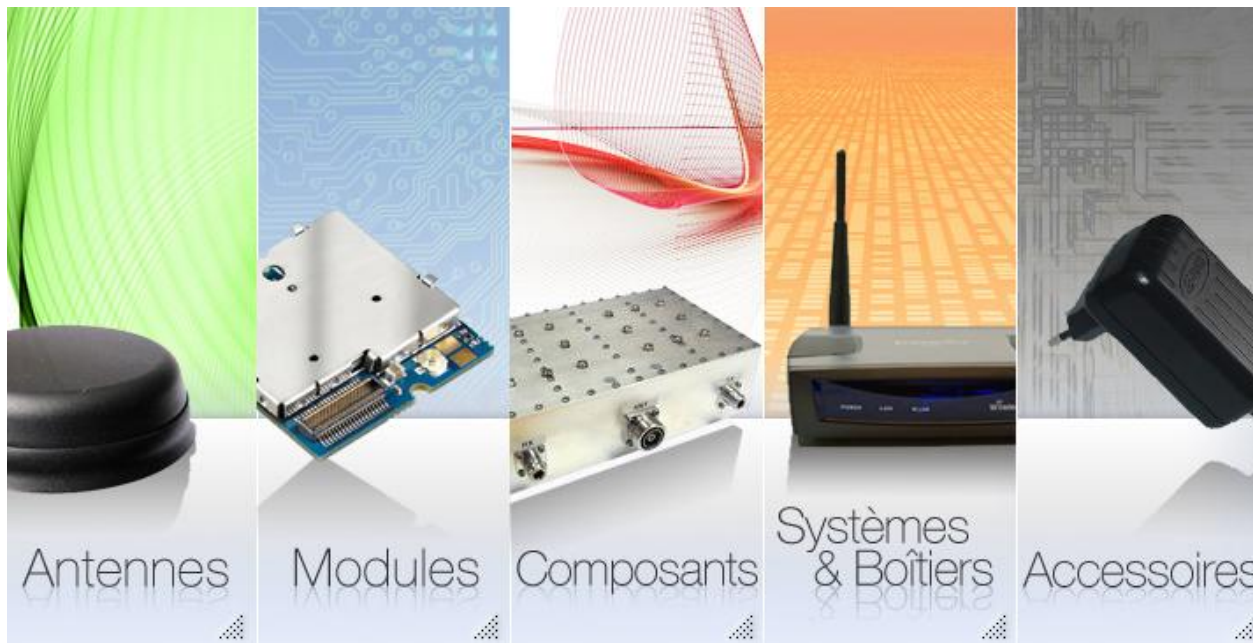




Une offre complète de produits pour l'électronique

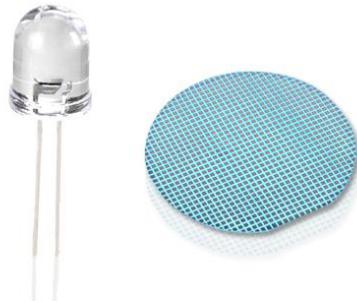
TECHNOLOGIE LED SOLAIRE



Technologie solaire mobile

A plat

GaAs Solar Cell – haute concentration



Des exemples concrets



Sphérique



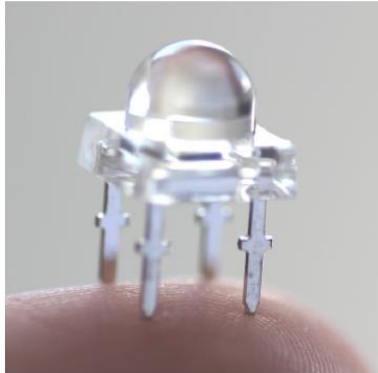
Silicon crystaline
1.8 mm ϕ

Sphelar®
Spherical Micro Solar Cell



INNOVATION

GIGALED PLS PIRAN

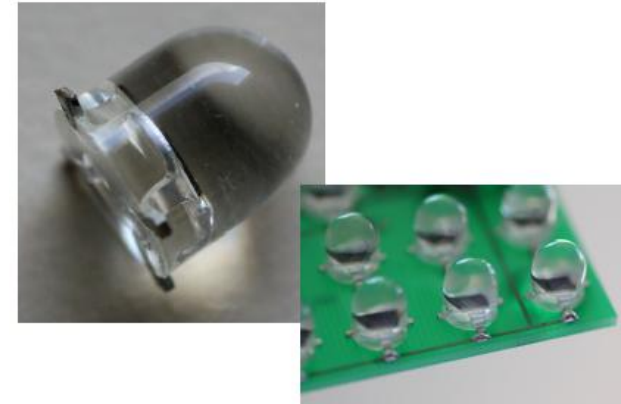


Triple Junction Solar Cell PIRAN

- Wide Solar Spectrum Absorption
- High Conversion Efficiency
- High Thermal Stability
- Excellent for Small size consumer products

Technologie à plat 3 TYPES

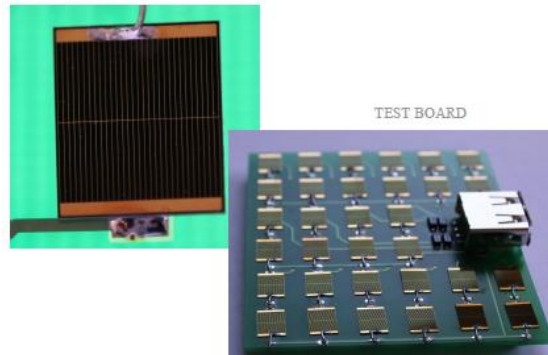
GIGALED MSQ DOM



TJ SOLAR SMD

- Wide Solar Spectrum Absorption
- High Conversion Efficiency
- High Thermal Stability
- Excellent for Small size consumer products

GIGALED MSQ0028



Triple Junction Solar

- High Converting Efficiency
- High Thermal Stability
- Suit the demand in the high concentration Application
- Suite for mini-generator of the Electric Equipment

Technologie sphérique

Sphelar® EIPV overview

Innovative ideas
for energy harvesting

Sphelar®
Spherical Micro Solar Cell



EIPV = Electronics Integrated Photovoltaic



Silicon crystalline
1.8 mm ϕ

Sphelar®
Spherical Micro Solar Cell



Sphelar®'s features suitable as EIPV

Compact size

-1.8mm in diameter

Flexibility in designing a module

-Any combination of serial/parallel connections

Mechanical Strength

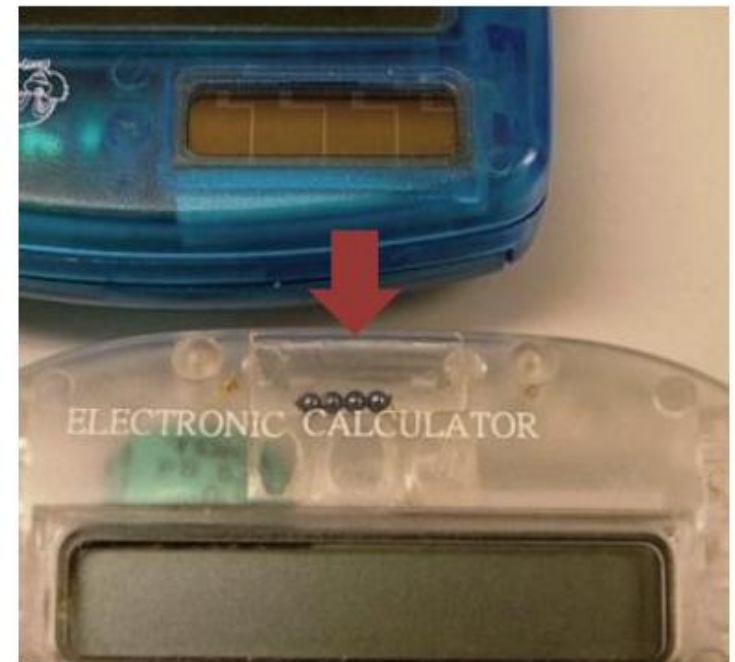
-Durable to mechanical vibration

Basic patents:

WO/98/015983, WO/02/035612, WO/03/017382

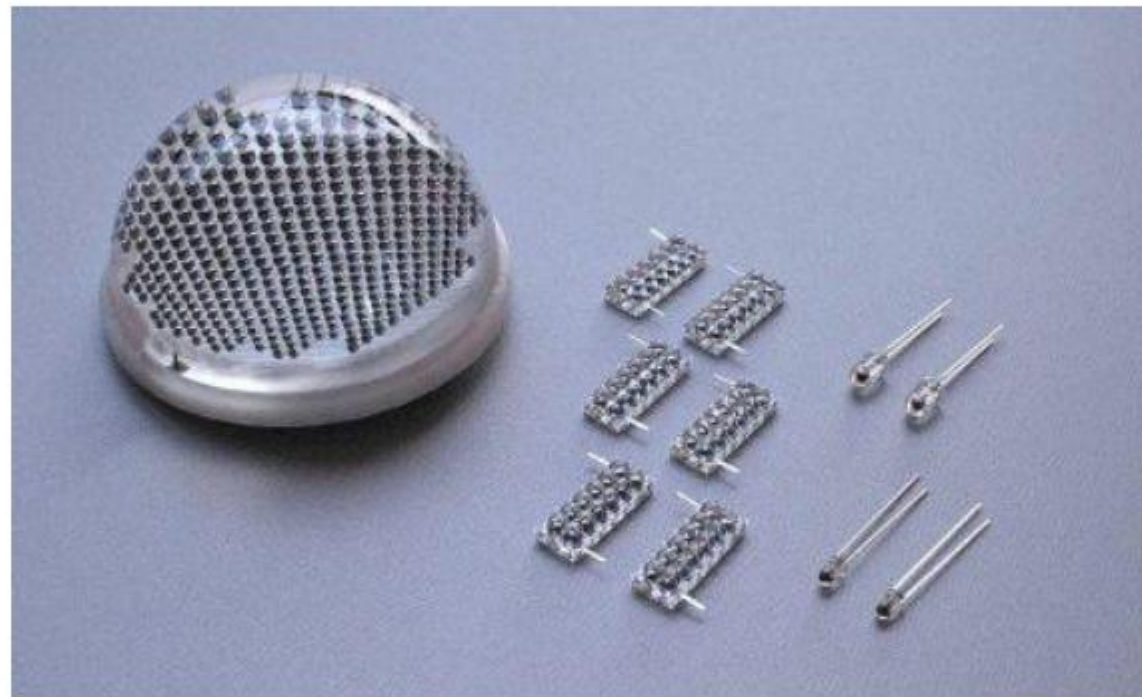
INNOVATION

An example



- 4 sphelar® cells (below) are enough to replace the conventional solar (above).

Sphelar® EIPV series

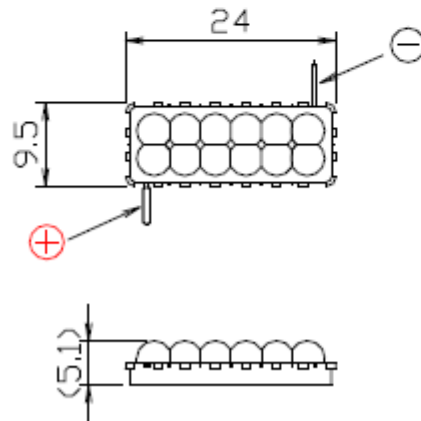
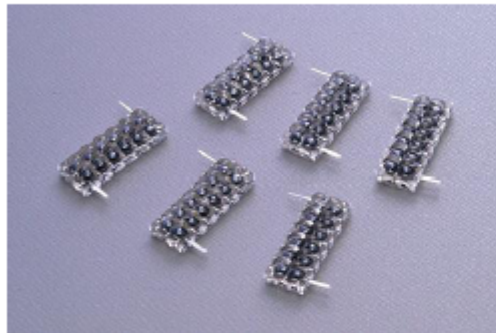


Sphelar® Dome

Sphelar® Array F12

Sphelar® One

Sphelar® Array F12



Dimensions (mm)

Type

- Cell type : Sphelar® cell
- Cells per module : 12 cells

Mechanical data

- Size (mm) : 24(L) x 9.5(W) x 5.1(H)
- Module type : 12 cell array
- Case : polycarbonate

Features

- Any combination of serial and/or parallel connections
- Compact, light and durable
- Aesthetically very pleasing/intriguing
- High pliability to fit in various types of module

Sphelar® Array F12



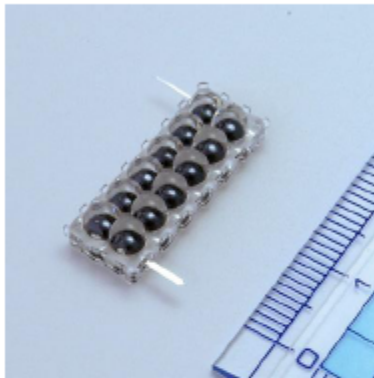
Electrical Characteristics

Measurement conditions :

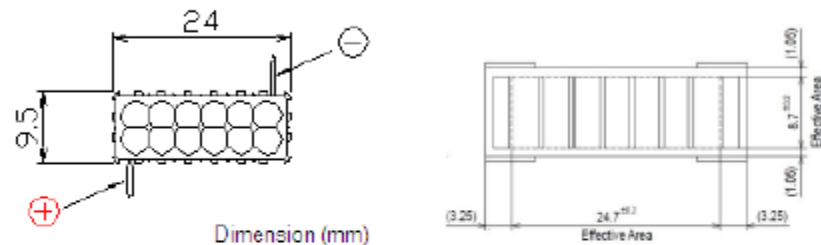
100mW/cm², AM=1.5, Ta=25°C

Part no.	Pmax (mW)	Vpm (V)	Ipm (mA)	Dimension L × W × H (mm)	Mass (g)
KSP-F12-1S12P-W1-X	13.5	0.48	28.0	24×9.5×5.1 without connectors	1.0
KSP-F12-2S6P-W1-X	13.5	0.97	14.0		
KSP-F12-3S4P-W1-X	13.5	1.46	9.2		
KSP-F12-4S3P-W1-X	13.5	1.95	6.9		
KSP-F12-6S2P-W1-X	13.5	2.97	4.5		
KSP-F12-12S1P-W1-X	13.5	6.00	2.2		

Sphelar® Array F12 – Light-concentrating lens



Comparison with Amorton (Sanyo)



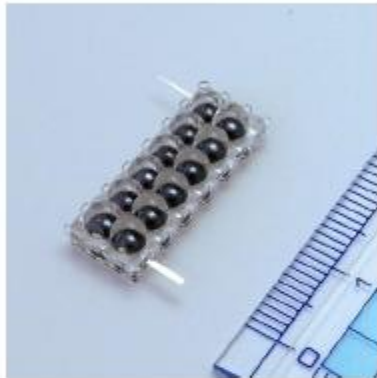
Cells seem much larger than their real size (1.8mm in diameter).

The case has a lens effect, by which the Array F12 can maximize the light income, and, in consequence, generate more electricity.

	F12-6S2P (Kyosemi)	AM-5815 (Sanyo)
Long (mm)	24	31.8
Wide (mm)	9.5	10.8
Area (cm ²)	2.28	3.43
Pmax (mW)	13.5	12
Ipm (mA)	4.5	2.3
Vpm (V)	2.97	5.2

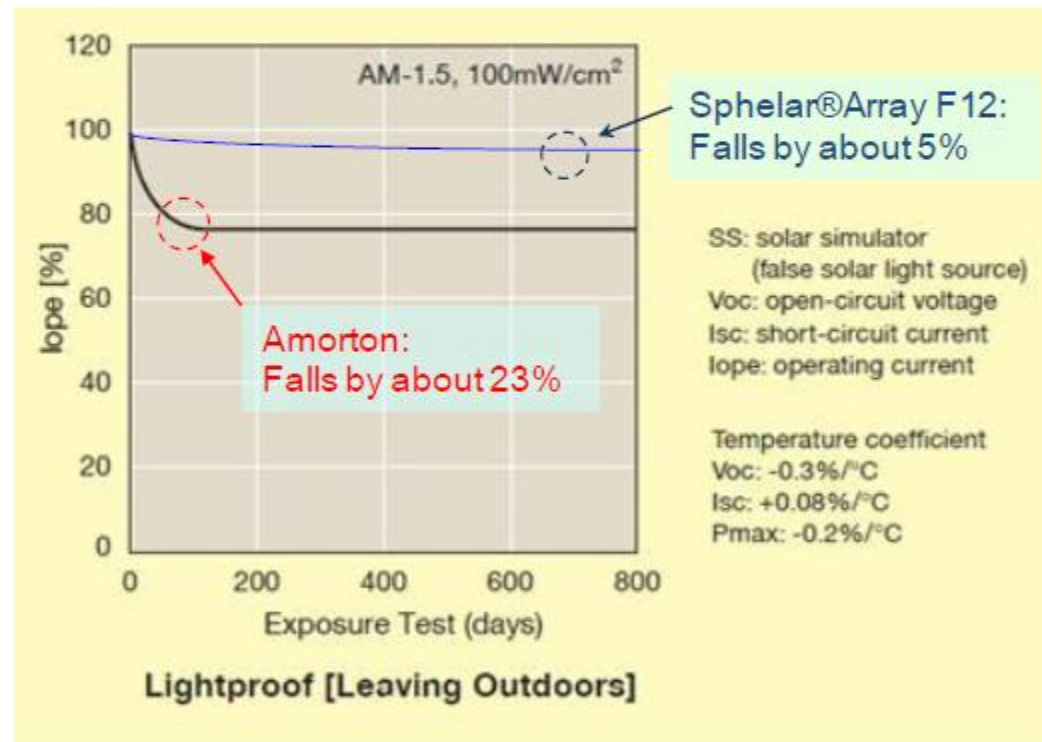


Sphelar® Array F12 – Strong against aging



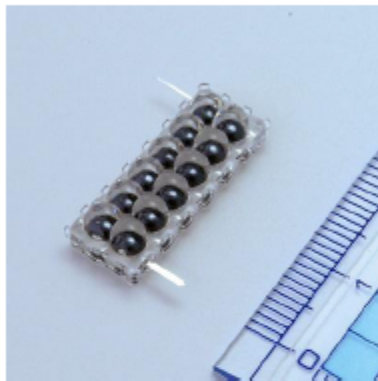
Cells are made of mono-crystalline silicon.
That is why Sphelar® Array F12 is more durable than Amorton (amorphous silicon product) even after being exposed to sunlight.

Comparison with Amorton (Sanyo)

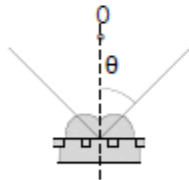


Sphelar® Array F12 – Double advantage

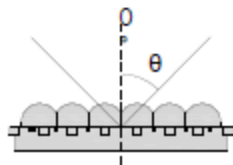
- Energy Density &
- Durable Performance



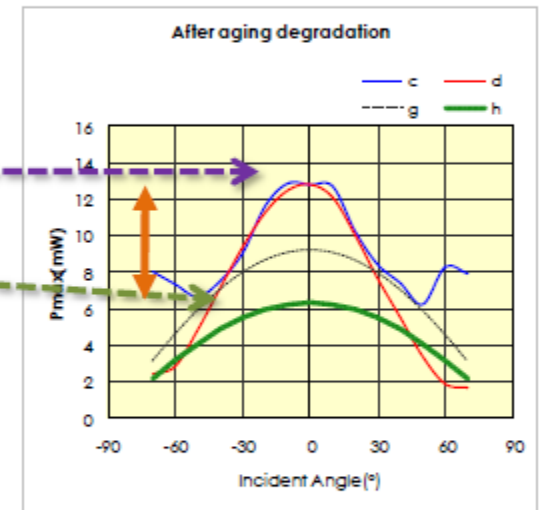
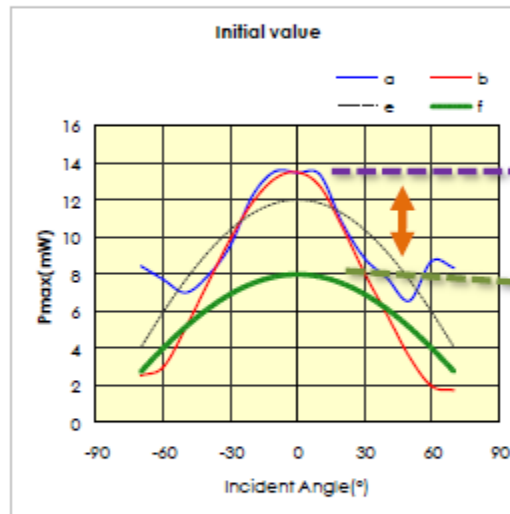
Incident direction (L)



Incident direction (W)



Comparison with Amorton (Sanyo)



F12 (6S2P)		a, c	Incident direction (L)	→ 95% of Initial Value
		b, d	Incident direction (W)	
Amorton		e, g	datasheet value	→ 77% of Initial Value
		f, h	same area as 'F12'	

Sphelar® One



Type

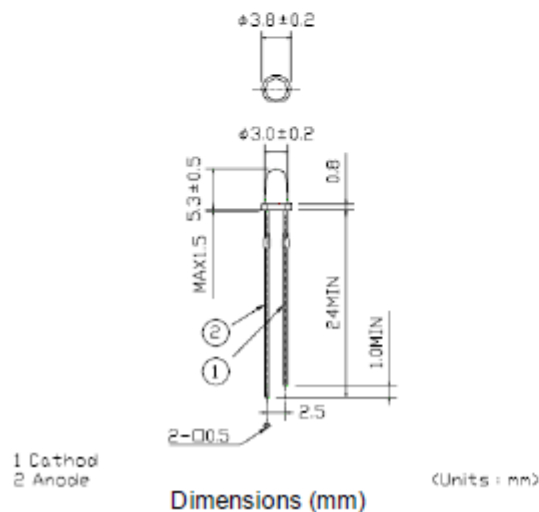
- Cell type : Sphelar® cell
- Cells per module : 1 cell
- 2 mold types : $\phi 3$ plastic mold and $\phi 5$ plastic mold

Features

- Low directivity
- Radial lead cells facilitate any serial and/or parallel connections

Applications

- Active RFID Tags
- Miniature Sensors
- Minute electric power equipment
- Educational kit etc



Sphelar® One

ES



Electrical Characteristics

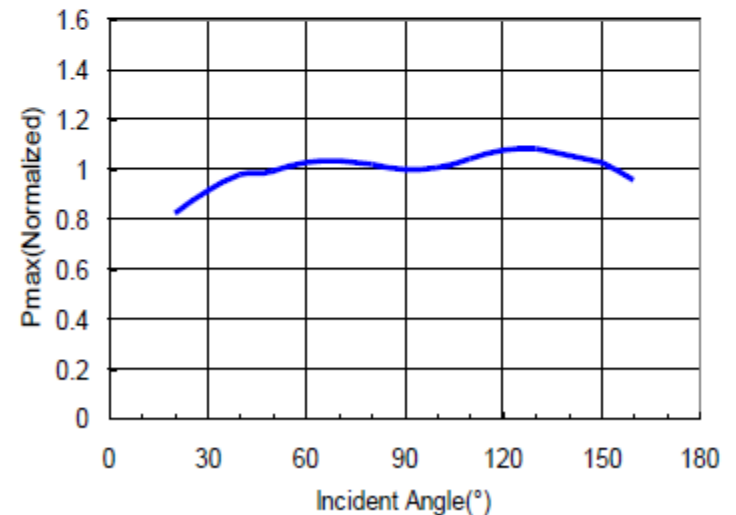
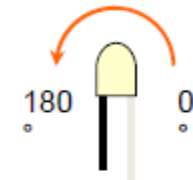
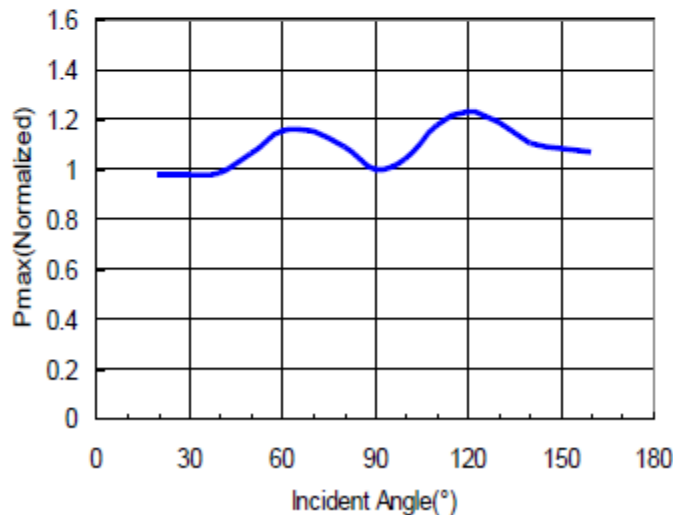
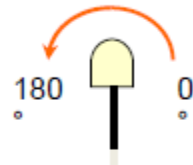
Measurement conditions :

100mW/cm², AM=1.5, Ta=25°C

Part no.	Pmax (mW)	Vpm (V)	Ipm (mA)	Dimension OD x H (mm)	Mass (g)	Case	Status
KSP-OC-1830MR-ER-X03	0.60	0.481	1.25	φ3×5.3	0.15	plastic mold	ES
KSP-OC-1850MR-ER-X01	0.66	0.484	1.38	φ5×7.7	0.20		ES
KSP-OC-1850MR-ER-FL01	0.66	0.484	1.38	φ5×7.5	0.20	plastic mold w/o flange	ES

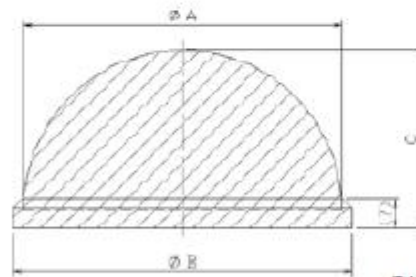
Sphelar[®] One – Low directivity

Incident Angle Dependence: Typical example of KSP-OC-1830MR-ER-X03



Measurement conditions : 100mW/cm², AM=1.5, Ta=25°C

Sphelar® Dome



Side View

Type	A(mm)	B(mm)	C(mm)
KSP-HH-10s77p100-F0-X	100	105	56
KSP-HH-10s45p 75-F0-X	75	90	43
KSP-HH-13s44p 75-S0-X	75	80	44
KSP-DR-10s77p100-F0-X	100	105	32

Type

- Cell type : Sphelar® cell
- Size (mm) : ϕ 75-150 x 32-56 (H)

Features

- Light trapping
- Less sensitive to shadows
- Weather resistant, UV resistant
- Shock proof and corrosion resistant
- Stain-resistant
- Various combination of serial and/or parallel connections available
- Aesthetically very pleasing/intriguing

Applications

- Energy harvesting for remote sensors and systems

Sphelar® Dome

DS

ES



Electrical Characteristics

Measurement conditions : 100mW/cm², AM=1.5, Ta=25°C

Part no.	Pmax (mW)	Vpm (V)	Ipm (mA)	Dimension OD x H (mm)	Mass (g)	Case	Status
KSP-HH-10S45P 75-F0-X	230	4.6	52.0	φ 75×43	200	PC	DS
KSP-HH-10S77P100-F0-X	400	4.6	87.0	φ105×56	300	Acrylate	DS
KSP-DR-10S77P100-F0-X	400	4.6	87.0	φ105×32	200	Acrylate	DS
KSP-DR-10S150-F0-X	940	4.7	200.0	φ155x52	500	PC	ES
KSP-DR-20S150-F0-X	940	9.4	100.0	φ155x52	500	PC	ES

Sphelar® Dome (Small size)

DS

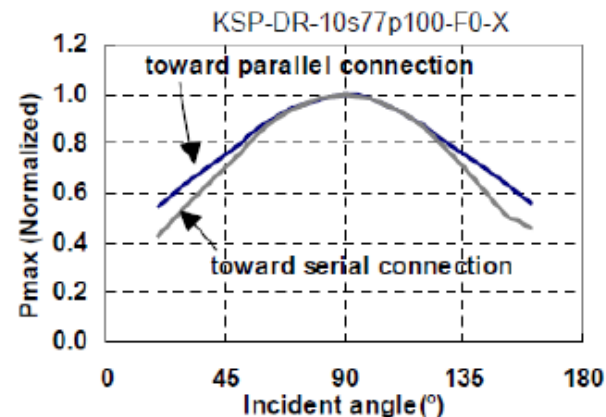
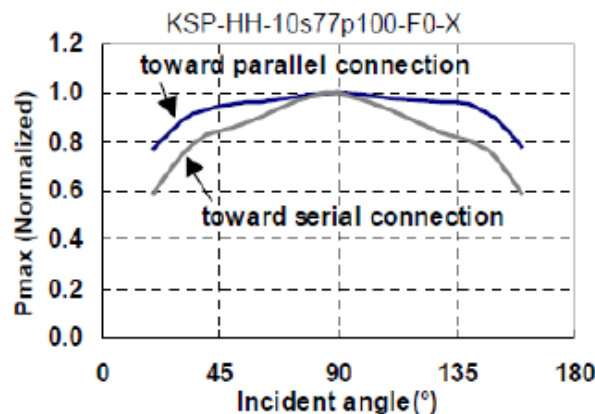
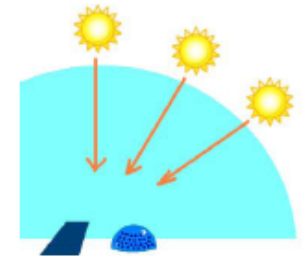
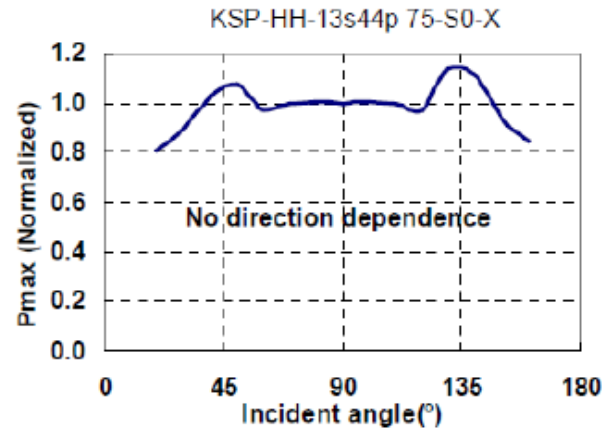
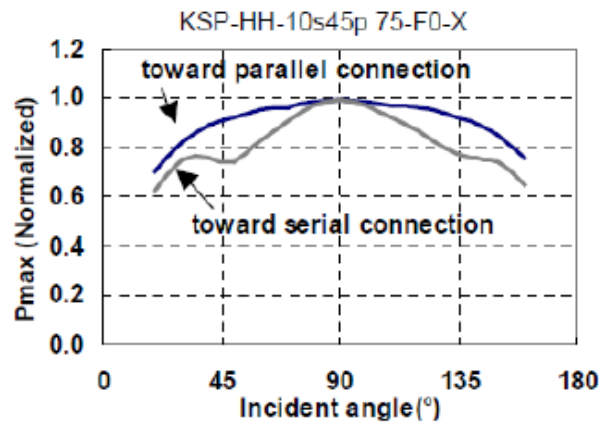


Electrical Characteristics

Measurement conditions : 100mW/cm², AM=1.5, Ta=25°C

Part no.	Pmax (mW)	Vpm (V)	Ipm (mA)	Dimension OD x H (mm)	Status
KSP-HH-3.8V-12MA-X	45	3.8	12	φ 38.1×24.1	DS
KSP-HH-3.8V-20MA-X	76	3.8	20	φ 44.5×27.5	DS
KSP-HH-3.8V-27MA-X	102	3.8	27	φ 50.8×30.4	DS
KSP-HH-4.7V-10MA-X	47	4.7	10	φ 38.1×24.1	DS
KSP-HH-4.7V-21MA-X	98	4.7	21	φ 50.8×30.4	DS
KSP-HH-5.7V-08MA-X	45	5.7	8	φ 38.1×24.1	DS
KSP-HH-5.7V-11MA-X	62	5.7	11	φ 44.5x27.3	DS

Sphelar® Dome – Low directivity



Sphelar® Dome – Advantage of the dome sharp

Resistance to shock, dirt, snow and so on.



Flat panel

Domes



The snow drops down faster on the domes than on the flat one.

Field test in Hokkaido

Sphelar® Cylinder Modules

DS



Features: High voltage in compact area. 180° light capture.
Easy to be connected.

Applications: Energy supplier for LCD, etc.

Electrical Characteristics (Typical)

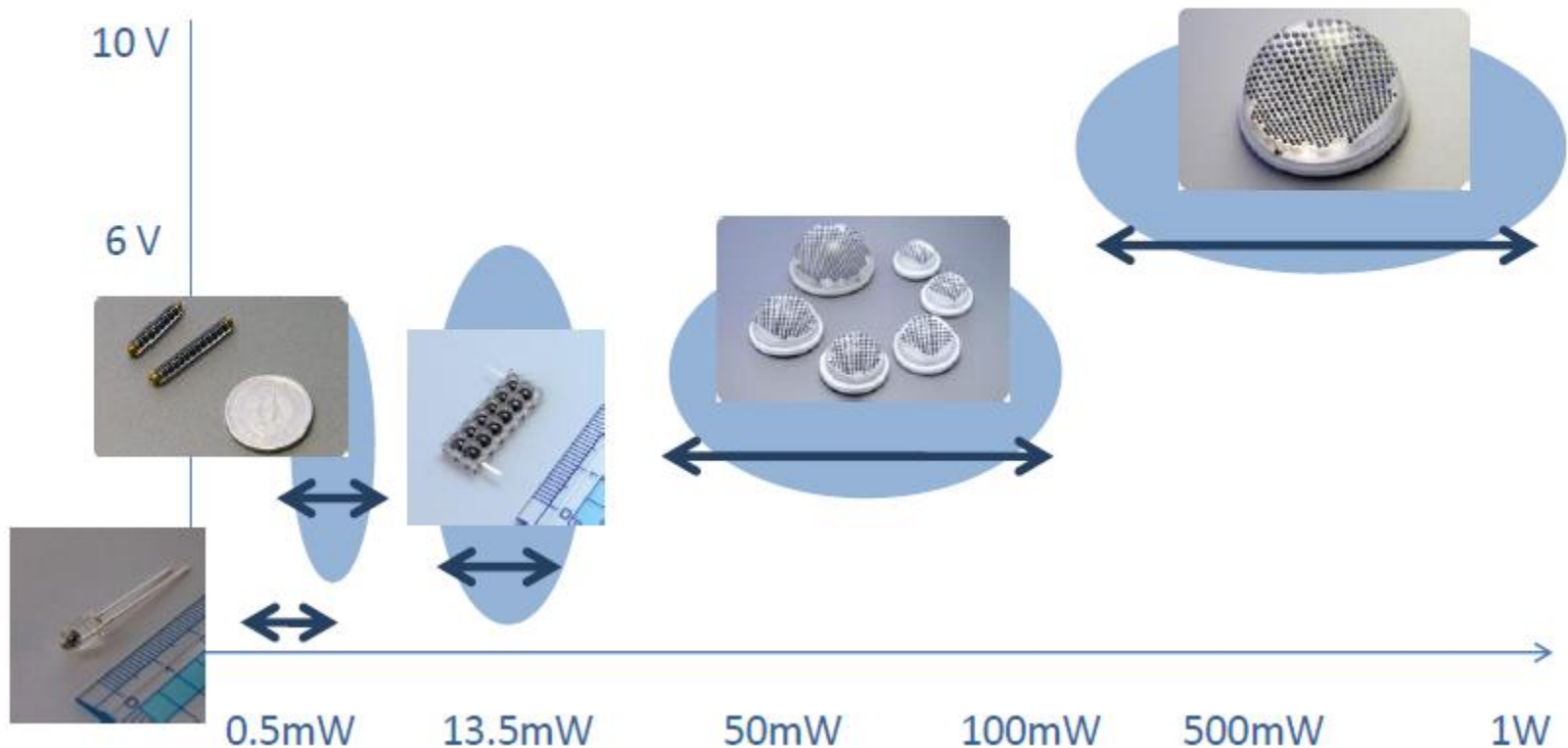
Measurement conditions : 100mW/cm², AM=1.5, T_a=25°C

Part no.	P _{max} (mW)	V _{pm} (V)	I _{pm} (mA)	Dimension ϕ x L (mm)	Status
KSP-MS-1.8V-0.9MA-X	1.6	1.8	0.9	ϕ3.5×11.5	DS
KSP-MS-3.8V-0.9MA-X	3.4	3.8	0.9	ϕ3.5×18.0	DS
KSP-MS-4.6V-0.9MA-X	4.1	4.8	0.9	ϕ3.5×21.5	DS
KSP-MS-5.6V-0.9MA-X	5	5.6	0.9	ϕ3.5×24.5	DS

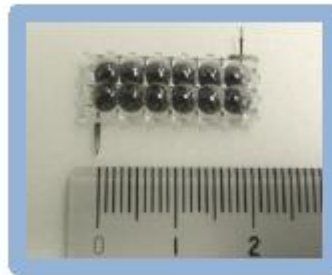
* Besides the listed, other prototypes with different voltages might be affordable. Please contact your nearest sales office or distributor.

** Design, features and specifications of all products are subject to change without notice. Please contact your nearest Kyosemi sales office for the latest specifications prior to purchase and/or use.

Power range of products



Products released in the market



...with F12



Audio Guide « Aimulet » at Aich Expo 2005

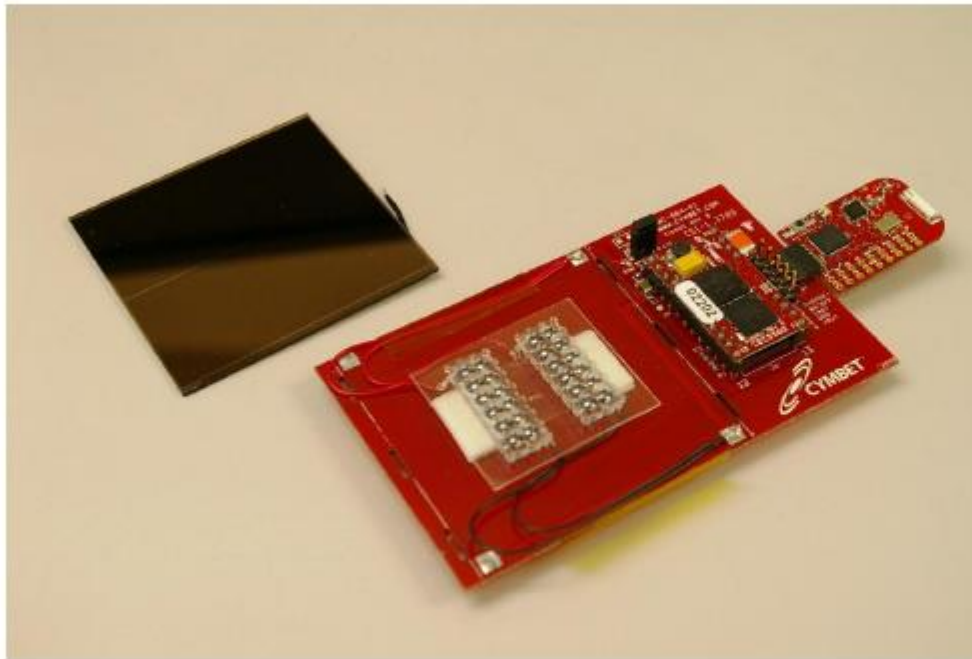


UV detector, Healthtronics Sunsafe



Solar sound box, Yupina

Among various ongoing projects...



Evaluation test supported by Texas Instruments

Conventional flat panel can be replaced by 2 pieces of F12.

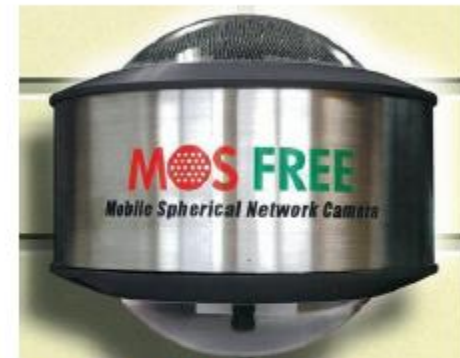
The notion of WSN (Wireless Sensor Network) is about to come into the market, thanks to development of low-power CPUs and innovation on wireless communication.

In this field, solar is supposed to be an efficient energy harvester, so that the devices could work alone.

Products released and prepared



...with Dome



Wireless stand-alone monitoring camera

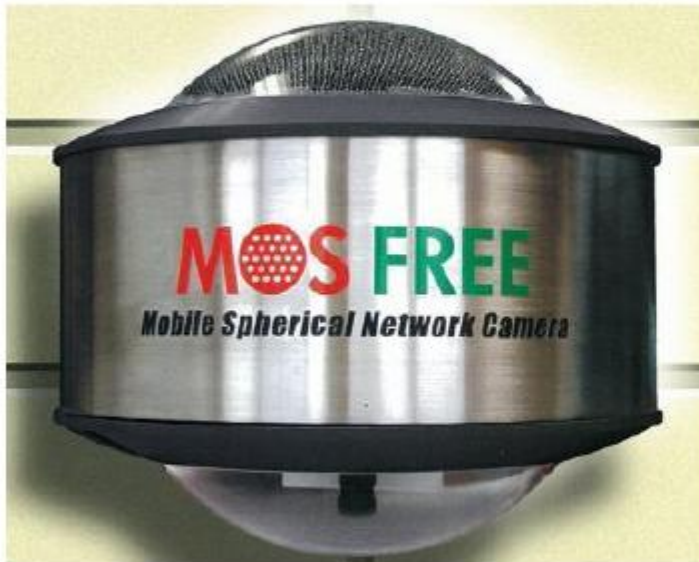


Energy harvester for WSN nodes



Street light

Wireless stand-alone monitoring camera

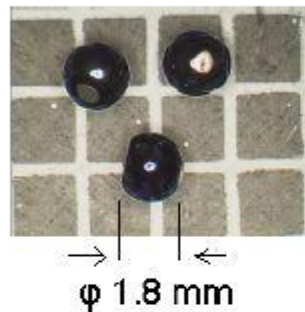


The monitoring camera costs high when it is installed : wired for transmission of image and electricity.



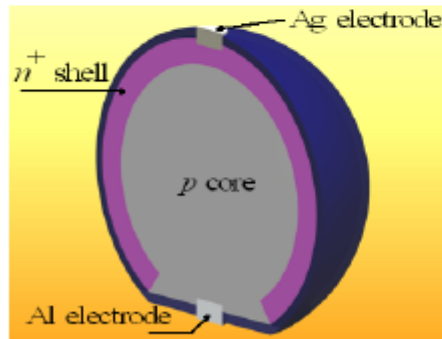
This product is completely 'wireless'. It transmits the filmed images by FOMA (= Japanese standard equivalent to GSM/GPRS in Europe) and obtains the electricity by Sphelear Dome (ϕ 150mm).

Characteristics of Sphelar[®] cell

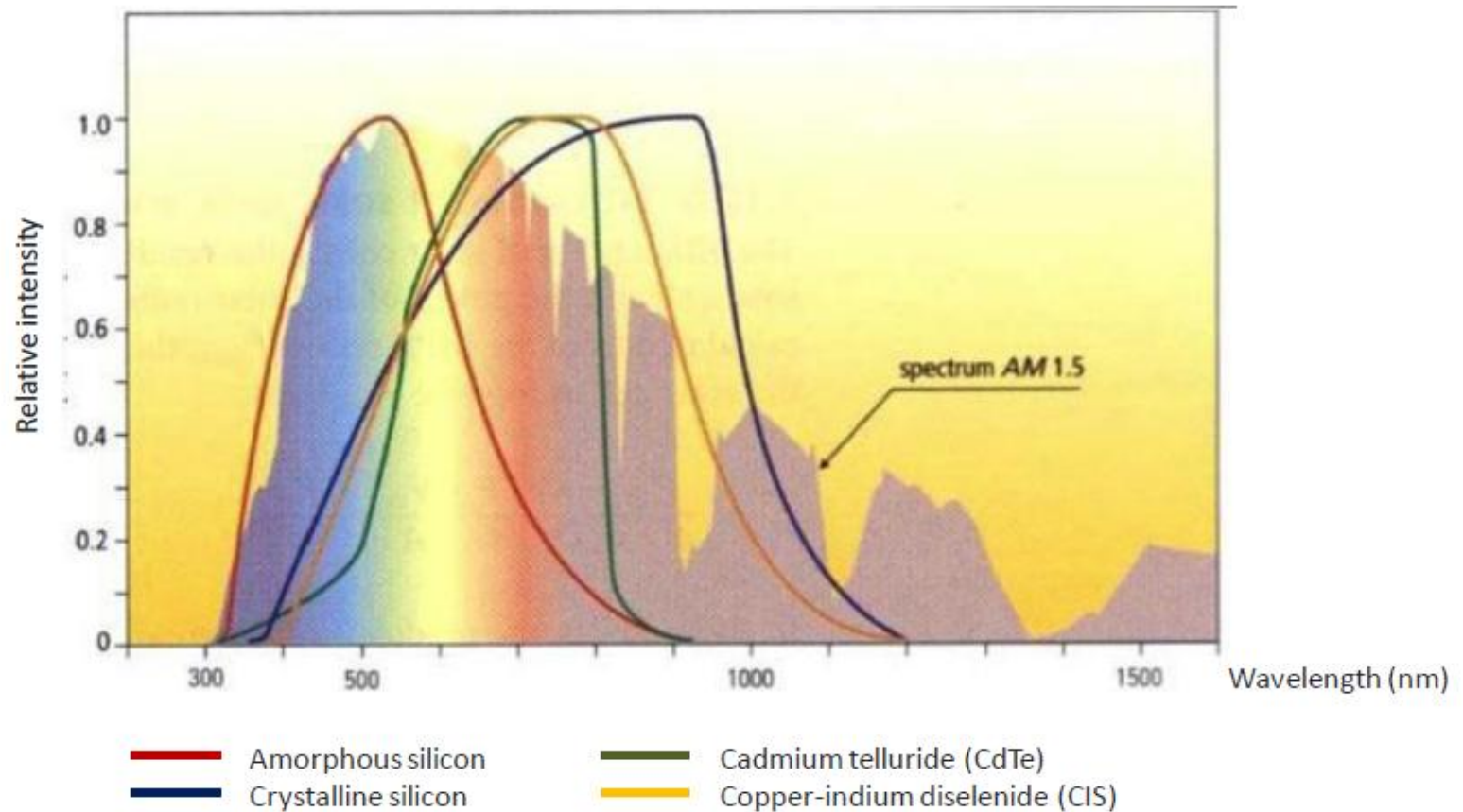


The Sphelar[®] cell is made of mono-crystalline silicon.

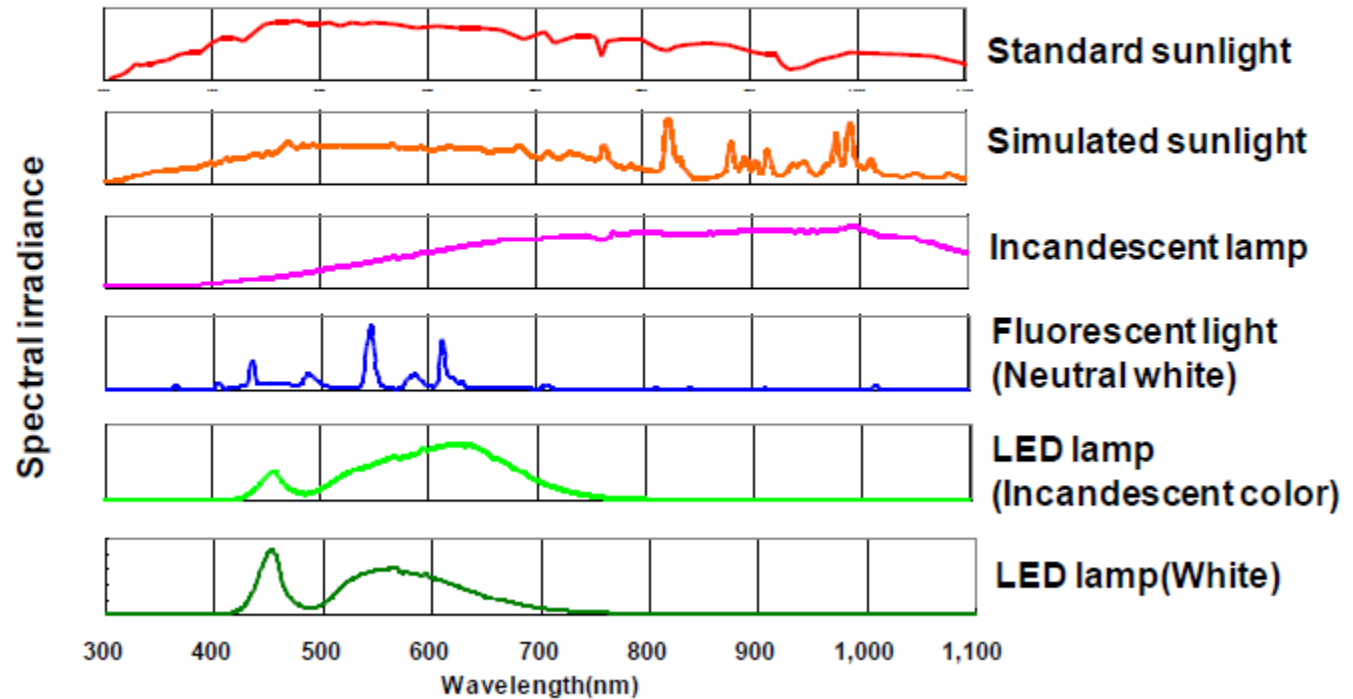
This type of solar cell can perform the most effectively under the sun light.



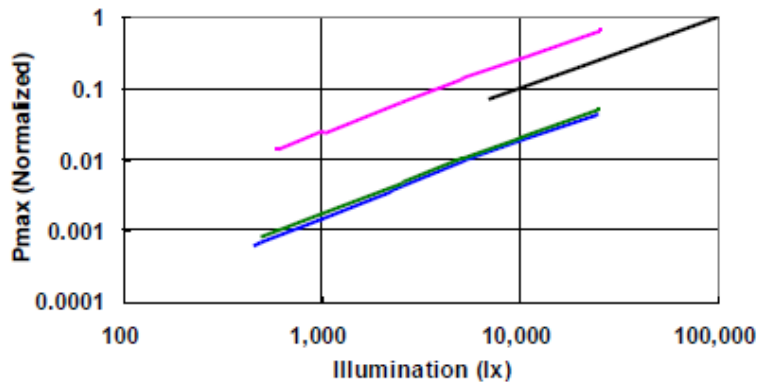
Solar cell types and spectrum



Spectral Irradiance of different light sources

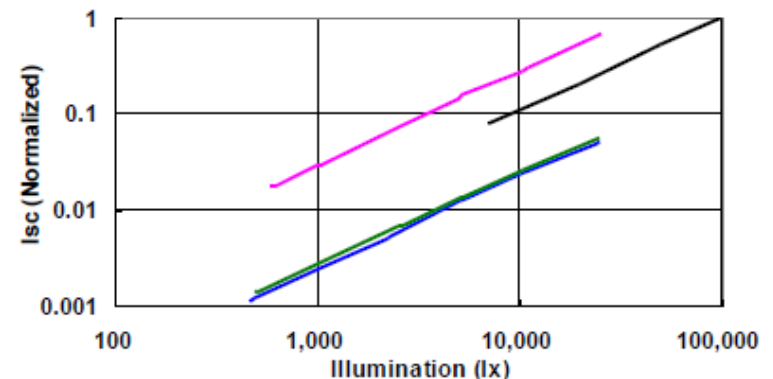
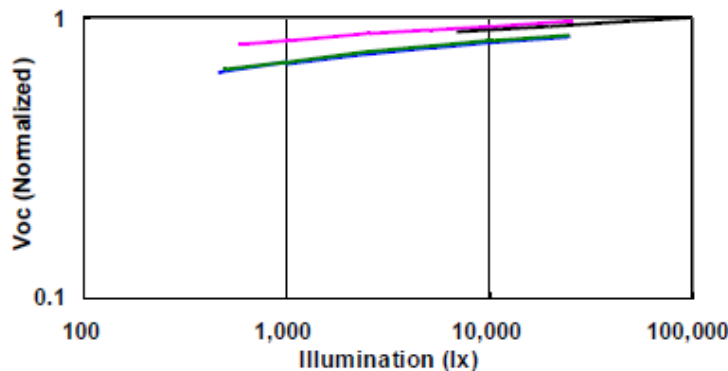


Illumination dependence of different light sources (F12)

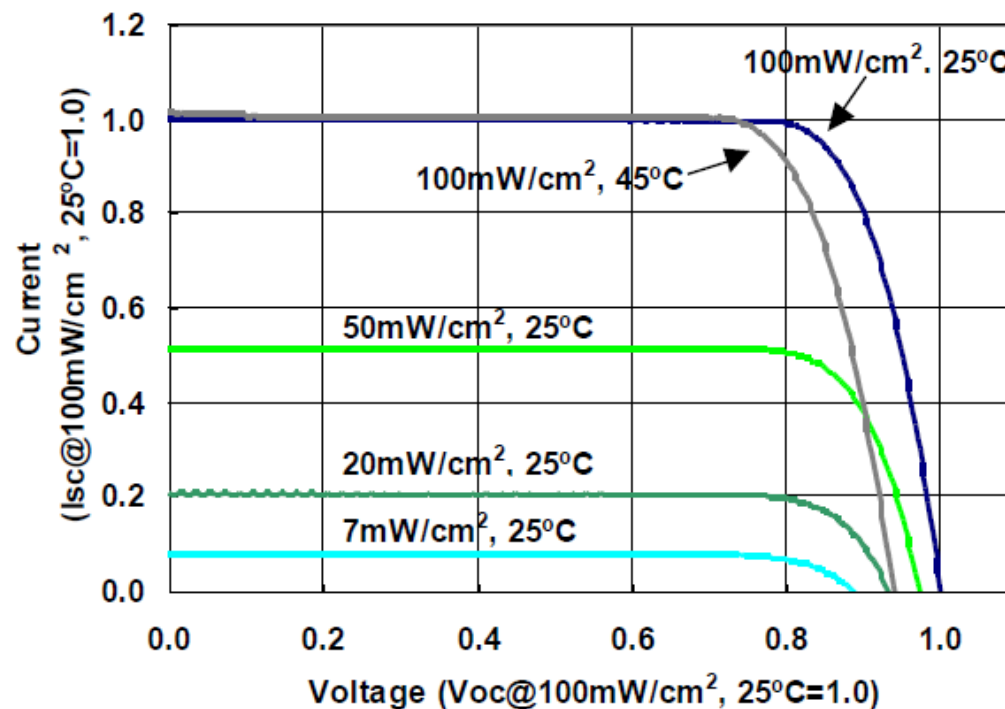


— Simulated sunlight — Fluorescent light (Neutral white)
 — Incandescent lamp — LED lamp (White)

Values are normalized by the value of simulated sunlight (AM1.5), 100mW/cm² and 25°C. Without reflector



Typical I-V curves (F12)



Aim of Brightness

100mW/cm²: Fine

50mW/cm²: Slightly Cloud
(no sunshine)

20mW/cm²: Rain
(no sunshine)

0.5mW/cm²: Office

Measurement Condition:

7~100mW/cm², 25~45°C,
AM1.5, Without reflector

Merci



Retrouvez tous nos produits sur notre site

<http://www.giga-concept.fr>

