

The final word
in next generation lighting

solana

2011 Summer Catalog

solana

is
pushing
the potential
of CCFL
to its limit

www.solana.asia

SOLANA

The next generation
lighting alternative—

solana



Table of Contents

Concept	03	Brand concept
What is "solana"?	04	What is "solana"?
	05	What is "CCFL"?
Product Comparison	06	Comparison with fluorescent lights
	07	Comparison with LED
	08	Comparison with T8 LED tube
	09	Comparison with LED bulbs
	10-11	Benefits of solana
solana features	12	Media coverage (TV, newspaper, etc.)
	13	Safety
	14	Quality control
	15	solana customers
	16-17	solana T8 CCFL tubes
Products	18-19	solana bulbs
	20	High color rendering & color solana
FAQ	21	Plant growth lights
	22	FAQ
Company Profile	23	Company Profile

illuminating Japan brightly and affordably. There is an alternative to LED lighting—CCFL

Interest in environmentally friendly products has grown in recent years, and demand for energy efficient lighting increases day by day.

Taking on the challenge to respond to these demands, we developed "solana", a next generation lighting alternative under the maxim "affordable, bright, and long-lasting." "solana" is based on CCFL (cold cathode fluorescent lamp) technology, which has a proven track record in backlights for liquid crystal displays.

"solana" lamps and light fixtures are environmentally friendly. They save space and energy, require little maintenance, and cut CO2 emissions.

And their use can lead to saving resources as well.

Don't give up, Japan!



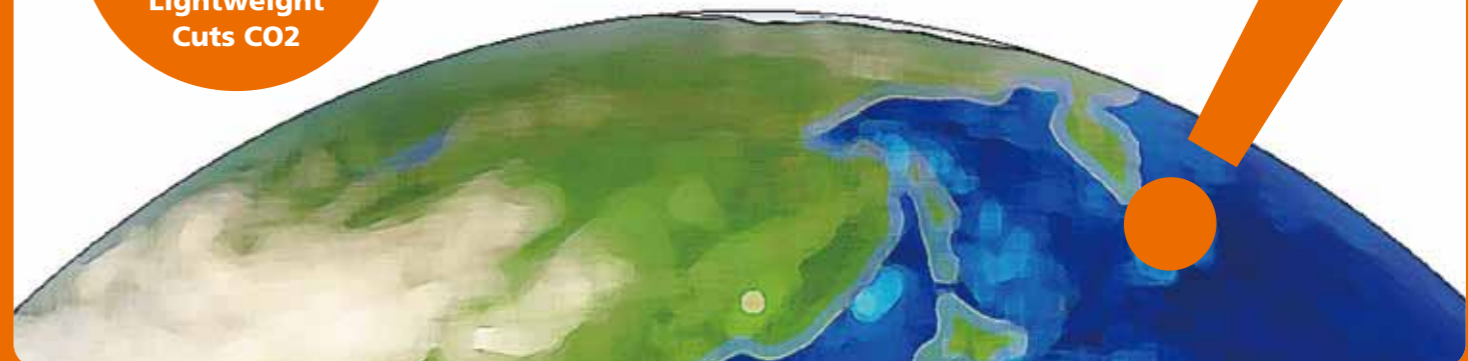
Kitakyushu Eco Premium Prize

In 2010 we received the acclaimed Eco Premium prize!

- Energy efficient
- Low maintenance
- Space-saving
- Safe
- Lightweight
- Cuts CO2

Contributes to the environment by saving energy & resources

solana is an extremely environmentally friendly product.



Concept

What is "solana"?

Product Comparison

solana features

Products

FAQ

Company Profile

Concept

What is "solana"?

Product Comparison

solana features

Products

FAQ

Company Profile

Q. What is solana?

A. The solana brand represents the next generation in lighting. It utilizes bright, long-lasting CCFL tubes that have a long proven track record in backlights for LCD TVs.

Feature1

Based on CCFL

Low cost

Feature2

Outstanding brightness,
with an illuminance equal to or better than fluorescent lights

Feature3

Reduces CO2 emissions, saves energy, and has a

long 40,000-hour lifespan

Feature4

Radiates less UV rays to reduce the attraction of insects

Cuts UV rays

Feature5

Cannot be matched by LED!

RGB three-band light that emulates natural light

Great CRI

Feature5

Cannot be matched by LED!

Because it is a linear light source, the light density angle is wide, providing uniform light distribution

No glare

It sounds too good to be true but it is—
maintenance free for 10 years! *When used 10 hours per day. May differ depending on external conditions.

Inexpensive does not equal cheap!

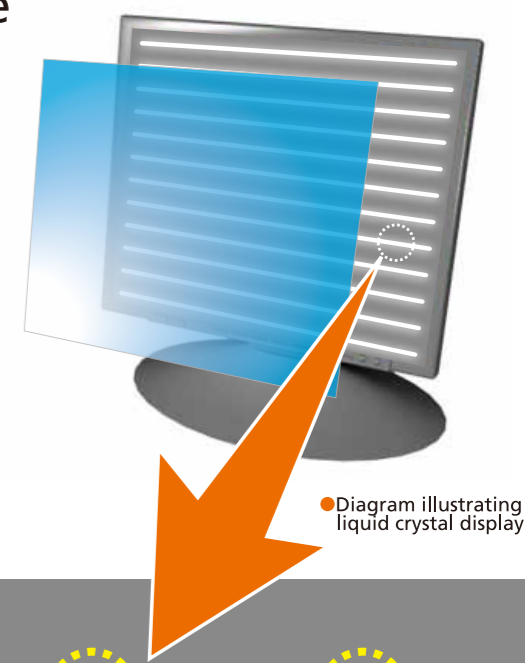
- 1** Put your mind at ease as design, development, and after-sales support is all carried out in Japan.
- 2** Dedicated inverter, power supply, and safety circuit are all in-house developed and ultra-lightweight!
- 3** Because the frequency of turning it on and off does not deteriorate the light, it exhibits a stable, long life even if used for long periods of time.
- 4** We have submitted our application for the PSE Mark and all of our products are RoHS Directive compliant. solana products have also passed testing by JET.*
*Only for the SOLANA-FD series as of April 2011. Other products are scheduled for testing in the summer of FY 2011.
- 5** And everything comes with a standard one-year warranty, so you can purchase with confidence! **(in japan sales only)**
*Please inquire of the shop that you bought about the guaranteed term other than Japan.

Conclusion!

By eliminating the price barrier—the major obstacle to purchasing next generation lighting—we made it possible to offer bright, long-lasting lighting with only a small initial investment!

Q. What is "CCFL"?

A. CCFL stands for Cold Cathode Fluorescent Lamp. They look like thin, light fluorescent tubes—about the size of a ballpoint ink cartridge. Although most people have never actually seen one, they are used a variety of everyday consumer electronics such LCD TVs and monitors.



Thin!

Most have a diameter of ϕ 1.8-5.0 (That's very thin.)

Multicolored!

They can be made into a variety of different colors depending on your needs.

Lightweight!

They are so light that you can lift them with your fingertips.

Wide illumination range!

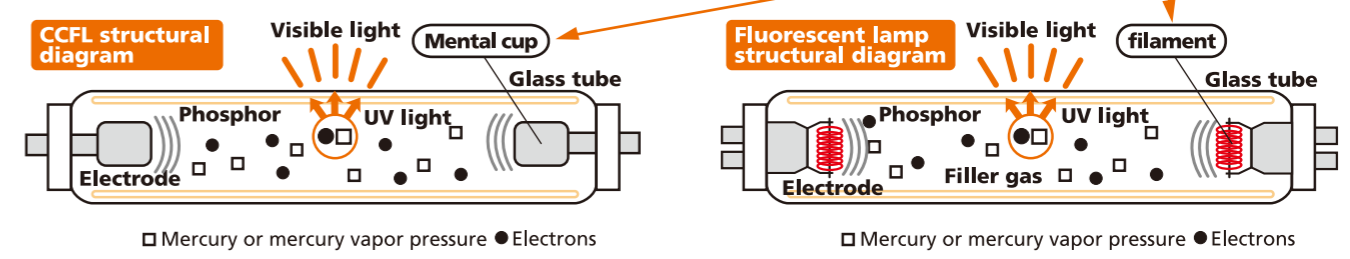
Provides 360° of uniform light.

Bendable!

Normally, they are straight but they can be made into a variety of shapes to suit the product, such as spiral or circular.

Differences between fluorescent lights and CCFL.

Here is the difference!



As illustrated above, the structures of fluorescent lights and CCFLs are very similar. While fluorescent lights use a filament, CCFL use a metal cup. Because the metal cup is highly resistant to impact from electrical discharge and does not deteriorate as fast, the frequency of **turning it on and off will not cause the light to burn out.**

Concept

What is "solana"?

Product Comparison

solana features

Products

F A Q

Company Profile

Concept

What is "solana"?

Product Comparison

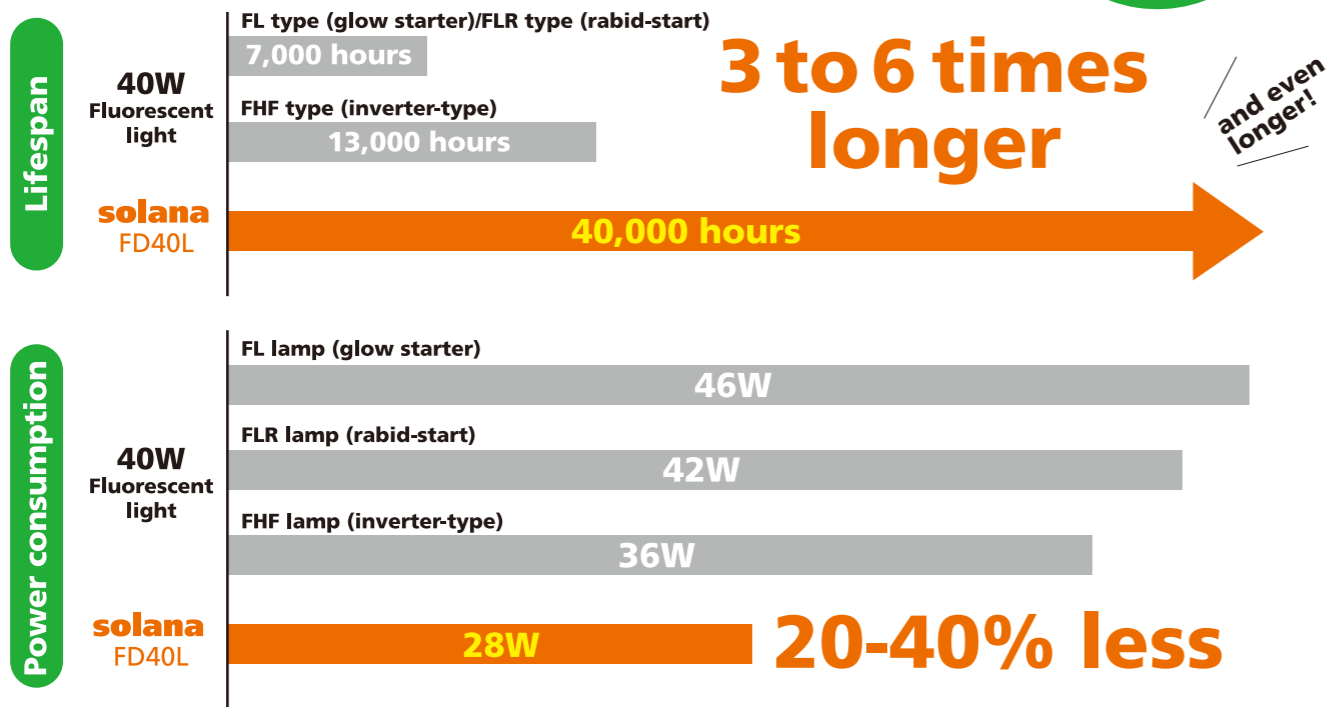
solana features

Products

F A Q

Company Profile

What is the difference between **solana** and standard fluorescent lights?



*Accumulative power consumption of ballast and inverter only.

Break-proof

Step on it with your full weight!

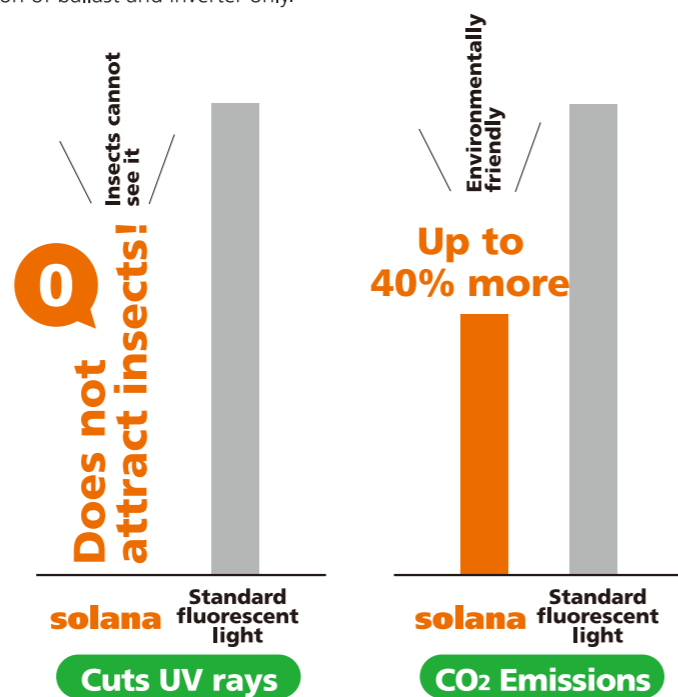
Run over it with your car!

It won't break!

Shatter-resistant!

See our website for a demonstration video.

*It is the solana polycarbonate portion of the crystal tubes that is break-proof, not the CCFL. Also, we cannot guarantee that such treatment will not affect the function of the product.

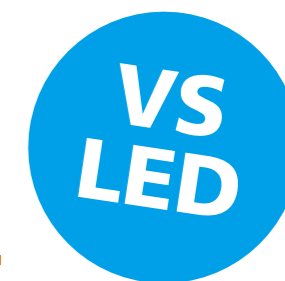


*The amount of ultraviolet light emitted is no lower than 380 nm.

*Proportional to the amount of electricity used.

Conclusion **solana has the same brightness and CRI of fluorescent lights. So there is no noticeable difference between it and the fluorescent lights you are used to.** It also provides wide, uniform light distribution, and will not break even if accidentally dropped.

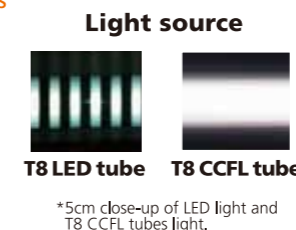
Dark...expensive...the color is odd... You won't have to deal with these problems any longer.



LED vs CCFL. There are five major differences.

1 Light source

LED (light emitting diode) is a semiconductor device. The light source is a **point light source**—which means it is like a highly linear beam. Usage: LED lamps are used for traffic signals, Christmas lights, and indicator lamps. CCFL (cold cathode fluorescent lamp) looks like a thin glass tube. It is a **linear light source** and, along with fluorescent lamps, belongs to the electric discharge lamp family. Its internal structure is very similar to fluorescent lamps as well. And they are available at affordable prices. Usage: They are widely used as backlights for displays.



3 Heat generation

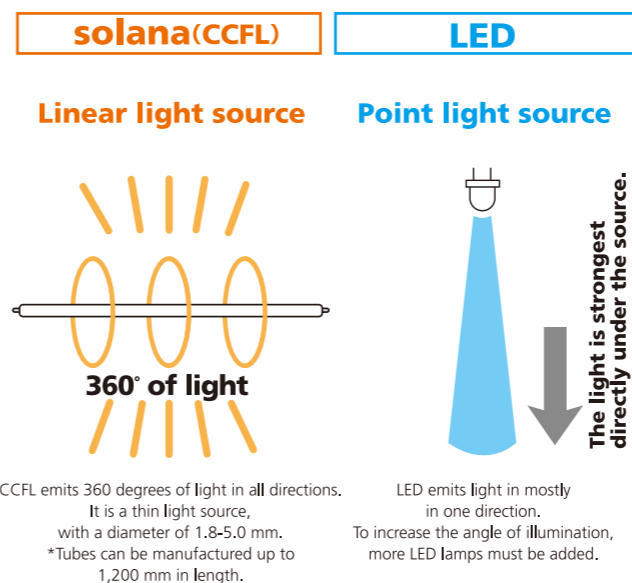
The brightness of LEDs can be increased by boosting the amount of power supplied to the lamp; however, this also increases the amount of heat generated. And this buildup of heat can shorten the lifespan of LEDs. Therefore, to prevent this, a heat sink or external power supply becomes necessary, contributing to higher costs. The heat generated by CCFL does not exceed 70-80°, lower than LED. Because they do not require any special thermal management measures, they can be manufactured at lower cost.

4 Temperature

LED lights have a low tolerance to high temperatures, and perform better in low temperatures. (ex: refrigerator lamps) On the other hand, CCFL has a high tolerance to high temperatures but is not suited for low temperatures. * (Example: high temperature environments) *Although they will function in low temperature environments, they can be slow to reach maximum illuminance.

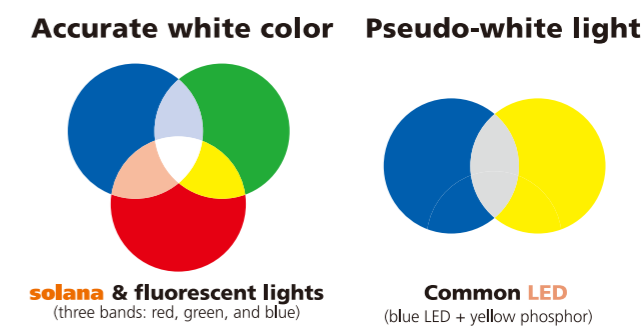
2 Light distribution angle

Because LED distributes light mostly in one direction, additional LED lamps must be placed or else it must be supplemented with other technology in order to diffuse the light. Because the CCFL lamp provides a 360° light distribution, getting a uniform illumination with no irregularities is easy.



5 Color Rendering Index

Normally, white LEDs are actually "pseudo-white." The white color is created by combining a blue LED with yellow phosphor but the color is not accurately reproduced. Recently three-band RGB LEDs have made an appearance; however, they are expensive. The CCFL white light is identical to that of three-band RGB fluorescent lights. It has a high CRI, comparing favorably with the fluorescent lights you are used to.



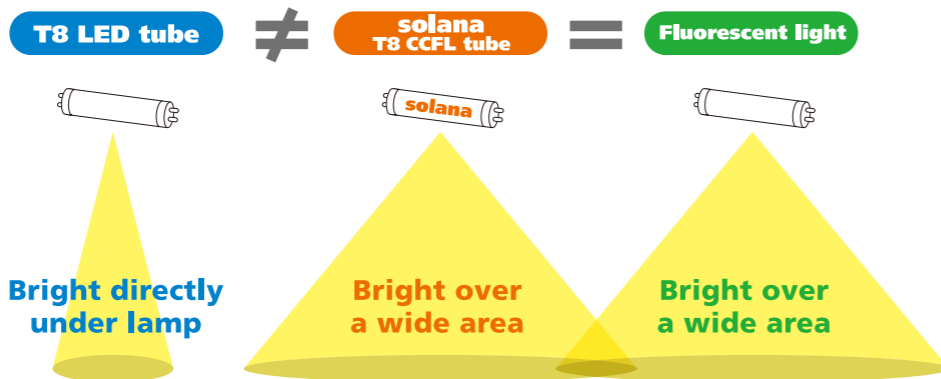
Conclusion **solana has a lifespan of 40,000 hours, ideal for indoor lighting.** LED is suited for low power, decorative lights and spotlights.

T8 tube face-off

T8 LED tube VS solana T8 CCFL tube (SOLANA-FD40L)

1 Light distribution

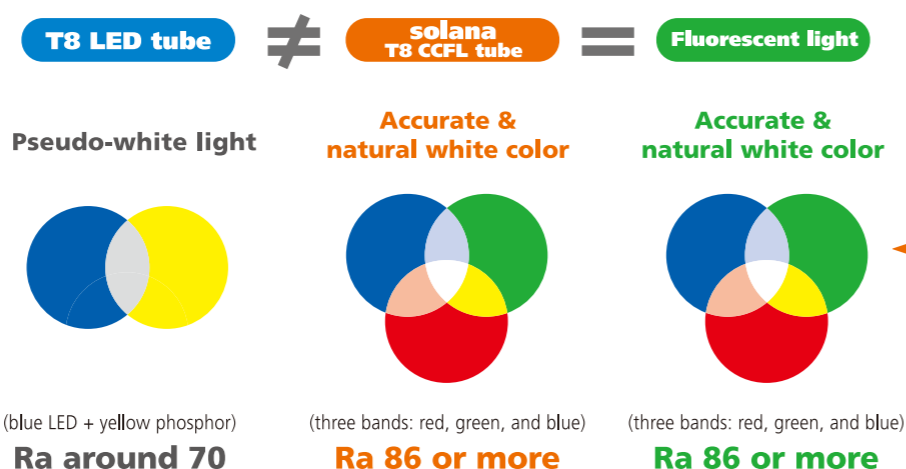
Because T8 LED tube emit light in mostly one direction, its illuminance (Lx) is strong directly under the lamp, but it does not illuminate a wide area. Therefore, placing it in the same way as a common fluorescent light for indoor lighting will produce shadows and unbalanced lighting. This is why you get the feeling LED lights are somehow "bright but dark..."



There is no point in having a light that is bright only under the lamp for indoor lighting. What you need is a wide, uniform light distribution.

2 Naturalness of the light

In most T8 LED tube, a combination of blue LED and yellow phosphor is used to produce a pseudo-white color. Therefore, the light has a strange yellowish tint. The color rendering index (Ra) is poor (around 70), so there are some colors it cannot reproduce. CCFL on the other hand is a three-band light source often used as the backlight for LCD TVs. It is acknowledged worldwide for its ability to reproduce color accurately. The color rendering index (Ra) is high (86 or more), it produces no glare, and does not irritate the eyes.



For lightning used daily in the office or living space, a natural light that does not irritate the eyes is ideal.

3 Price and performance

Recently, foreign-made inexpensive LED tube have hit the market. The solana T8 CCFL tube (SOLANA-FD40L) is in the same price range as T8 LED tube, but gives superior performance. CCFL fluorescent lights beat other fluorescent lights in both price and performance.

Unbeatable in price and performance

Manufacturer	T8 LED tube 40W	T8 LED tube 40W	solana T8 CCFL tube
Lamp model	low-end model	High-end model	SOLANA-FD40L
Regular price	4,800 JPY	10,000 JPY	Please inquire
Total luminous flux (lm)	1,200 lm	1,700 lm	2,000 lm
Light distribution angle	120°	120°	220°
General color rendering index	Ra 72	Ra 70	Ra 86
Lifespan	40,000 hours	35,000 hours	40,000 hours

4 Weight

CCFL fixtures are the lightest fixtures that contain internal power supplies. In most T8 LED tube, the power supply is separate from the light source. The reason for this is the heat generated from the LED and power supply can adversely affect the light. This makes development of lights with an internal power source problematic. The total weight of our SOLANA-FD40L CCFL fluorescent light model, including the internal power supply, is only 330 g, making it the world's lightest tube bulb.

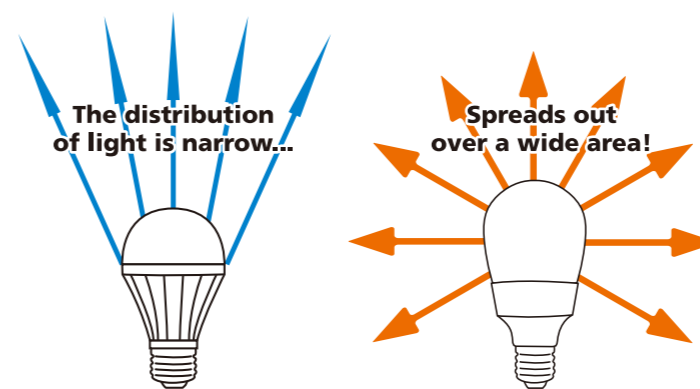


Other fluorescent lights can't hold a candle to solana in price and performance!

Light bulb face-off

LED bulbs VS solana bulbs

1 Light distribution



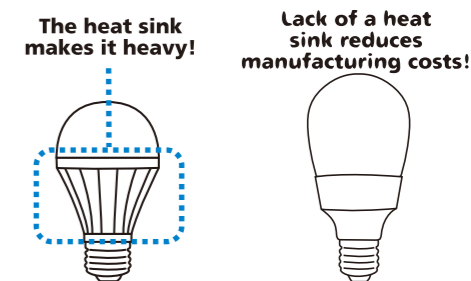
LED bulb

solana bulb

This is why it seems darker once you have made the switch from standard to LED bulbs.

2 Requires no thermal management measures

LED bulbs must be equipped with a thermal management component such as a heat sink. This contributes to the bulb's weight. solana bulbs do not require a heat sink, thereby reducing manufacturing costs.



LED bulb

solana bulb

Because solana bulbs require no thermal management measures, we can offer them at low cost.

3 Naturalness of the light

Provides the same natural light as fluorescent lights.

Because it has a high lumen (lm) level, it seems like it would be bright, but it is only bright directly under the light.

4 Price and performance

Manufacturer	Low-end LED bulb	high-end LED bulb	solana
Regular price	3,990 JPY	5,880 JPY	Please inquire
Total luminous flux (lm)	350 lm	850 lm	640 lm
General color rendering index	Ra 80 or less	Ra 80 or less	Ra86
Lifespan	40,000 hours	40,000 hours	30,000 hours

Unbeatable in price and performance

Conclusion solana bulbs give a clearer and more natural light!

Products with the following features can also be manufactured.

Plant growth



We can provide bulbs for plants that emit light at 610 nm, 658 nm, or 735 nm.

High color rendering



We can manufacture lamps with a general color rendering index (Ra) of 99.

UV (ultraviolet)



We can also manufacture long-lasting CCFL lamps that emit only UV light.

Concept

What is "solana"?

Product Comparison

solana features

Products

F A Q

Company Profile

Concept

What is "solana"?

Product Comparison

solana features

Products

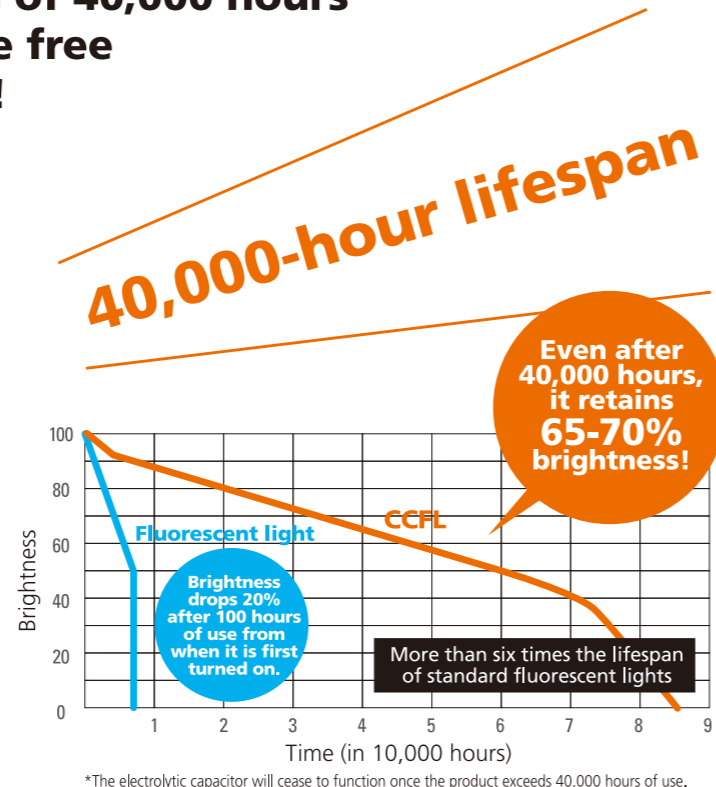
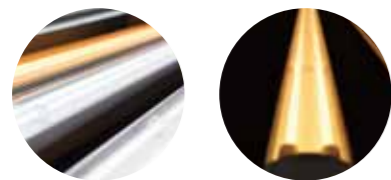
F A Q

Company Profile

The advantages of solana are more than just brightness and low price.

! They have a lifespan of 40,000 hours and are maintenance free for at least 10 years!

solana products have an amazingly long lifespan of 40,000 hours. With normal use of 12 hours per day, they are maintenance free for at least 10 years! And they hold up fine under conditions where they must be left on 24 hours a day. solana products are ideal for places where the maintenance of light fixtures is difficult because they rarely require replacement, thereby saving you the high cost and effort of replacing lights.



! Clear light

solana products all have a three-band RGB light source, with a general color rendering index (Ra) of at least 86. This satisfies the International Commission on Illumination Recommended Criteria: 1B. We also have lamps with a high color rendering of 90 Ra or more.



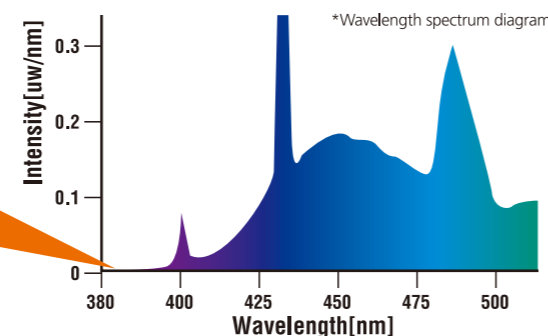
The light source produces a very clear and clean light, with a proven track record in LCD TVs and monitors.

Clear

! Cuts UV rays

Radiates less UV rays that can attract insects. Ideal for public facilities, outdoor lighting, food processing plants, and eating and drinking establishments.

Cuts UV rays (380 nm or less)



! Choose the light that suits your needs

Only solana can be made to order!

Our products come in three standard colors: cool white, natural white, and warm white. Other colors can also be made to order according to specified RGB color, color temperature, and wavelength. *1

Emission color (Kelvins) ※2	Color sample	Description	Features	Usage
Cool white (6400K~7000K)		Like a perfectly clear blue sky	This color has the best color rendering and is said to stimulate and activate the human body.	Conference rooms and classroom lighting, illuminating signs and posters, museums and drafting tables
Natural white (5000K~5500K)		Bright color with a yellowish tint	Humans perceive this as the brightest white	Illuminating wide areas such as offices, reception rooms, floor lighting, lobbies, studies, and kitchens
Warm white (2600K~2800K)		Like the sky at sunset	Provides a calm mood and atmosphere	Living rooms and food displays, lighting in eating and drinking establishments, and indirect lighting

*1 We can manufacture colors with a color temperature of up to 25,000K. *2 Kelvin refers to the measurement of color temperature. At over 10,000 K the color takes on a white to transparent blue appearance.

! High praise at trade show

From January 19 through 21 the 3rd Lighting Japan trade show was held at Tokyo Big Sight. So many visitors came to our booth, even more than last year's Lighting Japan, we could barely keep up.



! Fully customizable

We can customize our products according to your desired specifications. Below are just some examples:
 ●Water-proofing ● color temperature modification ● analog dimmer control (0-100%) and remote control dimmer compatible. Dimmer control of multiple light sources simultaneously by remote is also possible (we have proven track record at bridal venues).
 ●Can be combined with sensors to create a variety of programs to accommodate a variety of events and functions.
 ●Timer function, power outage backup function.
 ●Built-in lighting systems, UV lamps, and more.

We can also make to order according to your desired specifications. And we offer OEM manufacturing. Contact us at: sales@solana.asia

Concept

What is "solana"?

Product Comparison

solana features

Products

F A Q

Company Profile

Concept

What is "solana"?

Product Comparison

solana features

Products

F A Q

Company Profile

solana has also attracted the attention of a variety of media—from TV shows and magazines, to print and online newspapers!



solana was covered in an environmentally themed TV show!



Our head office in Kitakyushu, Fukuoka Prefecture.



This is the CCFL light source. It's very thin.



CCFL has a proven track record in LCD TVs.



Affordable, bright, long-lasting—solana.



Consumes minimal electricity!



Our company's president was interviewed as well.

Picked up by TV as the light much better than LEDs!



Main office building in Kitakyushu-shi, Japan.



Our president



Power max 40% less, life max 6 times longer!



Obvious difference between CCFL and LED lamp.



"solana" in a food factory.



"solana" beat LEDs.

solana has also gained attention in print and online newspapers and magazines.



May 2010 Teikoku Databank



June 2010 Nikkan Kogyo Shimbun



July 2010 Semiconductor Industry News



August 2010 Tokei Topics



November 2010 The Nikkei

solana safety standards

There is more to solana than just brightness and low price. We also have a no-compromise commitment to safety.

1 All solana products comply with the RoHS Directive.

What is the RoHS Directive?

The RoHS Directive refers to restrictions among EU member countries on the sale of electronic and electrical equipment which contain amounts of one or more of six designated hazardous substances that exceed a specified value.

Designated hazardous substances	RoHS Directive threshold values
1. Cadmium and compounds containing cadmium	100 ppm or less
2. Hexavalent chromium	1,000 ppm or less
3. Lead and compounds containing lead	1,000 ppm or less
4. Mercury and compounds containing mercury (*)	1,000 ppm or less
5. Polybrominated biphenyls (PBBs)	1,000 ppm or less
6. Polybrominated diphenyl ethers (PBDEs)	1,000 ppm or less



* The CCFL used in solana products contain 3 mg of mercury per unit. However, this falls under the RoHS exemption of "mercury in compact fluorescent lamps not exceeding 5 mg per lamp." Mercury contained in CCFL is inorganic mercury. Because it is water-soluble and metabolizes without being absorbed into the body, it is not harmful if accidentally ingested.

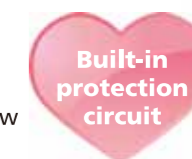
2 All products come with a standard one-year warranty

All solana products can be exchanged free of charge if any defects arise within one year from the purchase date. **(in japan sales only)**
Please inquire of the shop that you bought about the guaranteed term other than Japan.



3 Standard-equipped with protection circuit.

All products come standard equipped with a protection circuit in the inverter. If the circuit shorts out due to water exposure or other problem, it stops the flow of electrical current to prevent injuries and equipment damage.



4 PSE Mark (Electrical Appliance and Material Safety Law) application submitted.

The Electrical Appliance and Material Safety Law consists of safety standards to protect users from fires and electrical shocks which can be caused by electrical products. The law covers nearly all electrical products in Japan.



5 Compliant with electromagnetic interference (EMI) standards

Our products have passed testing and obtained certification from the third party testing body JET for EMI standards as established in the PSE (Electrical Appliance and Material Safety Law).



6 Meets JIS standards for weight

solana T8 CCFL tubes are under 500g, meeting the JIS standards for G13 base type lamps.

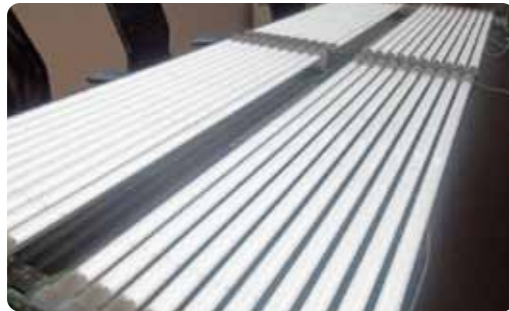
7 Complies with standard values for flame-resistant materials

The Polycarbonate used in solana's crystal tubes has an oxygen index of 29.4, thereby complying with standard values for flame-resistant materials.

solana Quality Control

Interested in where and how is solana made?

1 Everything is checked at the factory, and double checked at our Japan office



Thorough ageing test

Before shipping our products for sale, Japanese technicians perform ageing tests, visual inspection, and power consumption tests at our office in Japan.



2 Quality and environmental management is conducted based on ISO 9001 and ISO 14001.

Our Quality Control Department is stationed with staff thoroughly knowledgeable in ISO.

*The employee responsible for obtaining ISO certification in the PCB Department holds the concurrent post of Quality Control Dept Manager. The solana Lighting Department has not yet obtained ISO certification, although we plan to in the future.



Quality Control Department

3 Technicians engage in regular quality control meetings



In order to improve product quality, our technicians regularly participate in quality control meetings to facilitate the development and manufacturing of better products.



Technical advisor

Photography by

Customers can feel at ease with Hohkohsya's unparalleled quality control system—proudly boasting a track record of over 40 years in the printed circuit board industry.

Assembly plant in Taiwan



Manufacturing at the Taiwan plant



Power consumption testing before shipment

solana customers

Here are just some of the types of businesses and organizations that use solana.

- Indoor lighting in food plant (Pollack roe and ginger)
- Indoor lighting in major fast food chain stores
- Indoor lighting in major ramen chain stores
- Indoor lighting in local banks
- Indoor lighting in major supermarkets
- Indoor lighting in hotel rooms
- Indoor lighting in electronic parts assembly plant
- Indoor lighting in plant-growing factories
- Showroom lighting for major security companies
- Indoor lighting in printed circuit board manufacturing plant
- Indoor lighting at nursing facilities
- Indoor lighting at mental health clinics
- Indoor lighting at architectural design firms
- Office lighting at design companies
- Indoor lighting at technical schools
- Office lighting at small businesses
- Office lighting at airports
- Lighting in ships and offices for shipping companies
- Storehouse lighting for materials storage companies
- Office lighting at major electrical appliance companies
- Indoor lighting in convenience stores
- Office lighting at major power companies
- Indoor lighting at major mobile phone shops
- And many more!



And there's more!
From our customers

We tried LED once but the color seemed strange. We switched to CCFL as soon as we saw it.
Major power company

We placed 200 LED fluorescent and CCFL lights each on the same floor and asked the employees which they liked better. They overwhelmingly choose CCFL so now all of our lights are CCFL.
Major electrical appliance manufacturer

For some reason LED fluorescent lights made the food look odd. There was no problem with CCFL warm white bulbs so we decided to use them instead.
Major ramen chain

The depreciation period for LEDs is too long... I found the quick recovery of Solana products appealing, and decided to use it for our lighting.
Materials storage company

We used inexpensive foreign-made LEDs but were concerned about the quality. With solana however, we can be confident that quality will not be a problem.
Local bank

Concept

What is "solana"?

Product Comparison

solana features

Products

F A Q

Company Profile

Concept

What is "solana"?

Product Comparison

solana features

Products

F A Q

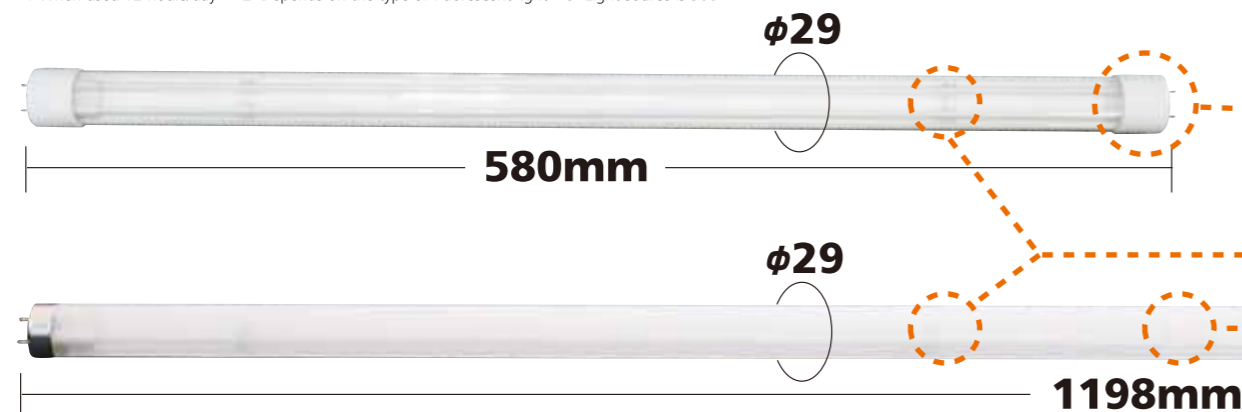
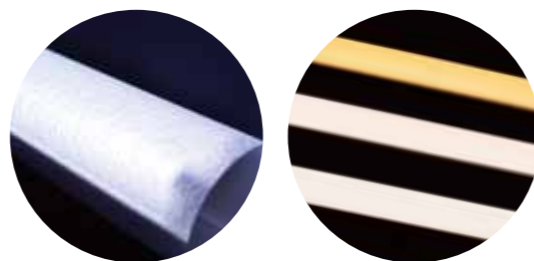
Company Profile

Straight tube type solana T8 CCFL tubes

SOLANA-FD20L / J SOLANA-FD40L / J

- 40,000 hour lifespan means no replacement costs for 10 years. *1
- Power consumption is only 28 W (FD20L is 14 W), that is 20-40% lower than fluorescent lights. *2
- With a light distribution angle of 220°, it is perfect for indoor lighting. *3
- Illuminance is nearly the same as fluorescent lights.
- Radiates less UV rays to reduce the attraction of insects.
- Uses high quality CCFL utilized in LCD products to provide a gentle, natural light with no glare.
- Uses three-band RGB CCFL with a Ra of 86 for a clear, natural light.
- Uses improved polycarbonate "crystal tubes".
- Ultra-lightweight. Only 330 g, including the internal power supply unit and inverter (FD20L is 185 g).

*1 When used 12 hours/day. *2. Depends on the type of fluorescent light *3. Light source is 360°



T8 CCFL tube SOLANA-FD20L

Best seller

Total length 580mm

Please inquire for price



T8 CCFL tube SOLANA-FD40L

Best seller

Total length 1198mm

Please inquire for price



CCFL & inverter made in Japan, assemble in Japan

Japan-made T8 CCFL tube

SOLANA-FD20J

New product Made in Japan

Total length 580mm

Please inquire for details



CCFL & inverter made in Japan, assemble in Japan

Japan-made T8 CCFL tube

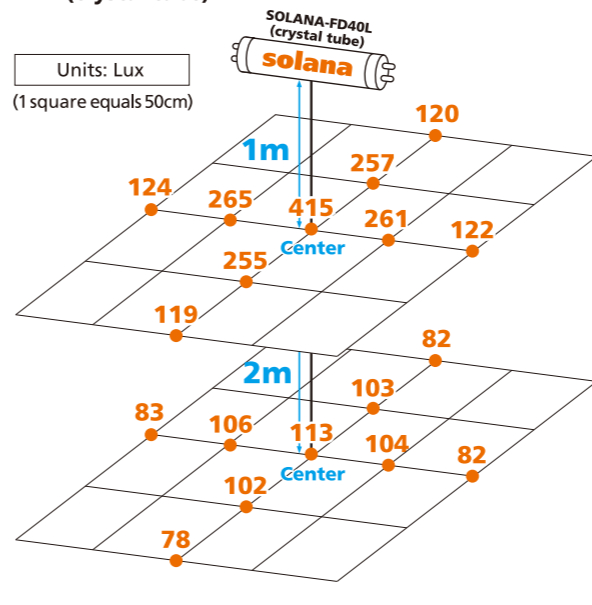
SOLANA-FD40J

New product Made in Japan

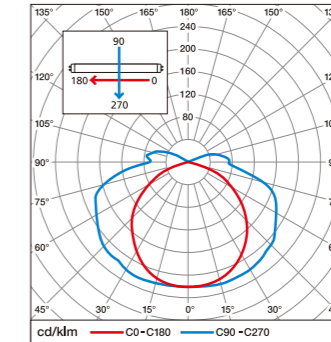
Total length 1198mm

Please inquire for details

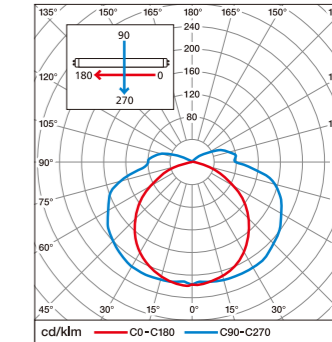
SOLANA-FD40L light distribution diagram (crystal tube)



SOLANA-FD20L Light distribution curve



SOLANA-FD40L Light distribution curve



SOLANA-FD20L Illuminance data

Light distribution distance	Illuminance directly under	
	Vertical light	Horizontal light
0.5m	791.78lx	1.5m 6.4m
1.0m	197.94lx	3.1m 12.8m
1.5m	87.98lx	4.5m 19.3m
2.0m	49.49lx	6.1m 25.7m
2.5m	31.67lx	7.7m 32.1m
3.0m	21.99lx	9.2m 38.5m

SOLANA-FD40L Illuminance data

Light distribution distance	Illuminance directly under	
	Vertical light	Horizontal light
0.5m	1,661.52lx	1.4m 6.7m
1.0m	415.38lx	2.8m 13.3m
1.5m	184.61lx	4.1m 20.0m
2.0m	113.84lx	5.5m 26.7m
2.5m	66.46lx	6.9m 33.4m
3.0m	46.15lx	8.3m 40.0m

- G13 base plastic**
*The same base used in most fluorescent lights.
- Internal inverter & power supply**
*Only AC voltage is needed to start the light.
- Contains U shaped CCFL**
- Uses crystal tubes**
*Very durable, heat and shatter resistant material.
- G13 base metal**
*The same base used in most fluorescent lights.

Choose from 3 colors

- Cool white**
A crisp and clear white light. Perfect for hospitals and schools.
- Natural white**
The closest color to standard fluorescent lamps.
- Warm white**
Provides a calm, smooth atmosphere. Great for eating & drinking establishments.

*We can make colors other than those listed above.

Cover-type

- Crystal (type)**
- Feature1**: We enhanced the material to increase its hardness!
- Feature2**: Prevents fingerprints from adhering to the surface!
- Feature3**: Now with a more "high-end" look!
- Feature4**: Has an oxygen index of 29.4, satisfying required specifications for flame-resistant materials.

SOLANA-FD20L/J SOLANA-FD40L/J Specifications

Product name	SOLANA-FD20L/J	SOLANA-FD40L/J
Base	G13	G13
Appearance	φ29 straight tube	φ29 straight tube
Outer material	Improved polycarbonate	Improved polycarbonate
External dimensions	φ=29mm L=580mm (not including protuberant portion)	φ=29mm L=1198mm (not including protuberant portion)
Weight	185g	330g
Light source	φ4 CCFL	2 φ4 CCFLs
Rated lifespan	40,000 hours	40,000 hours
Total luminous flux *1	1000lm	2000lm
Illuminance (1 m under fixture)	Warm white:190lx cool white & natural white:197lx	Warm white:390lx cool white & natural white:415lx
CRI	Ra86	Ra86
Light distribution angle	220°	220°
Power consumption	14W	28W
Rated voltage	AC100V-220V(50/60Hz)	AC100V-220V(50/60Hz)
Recommended temperature range *2	-20~40°C	-20~40°C

*1. This number applies to the light source. The total luminous flux of the product is about 10% less.
*2. Products can be used within a temperature range of -20 to 60°C; however, temperatures above 40°C may adversely affect the lifespan.

- Common specifications
- Uses CCFL
- solana protection circuit
- Completely lead free
- RoHS compliant
- Usable in temperatures down to -20°C
- Meets PSE safety standards
- Cuts UV rays

Bulb type solana CCFL bulbs SOLANA-LT60



E26 base

SOLANA-LT60

- 40,000 hour lifespan means no replacement costs for 7 years.
 - Power consumption is only 9.5W--that is 10 to 70% lower than standard bulbs. *2
 - With a light distribution angle of 300°, it is perfect for indoor lighting. *3
 - It is nearly as bright as 60W incandescent bulbs.
 - Radiates less UV rays to reduce the attraction of insects.
 - Uses high quality CCFL utilized in LCD products to provide a gentle, natural light with no glare.
 - Uses three-band RGB CCFL with a Ra of 86 for a clear, natural light.
 - Ultra-lightweight at only 110 g, which includes the internal inverter.
 - It has a standard E26 base so all you have to do is screw it in to use it.
- *1. When used 12 hours/day. *2. Depends on the type of fluorescent light
*3. Light source is 360°

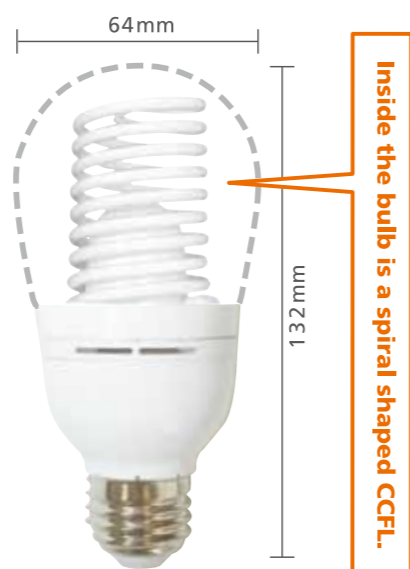
Please inquire for price

Model number	SOLANA-LT60
Base	E26
Appearance	Full cover glass
External dimensions	φ=64mm / L=132mm
Weight	110g
Light source	Spiral CCFL
Designed lifespan	40,000 hours
Total luminous flux	Warm white:550lm Natural white:600lm
Power consumption	9.5W
Rated voltage	AC100V
Recommended temperature range	-20 to 40°C*

*Can be used within a temperature range of -20 to 60°C; however, temperatures above 40°C may adversely affect its lifespan.

Emission color line up

Warm white	Natural white
2800K	6400K
<i>Recommended</i>	
Perfect for the home! (bathroom, hallway, etc.)	Great for the office and kitchen!



Specifications

- Uses spiral CCFL
- solana protection circuit
- RoHS compliant
- Usable in temperatures down to -20°C
- Ra86
- Completely lead free
- Meets PSE safety standards
- Cuts UV rays



CCFL dimmable bulb SOLANA-LT60C

Please inquire for price



Emission color line up

Warm white	Natural white
Perfect for the home! (bathroom, hallway, etc.)	Office, factory, commercial facility, etc.

E26 AC100V

A separate dimmer device is required for dimming. We recommend using a dimmer for incandescent bulbs (phase control dimmer). However, it can also be used with rotary and slide dimmers that are already installed. Do not use dimmers with a maximum wattage that exceeds 500W.

Product name	SOLANA-LT60C
Base	E26
Appearance	Full cover glass
External dimensions	φ=64mm / L=132mm
Weight	110g
Light source	Spiral CCFL
Rated lifespan	40,000hours
Total luminous flux	Warm white:550lm/ Natural white:600lm
CRI	Ra86
Power consumption	9.5W
Rated voltage	AC100V
Recommended temperature range	-20~40°C*

New product

Dimmable

Launch scheduled for autumn 2011

CCFL bulb SOLANA-LT80

Please inquire for price



Emission color line up

Warm white	Natural white
Perfect for the home! (bathroom, hallway, etc.)	Office, factory, commercial facility, etc.

E26 AC100V

Product name	SOLANA-LT80
Base	E26
Appearance	No cover
External dimensions	φ=60mm / L=128mm
Weight	100g
Light source	Spiral CCFL φ5mm
Rated lifespan	40,000hours
Total luminous flux	Warm white:950lm/ Natural white:1000lm
Power consumption	18W
Rated voltage	AC100V
Recommended temperature range	-20~40°C*

New product

Power consumption 18W

Launch scheduled for autumn 2011

*Can be used within a temperature range of -20 to 60°C; however, temperatures above 40°C may adversely affect its lifespan.

CCFL High CRI bulb SOLANA-LT60R

Please inquire for price



Emission color line up

Warm white	Natural white
Perfect for the home! (bathroom, hallway, etc.)	Office, factory, commercial facility, etc.

E26 AC100V

Product name	SOLANA-LT60R
Base	E26
Appearance	Full cover glass
External dimensions	φ=64mm / L=132mm
Weight	110g
Light source	Spiral CCFL
Rated lifespan	20,000 hours
Total luminous flux	Warm white:385lm/ Natural white:420lm
CRI	Ra99*1
Power consumption	9.5W
Rated voltage	AC100V
Recommended temperature range	-20~40°C*2

New product

Equivalent to Ra99

*1. The Ra of the CCFL itself is 99 but the actual Ra of the product is equivalent to 95.
*2 Can be used within a temperature range of -20 to 60°C; however, temperatures above 40°C may adversely affect its lifespan.

CCFL bulb SOLANA-LT40

Please inquire for price



Emission color line up

Warm white	Natural white
Perfect for the home! (bathroom, hallway, etc.)	Office, factory, commercial facility, etc.

E26 AC100V

Product name	SOLANA-LT40
Base	E26
Appearance	Full cover glass
External dimensions	φ=64mm / L=132mm
Weight	110g
Light source	Spiral CCFL
Rated lifespan	40,000hours
Total luminous flux	Warm white:300lm/ Natural white:350lm
Power consumption	7W
Rated voltage	AC100V
Recommended temperature range	-20~40°C*

New product

Power consumption 7W

Launch scheduled for autumn 2011

*Can be used within a temperature range of -20 to 60°C; however, temperatures above 40°C may adversely affect its lifespan.

Straight tube type

solana (specialized lamps)
T8 CCFL tubes

- Common specifications
- Uses CCFL
- solana protection circuit
- Completely lead free
- RoHS compliant
- Usable in temperatures down to -20°C
- Meets PSE safety standards
- Cuts UV rays

High CRI T8 CCFL tube



High CRI T8 CCFL tube
SOLANA-FD20R

Total length
580mm

Best seller **Equivalent to Ra99** **Please inquire for price**

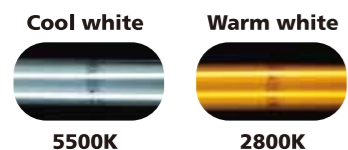
T8 CCFL tube with CCFL lamp of Ra99.
We can also manufacture 1198mm T8 CCFL tubes.

SOLANA-FD20R Specifications

Product name	SOLANA-FD20R
Base	G13
Appearance	φ29 straight tube
Outer material	Improved polycarbonate
External dimensions	φ=29mm L=580mm (not including protuberant portion)
Weight	185g
Light source	φ4 CCFL
Rated lifespan	20,000hours
Total luminous flux	700lm
CRI *1	Ra99
Light distribution angle	220°
Power consumption	14W
Rated voltage	AC100V-220V(50/60Hz)
Recommended temperature range *2	-20~40°C

*1. The Ra of the CCFL itself is 99 but the actual Ra of the product is equivalent to 95.
*2. Products can be used within a temperature range of -20 to 60°C; however, temperatures above 40°C may adversely affect the lifespan.

Choose from 2 colors



*We can make colors other than those listed above.



Color T8 CCFL tube



Color T8 CCFL tube
SOLANA-FD20T
available in red, pink, blue, green, yellow-green, and yellow

Total length
580mm

Best seller **Selectable colors** **Please inquire for price**

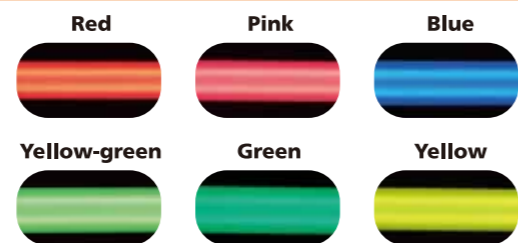
T8 CCFL tube equipped with single color CCFL lamp.
We can also manufacture bulbs and 1198mm T8 CCFL tubes.

SOLANA-FD20T Specifications

Product name	SOLANA-FD20T
Base	G13
Appearance	φ29 straight tube
Outer material	Improved polycarbonate
External dimensions	φ=29mm L=580mm (not including protuberant portion)
Weight	185g
Light source	φ4 CCFL
Rated lifespan	20,000hours
Total luminous flux	*1
CRI	*1
Light distribution angle	220°
Power consumption	14W
Rated voltage	AC100V-220V(50/60Hz)
Recommended temperature range *2	-20~40°C

*1. Depends on the color. Please inquire for details.
*2. Products can be used within a temperature range of -20 to 60°C; however, temperatures above 40°C may adversely affect the lifespan.

Choose from 6 colors



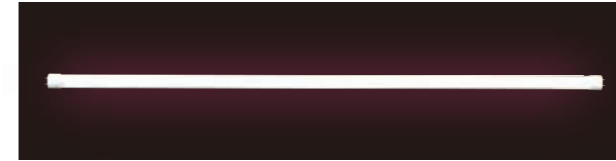
*We can make colors other than those listed above.

Plant growth light

Plant growth lights

- Common specifications
- Uses CCFL
- solana protection circuit
- Completely lead free
- RoHS compliant
- Usable in temperatures down to -20°C
- Meets PSE safety standards
- Cuts UV rays

Plant growth T8 CCFL tube



Plant growth T8 CCFL tube
SOLANA-FD40G

Total length
1198mm

This T8 CCFL tube emits the optimal wavelength for growing plants

Best seller **Please inquire for price**

Product name	SOLANA-FD40G-610	SOLANA-FD40G-658	SOLANA-FD40G-735
Wavelength	610nm	658nm	735nm
Base	G13		
Appearance	φ29 straight tube		
Outer material	Improved polycarbonate		
External dimensions	φ=29mm L=1,198mm (not including protuberant portion)		
Weight	330g		
Light source	2 φ4 CCFLs		
Rated lifespan	35,000hours	30,000hours	20,000hours
Total luminous flux	*1		
Illuminance (1m under fixture)	*1		
Light distribution angle	220°		
Power consumption	28W		
Rated voltage	AC100V-220V(50/60Hz)		
Recommended temperature range *2	-20~40°C		

*1. Please inquire.
*2. Products can be used within a temperature range of -20 to 60°C; however, temperatures above 40°C may adversely affect the lifespan.



Plant growth research unit



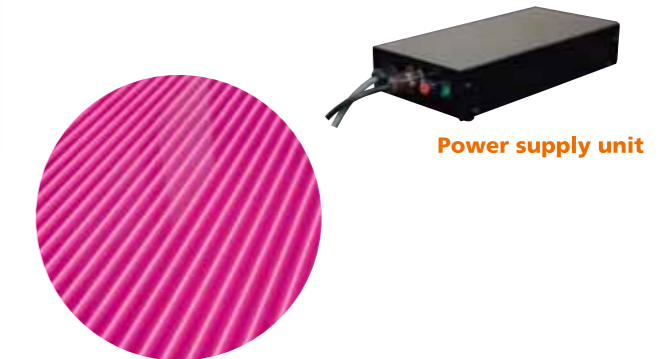
Plant growth research unit
SOLANA-SG

Dimmable plant growth research unit equipped with twenty 1,170 mm CCFL tubes.

Best seller **Equipped with dimmer** **Please inquire for price**

Product name	SOLANA-SG610U	SOLANA-SG658U	SOLANA-SG735U
Wavelength	610nm	658nm	735nm
Power input	Max DC24V 13A		
Dimmer function	20%~100%		
Light photon	200μmol *1	200μmol *1	200μmol *1
Rated lifespan	35,000hours*2	30,000hours*2	20,000hours*2
Light source	20 CCFL φ4mm 1170mm		
Dimensions	W=1250mm / D=650mm / H=36mm(not including protuberant portion)		
Weight	10kg (not including power supply unit)		
Operating temperature	0°C~40°C		
Power consumption	312W		
AC Power	Rated voltage 100V - 240V (85V - 265V)(50/60Hz)		

*1 & 2: reference values
Note: Product specifications and appearance are subject to change for improvement proposes without notice.



Power supply unit

Concept

What is "solana"?

Product Comparison

solana features

Products

F A Q

Company Profile

Concept

What is "solana"?

Product Comparison

solana features

Products

F A Q

Company Profile

Frequently Asked Questions

Q. Isn't CCFL a new light source? How can I be sure it's reliable?

CCFL (cold cathode fluorescent lamp) was developed 25 years ago for use as a light source in liquid crystal displays. It is a reliable light source used as a back-light in laptops, LCD TVs, and more. Moreover, our CCFL products are equipped with a specialized protection circuit, which automatically shuts down the protected circuit in case trouble arises.

Q. How much energy will I save, and how environmentally friendly is it?

CCFL consumes roughly 20-40% less power than standard fluorescent lights, cutting electrical costs considerably. And its astounding 40,000-hour lifespan means there will be no replacement costs during that entire period. It also reduces CO2 emissions by 20-40% compared with conventional lights. Furthermore, because the light-emitting lamp (CCFL) does not in principle generate heat, it will also cut electrical costs as air conditioning is not required for cooling.

Q. Could you tell me more details about its lifespan?

solana uses circuit components that are guaranteed to function for over 50,000 hours under high temperature conditions. The CCFL tube light source will gradually lose brightness over time. After 40,000 hours of use, its illuminance will drop to roughly 65%. The CCFL tube itself can be used over 80,000 hours. (Exact time depends on external conditions.)

Q. I'd like to know more about the warranty period.

solana products come with a one year warranty after purchase. **(in japan sales only)** All solana products can be exchanged free of charge if any trouble arises under normal use during that period. Please inquire of the shop that you bought about the guaranteed term other than Japan.

Q. I'd like to know more about solana safety standards.

solana products are PSE* certified. This means that they are covered by PL insurance in the event that something unforeseen happens. *PSE is a safety law for electrical appliances and materials to protect consumers from fires and electrical shocks that can be caused by electrical products.

It consists of safety standards for nearly all 100V electrical products in Japan.

Q. Can I grow plants with solana lights?

Yes. Plants can be grown without any problems. And because the light source generates little heat, it can be placed physically close to the plants. CCFL emits wavelengths that are said to be needed for growing plants. We also offer products that emit wavelengths ideal for growing. **See p 21.**

Q. How do you install solana T8 CCFL tubes?

Please see the instruction enclosed.

Q. How do I check what starting system my current light systems use?

Look for the following designations on your fluorescent light.
 ·FL:glow starter
 ·FLR:rapid-start
 ·FHF:inverter

Q. Do you use mercury?

Yes. However, because very small quantities are used (under 3 mg per CCFL) it conforms to RoHS criteria and can be disposed of as industrial waste. And because the mercury we use is inorganic, it is water-soluble and metabolizes without being absorbed into the body. It is therefore not harmful if accidentally ingested. For more details on safety **see p 13.**

Q. Where are your products manufactured?

"solana" is made in Taiwan and Japan now. We are starting up an on-site production in other countries. **See p 14.**

Q. Where are your products designed?

Design is carried out at the Hohkohsya head office. We offer safe and high quality products leveraging design technology cultivated in Hohkohsya's main business line of circuit board design and manufacturing.

Q. Do you have PL insurance?

Yes.

Q. What are the volume requirements for custom manufacturing and OEM development?

You can place orders for custom manufacturing and OEM even for a single item. Please contact us for details.

Q. Is solana waterproof?

"solana" is not a waterproof lamp itself. It can be fit with a waterproof capsule case to keep waterproof.

Q. Are they explosion-proof?

No. However, polycarbonate is shatter-resistant. And solana can be placed in an explosive-proof case.

Q. Can solana tubes be installed onto a light fixture with any kind of starting system?

For safety and to ensure optimal performance of solana products, the following installation methods are strongly recommended.

1. Carry out a bypass installation
2. Use a light fixture with a pre-installed starting system

Q. Do you have any patents?

We use patentable components and circuits, and we possess proven know-how on internal inverter components.

Q. What type of places is CCFL suited for?

Because the light source can be made narrow and long (linear light source), it can provide uniform illumination over a wide area. And because it has a long lifespan, it is ideal for places where maintenance is difficult.

Q. I'm concerned about defects.

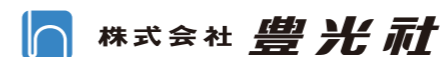
We use high quality CCFL, and as for internal components—we boast a track record of over 40 years in the printed circuit board industry. And Hohkohsya offers complete support from design to after-sales support, so you can purchase with confidence.

Q. Can I use it overseas?

About the fluorescent lamp type, you may use it within the voltage range of 100V~220V. About the bulb type, we are developing two models of 100V and 220V type. Be sure that you confirm the appropriate safety laws and regulations of the country you are using it in. Product warranty does not apply to overseas use.

Feel free to contact us with any other questions.

Manufacturing and Sales Company



Hohkohsya Co. Ltd.

www.solana.asia

Lighting Department

Phone: **+81-93-581-4471**

Sales: sales@solana.asia

E-mail: Technology: tech@solana.asia

Support: support@solana.asia

Contact persons

Nakamura(English speaker), Miyagawa, Sato, and Hashiuchi

Company Name: Hohkohsya Co., Ltd.

Head Office: 2-7-30 Kamiitozu, Kokurakita-ku, Kitakyushu-shi, Fukuoka-ken, 803-0845

Phone: +81-93-581-4471 (switchboard number)

Fax: +81-93-581-0380 (switchboard number)

URL <http://www.hohkohsya.co.jp>

Founded: January 1969

Stated capital: 30,000,000 JPY

(Group company total: 330,050,000 JPY)

President: Hiroshi Kuramitsu

Employees: 28

Business Lines

- Printed circuit board design and manufacturing
- Mounting and assembly of components
- Board simulation
- CAD system consulting
- System development
- Sales of semiconductors and information systems
- Development and sales of Picsor—DC current sensor
- Development and sales of solana—next generation lighting

【 Subsidiary 】

Hohkohsya Technologies Co., Ltd.

Stated Capital: 300,050,000 JPY

Wholly owning company of Hohkohsya

Website: <http://www.hktec.co.jp/>

【Development cooperation】

Cox Co., Ltd.

1488-4 Aikawa-machi, Kurume-shi,

Fukuoka-ken, 839-0861 Fukuoka Bio Factory Rm 301

Phone: +81-942-46-1285 Fax: +81-942-46-1286



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