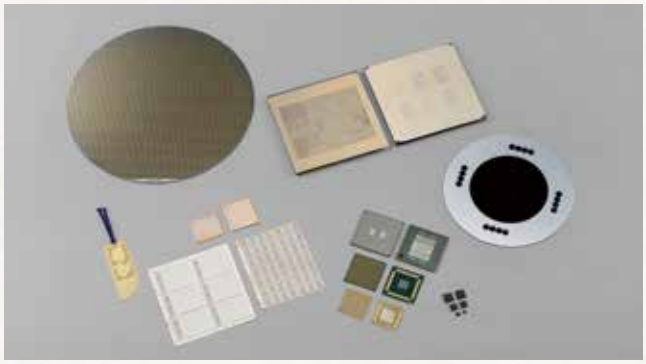
TOPPAN

Electronics Business Guide

Creating a bright future
with electronics technology.

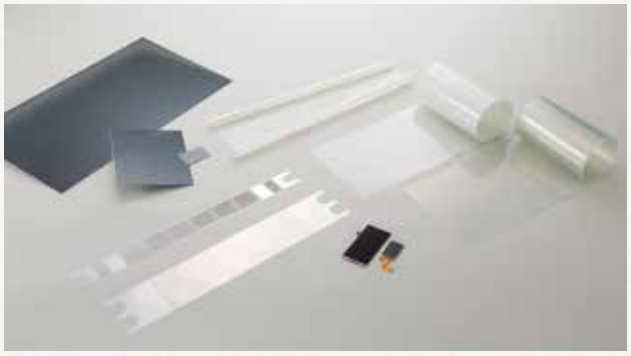
Turning Printing Technologies into Leading Edge Electronics Products

Semiconductor-Related



We develop and manufacture FC-BGA substrates used in the back-end process of semiconductor manufacturing, photomasks which are indispensable for the front-end process of circuit patterns, LSI design services, and wafer processing services such as on-chip color filters for image sensors, liquid crystal light control films that can be switched between transparent and opaque by turning the power on and off, contrast, as well as high-definition, low power consumption TFT liquid crystal displays.

Display-Related

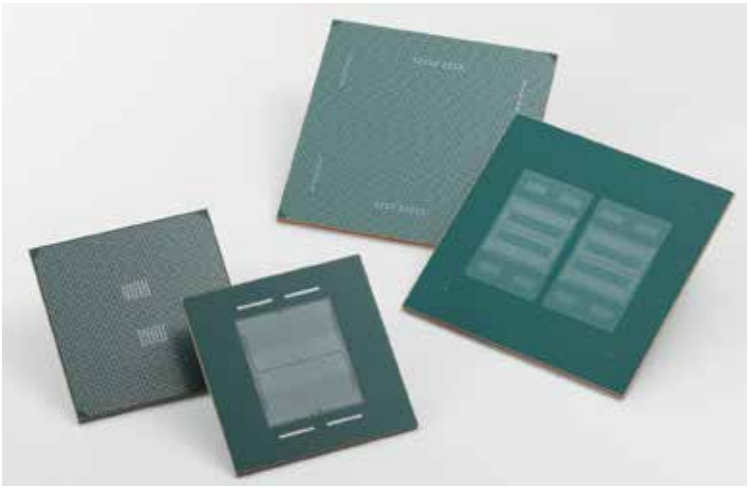


We develop and manufacture color filters, which are indispensable for colorizing displays, anti-reflection films that reduce display reflections and achieve high contrast, liquid crystal light control films that can be switched between transparent and opaque by turning the power on and off, as well as high-definition, low power consumption TFT liquid crystal displays.

Device Development & Solutions

TOPPAN combines its various elemental technologies to design and develop devices and systems for a wide range of applications.

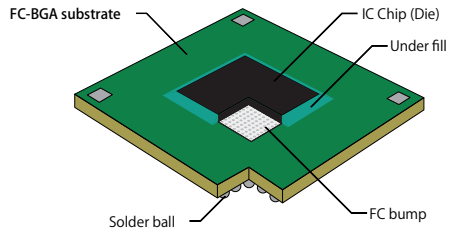
FC-BGA Substrates (High Density Semiconductor Package Boards)



Satisfying diversified requirements with build-up wiring board technology

An FC-BGA (Flip Chip-Ball Grid Array) substrate is a high density semiconductor package board that enables higher speed LSI chips with more functions. We have developed ultra high density wiring substrates with our original microfabrication and build-up wiring technologies, offering products supporting current semiconductor microfabrication. In the areas of microprocessors and graphic processors for PCs, servers and game devices, as well as LSIs for digital home appliances, TOPPAN comprehensively supports customer's needs from substrate design to manufacture. Solutions for lead-free and halogen-free products are also available.

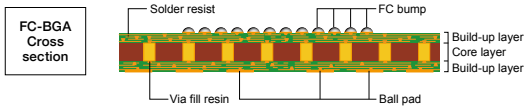
Structure of FC-BGA package



Structure of FC-BGA substrate

FC-BGA Substrate

This type of substrate is excellent in terms of its narrow pitch, electric characteristics and heat radiation due to a structure that combines IC chip connecting FC bumps with ball pads on the substrate side.



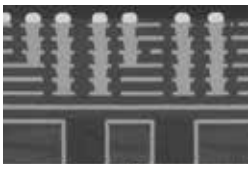
2.3/2.5D FC-BGA Substrates

FC-BGA substrates, which pursue advanced specifications of large size, high multilayer, and quality stability through high-precision coplanarity, are also utilized in 2.3D/2.5D structures where multiple dies are mounted via interposers.

Technologies that support higher density

Hyper Build-up

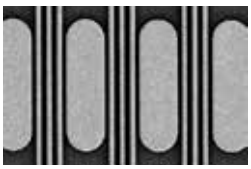
In terms of power strengthening and signal quality, high-end products such as highly functional processors require build-up technology with a higher layer count specification. Using the filled via hole technology that enabled the optimization of manufacturing conditions, TOPPAN guarantees reliability of interlayer connections.



Line/space = 12/12 µm
Land/Via = 85/55µm

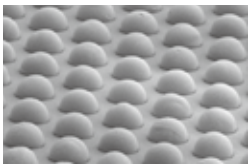
Higher Pin Count / Ultra Fine Wiring

It is high-precision patterning technology that supports the increasing demand for higher density wiring. Based on TOPPAN's copper plating technology that has been cultivated through the manufacture of substrates for super computers that need strict impedance control, the thickness of conductors has been successfully made uniform, allowing super-fine wiring with little fluctuation.



Narrow Pitch FC Bumps

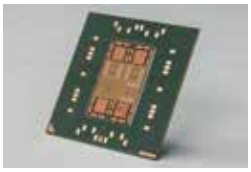
With a trend toward smaller bumps with narrower pitch, TOPPAN has adopted various advanced production methods in addition to the high-resolution silkscreen printing process and successfully developed a pre-soldering method that minimizes fluctuation. Through a stable supply of such solder, we support customer's high yield component mounting.



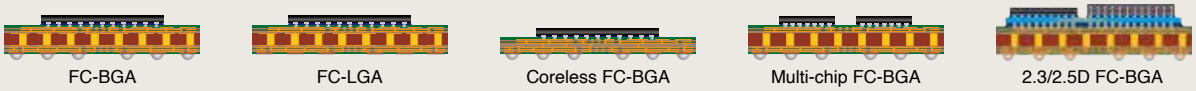
Pitch = 120µm

Development of Next Generation Package

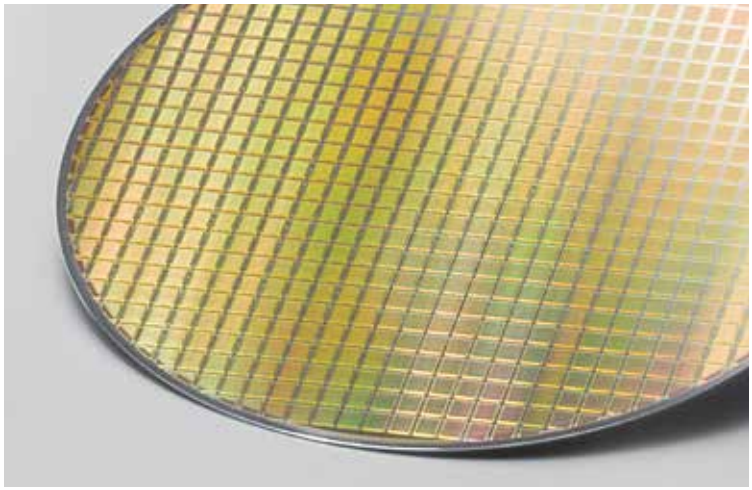
As data communication volume increases in the age of AI, semiconductors are required to deliver higher performance and lower power consumption.
In response to these needs, TOPPAN is developing next-generation substrates for 2.1D mounting and with embedded components, as well as next-generation FC-BGA substrates pursuing high flatness.



Line-up of products



Color Filter Arrays (On-chip Color Filters)

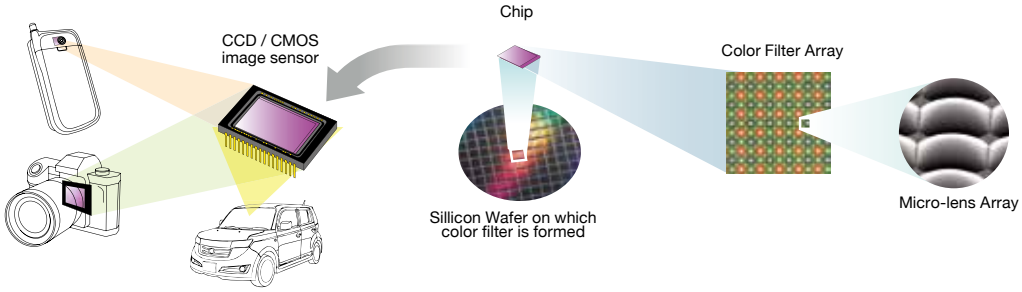


Contributing to higher image quality for digital images such as smartphones and security cameras

On-chip color filters (color fiilter arrays and micro-lens array) are essential for colorizing image input devices such as CMOS image sensors and small display devices such as OLEDoS, and are used in a wide range of applications including cameras for smartphone, automotive, security, and medical applications, as well as head mounted displays.
Because a color filter for red, green and blue (RGB) as the three primary colors of light is formed on each photodiode generated on a silicon wafer, it is called an “on-chip color filter.” Such filters are essential components to input color images. In addition, microlenses are formed on the color filter for the purposes of enhancing light converging capabilities and sensitivity.

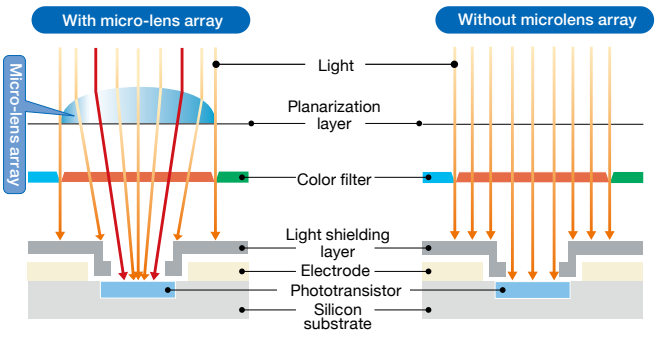
What is an image sensor?

An image sensor consists of a large number of small elements called pixels. Each pixel further consists of a photodiode and light transfer unit. Although the photodiode generates electric signals once it receives light, it does not produce any color images since the element reacts only to light and dark. Accordingly, a color filter is formed on the photodiode, enabling detection of light strength received and perception of the image as a color image.

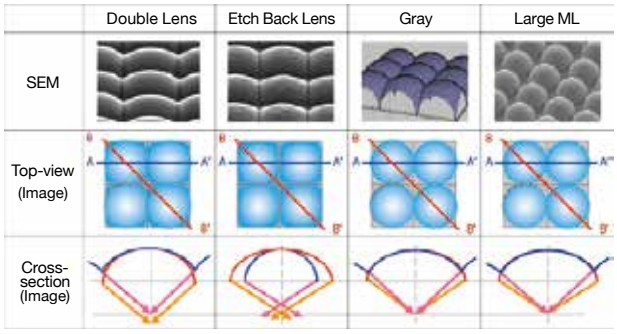


Effect of microlens

By changing the light direction through the effect of the lens, a higher volume of light can be converged onto the photodiode.
TOPPAN offers a lineup of microlens process technologies that are ideal for various applications.



Example of microlens pattern



World’s leading color filter array supplier

TOPPAN provides high-quality color filter arrays to image sensor manufacturers.
By fully utilizing color filter technologies, highly semiconductor-related technologies and other leading- edge technologies that TOPPAN has accumulated, we provide highly reliable products to satisfy each customer’s needs.
Our development center is located in Tamana City, Kumamoto Prefecture, and our manufacturing center is in Shanghai.


TOPPAN Electronics Product Co.,Ltd.
Kumamoto Plant


TOPPAN Sensing Electronics
(Shanghai) Co., Ltd.

Etched Products

Etching is a type of method that chemically corrodes a metal surface to remove a portion of the material. TOPPAN develops, manufactures, and sells a wide variety of etching-applied products, such as micro flow channels, metal masks, and other components for various electronics products, using the advanced etching technology cultivated over many years in manufacturing.
In addition, we also produce logo plates and metal bookmarks, etc. Based on our photofabrication technology, we provide microfabricated products to meet our customers' applications.
The wide width and roll-to-roll system also realize excellent production efficiency.

High definition metal masks

Ultra-high definition metal mask for sputtering. The etching process is controlled with high precision to form a cross-sectional shape suitable for sputtering applications. It is possible to form films with high-precision sputter pattern deposition.

Base material

Copper / ferrous metals (t=0.015-0.30mm)

Minimum dimension

Aperture Size	≈ base material thickness
Slit width	≈ base material thickness
Line width	≈ 50% of base material thickness

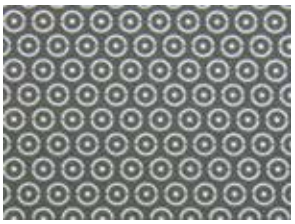
Dimensional accuracy / Guaranteed value

	Base material thickness 0.025mm	Base material thickness 0.100mm
Aperture Size	±0.005 (±0.002)mm	±0.015mm
Slit width	±0.005 (±0.002)mm	±0.015mm
Line width	±0.005 (±0.002)mm	±0.015mm

Value of ( ) is actual data

Light shielding plate for camera module

The etching method solved the problem of the press construction method, where the cross section is flat and at right angles, causing diffuse reflection of light.
Black oxide coating (black oxide film) treatment is also available for low reflectivity.



Cross-sectional Shape Control

In response to customer requests, we have realized a cross-sectional shape with a curved neck, which is usually considered difficult to achieve with etching.Our precise shape control technology enables us to meet various processing requirements.

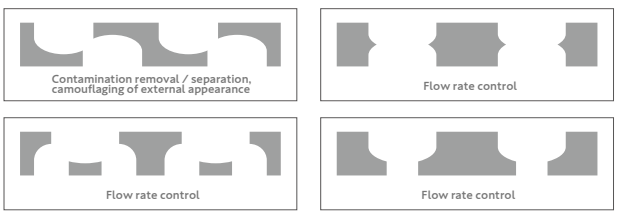
Examples of cross-sectional shapes

Normal etched through hole | Curved neck through hole

Micro Channel

By combining through-etching and half-etching to stack thin sheets with different patterns, complex flow channels can be formed.
Applications include components for heat dissipation and cooling devices and ink channels.

Filter Cross Section Structure by Application

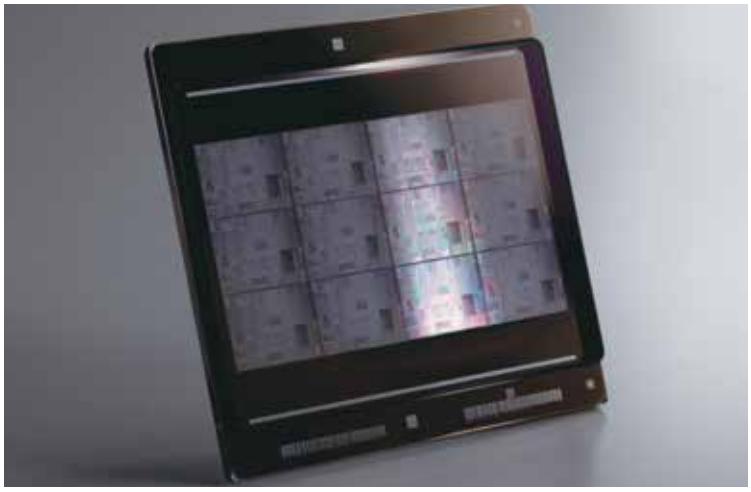


Photomasks / Nanoimprint Molds

Tekscend Photomask Corp.

https://www.photomask.com

TOPPAN Photomask Co., Ltd. changed its name to Tekscend Photomask Corp. in November 2024.



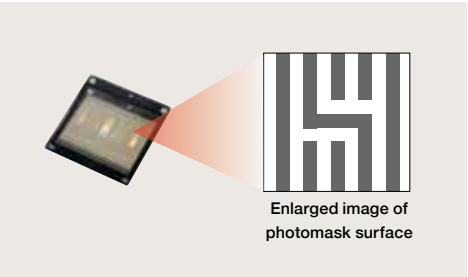
Contributing to the semiconductor industry with cutting edge lithography technology

A photomask is an essential device used as the master plate in the manufacturing process for semiconductor chips such as LSI. Circuit patterns drawn by electron beams or laser beams are etched onto composite quartz glass on which a metal (such as chrome) light shielding film is formed.
Tekscend Photomask Corp. has a production network with eight manufacturing bases in US/Europe and Asia, providing high-quality photomasks to customers around the world.

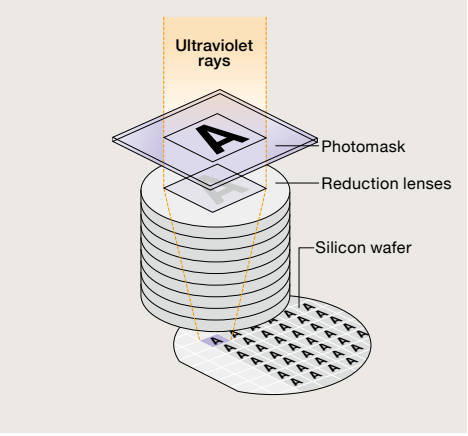
How is a photomask used?

Using ultraviolet light, the semiconductor circuit pattern formed on the surface of a photomask is transferred onto the photo resist (photosensitive resin) that is coated over the surface of a silicon wafer. The pattern is usually reduced to a quarter size through reduction lenses on the stepper (exposure device).

Enlarged image of photomask surface



Exposure process



Type of Photomasks

Binary Masks

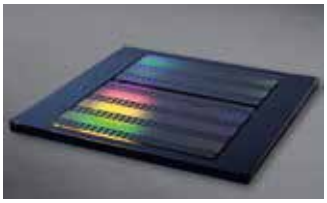
Structure of binary mask is simple; it is a photomask blank covered with patterned layer of opaque material.
Its transmission characteristics are either transparent or non-transparent. Binary mask is used for building a pattern in which line width being larger than the exposure wave length.

Phase Shift Masks

Phase-shifting mask (PSM) has achieved improved wafer printability with higher resolution and increased DOF (Depth of Focus), by controlling the phase shift and the transmission rate.
This is a standard technology for lithography in which line width being smaller than the exposure wave length.

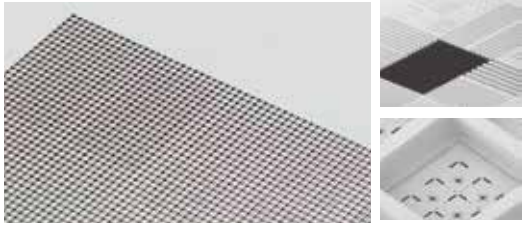
EUV Masks

EUV is next generation lithography technology. EUV lithography uses EUV light shorter wave length than existing DUV, and requires reflective optics exposure system.



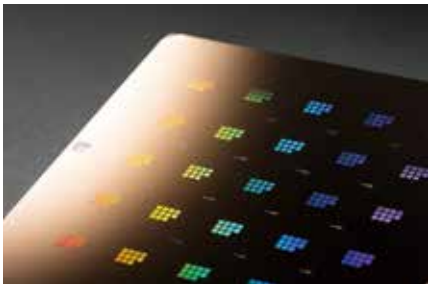
Stencil Masks

Silicon stencil mask is a photomask for Electron Beam Lithography, with nanometer size apertures to fabricate nanometer scale patterns.



Various photomask types

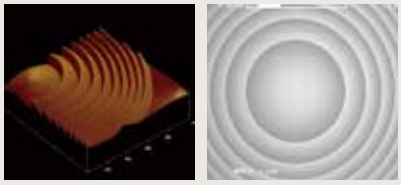
Tekscend Photomask provides high-definition and reliable photomasks for a wide range of applications, such as for various industrial and R&D purposes etc.



3D Photo masks (Gray-tone masks)

By using a pattern smaller than the resolution limit, halftones are expressed without resolving the pattern on an object such as a wafer. High quality 3D structure can be formed.

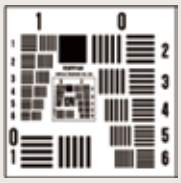
Example of pattern



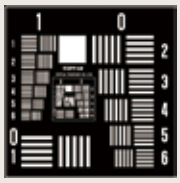
TEST CHART

Test chart is the photomask which formed the basic-shaped pattern on the glass substrate. It is available in the uses such as accuracy management of equipment, a resolution check, and a valuation basis at photo-resist selection.photo-resist selection.

positive type



negative type



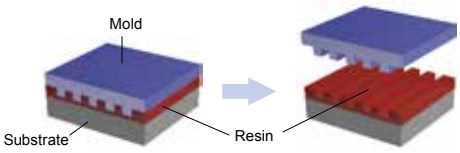
Examples of Photomasks

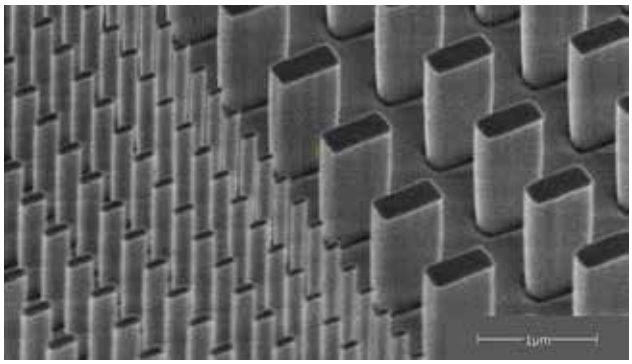
- Masks for MEMS
- Masks for IC (bump)
- Masks for Thermal Head
- Masks for various R&D etc.
- Mask for Device Accuracy control
- Master masks for High-resolution Printing
- Masks for Semiconductor Packaging Substrates
- Masks for LED
- Masks for Micro Lens Array
- Test Chart

etc.

Nanoimprint Molds

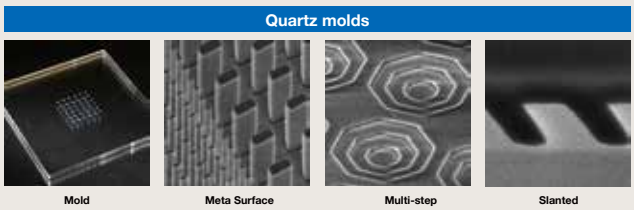
Nanoimprint is a microfabrication technology that transfers patterns on the order of several nanometers by pressing a mold (DIE), which serves as the original plate.
Because of the simplicity of the process, nanoimprinting is expected to be the technology for mass production of micro-structures at low cost and with good reproducibility.
Tekscend Photomask Corp. develops and manufactures high-precision molds for nanoimprinting by applying lithography technology cultivated through its semiconductor photomask business.





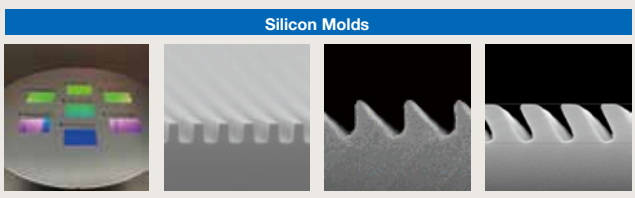
Quartz Molds

Tekscend Photomask Corp.'s quartz molds are made of high-quality quartz material equivalent to semiconductor photomasks and have excellent stability and flatness.
By applying the semiconductor photomask manufacturing process, it is possible to form high-resolution patterns at the tens nanometer level.
We also develop and manufacture multi-stage molds to meet a wide range of needs.
Substrate size: 152 x 152 x 6.35 mm (t)



Silicon Molds

Tekscend Photomask Corp.'s silicon molds are manufactured by drawing precise patterns on photosensitive resin coated on a silicon substrate using an electron beam, and then deep digging process using a dry etching method.
This allows us to achieve the same high precision as quartz molds and to manufacture silicon molds with high aspect ratio patterns and complex three-dimensional shapes.
Substrate size: 200 mm in diameter (wafer thickness: 725 μm)



LSI Design / LSI Turnkey Service

TOPPAN TECHNICAL DESIGN CENTER CO., LTD.

http://www.toptdc.com/en/

TOPPAN Technical Design Center develops and designs LSIs based on various technologies related to LSIs such as digital, analog and memory etc.

LSI Design Service

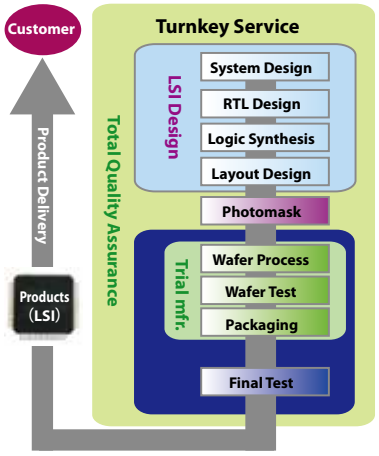
As an LSI design partner of various semiconductor manufacturers, the company has been providing LSI development and design services for about 50 years. Development performed in the past encompasses a wide variety of fields, including analog, memory, LCD, LED drivers, and microcomputer logic. For development of RF and analog mixed signal in particular, a wealth of technologies including power circuit, amplifier circuit, high frequency LSI, and system LSI digital mixed macro have been accumulated. TOPPAN prides itself on industry-leading technical know-how.

Analog mixed signal development achievements

- High-speed data interface (SerDes/LVDS)
- Power management / DC-DC converter
- CMOS image sensor
- Silicon tuner
- PLL/VCO
- ADC/DAC
- Sensor
- LED Driver
- LCD Driver
- Wireless
- RF : LNA/MIX

LSI Turnkey Service

This is a solution-based business aiming to provide a total range of services, from circuit design to LSI prototype and mass production based on each customer's requirements and specifications. Its strengths in the analog field include wireless communication technologies, high-speed transmission technologies, sensor circuits, and power circuits.
In the digital field, the company has expertise in low power consumption technologies. Through collaborations with partners with their own particular strengths, we respond to clients' requests for custom LSIs.



Features

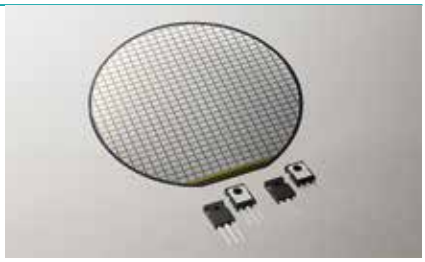
- Response from design to production
- Flexible interface
- Correspondence of small quantity lot
- Production and quality control
- Prototype service compliant

Specialties

- High-speed transmission system device
- Wireless communication RF front end
- AFE for sensors
- Power supply IC

Power Semiconductor Turnkey Service / Power Semiconductor Porting Service

We provide turnkey services for power semiconductors. We offer not only total solution services from design to packaging and mass production, but also contract wafer fabrication. We also offer porting of wafer fabrication processes owned by device manufacturers and contract services for partial fabrication.



Planning → Circuit design Board design → Material selection → Trial / Evaluation → Certifications → Reliability test → Mass production

Own Products

This is a service that covers everything from development to mass production of original electronic devices tailored to customer needs. We provide one-stop support on behalf of our customers, from planning to manufacturing.
We can handle a wide range of needs, from small-scale prototyping at the PoC (proof of concept) stage, where ideas are turned into reality, to mass production of finished products.

Planning / Concept → Circuit design Board design → Material selection → Prototype / Evaluation → Various certifications → Reliability testing → Mass production

TDS601

I/O Expander IC

TOPPAN Original ASSP

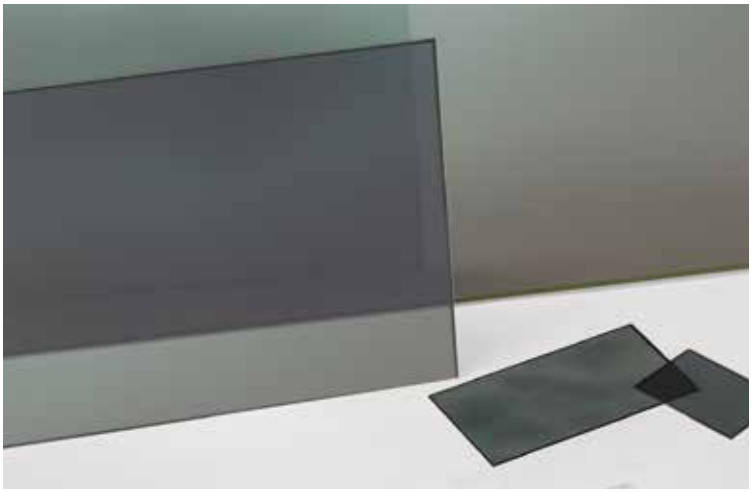
ZETA BOX

ZETA / LPWA network gateway

TDS902

ZETA LPWA Communication Module

Color Filters

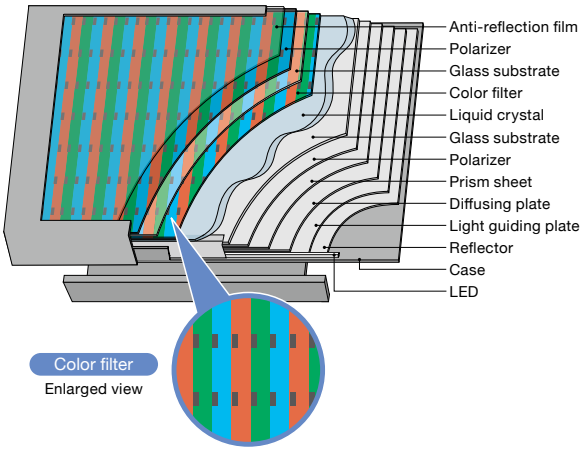


A wide range of applications from large televisions to smartphones

A color filter is a critical component that determines color display image quality. In 1971, TOPPAN developed color stripe filters for image pick-up tubes by applying microfabrication technology based on plate making in printing. Since then, TOPPAN's color filters are applied to various products ranging from large televisions to tablets and smartphones.

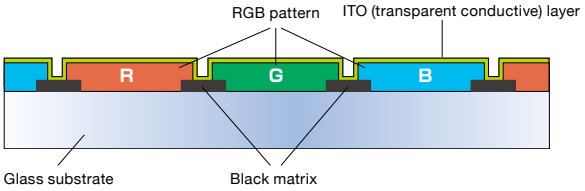
Structure of Color LCD panel

The color image is created by light passing through a color filter.



Structure of Color filter

As the basic structure of the color filter, red (R), green (G) and blue (B) color resist patterns that allow transmission of light are formed on a thin glass substrate first, together with a black matrix that prevents defects such as light leakage while displaying black color as well as any color mixture with an adjacent color resist. Then, an ITO (Indium Tin Oxide) layer (transparent conductive layer), which becomes the common electrode for an array substrate, is formed over it.

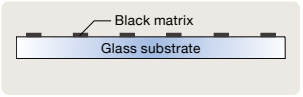


Color filter manufacturing process

While there are a number of color filter manufacturing methods used, the photolithography method (in which pigment-based color resists are coated over a glass substrate, and exposure and development are carried out) is now mainstream.

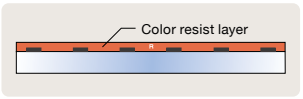
1 Formation of black matrix (low reflection chrome and resin)

In order to prevent any backlight leakage and mixture of RGB, a black matrix is formed first.



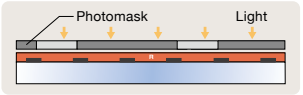
2 Color resist coating

Color resist is coated on the entire glass substrate.



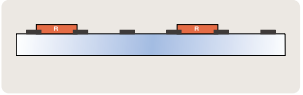
3 Exposure

To make the pattern insoluble, it is UV-cured by exposure through a photomask.



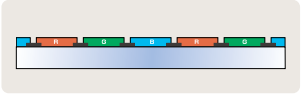
4 Development & baking

After removal of unnecessary portions on the color resist by a developing solution, the pattern is cured by baking.



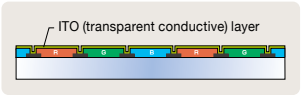
★ Repeat of steps 2 to 4

The color resist coating, exposure and development/ baking processes are repeated for the other two colors.



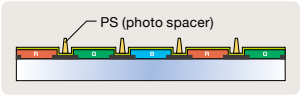
5 Formation of ITO layer

ITO layer (transparent conductive layer) is formed by the sputtering method.



6 PS process

Photo spacers (PS) are formed to improve image quality by precisely controlling the value of the cell gap between two pieces of glass (color filter and thin film transistor array).



TFT LCDs

Providing products for a variety of applications, mainly for mobility and industrial equipment

The Ortus brand TFT LCD display features Blanview which has low power consumption and enhanced outdoor visibility , and is highly regarded for its installation in mobility and industrial equipment.
In the future, we will continue to develop products to further reduce power consumption and improve outdoor visibility and respond to the needs of a wide range of customers with the Blanview series. In addition, the "Solution Business" model integrates peripheral technologies to provide one stop support to customers.

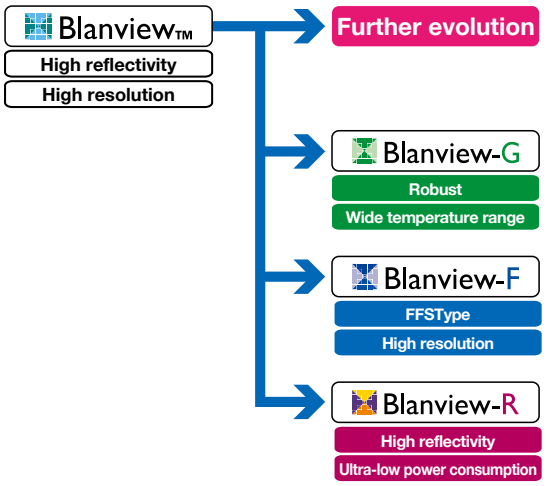
"Blanview™" realizing ultimate low power consumption and outdoor visibility

Excellent features of "Blanview™"

The Blanview LCD, which was developed by combining proprietary high transmittance technology and reflection design technology that utilizes external light, realizes beautiful display in all environments, whether in direct sunlight or indoors, with low power consumption.


Outdoor
(Under Sunlight)


Indoor

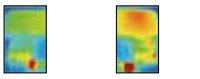


G Blanview-G Robst LCD for Automotive and Mobility

Vibration resistance: 6.8G compatible
Temperature range : -30 to +85°C

F Blanview-F Large screen, high-quality LCD with excellent visibility

FFS + Blanview : High image quality for outdoor displays
Screen size : 10.4", 12.1"
Low heat : Improved product safety


Blanview-F　Other company's LCD

R Blanview-R Excellent outdoor visibility without backlight

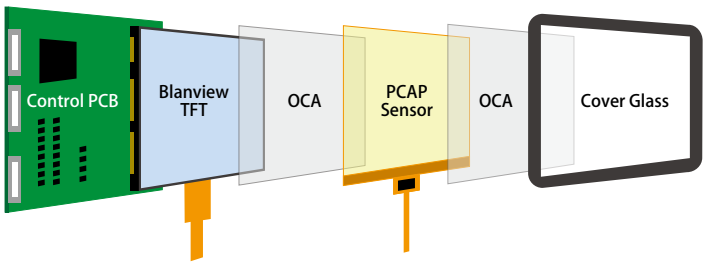
Reflective performance : Reflective rate ~23%
Ultra-low power consumption : 2mW
(2.0"QVGA, backlight not included)

Back light ON　Back light OFF

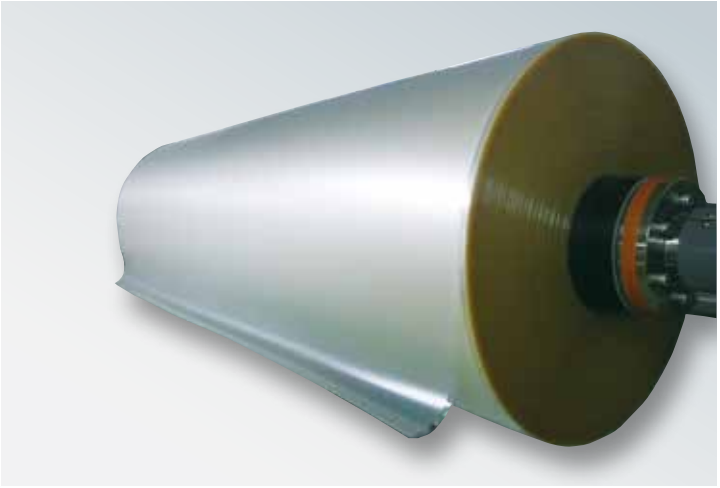
"Solution business model" that incorporates display peripheral technologies and achieves new added value for LCD modules

Solutionize our extensive TFT LCD lineup

Ortus "Solution Business" model integrates the TFT LCD lineup, including Blanview LCDs, with display peripheral technologies such as interface circuit boards and touch panel cover glass to provide one-stop design and quality support.



Surface Treatment Films



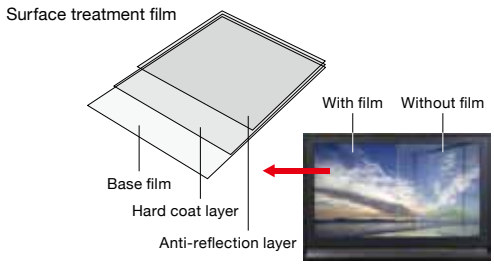
Improvement of display image visibility

Surface treatment film is an optical film applied to the front surface of a display in order to minimize reflection of external light. Various types of surface treatment film can be provided for different applications, examples of which include low reflection (LR) film that has excellent anti-reflection properties, anti-static performance and high contrast; and anti-glare (AG) film that controls reflection with excellent anti-glare properties. In addition, such films effectively protect the display by preventing the accumulation of dust and enhancing strength and durability.
TOPPAN Tomoegawa Optical Films Co., Ltd. manufactures and sells TOPPAN's surface treatment films.

Product Type

	LR (Low Reflection)	CHC (Clear Hard Coat)	AG (Anti Glare)	AGLR (Anti Glare with Low Reflection)
Reflectance	0.1%～1.0%	4.0%	—	1.5～2.0%
Structure	LR layer Hard coat Base film	Hard coat (CHC) Base film	Hard coat (AG) Base film	LR layer Hard coat (AG) Base film
Features	・High contrast (color reproducibility) ・Low reflectivity ・High antistatic performance ・High dirt resistance	・Highly uniform interference ・High strength ・Low cost	・Superior anti-glare performance ・Function to prevent reflection on the screen ・Lineup according to application (High haze to low haze)	・High contrast (color reproducibility) ・Low reflectivity ・Superior anti-glare performance ・High dirt resistance

Structure of surface treatment film



TOPPAN's Surface treatment film is used in any applications


VR Goggles


Automotive displays


Medical monitors, etc.

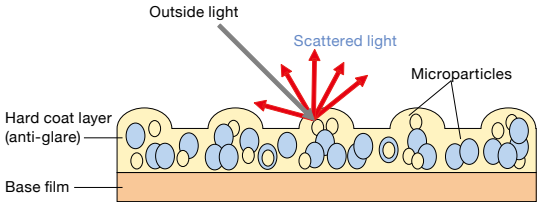

Smartphones


Notebook PCs


TVs

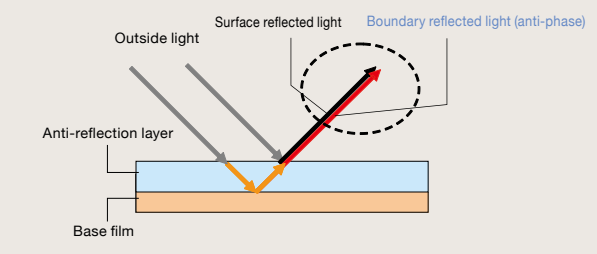
Principle of reducing glare of external light (AG)

By applying hard coating containing fine particles to the surface of the base film, it creates uneven surface. This unevenness scatters external light to prevent reflection on the display surface, which also protects the screen from scratches and smudges.



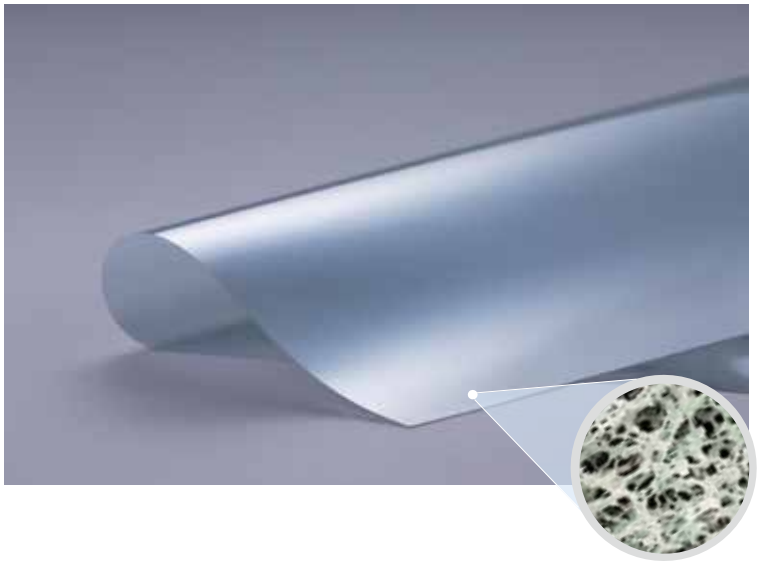
Principle of preventing the reflection of light (LR)

The film structure is designed so that the light reflected at the boundary between the anti-reflection layer and the base film has the same amplitude as, but the opposite phase to the light reflected on the surface of the anti-reflection layer. Reflection is reduced as the two different lights cancel each other out due to interference.



Light Control Film

LC MAGIC™



SEM image of the polymer network

Create a new space with the magic of light. The liquid crystal light control film allows to “show”, “not to show” or “project” depending on the situation

LC MAGIC is a thin liquid crystal film developed by applying the liquid crystal technology cultivated in the display business. By turning the electricity on and off, you can switch between transparent and opaque. It is widely used as an innovative product that can be used as a replacement for blinds and curtains, as well as a signage screen.

Features of light control film “LC MAGIC™”

Satisfy both high transparency and securing privacy

LC MAGIC realizes the highest level of transparency in the industry. Not only from the front, but also from a diagonal angle is highly transparent, ensuring a clear view

Free-form capability (design flexibility)

After performing an appropriate electrical design before modularization, it can be processed into any shape. The film can be divided and driven by area, and characters and designs can be added.

Usage of projection screen

LC MAGIC has been developed from an optical point of view, and can project high-quality, high-definition images such as 4K images when opaque. It can also be used for advertising and directing.

Light control function

By using the controller, you can smoothly adjust the transparency.

*Only normal type is possible.

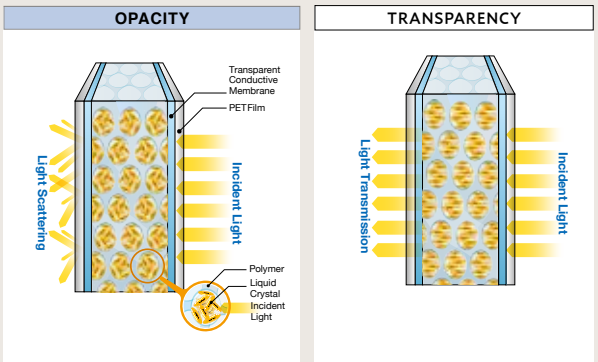
Produced in roll form

Our product line is produced in rolls in our own factory and covers a wide range of applications.

*Maximum dimensions are 1,450mm x 3,000mm.

Stable supply of high quality products

It is produced in a clean room (class 100) where dust do not adhere. While applying the coating and laminating technologies cultivated in printing, we carry out advanced quality control cultivated in electronics.



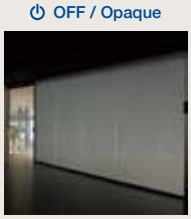
As the liquid crystal molecules are aligned differently, incident light is scattered, which in turn, other side cannot be seen. Light is not completely shielded, as some light is transmitted.

When alternating voltage is applied, the liquid crystal molecules are aligned in a uniform direction where incident light is not scattered and the system will appear transparent.

Products Line-up

Normal mode

OFF / Opaque



ON / Transparent

Reverse mode

OFF / Transparent

ON / Opaque

Normal Mode BlacK

OFF / Opaque

ON / Transparent

Device Development & Solutions

Smart Inspection Support Services for Plants and Facilities "e-Platch ™"

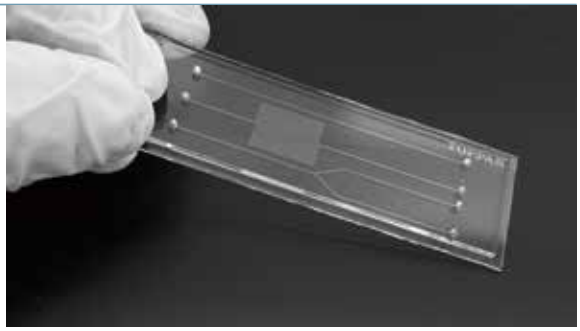
e-Platch is a system that remotely monitors measuring instruments scattered throughout factories/facilities which reduces the burden of inspection work.
It is capable of automatically collecting data from existing measuring instruments and providing integrated monitoring services, including environmental data analysis and report generation, by constructing a "wireless communication network without blind spots" using the LPWA standard ZETA.
The system reduces and streamlines the burden of environmental conservation and inspection work at factories/facilities, and enables the active allocation of human resources.

Hybrid® ToF Camera Sensor

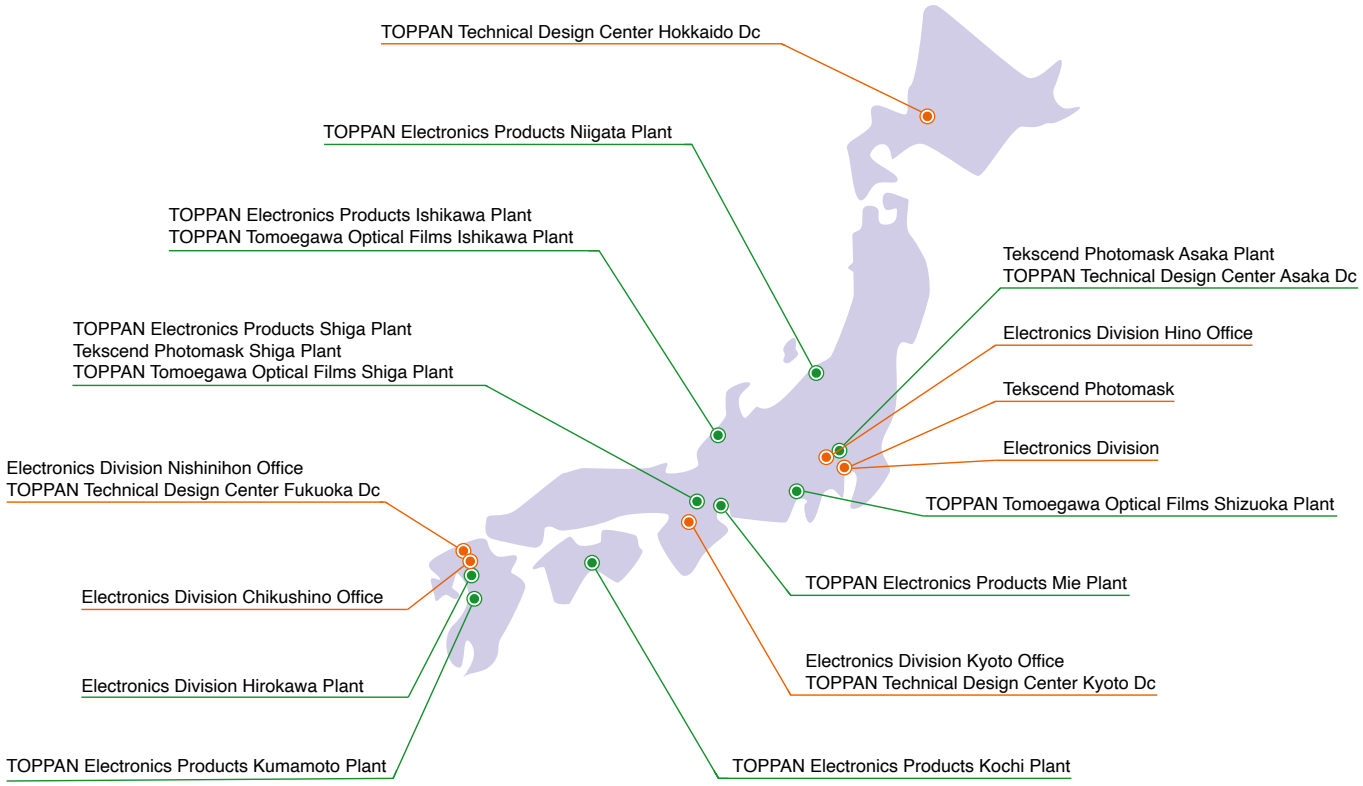
ToF is an abbreviation for “Time of Flight” and refers to the time of flight of light, or the time it takes for light to hit an object and return. ToF sensors are used in applications that recognize the shape and movement of objects in three dimensions by measuring the very short time of flight of light.
Our “Hybrid ToF®” method is a 3D sensing technology that uses our proprietary sensor and drive technology to enable high-speed, highly robust measurements that are not affected by the operating environment. Taking advantage of this feature, we provide high-precision ToF sensors and cameras required in the manufacturing, logistics, security, gaming, and other markets.

Micro Channel Chip

These Micro channel Chips are made using microfabrication technology based on the photolithography method cultivated in the manufacture of color filters for displays.
It is possible to form channels on a glass substrate with a width of 10 μm to several millimeters and a depth of 1 to 50 μm, and to add electrodes and optical filters, enabling separation and analysis of cells, microparticles, etc. It is expected to be used in the field of liquid biopsy.



Production Sites and Offices



Planning, development and sales of electronics products

TOPPAN Inc. Electronics Division

	TOPPAN Shibaura Bldg., 3-19-26 Shibaura Minato-ku, Tokyo, 108-8539 Japan TEL +81-3-5418-3900
Hino Office	2-8-7 Asahigaoka, Hino, Tokyo, 191-0065 Japan TEL +81-42-514-0700
Kyoto Office	Yomiuri Kyoto Bldg., 630 Shichikannon-cho, Karasuma-dori Rokkaku-sagaru, Nakagyo-ku, Kyoto, Kyoto, 604-8162 Japan TEL +81-75-257-7231
Nishinihon Office	Shimazu Hakata Bldg. 7F, 4-20 Reisen-machi, Hakata-ku, Fukuoka, Fukuoka, 812-0039 Japan TEL +81-092-261-2070
Chikushino Office	511-1 Ritsumeiji, Chikushino, Fukuoka, 818-0042 Japan TEL +81-92-405-0290
Hirokawa Plant	1425-58 Fujita, Hirokawa-cho, Yame-gun, Fukuoka, 834-0123 Japan TEL +81-943-24-8058

LSI design, system development and LSI turnkey service

TOPPAN Technical Design Center Co., Ltd.

Shibaura Office	TOPPAN Shibaura Bldg., 3-19-26 Shibaura Minato-ku, Tokyo, 108-8539 Japan TEL +81-3-5418-3915
Asaka Design Center	7-21-33 Nobitome, Niiza, Saitama, 352-0011 Japan TEL +81-48-482-4428
Hokkaido Design Center	1-1-30 Nijuyonken Shijou, Nishi-ku, Sapporo, Hokkaido, 063-0804 Japan TEL +81-11-616-6111
Kyoto Design Center	Yomiuri Kyoto Bldg., 630 Shichikannon-cho, Karasuma-dori Rokkaku-sagaru, Nakagyo-ku, Kyoto, Kyoto, 604-8162 Japan TEL +81-75-257-7181
Fukuoka Design Center	Shimazu Hakata Bldg. 7F, 4-20 Reisen-machi, Hakata-ku, Fukuoka, Fukuoka, 812-0039 Japan TEL +81-92-282-6280

Manufacturing and development of electronics products

TOPPAN Electronics Products Co., Ltd.

Niigata Plant	• FC-BGA substrates, Color filters 5270 Yamazaki, Ijimino, Shibata, Niigata, 957-0028 Japan TEL +81-254-22-8911
Mie Plant	• Color filters 646-3 Shiraki-isshiki, Seki-machi, Kameyama, Mie, 519-1104 Japan TEL +81-0595-84-6701
Shiga Plant	• Light Control Film 1101-20 Myohoji-cho, Higashi-ohmi, Shiga, 527-0046 Japan TEL +81-748-24-3501
Kochi Plant	• TFT LCDs 2420 Kureda, Nankoku, Kochi, 783-0062 Japan TEL +81-88-862-1000
Kumamoto Plant	• Color Filter Arrays (On-chip Color Filters), Photo etched Parts 800 Ikura Kitakata, Tamana, Kumamoto, 865-0041 Japan TEL +81-968-73-2191
Ishikawa Plant	• Semiconductor package (Scheduled) 1-47 Iwanaicho, Nomi, Ishikawa, 923-1201 Japan TEL +81-761-48-7100

Manufacturing, development and sales of photomasks

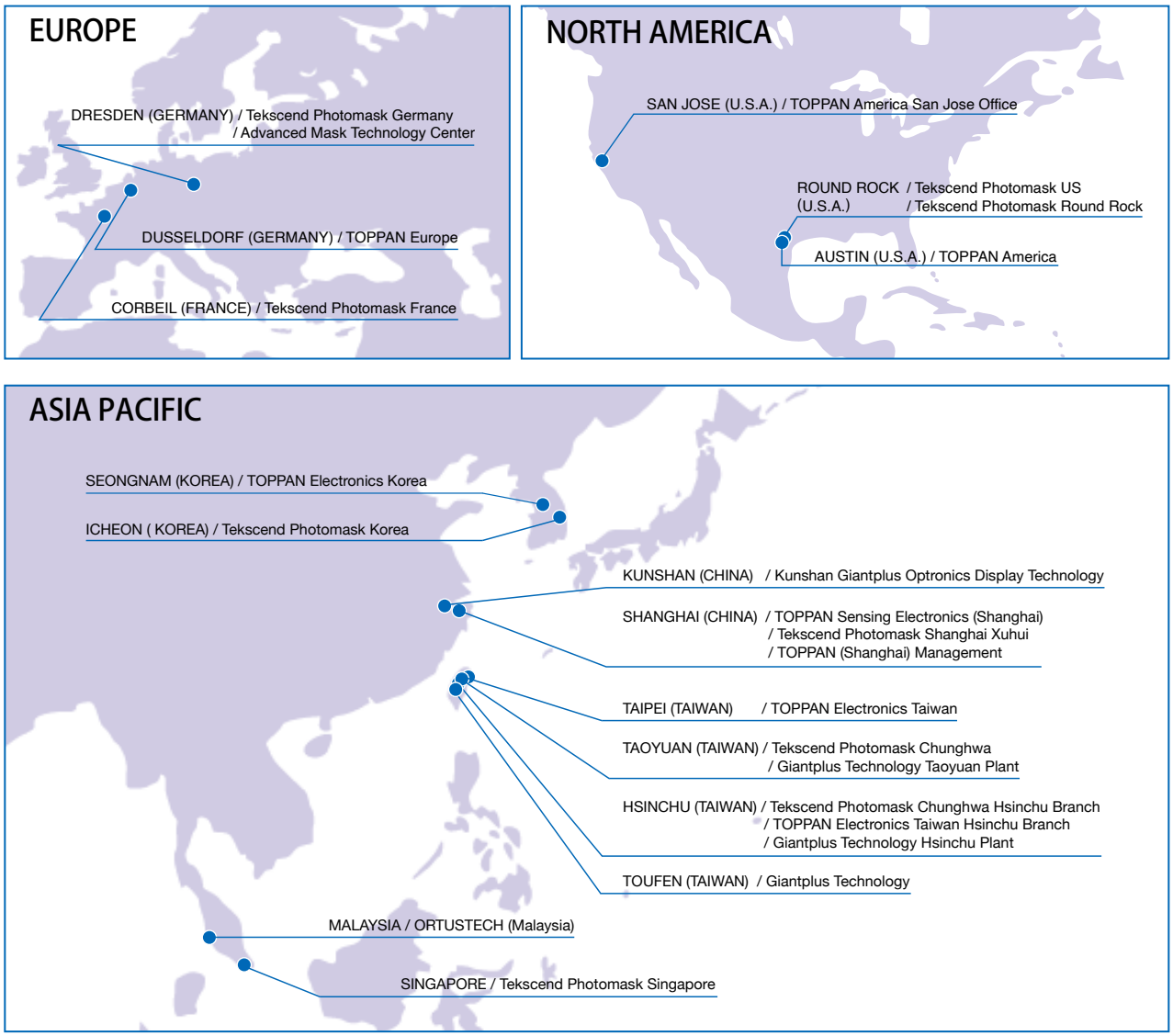
Tekscend Photomask Co., Ltd.

	Shiodome City Center, 1-5-2 Higashi Shimbashi,Minato-ku, Tokyo, 105-7133 Japan TEL +81-3-5418-3905
Asaka Plant	7-21-33 Nobitome, Niiza, Saitama, 352-0011 Japan TEL +81-48-482-4701
Shiga Plant	1101-20 Myohoji-cho, Higashi-ohmi, Shiga, 527-0046 Japan TEL +81-748-24-3432

Manufacturing and sales of surface treatment (anti-reflection) films

TOPPAN Tomoegawa Optical Films Co., Ltd.

Kyoto Office	Yomiuri Kyoto Bldg., 630 Shichikannon-cho, Karasuma-dori Rokkaku-sagaru, Nakagyo-ku, Kyoto, Kyoto, 604-8162 Japan TEL +81-75-257-7233
Shiga Plant	1101-20 Myohoji-cho, Higashi-ohmi, Shiga, 527-0046 Japan TEL +81-748-24-3501
Shizuoka Plant	3-1 Mochimunetomoe-cho, Suruga-ku, Shizuoka, Shizuoka, 421-0192 Japan TEL +81-54-256-4111
Ishikawa Plant	1-47 Iwanaicho, Nomi, Ishikawa, 923-1201 Japan TEL +81-761-48-7100



U.S.A.

- Manufacturing and sales of photomasks for semiconductors
  Tekscend Photomask US Inc.
- Manufacturing and sales of photomasks for semiconductors
  Tekscend Photomask Round Rock Inc.
- Sales of electronics products
  TOPPAN America Inc.

GERMANY

- Manufacturing and sales of photomasks for semiconductors
  Tekscend Photomask Germany GmbH
- Development and manufacturing of photomasks for semiconductors
  Advanced Mask Technology Center GmbH & Co. KG
- Sales of electronics products
  TOPPAN Europe GmbH

FRANCE

- Manufacturing and sales of photomasks for semiconductors
  Tekscend Photomask France S.A.S.

TAIWAN

- Manufacturing and sales of photomasks for semiconductors
  Tekscend Photomask Chunghwa Inc.
- Sales of electronics products
  TOPPAN Electronics Taiwan Inc.
- Manufacturing and sales of TFT LCDs
  Giantplus Technology Co., Ltd.

KOREA

- Manufacturing and sales of photomasks
  Tekscend Photomask Korea Inc.
- Sales of electronics products
  TOPPAN Electronics Korea Inc.

CHINA

- Manufacturing and sales of color filter arrays (on-chip color filters)
  TOPPAN Sensing Electronics (Shanghai) Co., Ltd.
- Manufacturing and sales of photomasks for semiconductors
  Tekscend Photomask Company Limited, Shanghai Xuhui
- Manufacturing of TFT LCDs
  Kunshan Giantplus Optronics Display Technology Co., Ltd.
- Sales of electronics products
  TOPPAN (Shanghai) Management Co., Ltd.

SINGAPORE

- Sales of photomasks for semiconductors
  Tekscend Photomask Singapore Pte. Ltd.

MALAYSIA

- Manufacturing of TFT LCDs
  ORTUSTECH (Malaysia) Sdn. Bhd.

Please refer to our website for further information such as addresses and contact details.

https://www.toppan.com /en/electronics/profile/

On this page, the term “sales” is used as a general term covering all sales activities (including market research, customer service, and sales support, etc.)

TOPPAN INC.
https://www.toppan.com/en/