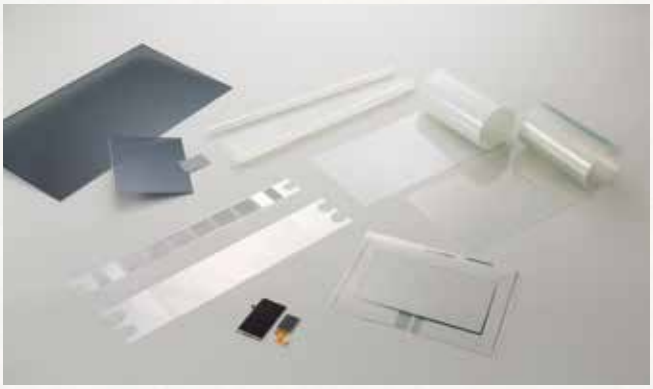
TOPPAN

Electronics Business Guide

Creating a bright future
with electronics technology.

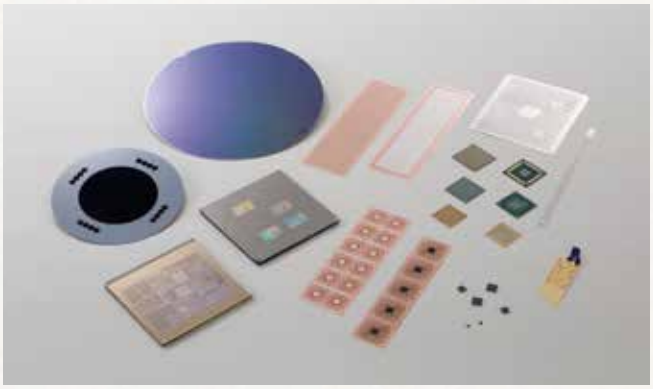
Turning Printing Technologies into Leading Edge Electronics Products

Display-Related



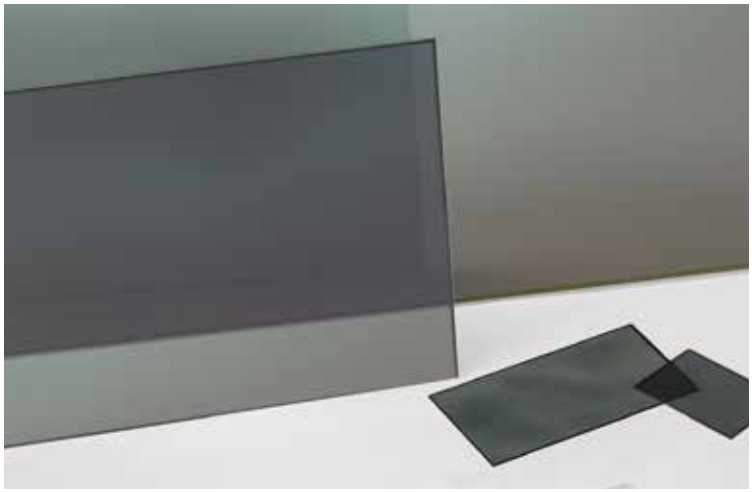
We develop and manufacture color filter that is an essential part that defines image quality on displays, surface treatment film that is an optical film for displays, metal masks for OLED display, light control film that can instantly switch between transparent and opaque by turning the power on / off, TFT LCDs with high definition and low power consumption, and provide sensor film for touch panels that enables light touch operation.

Semiconductor-Related



We develop and manufacture photomasks (circuit master plates), which are essential to frontend processes in semiconductor manufacturing, provide LSI design services and wafer processing services including color filter arrays for image sensors, nanoimprinti solutions that provides total services from mold creation to prototyping and mass production, develop and manufacture semiconductor packaging components used in backend processes, and various types of etched products.

Color Filters

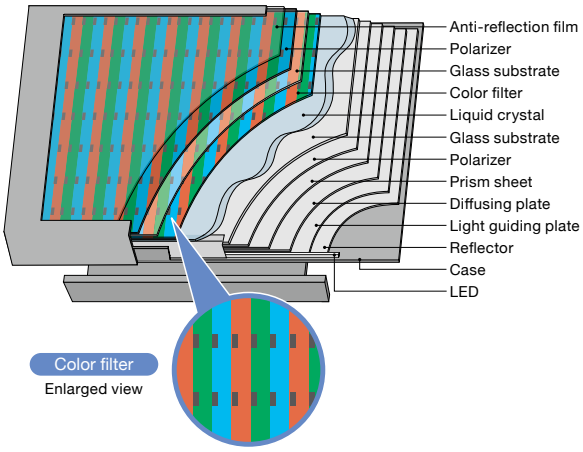


A wide range of applications from large televisions to smartphones

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.

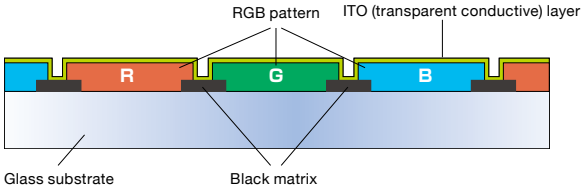
Structure of Color LCD panel

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.

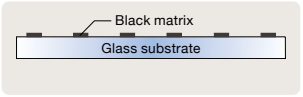


Color filter manufacturing process

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.

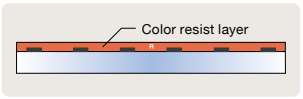
1 Formation of black matrix (low reflection chrome and resin)

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



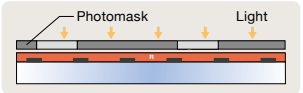
2 Color resist coating

Color resist is coated on the entire glass substrate.



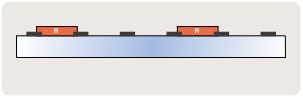
3 Exposure

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



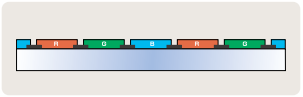
4 Development & baking

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



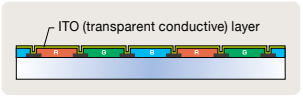
★ Repeat of steps 2 to 4

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



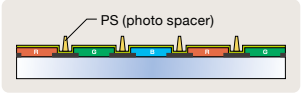
5 Formation of ITO layer

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).



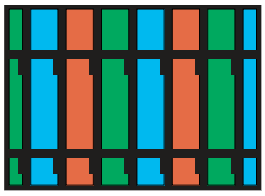
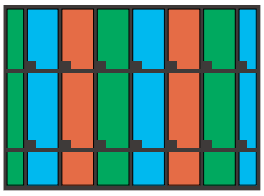
TFT LCDs

Provide LCDs for various applications, especially for industrial equipment

The high value-added TFT LCD panel of the "ORTUS" brand realizes high pixel count, high definition and low power consumption while enhancing outdoor visibility by using HAST® (Hyper Amorphous Silicon TFT) as its core technology, and is adopted for various equipment such as industrial equipment.
We will continue to develop products for further improvement of outdoor visibility and low power consumption in the future and will provide better products to customers.

Ultra high definition and image quality amorphous silicon TFT

HAST Hyper Amorphous Silicon TFT

Conventional a-Si TFT	ORTUSTECH a-Si TFT(HAST)
	

- Ultra-high-definition TFT array
- Low-resistance fine wiring technology
- Super-narrow pitch COG bonding technology
- High-image-quality optics design technology

30% increase aperture ratio!!
(2.4"QVGA conversion)

30%Brighter

30%Backlight power Reduceable

Excellent features of "Blanview"

Blanview is original TFT-LCD technology to realize high-quality display performance in any brightness circumstances (indoor / outdoor) with overwhelming low power consumption.

- Unique High Reflection Panel Design
- Superior Outdoor Visibility
- Ultra Low Power Consumption

Outdoor (Under Sunlight)

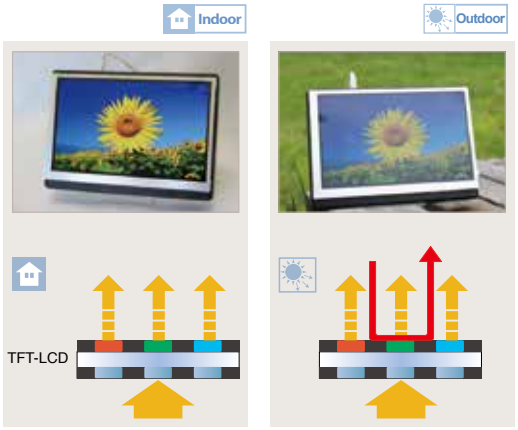
Indoor

"Blanview-2" realizing ultimate low power consumption and outdoor visibility

Transmissive TFT-LCD

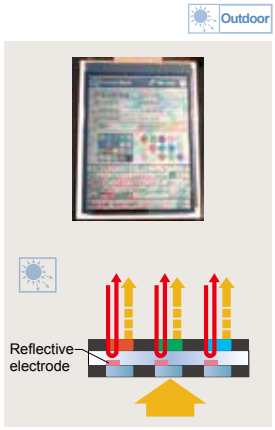
Crispy and bright display created by a backlight.

Display performance deteriorates by a sunlight reflection at LCD surface.



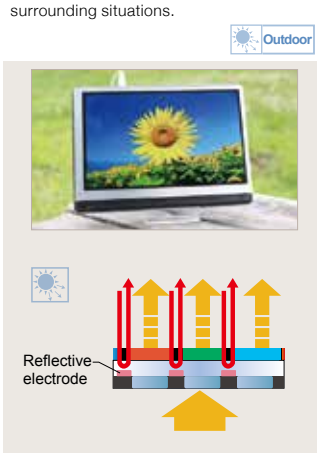
Transflective TFT-LCD
(other-companies products)

Reflection area works to improve outdoor display quality but leads to large power consumption in indoor usage.



Blanview-2

High light reflection panel design along with low power consumption functionality; Good display performance in any surrounding situations.



Surface Treatment Films

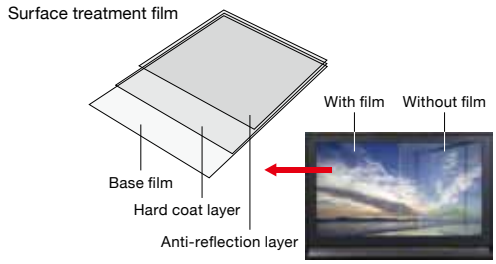
Improvement of display image visibility

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.

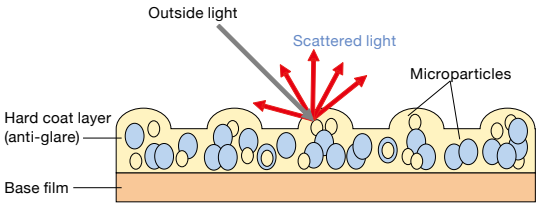
Product Type

	LR (Low Reflection)	CHC (Clear Hard Coat)	AG (Anti Glare)
Reflectance	0.1%~1.0%	4.0%	—
Structure	LR layer Antistatic layer Hard coat Base film	Hard coat (CHC) Base film	Hard coat (AG) Base film
Features	• High contrast (color reproducibility) • Low reflectivity • High antistatic performance • High dirt resistance	• Highly uniform interference • High strength	• Reflection prevention • Product lineup according to the application. (high haze - low haze)
Main applications	●TV, monitor, notebook PC, etc.		

Structure of surface treatment film

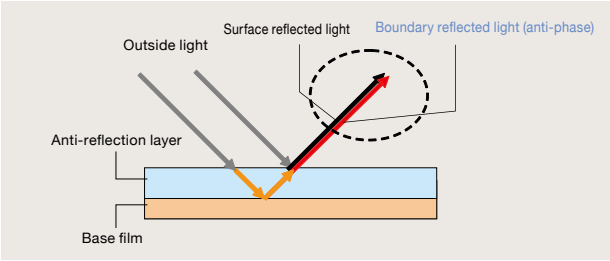


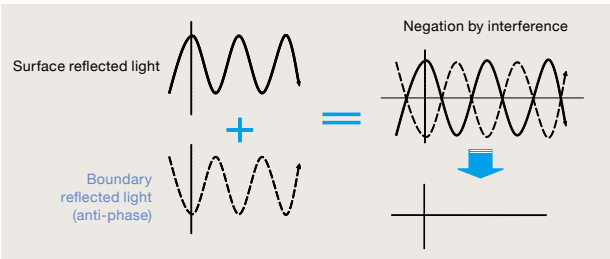
Principle of reducing glare of external light (AG)



Principle of preventing the reflection of light (LR)

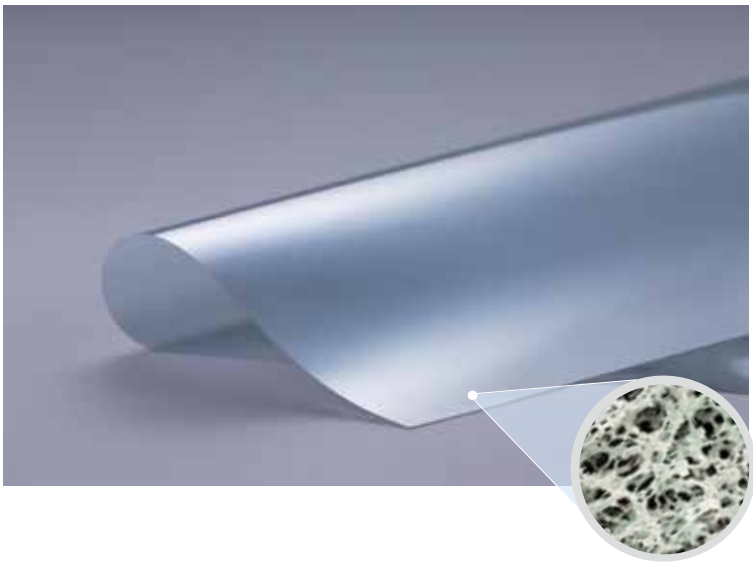
The film structure is designed so that the light reflected at the boundary between the anti-reflection layer and the base film has the same amplitude as, but the opposite phase to the light reflected on the surface of the anti-reflection layer. Reflection is reduced as the two different lights cancel 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 an ultra-thin liquid crystal film developed using liquid crystal technology on our long-established display related businesses. The change between power-on and power-off switches the film type between transparent and opaque accordingly. LC MAGIC is in the spotlight as a groundbreaking product for the possibilities used not only as alternative to the window shade or curtain but also as a projection screen of digital signages.

Features of light control film “LC MAGIC™”

Satisfy both high transparency and securing privacy

The highest level of transparency ensures clear viewing from not only front direction but also oblique direction.

Free-form capability (design flexibility)

LC MAGIC is freely processable into your ideal shape with the appropriate electric design before modularizing.

Easy process even onto carved design or post lamination

Thin film makes it easier to be applied to curved surface or post lamination.

Usage of projection screen

Optically developed, LC MAGIC in opaque state could be used as a projection screen for high resolution digital images, such as 4K. It enables to project advertisement or promotion videos.

Wide viewing angle

LC MAGIC has a 160° wide-viewing angle in each direction.

Light control function

Transparency level is smoothly controlled by a controller.
*Only normal type is possible.

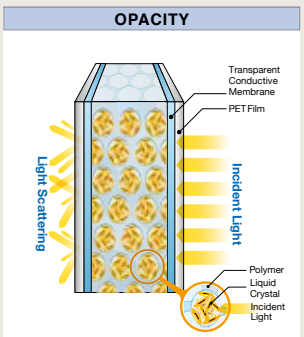
Roll-to-roll processing

Our production line is produced by roll-to-roll process, it enable to use a variety of applications.
*Maximum dimensions are 1,450mm x 3,000mm.

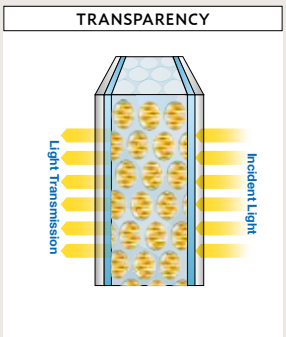
Stable supply of high quality products

In addition to the high quality control with years of experiences in our electronics business, well experienced coating and lamination technologies using class-100 level cleanroom ensure high quality products.





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

Exhibition Room / TOPPAN Shibaura bldg.

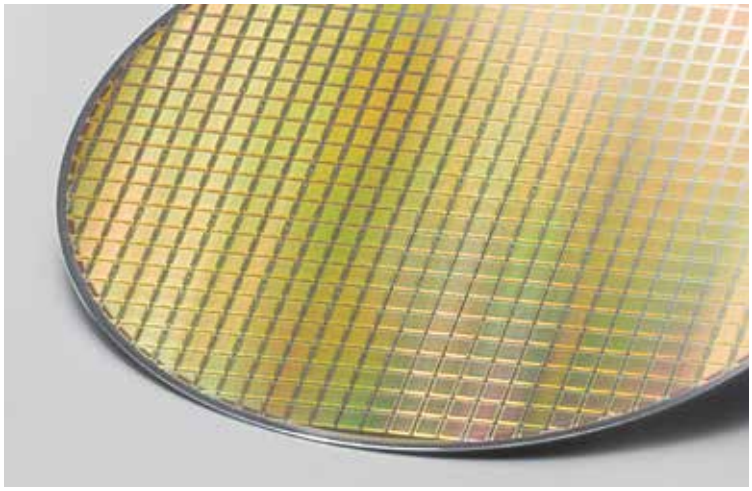
Reverse mode

OFF / Transparent

ON / Opaque

“Reverse mode” is transparent when the power is off.
This is the world’s first.

Color Filter Arrays (On-chip Color Filters)

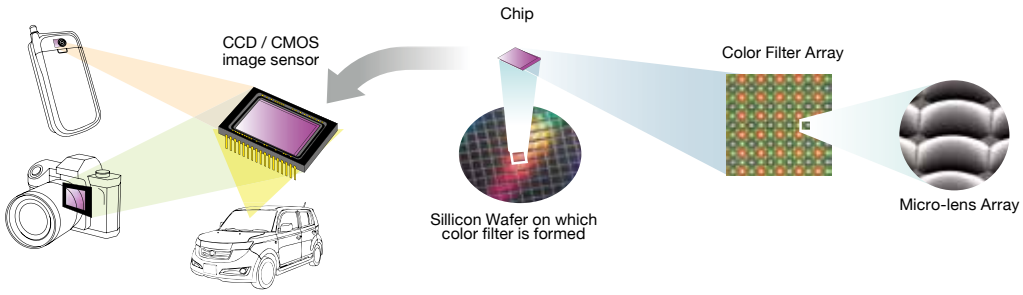


Contributing to higher image quality for digital images such as smartphones and security cameras

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.

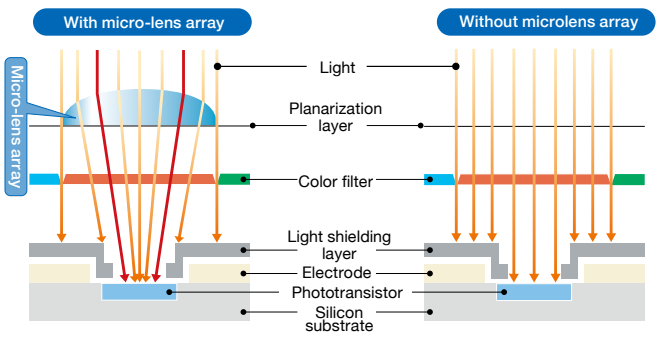
What is an image sensor?

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.

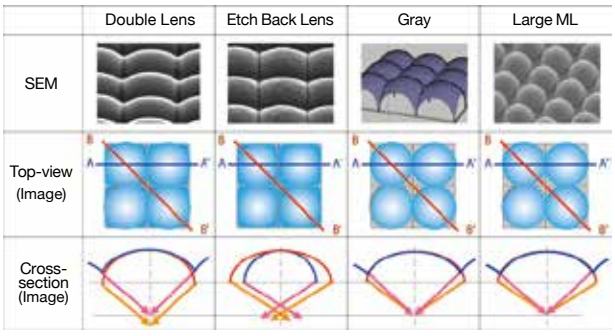


Effect of microlens

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 PRODUCTS CO.,LTD.
Kumamoto Plant

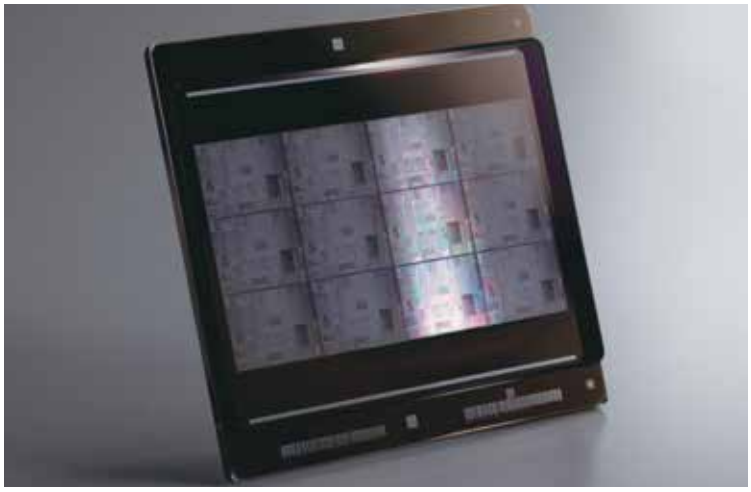

TOPPAN SENSING ELECTRONICS (SHANGHAI) CO., LTD.

Photomasks / Nanoimprint Molds

TOPPAN PHOTOMASK CO., LTD.

https://www.photomask.co.jp/english/

On April 2022, Toppan Photomask Co., Ltd. took over the photomask business from Toppan Inc. and started operations as a new company.



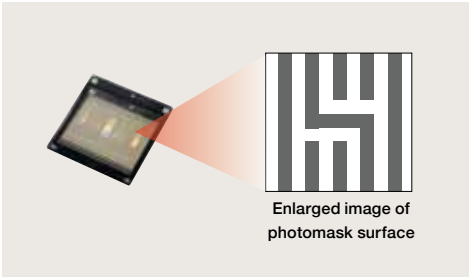
Contributing to the semiconductor industry with cutting edge lithography technology

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.
Toppan has photomask manufacturing bases in seven countries around the world and offers high quality photomasks to customers all over the world.

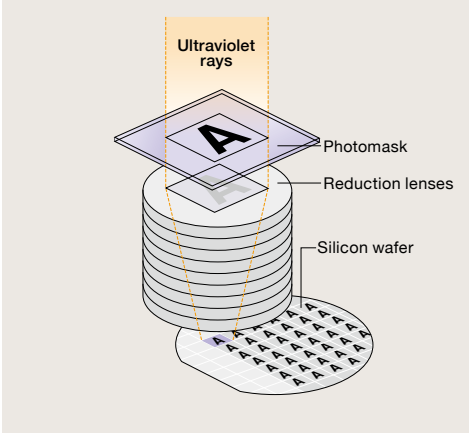
How is a photomask used?

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

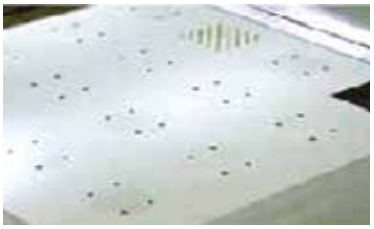
Phase-shifting mask (PSM) has achieved improved wafer printability with higher resolution and increased DOF (Depth of Focus), by controlling the phase shift and the transmission rate.
This is a standard technology for lithography in which line width being smaller than the exposure wave length.

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.

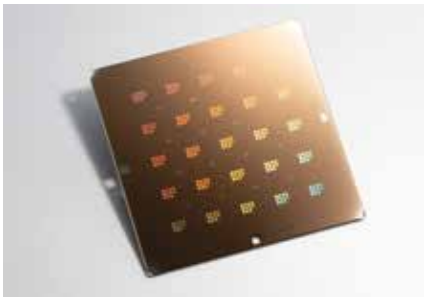
Stencil Masks

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



Various photomask types

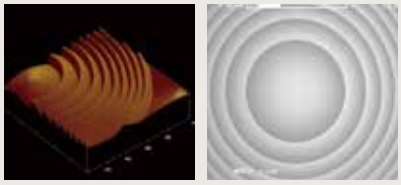
Toppan provides high-definition and reliable photomasks for a wide range of applications, such as for various industrial and R&D purposes etc.



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.

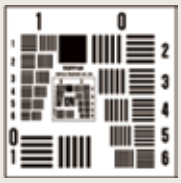
Example of pattern



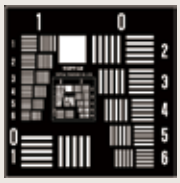
TEST CHART

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



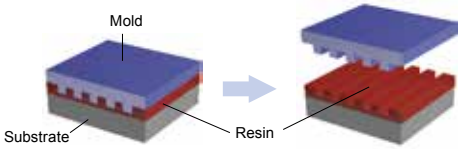
Examples of Photomasks

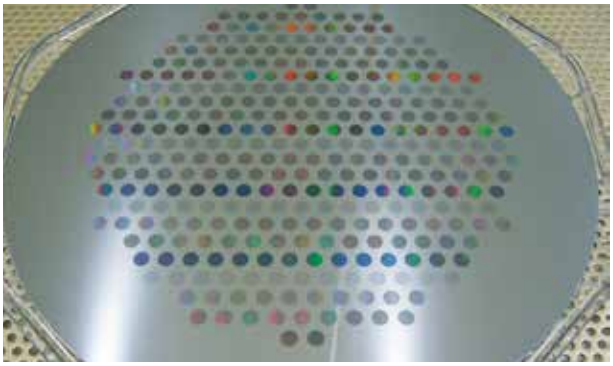
- Masks for MEMS
- Masks for IC (bump)
- Masks for Thermal Head
- Masks for various R&D etc.
- Masks for LED
- Masks for Micro Lens Array
- Test Chart
- Mask for Device Accuracy control
- Master masks for High-resolution Printing
- Masks for Semiconductor Packaging Substrates

etc.

Nanoimprint Molds

Nanoimprint lithography is a microfabrication technology used to transfer patterns that measure a few dozen nanometers by placing resin between a mold and a substrate and hardening the resin. Its process is so simple that it is expected to enable inexpensive and highly repeatable mass volume manufacturing of microstructures.
Toppan develops and produces high-precision molds for nanoimprint lithography, applying lithography technologies that have been developed in the company's semiconductor photomask business.

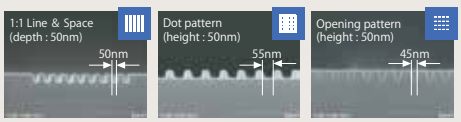




Quartz Molds

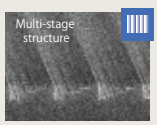
Quartz molds are mainly used in the UV nanoimprint method.
Quartz is used as the material for semiconductor photomasks. It is characterized by high rigidity and flatness.
The manufacturing process, same as that of semiconductor photomasks, allows to fabricate fine level patterns that measure a few dozen manometers. Toppan also develops and manufactures multistage structure molds.

High-definition pattern examples



Substrate size : 6025 (152×152×6.35mm(t))

Multi-stage structure pattern example

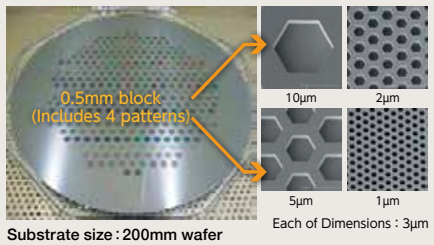


■ Pillar □ Hole

Silicon Molds

Silicon molds are mainly used in the thermal nanoimprint method.
Patterns are drawn with an electron beam on a silicon substrate that has been coated with photosensitive resin. Dry etching is then used to make the patterns deeper.
The manufacturing process, same as that of Quartz molds, allows to form fine precision patterns. Silicon molds with high aspect ratio patterns are under development.

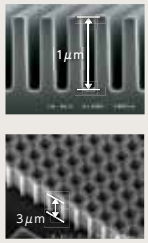
Wafer Mold



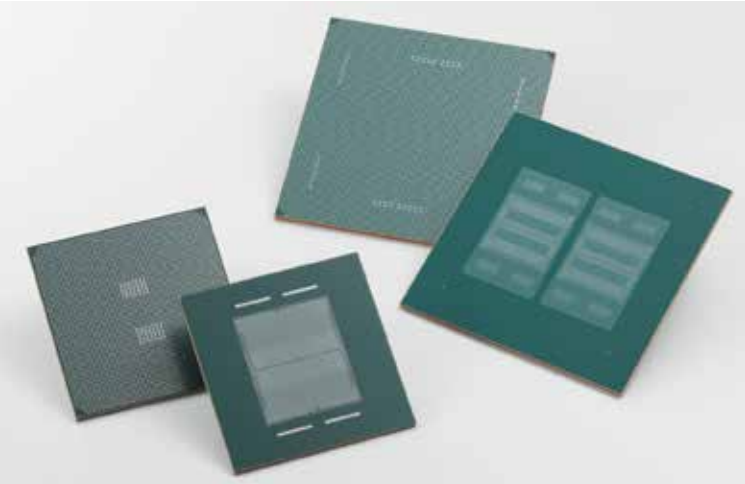
Each of Dimensions : 3μm

Substrate size : 200mm wafer

High-aspect-ratio patterns



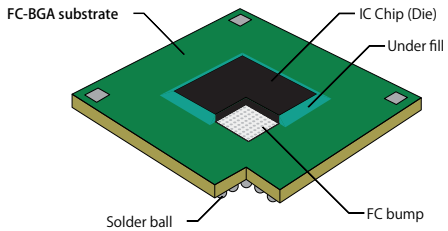
FC-BGA Substrates (High Density Semiconductor Package Boards)



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.

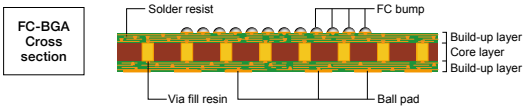
Structure of FC-BGA package



Structure of FC-BGA substrate

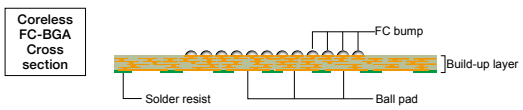
FC-BGA Substrate

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.



Coreless FC-BGA Substrate

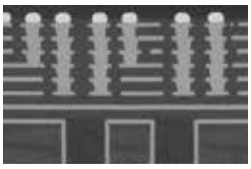
Since there is no core layer, it makes possible to ultra-high density and ultra-thin, and has excellent electrical characteristics, enabling high speed and multi-function of LSI chips. In addition, the freedom of design is greatly improved because the through hole of the core material is unnecessary as one of the features.



Technologies that support higher density

Hyper Build-up

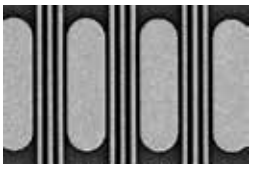
In terms of power strengthening and signal quality, high-end products such as highly functional processors require build-up technology with a higher layer count specification. Using the filled via hole technology that enabled the optimization of manufacturing conditions, Toppan guarantees reliability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



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

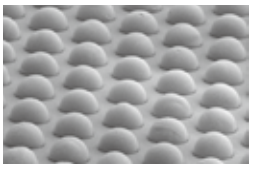
Higher Pin Count / Ultra Fine Wiring

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

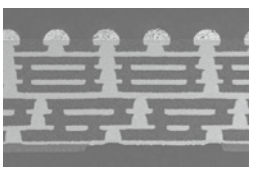
With a trend toward smaller bumps with narrower pitch, Toppan has adopted various advanced production methods in addition to the high-resolution silkscreen printing process and successfully developed a pre-soldering method that minimizes fluctuation. Through a stable supply of such solder, we support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



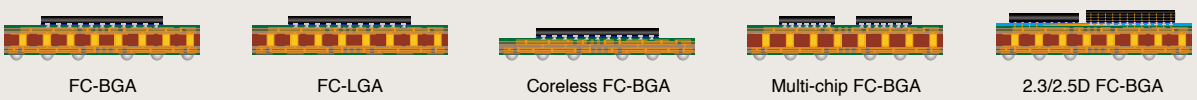
Pitch = 120µm

Development of New Substrates

Demands for higher speed devices and smaller packages are driving needs for new substrate technologies. To respond to such needs, Toppan is actively tackling the development of substrates with new structures such as substrates for 2.1D packaging.



Line-up of products



FC-BGA | FC-LGA | Coreless FC-BGA | Multi-chip FC-BGA | 2.3/2.5D FC-BGA

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, copper touch sensors, 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.

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

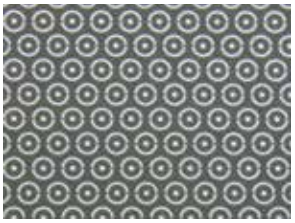
Dimensional accuracy / Guaranteed value

	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.



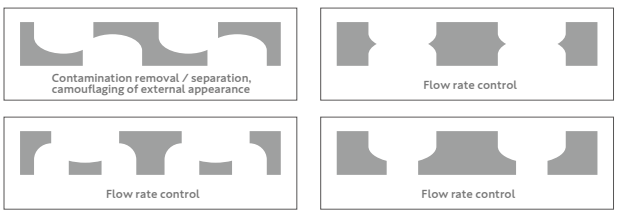
Copper Touch Sensors

By using copper as the electrode material, this touch sensor has greatly reduced resistance, improved operational performance, and enabled a larger and lighter touch sensors. Toppan's Copper Touch Sensors are manufactured and sold by VTS- Touchsensor Co., Ltd.

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



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

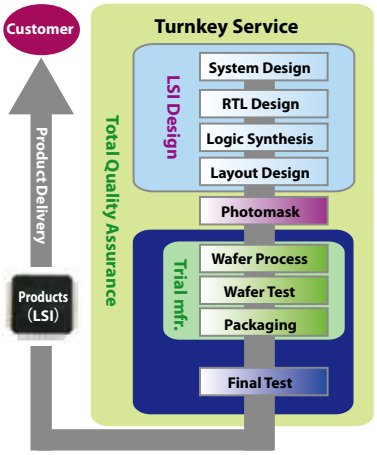
As an LSI design partner of various semiconductor manufacturers, the company has been providing LSI development and design services for about 50 years. Development performed in the past encompasses a wide variety of fields, including analog, memory, LCD, LED drivers, and microcomputer logic. For development 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)
- CMOS image sensor
- ADC/DAC
- LCD Driver
- Silicon tuner
- Sensor
- Wireless
- Power management / DC-DC converter
- PLL/VCO
- LED Driver
- 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

Device Solutions

This service develops and mass-produces original electronic devices that meet the needs of customers.
Toppan provide one-stop support from planning to manufacturing on behalf of customers. We can handle a wide range of products, from small-scale prototypes at the PoC (proof-of-concept) stage where ideas are put into shape, to mass production of products.

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

Own Products

TDS601

I/O Expander IC

Toppan Original ASSP

ZETA BOX

ZETA / LPWA network gateway

TDS902

ZETA LPWA Communication Module

Device Development & Solutions

Aerial Touch Display "La+ touch™"

This is an " Aerial Touch Display " that enables non-contact operation by touching the image floating in the air.
It can be used for operation equipment in factories where cleaning is time-consuming due to contamination during handling, or where gloves must be on and off during operation.
It can also be used for operation panels of equipment in food factories and medical facilities, where a high level of hygiene is required, as well as for reception areas, access control systems, elevators, signage, etc., where many unspecified people come into contact with the equipment, to create a safe, secure, non-contact environment.

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.

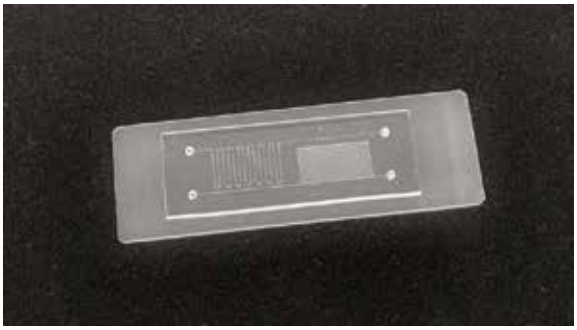
e-Platch™

ToF Sensors

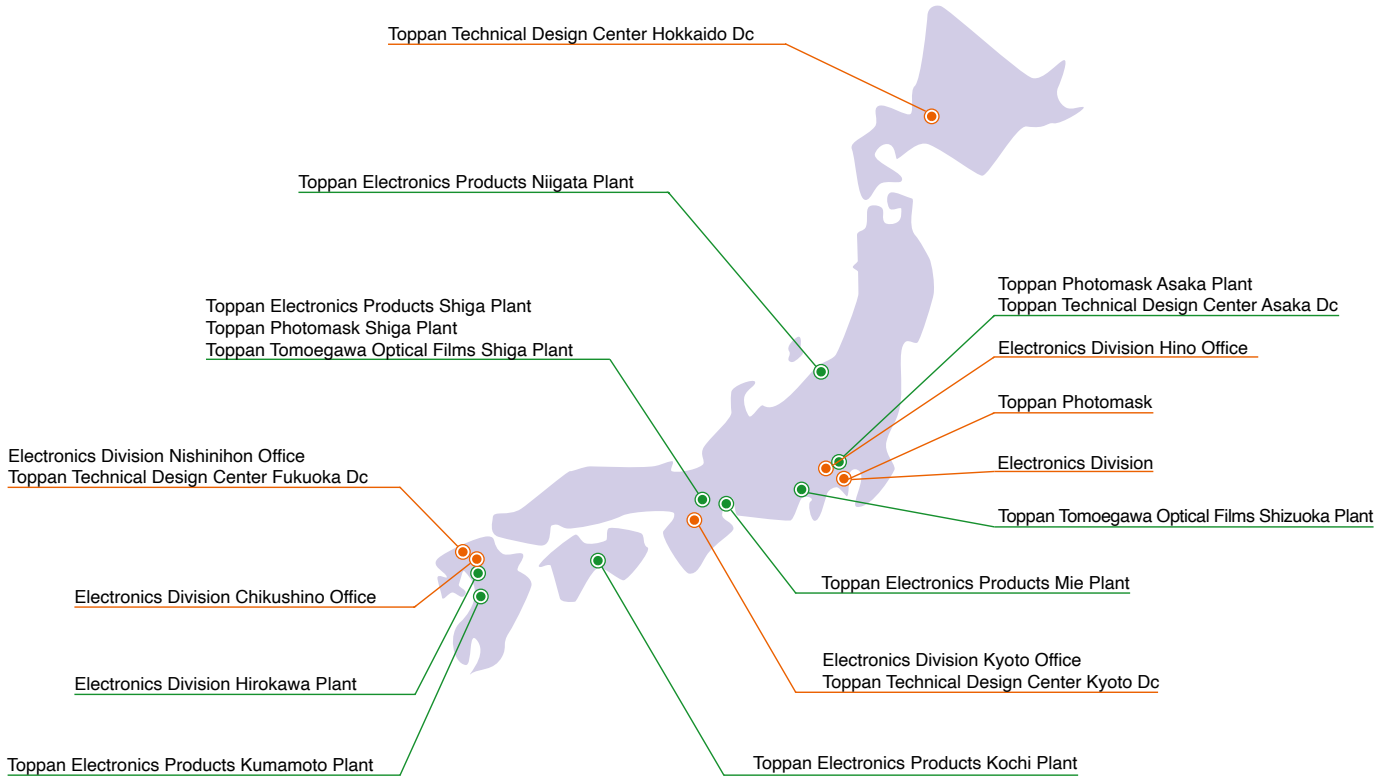
ToF is an abbreviation for "Time of Flight" and refers to the time of flight of light, or the time it takes for light to hit an object and return. ToF sensors are used in applications that recognize the shape and movement of objects in three dimensions by measuring the very short time of flight of light.
We provide high-speed, high-precision ToF sensors that are required for a wide range of applications such as gesture recognition, robot vision, logistics transportation, gaming, and security.

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.
The micro channel is formed on a photoresist coated on a glass substrate with a width of 10 μm to several millimeters and a depth of 1 to 50 μm, and is expected to be used in the field of liquid biopsy using blood and other body fluids for cancer screening and clinical testing, and also in the field of in vitro diagnostic reagents.



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	• Color filters, FC-BGA substrates 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

Manufacturing, development and sales of photomasks

TOPPAN PHOTOMASK CO., LTD.

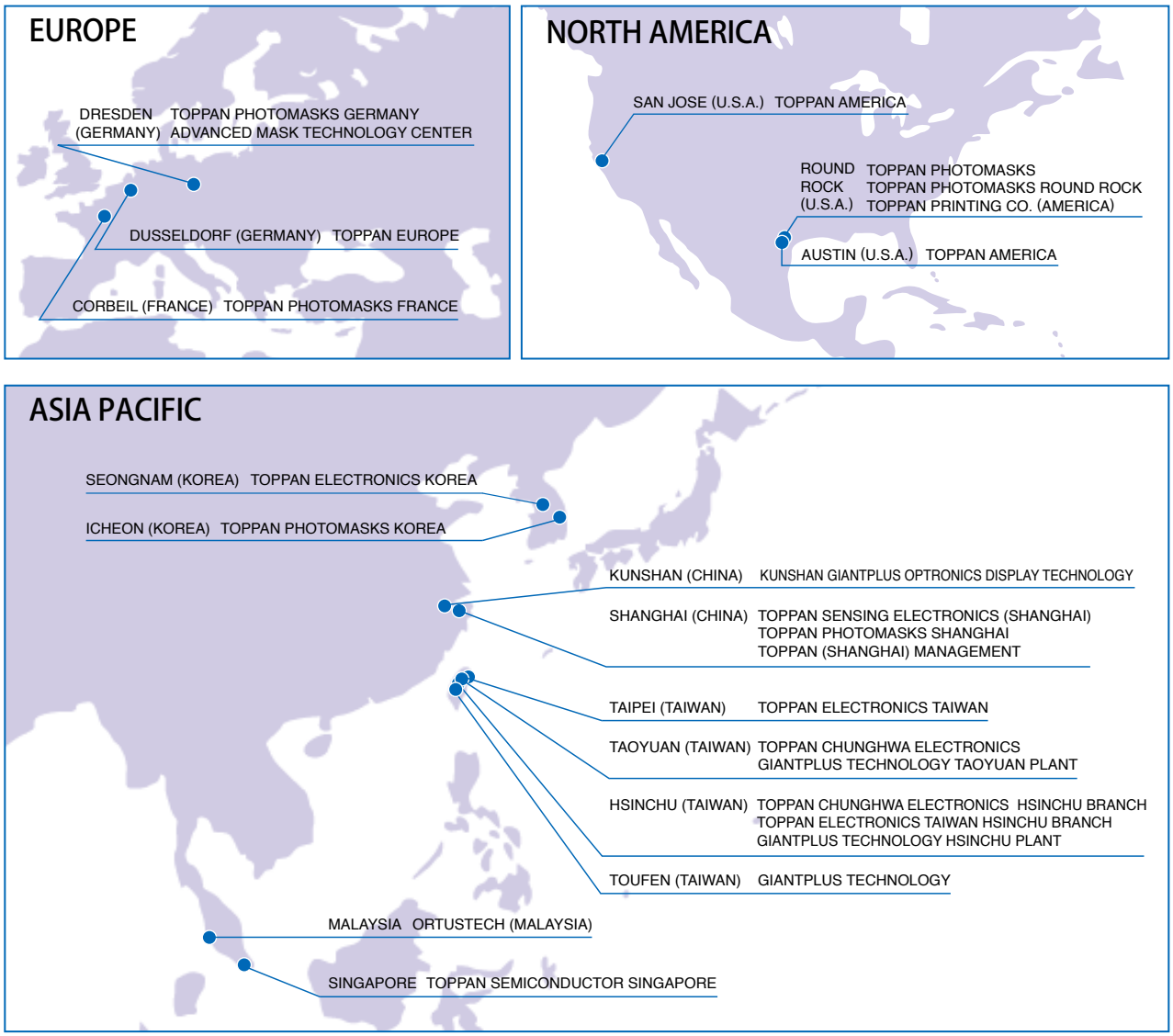
Shiodome City Center, 1-5-2 Higashi Shimbashi,Minato-ku,
Tokyo, 105-7133 Japan
TEL +81-3-5418-3905

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



U.S.A.

- Manufacturing and sales of photomasks for semiconductors
  TOPPAN PHOTOMASKS, INC.
- Manufacturing and sales of photomasks for semiconductors
  TOPPAN PHOTOMASKS ROUND ROCK, INC.
- Sales of electronics products
  TOPPAN AMERICA INC.

GERMANY

- Manufacturing and sales of photomasks for semiconductors
  TOPPAN PHOTOMASKS GERMANY GmbHv
- 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
  TOPPAN PHOTOMASKS FRANCE S.A.S.

TAIWAN

- Manufacturing and sales of photomasks for semiconductors
  TOPPAN CHUNGHWA ELECTRONICS CO., LTD.
- Sales of electronics products
  TOPPAN ELECTRONICS TAIWAN INC.
- Manufacturing and sales of TFT LCDs
  GIANTPLUS TECHNOLOGY CO., LTD.

KOREA

- Manufacturing and sales of photomasks
  TOPPAN PHOTOMASKS KOREA LTD.
- 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
  TOPPAN PHOTOMASKS COMPANY LIMITED, SHANGHAI
- 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
  TOPPAN SEMICONDUCTOR SINGAPORE PTE. LIMITED.

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/