CANON INDUSTRIAL PRODUCTS

ENABLING A WORLD OF INNOVATIONS

Canon

Advancing Day By Day

Canon Industrial Products enable a world of innovation to our manufacturing partners.

Canon Lithography Products provide solutions for processing of wafers and panels for semiconductor and other high-technology applications.

Canon Lithography Solutions include the FPA-1200NZ2C Nanoimprint Lithography system that was officially launched in October of 2023. The FPA-1200NZ2C can provide single-pattern resolution as low as 14 nanometers with a simple, yet elegant patterning technology.

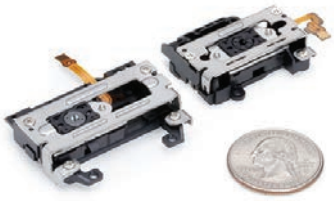
Canon FPA-1200NZ2C
Nanoimprint Lithography System

Canon Optical Lithography solutions support low Cost-of-Ownership wafer & panel processes for applications including logic, memory & advanced packaging, as well as emerging applications requiring processing of exotic substrates.

BC7000
Atomic Diffusion Bonding System

Canon ANELVA (ANalysis ELectronics VAcuum) Products also support wafer and panel processes and solutions include the BC7000 Atomic Diffusion Bonding system that can help enable low-temperature and low-pressure hybrid-bonding applications. Additional ANELVA equipment solutions include magnetic and thin-film disposition and etch, and panel-process deposition.

Canon Motion Control Products perform at peak operation efficiency to ensure consistent results in every application with high stability, high versatility and high-power output. Canon Motion Control Products can be customized, and product lines include Brushless, Linear Ultrasonic and Frameless motors.



Linear Ultrasonic Motor

Digital Laser Scanner

Canon Optoelectronic Products benefit applications where mechanical systems require accuracy and resolution. Canon Optoelectronic products deliver high-precision solutions include Digital Laser Scanner Systems and Rotary Encoders and Machine Vision Systems.

CANON INDUSTRIAL PRODUCTS
ENABLING A WORLD OF INNOVATIONS

LITHOGRAPHY PRODUCTS





ANELVA PRODUCTS




OPTOMECHATRONIC PRODUCTS




Canon Lithography Systems

Canon Photolithography equipment is designed to help provide exceptional quality, performance, and cost of ownership for your wafer imaging applications.

Canon FPA (Fine Pattern Aligner) Series Nanoimprint, i-line and Deep Ultraviolet (DUV) lithography systems are used in the fabrication and heterogeneous integration of high-tech devices including integrated circuits, hard disk read/write heads, microelectromechanical systems (MEMS) devices, image sensors, displays, power devices and light emitting diodes (LED).

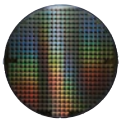
LITHOGRAPHY PRODUCTS & TARGET APPLICATIONS

Lithography Products	Technology	Resolution	Lens Red. Field Size [mm]	Substrate Options [mm]	MRAM	Logic & MPU/GPU	Medical	HDD & SCM	Power & Automotive	Waveguide & RF	Advanced Packaging	Optics & Photonics	MEMS, Sensors & IoT	PC & Mobile	5G & Data Centers	Wearables	AR/VR & Display	LED, MicroLED	Artificial Intelligence
FPA-1200NZ2C	Nanoimprint Lithography	≤15 nm	1:1 26 x 33	300	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
FPA-8000iW	i-line (365 nm) Stepper	≤ 0.8 µm	2:1 55 x 55	510 x 515			✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
FPA-3030i6	i-line (365 nm) Stepper	≤ 350 nm	5:1 22 x 22	≤ 200			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
FPA-3030iWa	i-line (365 nm) Stepper	≤ 0.8 µm	2:1 52 x 52	≤ 200			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
FPA-3030EX6	KrF (248 nm) Stepper	≤ 150 nm	5:1 22 x 22	≤ 200			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
FPA-5520iV LF2	i-line (365 nm) Stepper	≤ 0.8 µm	2:1 54 x 68	300	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
FPA-5550iZ2	i-line (365 nm) Stepper	≤ 350 nm ≤ 280 nm (2/3 Ann.)	4:1 26 x 33	200 300	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
FPA-5510iX	i-line (365 nm) Stepper	≤ 0.5 µm	2:1 50 x 50	300			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
FPA-6300ES6a	KrF (248 nm) Scanner	≤ 100 nm ≤ 90 nm (2/3 Ann.)	4:1 26 x 33	200 300	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
FPA-6300ESW	KrF (248 nm) Scanner	≤ 130 nm	3.125:1 33 x 42.2	200 300			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
MS-001	Overlay Metrology	----	----	300	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓ Compatible with application

All options may not be available on all models. Contact Canon for details.


Artificial Intelligence


Logic & Memory

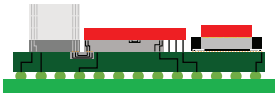

Sensors and IoT


PC and Mobile


Display and AR/VR


Automotive


Medical

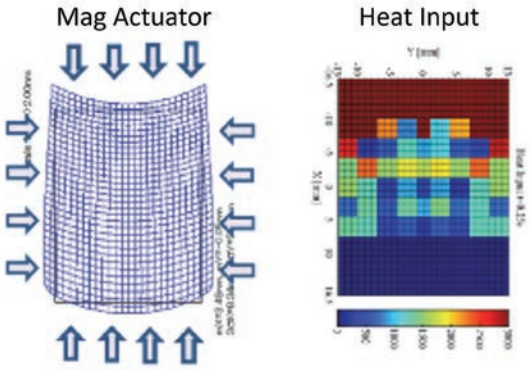

Advanced Packaging


Wearables

NEW

FPA-1200NZ2C FEATURES

- Canon NIL equipment can be used for a wide range of applications including logic, memory and metalenses for AR/VR displays
- NIL process can simplify existing multi-patterning processes and reduce Cost of Ownership (CoO)
- NIL resolution is primarily determined by the mask process
  - 14 nm Line/Space and 16 nm contact hole patterning has been demonstrated
- NIL enables greater design freedom allowing complex 2- or 3-dimensional circuit patterns to be formed in a single imprint
- NIL processes offer low Linewidth Roughness (LWR). NIL LWR is related to mask etch

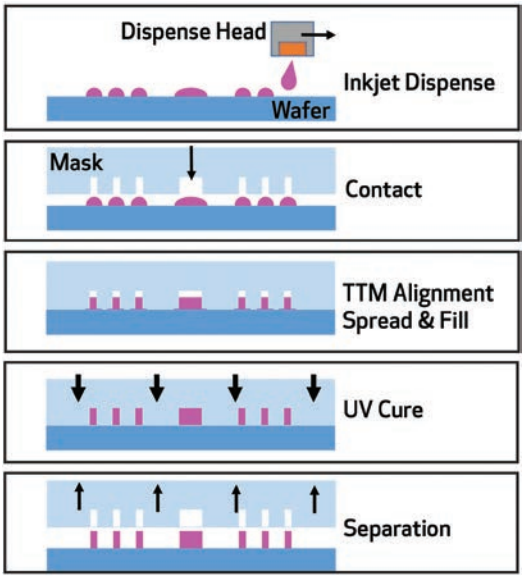


NIL process equipment uses an array of Piezo actuators to apply mag correction and localized intra-field heat input to improve overlay matching accuracy

High-Resolution Nanoimprint Lithography Equipment

Canon's Nanoimprint Lithography (NIL) technology enables fine patterning and has demonstrated 14 nanometer (nm) linewidth resolution. Canon's FPA-1200NZ2C NIL systems are expected to enable circuit patterning with a minimum linewidth of 10 nm, which corresponds to 2-nm semiconductor process node.

Nanoimprint patterns are formed by pressing a mask etched with the circuit pattern into photosensitive material on a wafer like a stamp. Because the NIL circuit pattern transfer process does not go through an optical mechanism, fine circuit patterns on the mask can be faithfully reproduced on the wafer.



Canon Jet & Flash Imprint Lithography (J-FIL) Nanoimprint Process

SPECIFICATIONS	
Technology	Nanoimprint Stepper
Resolution	≤ 15 nm (mask dependent)
Throughput	≥ 80 wph (4-station system)
Single Machine Overlay	≤ 4 nm
Mask Size	6"
Reduction Ratio	1:1
Field Size	26 x 33 mm
Substrate Size Options*	200, 300 mm
Dimensions (W x D x H)	2.7 x 6.6 x 2.83 m (2-station)

FPA-6300ES6a KrF Scanner for Logic & Memory Applications

High-Resolution, High-Productivity KrF Scanner for 200 & 300 mm Wafer Fabrication

The FPA-6300ES6a [ES6a] is a DUV Scanner that offers scalability to support next-generation semiconductor manufacturing. The ES6a is an all-in-one solution providing high throughput, high alignment accuracy and fine resolution for both 200 and 300 mm wafer processes.

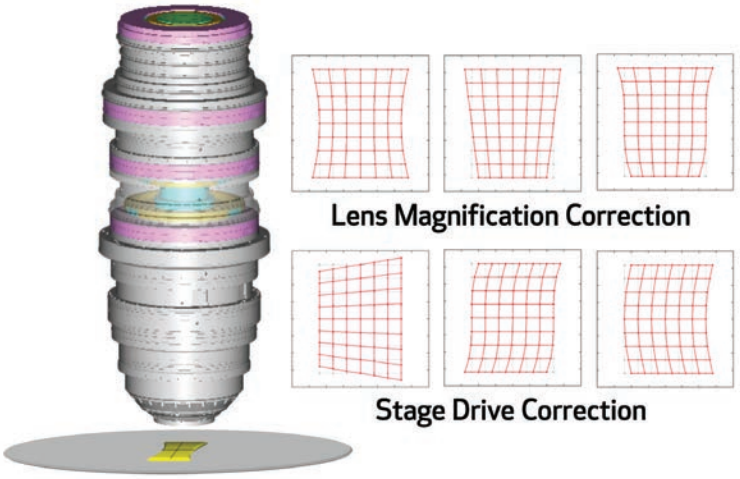
ES6a Scanners help reduce total cost of ownership by continuously upgrading the reliable and extendable single stage 6300 platform.

FPA-6300ES6a FEATURES

- Resolution ≤ 90 nm (2/3 Ann.)
- High-Throughput Mode*
- High-Overlay Mode*
- Advanced stage, alignment scope and precise temperature help control improve overlay accuracy
- Canon Built-In Metrology (CANOMAP)

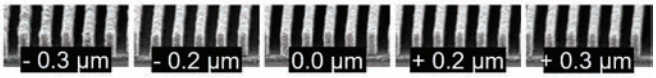
KEY OPTIONS

- Wide Band Off-Axis Scope (WB-OAS)
- Shot-Shape High-Order Correction (SSHOC)
- Each Shot High-Order Correction (ESHOC)
- Focus Accuracy Improvement (F-MAP)
- Advanced Flexible Illumination System (AFIS)
- 200, 300 mm wafer handling
- Pellicle Particle Checker
- GEM-compliant online software

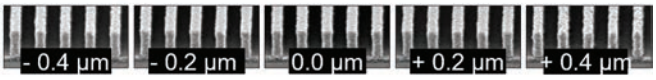


The Shot-Shape High-Order Correction (SSHOC) option can improve overlay matching by actively controlling lens magnification and stage position during scan exposure.

80 nm L/S @ 1:1.5 Pitch
NA 0.86, 30° dipole, outer-σ 0.90,
6% halftone mask



90 nm L/S @ 1:1 Pitch
NA 0.86, ¾ annular, outer-σ 0.93,
Attenuated phase shift mask



FPA-6300ES6a provides a large depth of focus for processes requiring resolution as fine as 90 nm

SPECIFICATIONS

Technology	KrF Scanner (248 nm)
Resolution	≤ 90 nm (2/3 Ann.)
Overlay	≤ 5 nm*
Numerical Aperture	0.50 – 0.86
Lens Reduction Ratio	4:1
Exposure Field	26 x 33 mm
Substrate Size Options	200, 300 mm
Dimensions (W x D x H)	2.3 x 5.2 x 2.9 m

* = Option Required

FPA-6300ESW KrF Scanner for Full-Size CIS & FPGA Applications

Wide-Field KrF Scanner for Single-Exposure Large Device Fabrication

FPA-6300ESW [ESW] wide-field DUV Scanners are capable of 130 nm resolution across a large exposure area. The ESW adopts a unique 3.125X reduction projection lens to yield a large 33 x 42.2 mm field size for large device fabrication without stitching.

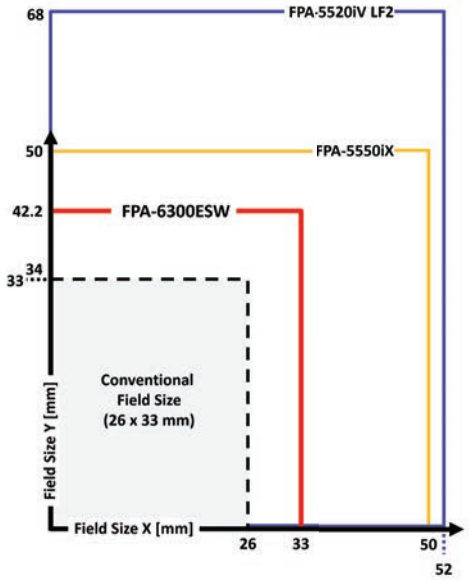
Originally designed to support CMOS Image Sensor and color filter production on 300 mm wafers, the ESW can be configured to support 200 or 300 mm wafer processes including Sensor, Advanced Packaging and Display manufacturing.

FPA-6300ESW FEATURES

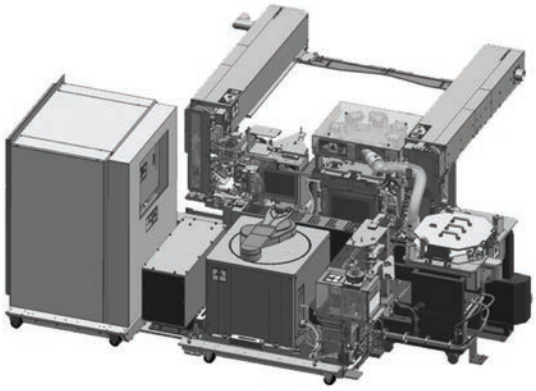
- Lens Reduction 3.125:1
- Expanded field size from 26 x 33 mm to 33 x 42.2 mm
- Flexible alignment solutions including alignment through multi-color RGB photo resist
- Proven FPA-6300 Platform
- Canon Built-In Metrology (CANOMAP)

KEY OPTIONS

- CD Uniformity Improvement
- Wide Band Off-Axis Scope (WB-OAS)
- Die-by-Die Overlay Compensation (EAGA)
- Advanced Flexible Illumination System (AFIS)
- 200, 300 mm wafer handling
- Standard Mechanical Interface Over Head Transport Kit (SMIF-OHT)
- Focus Spot Automatic Chuck Cleaning
- Pellicle Particle Checker
- PC Remote Console
- GEM-compliant online software



FPA-6300ESW Scanners are Canon's highest resolution, large-field lithography systems supporting production of large sensors, displays and packages without shot stitching.



FPA-6300 Scanners and FPA-5550 Steppers can be configured for 200 mm or 300 mm processes.

SPECIFICATIONS	
Technology	KrF Scanner (248 nm)
Resolution	≤ 130 nm
Overlay	≤ 9 nm
Numerical Aperture	0.45 – 0.70
Lens Reduction Ratio	3.125:1
Exposure Field	33 x 42.2 mm
Substrate Size Options	200, 300 mm
Dimensions (W x D x H)	2.3 x 5.2 x 2.9 m

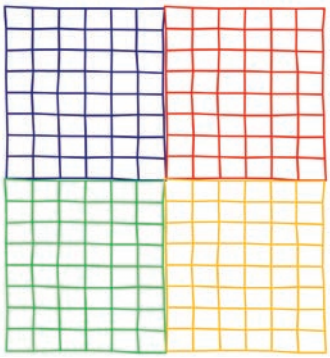
FPA-5520iV LF2 i-line Stepper for Advanced Packaging & Photonics Applications

FPA-5520iV LF2 FEATURES

- Resolution ≤ 0.8 µm
- Lens Reduction 2:1
- Wide Field 52 x 68 mm
- 20iV Steppers offer a wide exposure field, while balancing resolution and Depth of Focus (DoF) for thin and thick, positive and negative resist processes
- Canon Built-In Metrology (CANOMAP)

KEY OPTIONS

- Through Silicon Alignment (TSA)
- Die-by-Die Overlay Compensation (EAGA)
- Warped Wafer Vacuum Assist (WVA)
- Bonded/Transparent Wafer Handling
- Resist Outgas Exhaust System
- Front-to-Back Overlay Metrology (DMAP)
- Pellicle Particle Checker
- GEM-compliant online software



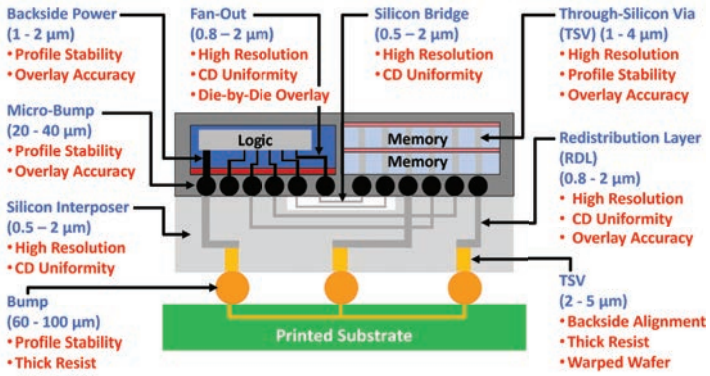
FPA-5520iV LF2 low-distortion projection optics allow multi-reticle stitching for large device production

High-Resolution, Wide-Field i-line Stepper for FOWLP & Photonics Fabrication

FPA-5520iV LF2 [20iV LF2] Steppers address next-generation Advanced Packaging and Heterogeneous Integration challenges as demand for high-resolution, cost effective back-end processes increases.

The 20iV LF2 Steppers are equipped with a projection lens designed with a maximum Numerical Aperture (NA) of 0.24 that can provide 0.8 µm resolution across a large 52 x 68 mm exposure field for high-density VIA and Redistribution Layer (RDL) patterning.

20iV LF2 warpage compensation and die-by-die overlay options also support fabrication of multi-die packages by compensating for the substrate distortion and die-shift that is common in interposer and wafer-level packaging processes.



FPA-5520iV steppers support a variety of Advanced Packaging process requirements including patterning of deep etching and plating masks

SPECIFICATIONS

Technology	i-line Stepper (365 nm)
Resolution	≤ 1 µm (0.8 µm)
Overlay	≤ 100 nm (Front) ≤ 500 nm (Back)*
Numerical Aperture	0.12 – 0.24
Lens Reduction Ratio	2:1
Exposure Field	52 x 68 mm
Substrate Size Options	300 mm
Dimensions (W x D x H)	2.3 x 3.34 x 2.7 m

* = Option Required

High-Productivity and High-Overlay Accuracy i-line Stepper for Low-CoO Fabrication

FPA-5550iZ2 Steppers are designed for logic, memory, advanced packaging and CMOS Image Sensor (CIS) fabrication and support the growing demand for Internet of-Things (IoT) device fabrication on both 200 and 300 mm wafers.

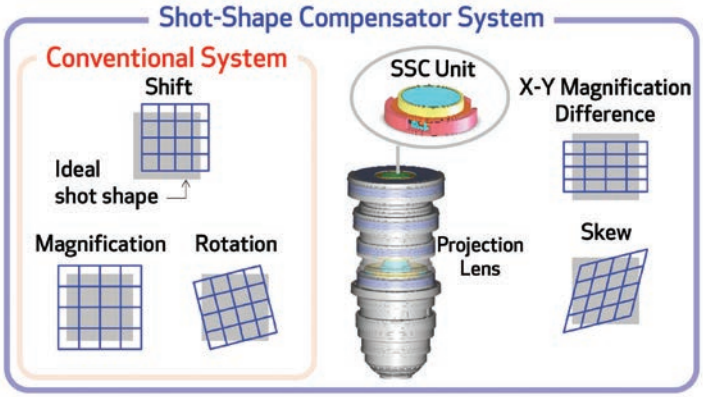
FPA-5550iZ2 Steppers offer a balance between productivity and alignment accuracy. Throughput upgrade options include calibration, alignment, exposure & wafer transfer sequence optimization, and reduced wafer lot exchange times. Overlay matching can also be improved through shot-specific and intra-field compensation options.

FPA-5550iZ2 FEATURES

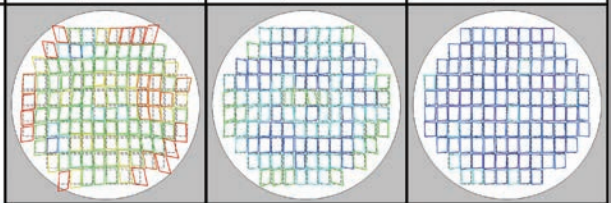
- Shot-Shape Compensator (SSC) Unit improves overlay matching accuracy by adjusting intra-field magnification and skew of each shot
- Canon Built-In Metrology (CANOMAP)

KEY OPTIONS

- Off-Axis Scope 2 (OAS2) Infrared (IR) Alignment scope for Color Filter (CF) & Backside Illuminated (BSI) applications
- Oxygen Concentration Control System (OCCS)
- Reticle Thermal Expansion Compensation (RTEC)
- Die-by-Die Overlay Compensation (EAGA)
- 200, 300 mm wafer handling
- Pellicle Particle Checker
- GEM-compliant online software



Shot-Shape Compensator (SSC) Unit compensates for intra-field X & Y Mag and Skew differences

	No Compensation	w/ EAGA Compensation	w/EAGA & SSC Compensation
Overlay Error 3σ [nm]			
X	99.1	37.0	22.7
Y	93.4	42.5	19.5

FPA-5550iZ2 steppers can reduce overlay error using optional shot-by-shot overlay (EAGA) and SSC options

SPECIFICATIONS	
Technology	i-line Stepper (365 nm)
Resolution	≤ 280 nm (2/3 Ann.)
Single Machine Overlay	≤ 18 nm (Front) ≤ 150 nm (Back, TSA)*
Numerical Aperture	0.45 – 0.57
Lens Reduction Ratio	4:1
Exposure Field	26 x 33 mm
Substrate Size Options	200, 300 mm
Dimensions (W x D x H)	2.3 x 3.66 x 3.0 m

* = Option Required

FPA-5550iX i-line Stepper for Display, Image Sensor & FPGA Fabrication

Wide-Field, High-Resolution i-line Stepper for Large Device Fabrication

FPA-5550iX [50iX] Steppers provide high-resolution imaging across a large exposure area and compatibility with a range of advanced functions. 50iX Steppers offer a large 50 x 50 mm exposure field allowing users to improve imaging performance and productivity by helping to avoid stitching of adjacent shots to expand field size.

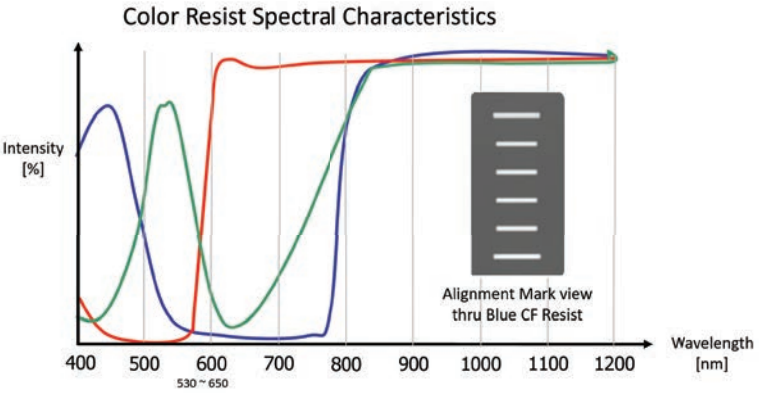
Originally designed for Color Filter (CF) fabrication, the 50iX can be extended to provide high-resolution patterning for production of full-field CMOS Image Sensors (CIS), Field Programmable Gate Arrays (FPGA), Advanced Packaging, display and other large device applications.

FPA-5550iX FEATURES

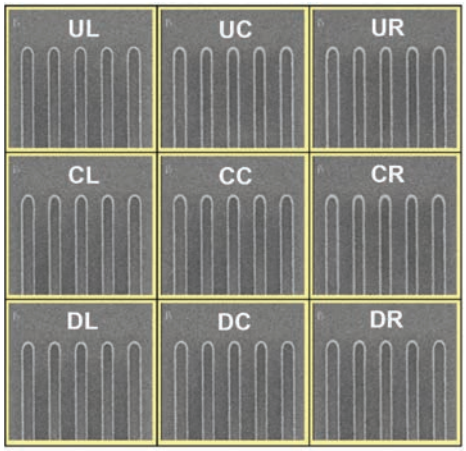
- Exposure Field 50 x 50 mm (max Φ 70.7 mm)
- Stepper Alignment Options enable overlay process optimization for Color Filter (CF) and Backside Illuminated (BSI) Processes
- Canon Built-In Metrology (CANOMAP)

KEY OPTIONS

- Wide Band Off-Axis Scope (WB-OAS)
- Oxygen Concentration Control System (OCCS)
- Die-by-Die Overlay Compensation (EAGA)
- Resist Outgas Exhaust System
- Pellicle Particle Checker
- PC Remote Console
- GEM-compliant online software



FPA-5550iX alignment wavelength options enable measurement through red, blue and green color filter resists



FPA-5550iX Steppers feature a large exposure field and 500 nm resolution capability

SPECIFICATIONS	
Technology	i-line Stepper (365 nm)
Resolution	≤ 500 nm
Overlay	≤ 50 nm
Numerical Aperture	0.28 – 0.37
Lens Reduction Ratio	2:1
Exposure Field	50 x 50 mm
Substrate Size Options	300 mm
Dimensions (W x D x H)	2.3 x 3.34 x 2.7 m

i-line Stepper Compatible with Large Panels at 1.0 µm Resolution

The FPA-8000iW was developed in response to packaging processes that use panel substrates. Canon developed the new 8000 Body stepper platform that is capable of handling large 515 x 515 mm panels to help customers realize high-productivity and efficient production of large packages using Panel-Level Packaging technology.

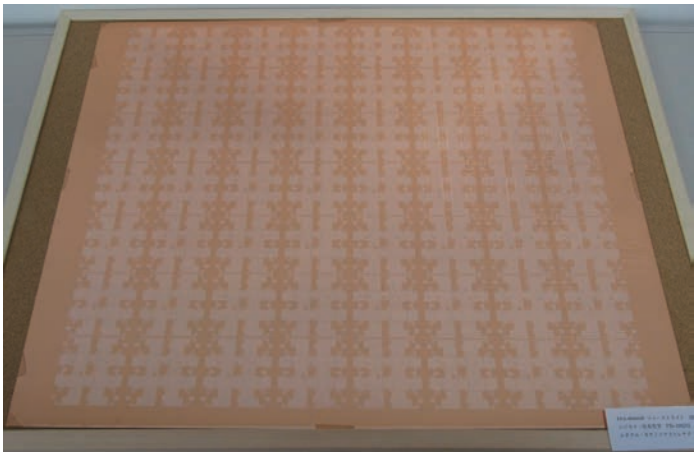
FPA-8000iW steppers apply Canon's original projection optical system High-NA and Wide-Field Projection Optics that are based on front-end stepper technology to help provide a wide 52 x 68 mm exposure field while achieving 1.0 µm resolution.

FPA-8000iW FEATURES

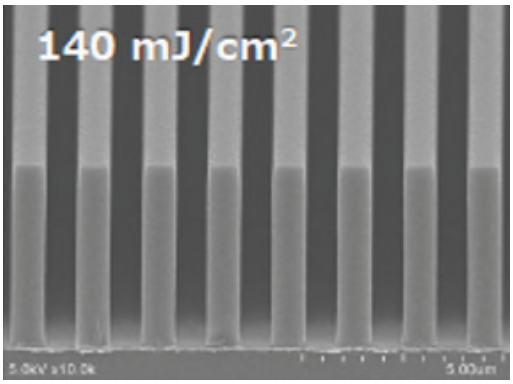
- Achieves a resolution of 1.0 µm on panel substrates to help enable advanced packaging
- Wide 52 x 68 mm or 55 mm x 55 mm field size
- Compatible with panels up to 515 x 515 mm with as much as 10 mm warpage
- Variable NA and die-by-die optical tilt-focus help maximize Depth of Focus

KEY OPTIONS

- Die-by-Die Overlay Compensation
- Warped Panel Vacuum Assist Unit
- Resist Outgas Exhaust System
- Pellicle Particle Checker
- PC Remote Console



FPA-8000iW Steppers have demonstrated submicron resolution on panel substrates



FPA-8000iW Steppers have demonstrated submicron patterning on panels (JSR THB-801P, 5 µm thick)

SPECIFICATIONS

Technology	i-line Stepper (365 nm)
Resolution	≤ 1.0 µm
Overlay	≤ 200 nm (Front)
Numerical Aperture	0.12 – 0.24
Lens Reduction Ratio	2:1
Exposure Field	52 x 68 mm or 55 x 55 mm
Substrate Size Options	515 x 515 mm (Max)
Dimensions (W x D x H)	3.0 x 4.8 x 2.7 m

FPA-3030i6 i-line Stepper for Power, 5G & IoT Applications

High-Resolution i-line Stepper for ≤ 200 mm Wafer Fabrication

FPA-3030i6 [30i6] Steppers feature new high-transmittance optics that are designed to reduce lens aberrations and improve exposure intensity. The standard throughput for the 30i6 is 130 wafers per hour and the stepper features numerical aperture options that allow exposure condition optimization according to process requirements.

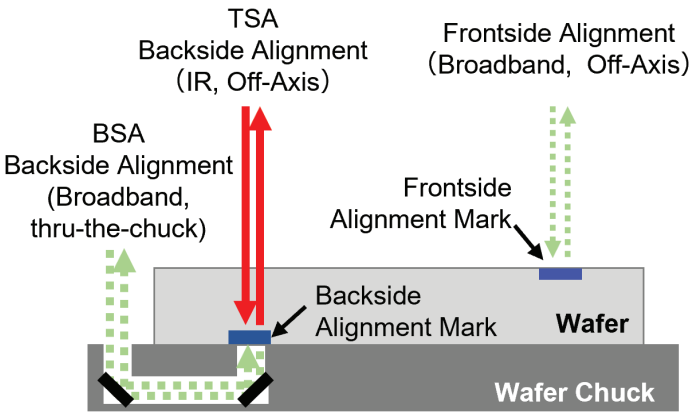
The 30i6 supports a variety of substrates including GaAs, GaN, SiC, sapphire and glass. The 30i6 can be configured to process wafers from 50 mm (2") to 200 mm (8") in diameter, and with the Multi-Wafer Handling Kit option, the 30i6 steppers can handle two different wafer sizes with minimal changeover required.

FPA-3030i6 FEATURES

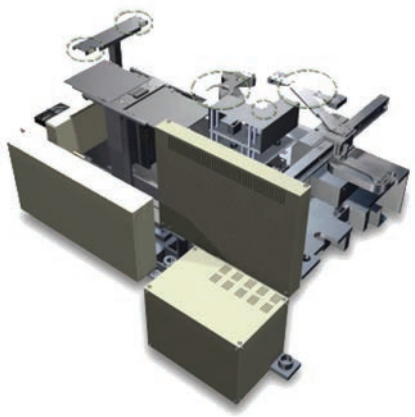
- Resolution ≤ 350 nm
- Lens Reduction 5:1
- Substrate handling capability: 50, 75, 100, 150, 200 mm
- FPA-3030i6 Steppers leverage and extend proven Canon FPA-3000 Stepper designs
- Canon Built-In Metrology (CANOMAP)

KEY OPTIONS

- Through Silicon Alignment (TSA) Scope
- Die-by-Die Overlay Compensation (EAGA)
- Multi-Wafer Size Handling Kit
  - 75 & 100 mm, 100 & 150 mm, 150 & 200 mm
- Warped/Bonded/Transparent Wafer Handling
- Pellicle Particle Checker
- PC Remote Console
- GEM-compliant online software



FPA-3030 Stepper Backside Alignment Options enable front-to-back overlay alignment



Multi-Wafer Size Handling Kits allow quick changeover between two wafer sizes
75 ↔ 100 mm, 100 ↔ 150 mm, 150 ↔ 200 mm

SPECIFICATIONS

Technology	i-line Stepper (365 nm)
Resolution	≤ 350 nm
Overlay	≤ 40 nm (Front) ≤ 150 nm (Front, TSA)*
Numerical Aperture	0.35 – 0.63 (0.30 – 0.63)*
Lens Reduction Ratio	5:1
Exposure Field	22 x 22 mm
Substrate Size Options	50, 75, 100, 125, 150, 200 mm
Dimensions (W x D x H)	1.9 x 2.6 x 2.45 m

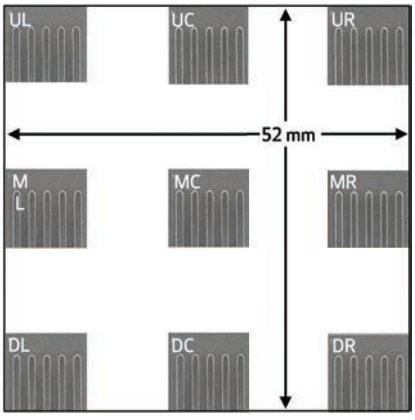
* = Option Required

FPA-3030iWa FEATURES

- Resolution ≤ 0.8 µm
- Lens Reduction 2:1
- Wide Field 52 x 52 mm
- Substrate handling capability: 50, 75, 100, 125, 150, 200 mm
- FPA-3030iWa Steppers leverage and extend proven Canon FPA-3000 Stepper designs
- Canon Built-In Metrology (CANOMAP)

KEY OPTIONS

- Through Silicon Alignment (TSA) Scope
- Die-by-Die Overlay Compensation (EAGA)
- Multi-Wafer Size Handling Kit
  - 75 & 100 mm, 100 & 150 mm, 150 & 200 mm
- Warped/Bonded/Transparent Wafer Handling
- Pellicle Particle Checker
- PC Remote Console
- GEM-compliant online software



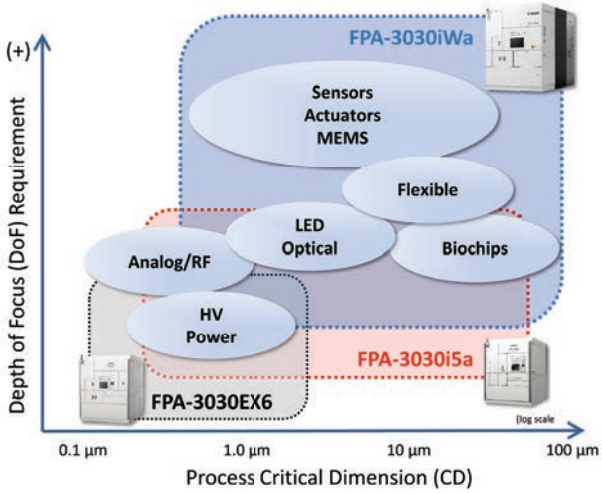
FPA-3030iWa Steppers feature a large exposure field and 0.8 µm resolution capability.

Wide-Field i-line Stepper for ≤ 200 mm Wafer Fabrication

FPA-3030iWa [30iWa] Steppers deliver performance and flexibility required for manufacturing and R&D environments and support a variety of substrates including GaAs, GaN and transparent sapphire and SiC wafers.

The 30iWa features a 52 mm x 52 mm wide-field projection lens with a variable numerical aperture (NA) ranging from 0.16 to 0.24, delivering a large depth of focus (DOF) and is designed to enable high-precision imaging over large topography or through thick resist.

The field size, depth of focus, productivity and available options of the 30iWa make it a cost-effective solution for challenging ≤ 200 mm wafer processes for innovative Internet-of-Things (IoT) applications.



FPA-3030 Series steppers support processes requiring high-resolution and large DoF

SPECIFICATIONS

Technology	i-line Stepper (365 nm)
Resolution	≤ 0.8 µm
Overlay	≤ 100 nm (Front) ≤ 500 nm (Front)*
Numerical Aperture	0.16 – 0.24
Lens Reduction Ratio	2:1
Exposure Field	52 x 52 mm
Substrate Size Options	50, 75, 100, 125, 150, 200 mm
Dimensions (W x D x H)	1.9 x 2.6 x 2.45 m

* = Option Required

FPA-3030EX6 KrF Stepper for High-Resolution IoT Device Applications

High-Resolution KrF Stepper for Aggressive ≤ 200 mm Wafer Fabrication

FPA-3030EX6 [30EX6] Deep UV (DUV) Steppers provide a low cost alternative to Scanners for customers seeking high-resolution imaging. The EX6 can also be configured to handle different substrate materials, sizes and thicknesses required for fabricating advanced analog, sensor, RF and power devices as well as emerging Internet-of-Things (IoT) applications with special wafer requirements.

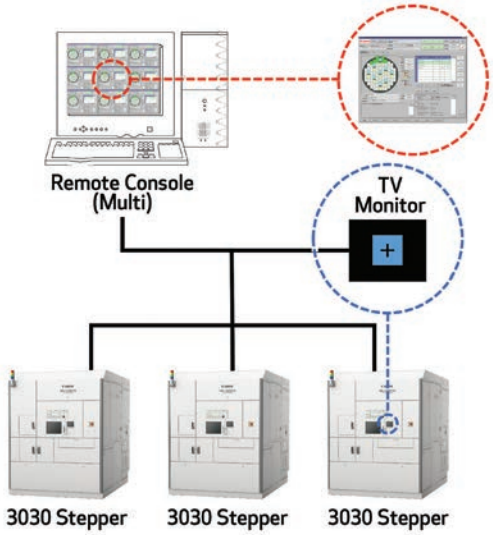
FPA-3030EX6 Steppers offer the highest level of performance among KrF (Krypton Fluoride) Excimer Laser Steppers and are designed to be a long-term solution for growing industry demands.

FPA-3030EX6 FEATURES

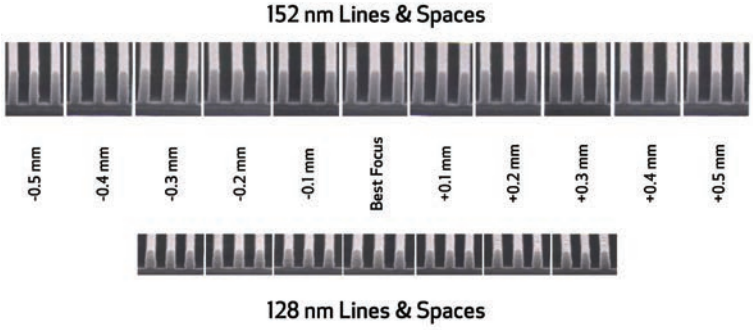
- 248 nm exposure wavelength Stepper
- Resolution ≤ 150 nm
- Single Machine Overlay ≤ 25 nm
- Substrate handling capability: 50, 75, 100, 125, 150, 200 mm
- e-Console Software supports advanced automation and remote operation functions
- Canon Built-In Metrology (CANOMAP)

KEY OPTIONS

- Through Silicon Alignment (TSA) Scope
- Die-by-Die Overlay Compensation (EAGA)
- Multi-Wafer Size Handling Kit
  - 75 & 100 mm, 100 & 150 mm, 150 & 200 mm
- Warped/Bonded/Transparent Wafer Handling
- Pellicle Particle Checker
- PC Remote Console
- GEM-compliant online software



e-Console Software supports Remote Console control and troubleshooting of fleets of tools from remote locations.



FPA-3030EX6 DUV (KrF, 248 nm) Steppers provide cost-efficient high-resolution imaging on ≤ 200 mm substrates for sensor, power and IoT applications.

SPECIFICATIONS

Technology	KrF Stepper (248 nm)
Resolution	≤ 150 nm
Overlay	≤ 25 nm
Numerical Aperture	0.50 – 0.65
Lens Reduction Ratio	5:1
Exposure Field	22 x 22 mm
Substrate Size Options	50, 75, 100, 125, 150, 200 mm
Dimensions (W x D x H)	1.9 x 3.0 x 2.45 m

MS-001 FEATURES

- MS-001 wafer standalone metrology systems measure wafer deformation
- Complex wafer processes cause 3 issues
  1. Wafer distortion. High-accuracy overlay correction requires multi-point measurement
  2. Distortion. Distortion factors are difficult to identify and reduce
  3. Process complexity. Optimal alignment measurement can vary for each layer

MS-001 BENEFITS

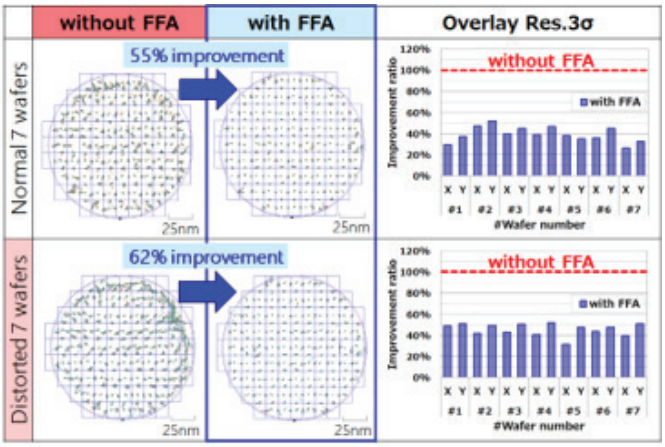
- Offline measurement allows Feed-Forward Alignment (FFA) Correction to improve overlay accuracy
- Offline measurement allows increased sampling and identification of error factors
- Offline measurement allows maximum lithography system utilization and can reduce Cost-of-Ownership
- Enhanced wavelength and alignment mark selectability increases alignment options

High-precision MS-001 overlay measurement system

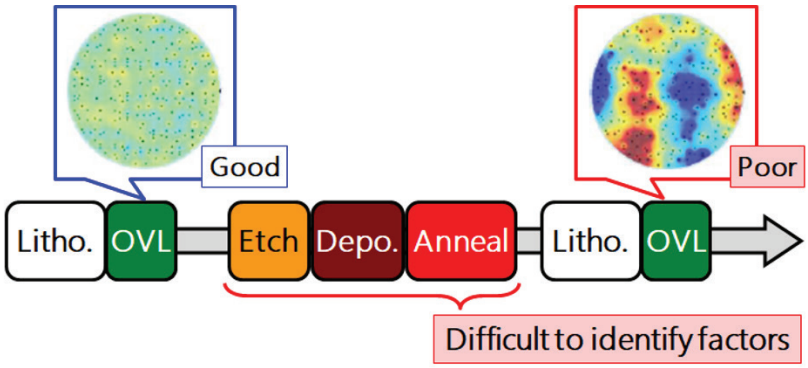
Canon's MS-001 wafer metrology system is capable of premeasuring the position of hundreds of alignment marks on semiconductor wafers in advance of wafer patterning to improve overlay accuracy and lithography system productivity.

Premeasuring the alignment mark positions can result in improved overlay accuracy and reduced alignment measurement time in the lithography process.

The MS-001 allows the majority of alignment measurements to be performed in one batch process, offline from the lithography system. The productivity of the lithography system can be improved by reducing the number of measurements performed during the exposure process.



Overlay improvement using the MS-001 & FFA has been demonstrated



Offline measurement using the MS-001 can help compensate for non-lithography process variability

Canon ANELVA Physical Vapor Deposition (PVD), Etch Systems and Components

Canon U.S.A. provides sales, marketing, service and engineering support for products manufactured by Canon ANELVA Corporation. Canon ANELVA develops and manufactures Physical Vapor Deposition (PVD) and etching equipment for use in semiconductor, storage media and display production lines.

ANELVA PRODUCTS TARGET APPLICATIONS

ANELVA Product	Technology/ Environment	Key Features and Options	Process	Substrate Options	MRAM	Logic & MPU/GPU	3D-NAND & DRAM	HDD & SCM	Power & Automotive	Waveguide & RF	Advanced Packaging	Optics & Photonics	MEMS, Sensors & IoT	AV/VR & Display	LED, MicroLED
BC7000	Permanent Wafer Bonding	Room Temp., Low Pressure	Atomic Diffusion Bonding	100 mm 150 mm					✓	✓	✓	✓	✓		✓
NC7900	UHV PVD Cluster HVM	Oblique & Multi-Cathode	Planar & Perpendicular MTJ	300 mm	✓										
NC8000	Ion Beam Etching Cluster HVM	Optimized Ion Source Optical Endpoint Control	Planar & Perpendicular MTJ	300 mm	✓										
EC7800	UHV PVD Cluster R&D & Small Scale	Oblique & Multi-Cathode	Planar & Perpendicular MTJ	300 mm	✓										
EC8000	Dry Etch Cluster R&D	Integrated Dry Etch & CVD	Planar & Perpendicular MTJ	300 mm	✓										
FC7100	UHV PVD Cluster HVM	Damage-less Deposition	Planar Metal Gate	300 mm		✓	✓								
IC7500	UHV PVD Cluster HVM	Reactive PVD & High-Stress Materials	Metal Interconnect	300 mm	✓	✓	✓								
IC7400	PVD Cluster HVM	Low-Temp Damage-less Deposition	Under Bump Metallization (UBM)	300 mm	✓	✓	✓				✓				
EL3400	Vertical Inline PVD HVM	Single or Dual-Side Deposition, Multiple Target	Barrier & Copper Seed layer	650 x 650 300 mm x 4	✓	✓	✓				✓			✓	
HC7100	UHV PVD Cluster HVM	Oblique and Multi-Cathode	TMR & GMR MR Sensors	200 mm				✓	✓	✓		✓	✓		✓
ML3000	Inline PVD System	High-Vacuum Quality High-Temp Heating/Cooling	Magnetic Media Next Gen Media	1,800 disks per hour				✓	✓	✓		✓	✓		✓
HC7300	PVD System HVM	Integrate PVD, Milling, Insulation, Hard Bias & Cap	Magnetic Head	200 mm				✓	✓	✓		✓	✓		✓
EB1000	Compact PVD R&D & Small Scale	3 Cathodes, High-Temp Co-Sputtering	General Purpose PVD	≤ 100 mm					✓	✓		✓	✓		✓
EB1100	High-Performance PVD R&D & Small Scale	4 Cathodes, High-Temp Co-Sputtering	General Purpose PVD	≤ 220 mm					✓	✓		✓	✓		✓
EC7000	Compact PVD Cluster R&D & Small Scale	4 Cathodes, 2 Chambers Load Lock and Transfer	High-Flexibility & Productivity PVD	≤ 220 mm					✓	✓		✓	✓		✓
EC7400	Compact PVD Cluster R&D & Small Scale	4 Cathodes Space Saving Design	Electronic Components	≤ 200 mm					✓	✓		✓	✓		✓
EC3000	Batch PVD System HVM	4 Cathodes Rotary Deposition	ITO Film & Metal Electrode	≤ 200 mm					✓	✓		✓	✓		✓
EC8100	Tray Transport PVD HVM	3 PVD Chambers Damage-Less Deposition	ITO Film & Metal Electrode	≤ 200 mm					✓	✓		✓	✓		✓
EL3200	Horizontal Inline PVD HVM	3 Cathodes, Top, Bottom or Dual-Side Deposition	Printed Circuit Board	300 x 450 mm	✓	✓	✓				✓			✓	
EC7200	Annealing System R&D & HVM	Electron Bombardment High-Temperature Vacuum Anneal	SiC Power Device Activation	≤ 150 mm					✓						
X-Ray Source	Microfocus X-Ray R&D & HVM	High-Power, High-Speed & High-Resolution	Radioscopy X-Ray CT	NA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vacuum Components	Components R&D & HVM	Pumps, Gauges, leak detectors, spectrometers, electron gun	Low-Vacuum UHV	NA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓ Compatible with application

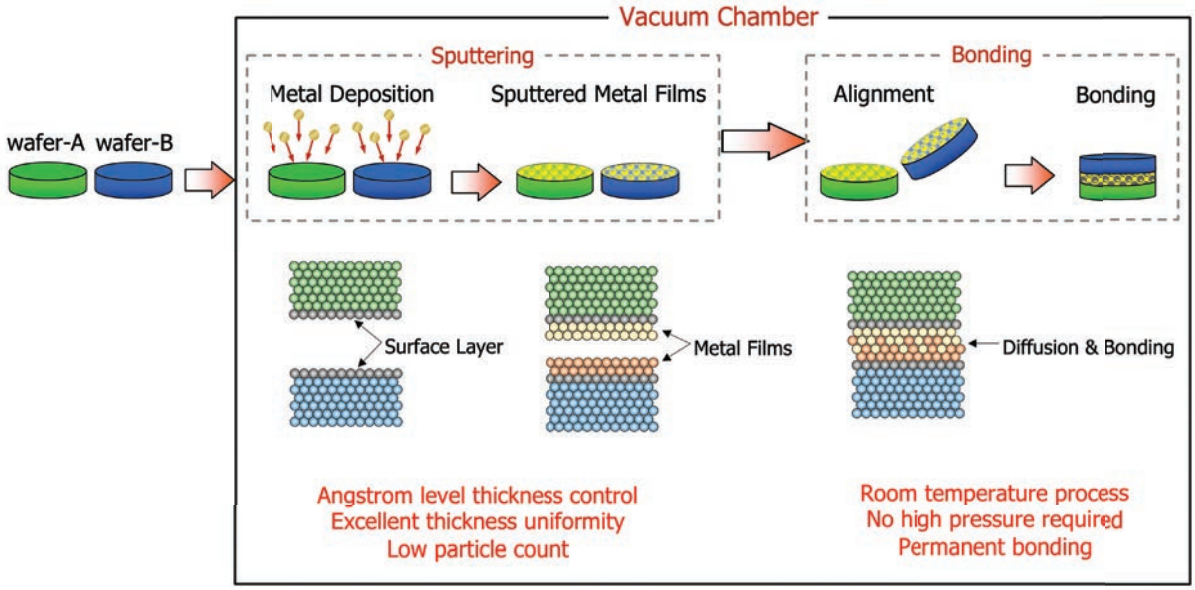
Next-Generation Wafer Bonding Solutions

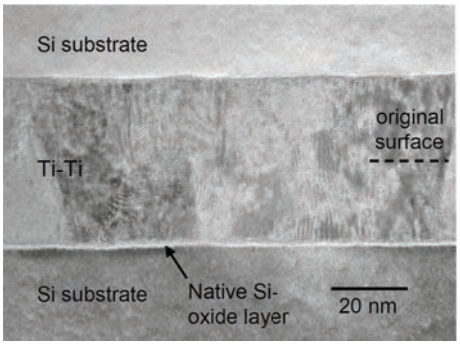
BC7000 Atomic Diffusion Bonding equipment is based on Canon ANELVA's long experience with ultra high vacuum and thin film deposition technologies. It offers ultra high vacuum in-situ processes of wafer transfer, film deposition, bonding and bonded wafer collection with automatic operation and is capable of handling 100 mm (4") and 150 mm (6").

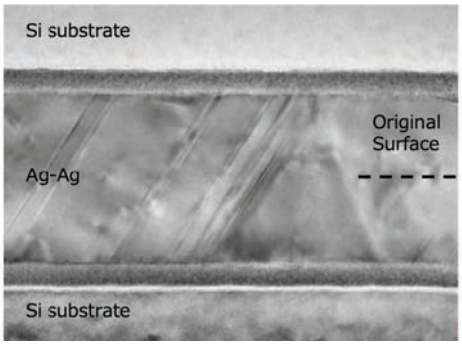
Mirror polished wafers of any materials can be bonded at room temperature without pressure by optimization of metal and thickness of deposited film at the bonding interface.

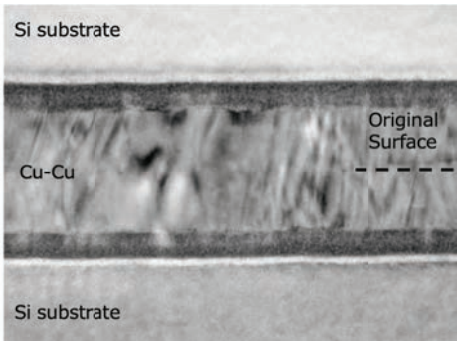
BC7000 FEATURES

- Bonding at room temperature
- No pressure during bonding
- High bonding strength
- Bonding of any similar or dissimilar materials
- High throughput









Canon ANELVA Semiconductor Manfacturing Equipment

Canon ANELVA develops and manufactures reliable Physical Vapor Deposition (PVD) and Ion Beam Etching (IBE) and Dry Etching equipment to provide nanometer level processing required for a large scale integration of semiconductor devices including Magnetic Random Access Memory (MRAM).

NC7900

Ultra-High Vacuum (UHV) PVD cluster tool for 300 mm MRAM high-volume manufacturing.

Features:

- Compatible with planar and perpendicular Magnetic Tunnel Junction (MTJ) formation
- High throughput (≥ 25 wph for perpendicular MTJ)
- Oblique and multi-cathode PVD chambers with extensive module line up such as heating, cooling, and pre-cleaning
- Fine interface control with ultra-thin multi-layers

NC8000

Ion Beam Etching (IBE) cluster tool for 300 mm MRAM high-volume manufacturing

Features:

- Enhanced ion beam source
- High etching performance with high productivity
- Clampless holder with 2-axis revolution and stage angle
- Optical end point detection system for precise etching depth control

EC7800

Ultra-High Vacuum (UHV) PVD cluster tool for 300 mm R&D and small scale MRAM production.

Features:

- Low pressure remote Pplasma sputtering technology delivering ultrathin multilayer stacks
- An order of magnitude lower pressure discharge (0.02 Pa) than conventional PVD processes
- Excellent film thickness uniformity (< ± 1%)
- Smooth and low resistance films
- Provides high Magneto-Resistance (MR) ratio with excellent distribution
- Oblique and multi-cathode PVD chambers with extensive module line up such as heating, cooling, and pre-cleaning

EC8000

Dry etching cluster tool for 300 mm MRAM R&D.

Features:

- Integrated processing –MTJ dry etching and protective film Chemical Vapor Deposition (CVD)
- Low-damage process with CH_3OH gas
- Enables micro-patterning with less shorts (high yield)
- Capable of retaining a high Magneto-Resistance (MR) ratio even after etching
- Easy maintenance and flexible equipment configuration

FC7100

Ultra-High Vacuum (UHV) PVD cluster tool provides planar metal gate deposition for 300 mm high-volume manufacturing.

Features:

- Suitable for planar metal gate deposition
- Precise control of film thickness (~ 0.1 nm)
- Excellent thickness uniformity (1 σ < 1%)
- Film composition control
  Small size cathode for low material cost

IC7500

Ultra-High Vacuum (UHV) PVD cluster tool for metal interconnect fabrication in 300 mm high-volume manufacturing of semiconductor memory.

Features:

- Excellent uniformity and low particles even for reactive PVD processes and high stress materials
- High productivity to reduce production cost
- High Throughput (80 wph)
- Uptime > 90% (Failure time < 1%)
- Cathode magnet position change through recipe facilitates easy optimization

IC7400

PVD cluster tool for Under Bump Metallization (UBM) processes in 300 mm high-volume memory packaging.

Features:

- Stress control
- Low temperature deposition
- Damage-less deposition
- Improved adhesion
- Easy to customize hardware

EL3400

Panel PVD System for Advance Packaging applications including barrier and Copper seed deposition.

Features:

- Vertical linear transport system
- Compatible with various substrates (Si, glass, organic, …)
- Large deposition area (Ŝ 650 mm x 2 panels, Φ 300 mm x 8 wafers, Ŝ 300 mm x 8 panels)
- Moisture control
- Plasma surface activation for superior adhesion
- Single side or double side deposition
- Multiple targets for multilayer deposition

Canon ANELVA Storage and Hard Disk Drive Manufacturing Equipment

Canon ANELVA commands a large market share of the PVD equipment used for production of high density magnetic heads and disks for use in PCs and servers. Using proprietary technology and know-how, Canon ANELVA intends to continue our technology leadership in the evolution of hard disk drives and innovative storage media.

HC7100

200 mm PVD cluster tool production of MagnetoResistive (MR) magnetic sensors.

Features:

- Compatible with Tunnel Magneto-Resistance (TMR) and Giant Magneto-Resistance (GMR) processes
- An order of magnitude lower pressure discharge (0.02 Pa) than conventional PVD processes
- Excellent film thickness uniformity (< ± 1%)
- Smooth and low resistance films
- Provides high Magneto-Resistance (MR) ratio with excellent distribution
- Oblique and multi-cathode PVD chambers with extensive module line up such as heating, cooling, and pre-cleaning

ML3000

Inline PVD tool for R&D & mass production of next generation Hard Disk Drive (HDD) magnetic media.

Features:

- High productivity (up to 1,800 disks/hr) with a 90 m^2 footprint
- Over 10 days of continuous operation is possible
- Emphasis on vacuum (~ 10^{-6} Pa) quality to improve magnetic characteristics of media
- High temperature heating and cooling units for the development of next generation thermally assisted magnetic recording media

HC7300

PVD tool for Hard Disk Drive (HDD) magnetic head production.

Features:

- Effectively consolidates magnetic head production processes – milling ➔ insulator ➔ hard bias ➔ cap layer
- Module lineup enables optimum shape required by read element (IBE, anisotropic deposition, isotropic deposition, RIE, etc…
- Excellent deposition characteristic and high productivity

Canon ANELVA's versatile device lineup supports next generation technology development and manufacturing of thin film devices such as Light Emitting Diodes (LEDs), CMOS Image Sensors, Compound Semiconductors, Piezoelectric Devices, and Power Devices.

EB1000

Compact and flexible PVD system for ≤ 100 mm general purpose R&D applications.

Features:

- Three Φ 2" compact cathodes
- Various deposition geometries (offset rotation, static) by tray transport
- Supports substrates up to Φ 100 mm
- High temperature (800 °C) substrate heating (option)
- Load lock chamber (option)
- Ternary co-sputtering (option)
- Auto-pumping and manual transportation/deposition operation
- Space saving design (standard footprint W 1.8 m x D 1.1 m x H 1.55 m)

EB1100

High-performance PVD system for ≤ 220 mm R&D and small scale production.

Features:

- Fully automated operation
- Supports up to four Φ 4" cathodes
- Supports substrates up to Φ 220 mm
- Various deposition geometries (offset rotation, static) by tray transport
- High temperature (800 °C) substrate heating (option)
- Space saving unit body design (standard footprint W 1.45 m x D 1.6 m x H 1.85 m
- Co-sputtering (option)

EC7000 SERIES

Compact PVD cluster system for ≤ 220 mm R&D and small scale production of LEDs, Compound Semiconductors, and Power Devices.

Features:

- Equipped with load lock stocker chamber and transfer chamber
- Supports up to two sputtering chambers
- Fully automated operation
- Supports up to four Φ 4" cathodes
- Supports substrates up to Φ 220 mm
- Various deposition geometries (offset rotation, static) by tray transport
- High temperature (800 °C) substrate heating (option)
- Space saving unit body design (standard footprint W 1.45 m x D 2.3 m x H 1.85 m)
- Co-sputtering (option)

EC7400

Compact cluster tool for ≤ 200 mm production of electronic components such as SAW Filters, TC-SAW Filters, Piezoelectric Devices, and Power Devices.

Features:

- Fully automated operation
- Able to accommodate a variety of process modules according to requirements
- High target utilization
- Substrate size up to Φ 200 mm
- Up to four Φ 7.1" cathodes
- Space saving design

EL3000 SERIES

Batch type PVD system for LED production.

Features:

- Ideal for Indium Tin Oxide (ITO) transparent conductive film deposition, metal electrode film deposition, etc.
- Rotary deposition facilitates batch processing of multiple wafers and good uniformity
- Fully automated operation
- Supports substrates up to Φ 200 mm
- Tray transport (50 Φ 2” wafers/batch)
- Supports up to four Φ 7.1” or Φ 12.5” cathodes
- High target utilization to help reduce cost
- Customizable configuration according to application and production volume

EC8100

Tray Transport PVD cluster system for small wafer and LED production.

Features:

- Ideal for Indium Tin Oxide (ITO) transparent conductive film deposition, metal electrode film deposition, etc.
- Long distance sputtering
- Excellent uniformity over large area
- Multiple wafers deposition per batch (four Φ 8”, eight Φ 6”, etc.)
- High target utilization
- Fully automated operation
- Up to three sputtering chambers

EL3200

Horizontal linear transport PVD system for production of electronic components such as Sensor Devices.

Features:

- Configurable for single side or dual-side deposition according to production volume
- Supports laminated films by using up to 3 (single side) cathodes
- Can accommodate up to 25 trays in the stocker chamber
- Pre-heating chamber (Option)
- 300 mm x 450 mm effective deposition area

EC7200

Electron Bombardment vacuum annealing tool for SiC power device activation in ≤ 150 mm R&D and mass production.

Features:

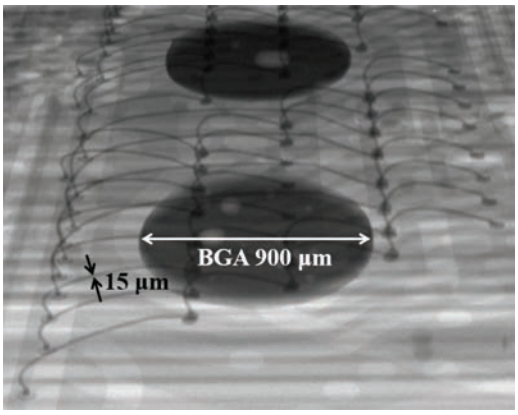
- High temperature (up to 1850 °C) process for implant activation
- In situ carbon capping for low surface roughness
- Clean vacuum
- Cluster tool configuration that supports up to three annealing chambers
- Substrate size up to Φ 6”
- Excellent repeatability (sheet resistance uniformity ± 4.9% @ 1,000 runs)
- High electrical activation, low sheet resistance, reduction of diode leakage current, and low surface roughness

Emerging applications in healthcare, automobile electrification and autonomous driving demand high-reliability operation which increases quality requirements for computer chips and chip packages. X-ray non-destructive inspection, combined with high-speed and high-magnification inspection is one method for helping to ensure all critical electronic components meet quality specifications.

The Canon ANELVA X-ray source supports X-ray high-speed non-destructive testing of all parts and features a sealed tube with a transmissive target on a diamond window. Transmissive target systems offer advantages over X-ray sources having a sealed tube with a reflective target by providing high-power X-ray with no anode degradation and a long shelf life.

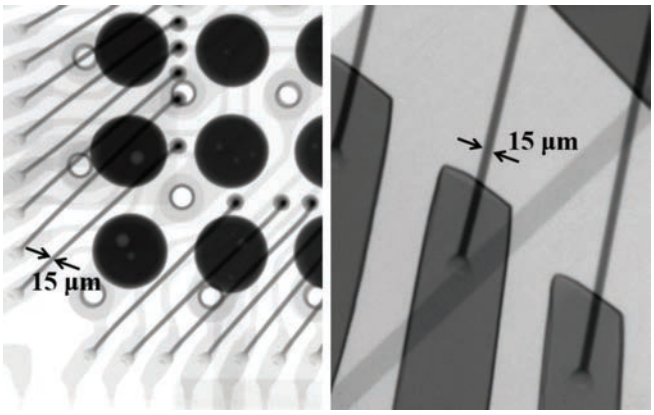
The technologies employed in our newly developed X-ray source include X-ray tube design implementations:

1. Simultaneous high power X-ray with high resolution and high magnification
2. Reduced system downtime for automated X-ray inspection systems
3. Reduced X-ray dose utilizing pulsed X-ray emission mode for protection of sensitive electronic devices



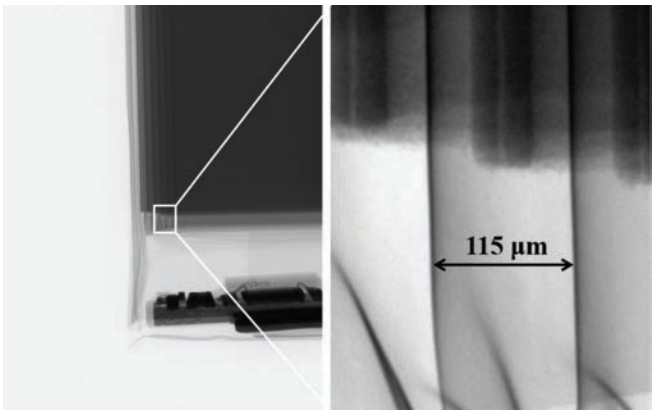
100 kV, 100 µA

Figure 1: Ball Grid Array (BGA) on Flash Memory Chip



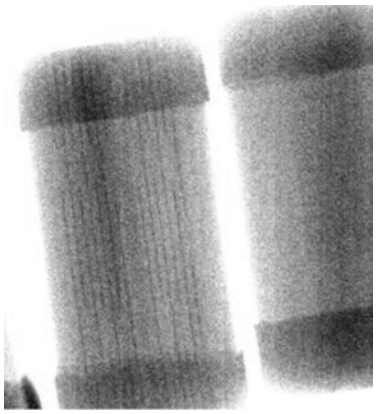
100 kV, 100 µA, (150 x) 100 kV, 100 µA (300 x)

Figure 2: BGA and Wire Bond



110 kV, 90 µA, (7.5 x) 110 kV, 90 µA, (450 x)

Figure 3: Lithium Ion Battery



60 kV, 60 µA, (64 x)

Figure 4: Multi-layer Ceramic Capacitor

Canon ANELVA Components

Thin-Film manufacturers and R&D facilities use Canon ANELVA vacuum component parts in systems incorporating vacuum technology. Canon ANELVA vacuum technology contributes to stable operation of equipment and measuring instruments.

QUADRUPOLE MASS SPECTROMETERS

Versatile instruments used to monitor process gases and analyze residual, inorganic and desorbed gases.

Available Products:

- Compact gas analysis system, D-series (M-101/201/400GA-D Series)
- Process gas monitor (M-080QA-HPM)
- Transducer type spectrometer (M-070QA-TDF, M-101QA-TDF, M-101/201QA-TDM
- High speed and high sensitivity spectrometer (M-401QA-MU/G)

VACUUM PUMPS

Canon ANELVA offers a wide range of vacuum pumps from low-vacuum to ultra-high-vacuum applications and high efficiency cryopumps.

Available Products:

- Ion pumps/noble pumps
- Excel pumps
- Titanium sublimation pump/tie-back pumps
- Combination pumps
- Cryopumps
- Cryogenic traps
- Air cooled freezer module
- Foreline traps
- Screw type dry pumps
- Roots type dry pump

VACUUM GAUGES AND CONTROLLERS

Canon ANELVA offers a diverse lineup of gauges to meet a variety of application requirements.

Available Products:

- Cold Cathode Gauge (M-370CG)
- Cold Cathode Pirani Gauge (M-361CP)
- Capacitance Diaphragm Gauge (M-342DG)
- Pirani Gauge (M-350PG)
- Corrosion-resistant Pirani Gauge (M-351PG)
- Ion Gauge (M-311HG)
- Crystal Ion Gauge (M-336MX)
- Crystal Gauge (M-320XG)
- Wide Range Ionization Vacuum Gauges (M-431HG, M-833HG)
- Ionization Vacuum Gauge (M-723HG, M-823HG, M-923HG)
- Thermocouple Vacuum Gauge (M-012DM)
- Miniature Gauge (MG-2, MG-2M, MG-2F, MG-2/WF)
- Vacuum Gauge (Shultz, B-A, Nude Ion, Pirani, Thermocouple)

LEAK DETECTORS

Canon ANELVA helium leak detectors support a variety of quality control applications requiring high sealing performance.

Features:

- Used by customers in a variety of industries
- Compact, lightweight, and portable design
- Various models available to choose from
- Simple operation
- High sensitivity, stability, and response
- Uses a tungsten filament to help enable long term high-sensitivity measurement

Canon Optomechatronic Products blend optics, analytics, motion control technology to enable advanced and automated processes. Canon has been developing industrial components with precision and accuracy using optical technology developed and accumulated for over half a century.

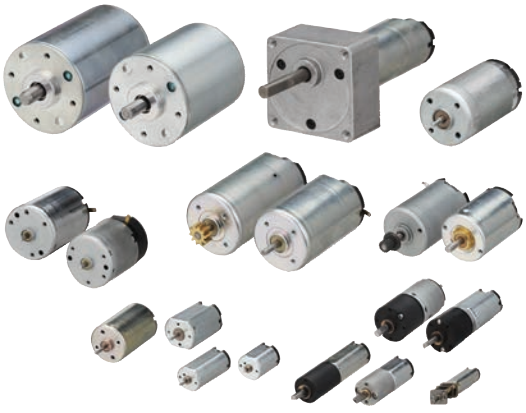
OPTOELECTRONICS

Canon Optoelectronics integrate optical and electronic technologies with precise fabrication to produce a line of products for advanced R&D and production.

Available Products:

- Digital Laser Scanner System
- Optical Digital Laser Rotary Encoder
- Interpolator Board
- Laser Doppler Velocity Sensor
- Custom Design Encoders

GM-1000 Series Digital Galvano Motors support beam diameters between 5 and 30mm.

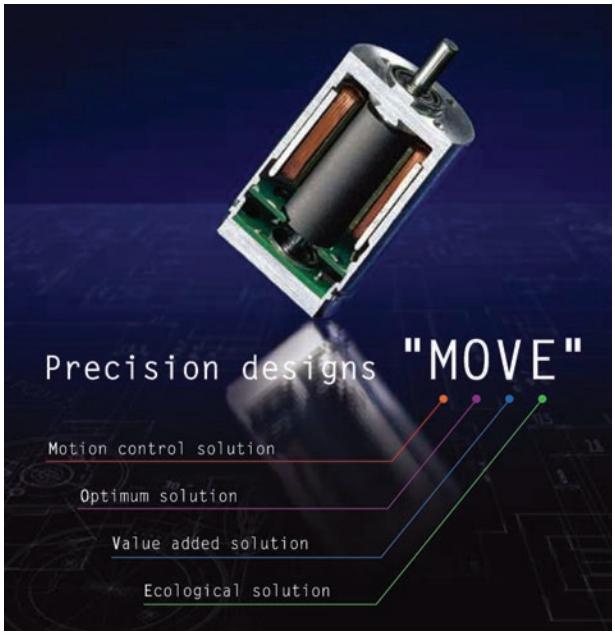


MOTION CONTROL PRODUCTS

Canon's DC Micro-Motors can be found in robotic systems, semiconductor process equipment, sporting equipment, ATMs, medical devices and pumps.

Available Products:

- Brushless Motors
- Coreless Motors
- Iron Core Motors
- Actuator Units



Options such as gear units and encoders can be added to Canon motors. Speed, reduction rate and other parameters can be customized to fit your exact requirements.

3-D MACHINE VISION SYSTEM (RV-SERIES)

RV-Series 3-D Machine Vision Systems are designed to work with robotic arm systems as an “eye” for three-dimensional recognition of the position and orientation of objects and to instruct the robotic system how to approach and pick up individual parts.

Features:

- 3-Dimensional, Image Recognition of Target Parts
- Simple and Easy Preparation with CAD data and Image File
- One-time Measurement of 3-D Pose
- Position and Orientation: 6 Degrees of Freedom

Canon’s 3-D Machine Vision System was developed in response to the manufacturing industry need for a solution for 3D robotic random bin picking.

*Image simulated

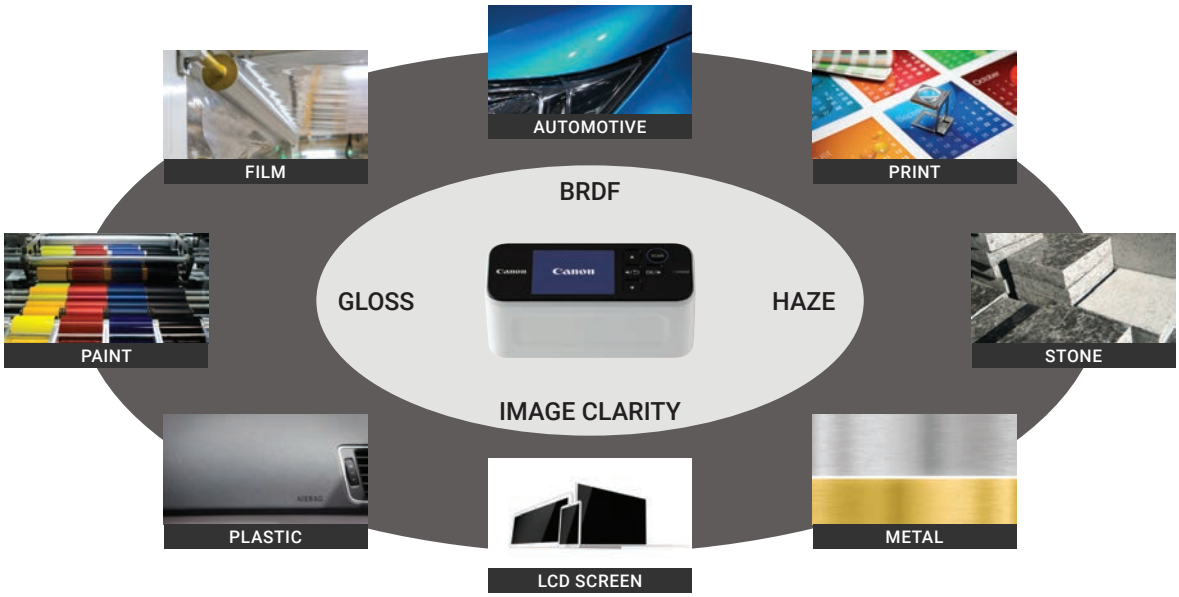
SURFACE REFLECTANCE ANALYZER

Canon’s RA-532H Surface Reflectance Analyzer is a portable measuring device to evaluate surface conditions of objects including standard compliant Gloss, Haze, Image Clarity and 2-D BRDF measurements.

Features:

- Single analysis for 4 surface conditions: Gloss, Haze, Image Clarity, and Bidirectional Reflectance Distribution Function (BRDF)
- 2-D BRDF measurement in the palm of your hand
- Outputs the angular distribution of incident reflected light intensity
- Monitoring camera function displays measurement area results

Industries With a Need for Surface Appearance Quality Measurement



About the Canon Industrial Group

Leading the Future with Technology

The Canon Industrial Group was formed to enable manufacturing innovations that support the future health humanity and our planet.

The Canon Industrial Group provides cutting-edge technology in the form of industrial equipment to manufacturing customers around the world. Our innovative products are used to fabricate semiconductor and other electronic systems that offer increased functionality and higher performance, while supporting a more sustainable global environment and human society.

Canon Industrial Group products and services can also help customers realize new markets by applying ultra-precision technology to help co-create new value and enable continued innovation.

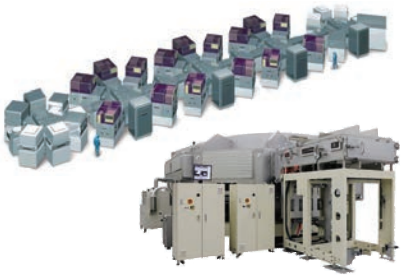
We remained committed to supporting the evolution of human manufacturing technologies to help realize an exciting future society.

Industrial Business Group

Providing Manufacturing Solutions for Cutting-edge Electronics Industries

Display Manufacturing Equipment

FPD Exposure Equipment



G6 / G8 OLED Display Manufacturing

Semiconductor Equipment

Nanoimprint Lithography

Semiconductor Exposure

Sputtering (PVD)

Atomic Diffusion Bonding

Die Bonding

Substrate Singulation

Substrate Coining

Wire Bond Inspection

Inspection / Measurement / Components

Digital Galvano Scanner

Laser Rotary Encoder

High Precision Laser Drilling Scanner

Surface Reflectance Analyzer

Non-contact Length Measurement

Force / Torque Sensor

Helium Leak Detector

Micro-Focus X-ray Source

Industrial Group Operating Companies

Canon Industrial Group Manufacturing Centers are Focused in Japan

Canon Tokki Co., Ltd.
Mitsuke City, Niigata PrefectureFlat-Panel Display Equipment
- OLED Display Manufacturing Equipment
- Vacuum Equipment

Canon Inc.
Utsunomiya City, Tochigi Prefecture
Semiconductor Equipment Business
- Semiconductor Exposure Equipment

FPD Equipment Business
- FPD Exposure Equipment
- Metrology Equipment / Components Business

Canon Anelva Inc.
Kawasaki City, Kanagawa Prefecture
Vacuum Film Processing Equipment
- Semiconductor Manufacturing Equipment
- Storage Device Manufacturing Equipment
- Electronic Component Manufacturing Equipment

Vacuum Component Products
- Vacuum Pumps / Vacuum Parts
- Vacuum Measurement Equipment / Analysis Equipment

Canon Machinery Co., Ltd.
Kusatsu City, Shiga Prefecture
Factory Automation Solutions Business
- Die Bonding Equipment
- Visual Inspection Equipment
- Substrate Processing Equipment

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usa.canon.com/industrial (Optoelectronics & Motion Control Products)

11/2024