

【UX4-3Di Product Data Sheet】

Comparison between lithography methods available for HVM of 3D LSIs

Lithography Method		Stepper	Contact Exposure	UX4-3Di FFPL 200
		Projection	Contact	Projection
		Step & Repeat	Full-field	Full-field
Performance	Tact (ø200 mm)	× Theoretically 100 wafers/hour *1	○ Theoretically 100 wafers/hour *2	◎ 120 wafers/hour
	Mask Damage	◎ No Contact	× · Scratch caused by wafer warpage · Occurrence of continuous defects · Mask needs to be cleaned and replaced	◎ No Contact
	Resolution	△ 1 μm L/S or less Defocus may occur	△ 1 through 5 μm L/S Resolution lowers depending on the distance between the mask and wafer	○ 3 μm L/S
	Overlay Accuracy	○ 1 μm or less	△ ±1 μm Overlay accuracy lowers depending on thermal expansion of the mask	○ ±1 μm
Wafer Size Conversion		× To be customized	× To be customized	◎ Automatically Enable
Exposure Mechanism		<p>Allows longer process time due to a step-and-repeat exposure of each chip on a wafer.</p>	<p>No lens is used but the mask and wafer are put into contact. Thus, both may be damaged to lower the yield.</p>	<p>Allows damage-free full-field exposure to shorten the process time.</p>

*1 : Due to wafer bow or non-uniform thickness of bonded wafer, the throughput may be reduced to 30% or 30 wph.

*2 : Due to the need for mask cleaning, the throughput may be reduced to 75% or 75 wph.

UX4-3Di FFPL 200 Specifications

Resolution:	3 μm L/S
Wavelength:	365 nm
Overlay Accuracy:	Top ±1 μm, bottom ±1 μm
Throughput:	120 wph in any wafer size
Wafer Size:	150 mm and 200 mm, selectable
Wafer Transfer Method:	Automated wafer handling on the UX4-LEDs platform



200-mm Full-field Projection Lens

USHIO's UX series: a global installation base of more than 1,100 units

USHIO INC. has been manufacturing its UX Series lithography systems for semiconductors, FPDs, printed-circuit boards and MEMS devices for over 20 years. The UX series employs all the major lithography methods, including proximity exposure, contact exposure, full-field projection, and step-and-repeat methods, while being capable of handling a wide range of substrates such as wafers, PCBs, and role-to-role flexible substrates. USHIO also develops original light sources and optics including lens and mirrors, mask/workpiece transfer components, and other elemental technologies such as alignment technologies.

USHIO's product portfolio for semiconductors

USHIO INC. has been delivering UV lamps and halogen lamps to the global semiconductor industry for more than 45 years. Starting with these light sources, USHIO has provided a wide range of semiconductor fabrication equipment, subsystems and components, such as projection, contact, and proximity lithography tools, WLP steppers, excimer irradiation units, UV curing units, and mask cleaning systems. Today, USHIO is aggressively working on development of EUV light sources for the next-generation lithography.