



TO: Kyungmok Kwon
University of California, Berkeley
Berkeley Sensor and Actuation Center
Cory Hall 144MB
Berkeley, CA 94720

PHONE:
FAX:
EMAIL: kwon0512@berkeley.edu

QUOTE NO: UCBER49383-BH-12-V

DATE: 6/30/2020
RFQ NUMBER: NA
RFQ RECEIVED: _____
QUOTE PRICES
VALID THROUGH: 12/30/2020
REPLACES QUOTE #: UCBER49383-BH-12-U
REQUESTER: _____

ITEM	DESCRIPTION	UNIT PRICE	AMOUNT
I.	CAD SERVICES: GDS II data conversion to MEBES format, per .gds layer: .DXF File conversion to MEBES format, per layer:	NC \$50.00	NC \$50.00
II.	6" x 6" X 0.250" Quartz ASML 4X DUV Reticle built to the following specifications: Address size: 0.05um or larger Critical Dimension: 1.0um or larger Critical Dimension tolerance: +/- 0.10um or larger Registration, guaranteed off system: +/- 0.25um Defect control, manual inspection: (Defect per square inch) 0 DPA @ 0.5um Price, no pellicle: \$1,250.00 Adder Address size: 20nm \$150.00		\$1,250.00 \$150.00
	6" x 6" X 0.250" Quartz ASML 4X DUV Reticle built to the following specifications: Address size: 0.25um or larger Critical Dimension: 2.0um or larger Critical Dimension tolerance: +/- 0.25um or larger Registration, guaranteed off system: +/- 0.25um Defect control, manual inspection: (Defect per square inch) 0 DPA @ 5.0um Price, no pellicle: \$590.00		\$590.00
	5" x 5" X 0.090" Quartz Contact Mask or 5X GCA 8500 built to the following specifications: Address size: 0.10um or larger Critical Dimension: 1.0um or larger Critical Dimension tolerance: +/- 0.1um or larger Registration, guaranteed off system: +/- 0.25um Defect control, manual inspection: (Defect per square inch) 2um @ 1 DPSP Price, no pellicle: \$525.00 Adder Iron Oxide QTZ: \$100.00 Critical Dimension tolerance for Iron Oxide: +/- 0.50um or larger Minimum Feature size for Iron Oxide: 2.0um		\$525.00 \$100.00
	5" x 5" X 0.090" Soda Lime 1X Contact Mask or 5X GCA 8500 Reticle Mask built to the following specifications: Address size: 0.25um or larger Critical Dimension: 5.0um or larger Critical Dimension tolerance: +/- 0.25um or larger Registration, guaranteed off system: +/- 0.25um Defect control, manual inspection: (Defect per square inch) 0 DPA @ 10um Price, no pellicle: \$500.00 Adder Iron Oxide Soda Lime: \$50.00 Critical Dimension tolerance for Iron Oxide: +/- 0.50um or larger		\$500.00 \$50.00
III.	SHIPMENT: Estimated shipment cost Not to Exceed \$50.00 Electronic Plot(s) or remoteview to be shipped/posted within 1 day (Mon. - Sat.) First mask layer to be shipped in 3 days (Mon. - Sat.) from plot/remotereview approval Additional layers to be shipped at a rate of 2 per day (Mon. - Sat.) Cut off time for scheduling masks to begin process on the same day is 10:00 (AM PDT) Orders received after the cut off time will be processed the next business day. Photronics standard courier options apply unless otherwise specified. Premium Shipments are scheduled in hours from receipt of paperwork unless specified otherwise. Cutoff times applicable as indicated above.		
III.	Expedited Delivery Ship in 24 hrs add 100% of Mask cost only. (clock starts after data approval if required) Ship in 48 hrs add 50% of Mask cost only. (clock starts after data approval if required) Minimum Order \$300 Cancellation Charges: In the event of a cancellation, the following incremented charges Should apply (% of selling price): However the \$300 min prevails. Order Entered: \$300.00 min Cancellation Fee Completion of Jobdeck QC, (prior to Write): 15% of base price Completion of Write to Process: 60% of base price Completion to Inspection (No Reg required or performed): 65% of base price Completion to Inspection (Registration performed): 80% of base price Completion from Final Clean (Pellicle req) to Ship: 100% of base price		
TERMS: See Enclosed Form PITCS02 FOB: Shipping Net 30 Terms Standard Terms: FCA for Domestic Bob Hicken All quoted pricing is proprietary and confidential Account Manager The acceptance of any order from you by Photronics is expressly made conditional on your acceptance of the terms and conditions stated on the attached Form PITCS02, ("Photronics Terms and Conditions"), and we agree to furnish the material or services covered hereby only upon these terms and conditions.			



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ITEM	DESCRIPTION	UNIT PRICE	AMOUNT
V.	7" x 7" X 0.120" Soda Lime Contact Mask built to the following specifications: Address size: 0.10um or larger Critical Dimension: 2.0um or larger Critical Dimension tolerance: +/- 0.25um or larger Registration, guaranteed off system: +/- 0.25um Defect control, manual inspection: (Defect per square inch) 2um @ 1 DPI Price, no pellicle: \$590.00 Adder for Quartz Material with 1.0um Minimum Feature: \$300.00		
	1X Master on 7.25" Round X 0.150" or 7" x 0.150 QTZ Material Address size: 0.05um or larger Critical Dimension: 1.0um or larger Critical Dimension tolerance: +/- 0.15um or larger Registration, guaranteed off system: +/- 0.25um Defect control, manual inspection: 0 DPA @ 0.5um Single sided pellicle: 0 DPA @ 5.0um \$1,575.00		\$1,575.00
VI.	6" x 6" X 0.250" Quartz ASML 4X DUV Reticle built to the following specifications: Address size: 10nm or larger Critical Dimension: 0.4um or larger Critical Dimension tolerance: +/- 0.05um or larger Registration, guaranteed off system: +/- 0.25um Defect control, manual inspection: (Defect per square inch) 0 DPA @ 0.5um Price, no pellicle: \$3,900.00		\$3,900.00
VII.	6" x 6" X 0.250" Quartz ASML 4X DUV Reticle built to the following specifications: Address size: 10nm or larger Critical Dimension: 0.5um or larger Critical Dimension tolerance: +/- 0.05um or larger Registration, guaranteed off system: +/- 0.25um Defect control, manual inspection: (Defect per square inch) 0 DPA @ 0.5um Price, no pellicle: \$2,500.00		\$2,500.00
VIII.	6" x 6" X 0.250" Quartz ASML 4X DUV Reticle built to the following specifications: Address size: 10nm or larger Critical Dimension: 0.6um or larger Critical Dimension tolerance: +/- 0.05um or larger Registration, guaranteed off system: +/- 0.25um Defect control, manual inspection: (Defect per square inch) 0 DPA @ 0.5um Price, no pellicle: \$1,890.00		\$1,890.00

Bob Hicken
Account Manager

PHOTRONICS, INC. (Including its subsidiary companies)

TERMS AND CONDITIONS OF SALE (PITCS02)

1. **GENERAL.** All orders are subject to approval and acceptance by Seller, and Seller shall not be liable to Buyer or any other party by reason of its failure to accept any order. Seller accepts the order and sells the **goods** only in accordance with the terms and conditions contained herein, unless specifically agreed to the contrary in writing by a duly authorized officer of Seller. Notwithstanding any contrary provisions that Buyer may propose, Seller's acceptance of any order is conditional upon Buyer's assent to the terms and conditions contained herein. Acceptance by Buyer of goods delivered by Seller shall constitute assent by Buyer. Unless otherwise agreed in writing, the prices quoted are valid only for a period of three (3) months from the date of the quotation. Unless otherwise agreed there is a minimum charge of \$200 for each order.
2. **PRICES AND CHARGES.** The prices for all goods (materials or services) to be furnished by Seller under any order are in United States dollars (unless otherwise agreed upon in writing by an officer of Seller), and include provisions for packaging in accordance with standard commercial practices. Buyer shall be billed for goods at prices in effect on the date of Seller's acceptance of Buyer's order for such goods. Seller shall not be responsible for, and Buyer shall pay all freight, transportation, insurance, shipping, storage, handling, demurrage or similar charges; provided, however, that Seller may, at Seller's option, pay any or all such charges on behalf of Buyer and include such amounts in invoices to Buyer. Buyer requested order changes require Seller's prior written consent. Seller reserves the right to change quoted prices in the case of any functional specification changes, incremental changes in write times, or fluctuation in raw material costs to the Seller.
3. **TERMS OF PAYMENT.** Unless progress payments as determined by Seller are required or Seller decides that Buyer's financial condition makes C.O.D. payment or advance payment necessary, payment shall be made in full thirty (45) days from invoice date (which will not be prior to shipment date). Overdue payments shall carry 18% per annum interest charges or the legal maximum rates whichever is lower. Buyer shall pay Seller's collection or litigation expenses, including reasonable attorney fees.
4. **DELIVERY.** Delivery of all goods shall be made F.O.B. (as defined by Incoterms 2000) Seller's designated domestic point of shipment. Title and risk of loss or damage shall, in all cases, pass to Buyer upon Seller's delivery to a common carrier or other delivery agency for shipment to Buyer. It shall be the responsibility of Buyer to file claims with the carrier for any loss or damage occasioned to goods while in transit. Seller shall use reasonable efforts to satisfy delivery dates requested by Buyer but shall have no obligation to satisfy such delivery dates unless such obligation is agreed to in writing signed by a duly authorized officer of Seller. Notice of nonconformity shall be given within thirty (30) days after receipt of the goods involved. If valid under applicable law, Seller reserves all rights to the goods until receipt of payment for the full purchase price.
5. **WARRANTY AND LIMITATION OF LIABILITY.** Seller warrants that goods sold by to Buyer will conform to Seller's specifications, and will be free from defects caused by faulty material or poor workmanship. **EXCEPT AS EXPRESSLY SET FORTH IN THE IMMEDIATELY PRECEDING SENTENCE, SELLER HAS NOT MADE AND DOES NOT HEREBY MAKE ANY OTHER REPRESENTATIONS OR WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO THE MERCHANTABILITY, PERFORMANCE, SUITABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE GOODS FOR THE BUYER'S USE OR THE BUYER'S CUSTOMERS' USE.** Seller's liability under this warranty is limited to the obligations to, at Seller's sole option, repair or replace, without charge, or refund the purchase price for any goods, which within thirty (30) days after delivery to Buyer, are returned to Seller with all transportation charges prepaid, and which is found by Seller to be defective under the terms of this warranty.

This warranty does not apply to any damage resulting from accident, misuse or abuse; furthermore, this warranty is void in the event any unauthorized person alters or repairs the goods.

The warranty stated herein is in lieu of all other obligations or liabilities on the part of the Seller, and Seller neither assumes nor authorizes any other person to assume for it any other liability. Buyer expressly waives any right, claim or cause of action that might otherwise arise out of the purchase and use of Seller's goods and services. **IN NO EVENT SHALL SELLER BE LIABLE TO BUYER FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS) OF ANY NATURE (INCLUDING, WITHOUT LIMITATION, ANY LOSS OR DAMAGE RESULTING FROM DEFECTS IN THE GOODS OR SERVICES, BUSINESS INTERRUPTION OR OTHERWISE) WITH RESPECT TO ANY GOODS SOLD OR DELIVERED, OR ANY SERVICE RENDERED.**
6. **NOTICE OF CLAIM.** Immediately upon receipt, Buyer shall inspect goods for any defects. All claims for defects discoverable upon inspection must be made in writing within fifteen (15) days after Buyer learns of the facts upon which claim is based, but in no event later than thirty (30) days after Buyer's receipt of goods.
7. **FORCE MAJEURE.** Seller shall not be liable for any loss, cost, expense or damage if the fulfillment by Seller of any order or any other obligation to Buyer is delayed or prevented due to any cause beyond Seller's reasonable control including but not limited to compliance with any Government law or regulation, acts of God, acts of civil or military authority, judicial action, labor disputes, failure or delays in transportation, embargoes, wars, riots, production or engineering delays, or inability of Seller or its vendors to secure adequate materials, manufacturing facilities or labor. In the event of any delay due to such causes or other difficulties, whether or not similar in nature to any of those enumerated, the delivery dates shall be extended for a period equal to the extent of the delay so incurred.
8. **TAXES.** Prices quoted are exclusive of any sales, use, and excise, ad valorem or other like taxes, and (on goods sold outside the United States) customs duties, licenses and permits, applicable to the sale, use or delivery of materials or services. In the event that any such tax or duty is payable, the amount thereof may be added by Seller to the price, and in all cases shall be paid by Buyer.
9. **PROPERTY RIGHTS.** Seller retains ownership of its models, patterns, dies, molds, jigs, fixtures, tools, software and hardware made for furnishing any goods to Buyer and retains ownership of its proprietary data (including without limitation, design engineering, software programs and technical information—whether or not patent able—and trade secret information, such as secrets contained in manufacturing methods or processes, treatment and chemical compositions, and plant layout and tooling). Buyer shall not use any such proprietary data obtained by Buyer, nor shall Buyer disclose such proprietary data to any third party without the previous written approval of an authorized officer of Seller.
10. **DEFAULT.** Seller shall have the right to stop work at any time and to withhold deliveries of any goods ordered (including any portion of an order) if any payment due to Seller from Buyer shall not be paid in full when due. If Seller shall invoke the foregoing right, the full purchase price for all goods completed, whether or not shipped, shall become due and payable, and Buyer shall pay to Seller a reasonable charge for any goods and work in process.
11. **TERMINATION.** After acceptance or acknowledgment by Seller of any order, such order may not nor any part of such order may be terminated (unless due to Seller's default) by Buyer without the written consent of Seller signed by a duly authorized officer of Seller. If Buyer terminates any order or any part of any order, as permitted hereunder, Buyer shall pay to Seller the purchase price for all goods completed, whether or not shipped, and Buyer shall pay to Seller a reasonable charge for any goods and work in process.
12. **APPLICABLE LAW.** Connecticut Law applicable to agreements executed and to be performed in the state of Connecticut shall govern all matters relating to sales by Seller to Buyer in the United States including the validity and interpretation of these terms and conditions of sale. The applicable law in all other jurisdictions shall be the country where the goods are manufactured. The United Nations Convention of Contracts for the International Sale of Goods (UNICSG) shall not apply to the transactions contemplated by these terms and conditions of sale.
13. **EXPORT LAWS.** The export or re-export of the goods may be subject to the applicable export laws of the country of origin of the goods, and Buyer agrees to comply in all respects with such laws. The photomasks purchased from Photonics are not designed for or used in any of the following: terrorist activities; nuclear activities; or the manufacture of devices that are used in any manner for the design, development, or production of chemical or biological weapons, missiles, rocket systems, unmanned air vehicles, satellites, maritime nuclear propulsion projects, space systems or foreign vessels or aircraft. Customer will only use the photomasks purchased from Photonics to manufacture semiconductor devices classifiable in Export Control Classification Number ("ECCN") 3A991 or EAR99 of the U.S. Commerce Control List. If any photomask layers ordered by the Customer have specifically designed functions and are used in making semiconductor devices classifiable under

The photomasks Customer purchases from Photonics are not used in manufacturing semiconductor devices with cryptographic (e.g., encryption/decryption) capability and do not themselves have any cryptographic capability. If any photomask layers ordered by Customer have encryption functionality, Customer will advise Photonics in writing and no later than at the time of the purchase order;

If multi-layer photomasks with a phase-shift layer ("PSM's") are purchased, Customer certifies it will advise Photonics if any of the following apply:

Select One The PSM's are designed for the fabrication of memory devices controlled by 3A001;

Select One The PSM's are designed for the fabrication of memory devices not controlled by 3A001;

Select One The PSM's are not designed for the fabrication of memory devices.

Customer will immediately advise Photonics if any ordered photomasks meet both of the following two characteristics:

- (1) Their design is based on geometries of 2.5 micrometer or more; and
- (2) The design does not include special features to alter the intended use by means of production equipment or software.

Customer will not sell, transfer, export, or re-export the photomasks in violation of the export laws of the United States. Specifically, Customer understands that such sale, transfer, export or re-export may require a license from the U.S. Government; that transfers to certain countries or entities are prohibited under U.S. law; and certain uses of the photomasks are prohibited by law. Customer certifies that all transferees will not use the photomask for any of the prohibited uses described herein and will not sell, transfer, export or re-export the photomasks in violation of the U.S. export laws. As Photonics will rely on this certification, Customer agrees to indemnify and hold Photonics harmless against any claim, demand, action, proceeding judgment, penalty, fine, loss, liability, cost or expense (including reasonable attorneys' fees) suffered or incurred by Photonics and arising out of or relating to statements, representations and obligations made by Customer pursuant to this certification.

14. **MILITARY/DEFENSE QUESTIONS.** In order for Photonics to determine whether U.S. Military export controls apply,

It is our understanding that the photomasks purchased from Photonics are not specifically designed for or used in

the design, development or production of military or defense articles controlled on the U.S. Munitions List ("USML"). If

they are however, then please notify us immediately.

15. **LIMITATION OF LIABILITY.** Notwithstanding anything contained in these terms and conditions to the contrary, the Seller shall not be liable for any special, incidental, indirect or consequential damages (including lost profits) of any kind whatsoever arising out of or relating to the sale of goods.

16. **ASSIGNMENT.** No assignment of any order by Buyer shall be valid without Seller's prior written consent.

17. **AMENDMENTS.** No provision in any order or any other writing (except a writing signed by a duly authorized officer of Seller) shall in any way increase Seller's obligations or decrease Seller's rights in connection with any sale by Seller to Buyer.

18. **CANCELLATION CHARGES..** Photonics reserves the right to assess a cancellation fee in the event of a cancellation at the customer's request after the beginning of the manufacturing process.