PREPARED BY:	***Multiband Imaging Photometer for SIRTF***	NUMBER M11I10	
C. DAVIDSON		TYPE INSPECTION	
APPROVALS			
ENGINEERING	University of Arizona Steward Observatory, IR Group	DATE 07/07/97	
QUALITY	**SPECIFICATION**	SUPERSEDES SPEC. DATED	
PI/DEPUTY PI		REV. NEW	PAGE 1 of 5

TITLE

INCOMING INSPECTION OF GE: GA DETECTOR WAFER (P/N MIPSD-65), PROCEDURE FOR

1.0 SCOPE

This specification defines the equipment, materials and procedures for incoming inspection of the gallium-doped germanium (Ge: Ga) detector wafer, PIN MIPSD-065, procured from Lawrence Berkeley National Laboratory (LBNL).

2.0 PURPOSE

The inspection is to verify that requested process data or other specified information is provided and that the wafer is undamaged and acceptable for its intended use based on visual examination and dimensional measurement.

3.0 APPLICABLE DOCUMENTS

The following documents form a part of this processing procedure to the extent specified herein. In the event of conflict between the requirements of this document and the requirements of the engineering drawings called out the requirements of the drawings shall take precedence. Unless otherwise specified, the most recent revision of the documents identified herein shall apply.

Non-Government Documents
Manual
University of Arizona Safety Manual

Drawings
University of Arizona, Steward Observatory, IR Group
MIPSD-065 Wafer, detector

4.0 REQUIREMENTS

4.1 Equipment

Acceptable results are contingent upon the use of the recommended equipment listed below or equivalent equipment. Equivalent equipment may be substituted for the recommended equipment if and only if effectiveness and accuracy are not decreased by its use.

Item	Quantity	Description
1	1 each	Microscope, stereozoom, Bausch and Lomb
2	1 each	Microscope, measuring, x, y, and z-axes, Nikon
3	1 each	Measurement system, Nikon Digimicro System
4	1 each	Gun, blow

4.2 Materials

Item	Quantity	Description
1	1 each	Ge: Ga detector wafer, PIN MIPSD-065
2	as required	Acetone, electronic grade
4	as required	Methanol, electronic grade
5	as required	Isopropanol, electronic grade
6	as required	Nitrogen, gaseous (dry)
7	1 each	Tweezers, Teflon
8	as required	Wipes, cleanroom

5.0 PROCEDURE

Notes:
1. Handling, storage and disposal of chemicals, gases and cryogen material is to be in accordance with the University of Arizona Safety Manual.

2. Cleanroom gloves or finger cots are to be worn when handling hardware and equipment.

3. Removal of outer wrappings and packaging material is to be done outside the cleanroom

5.1 Verify Receipt of Requested Paperwork and Quantity of Wafers.

5.1.1 Inspect the outer packaging for signs of damage incurred during transport. Record the results on the Incoming Inspection Sheet, M11I10-A.

5.1.2 Carefully remove outer packaging and remove contents and paperwork. With a cleanroom wipe dampened with isopropanol, wipe the plastic bags that contain the wafers in transport/storage containers. If containers are not within plastic bags, wipe down the containers, taking care not to obscure label information. Place the paperwork in cleanroom bags. Transport the packaged wafers and paperwork to the cleanroom.

5.1.3 Verify that the quantity of wafers identified on the paperwork is in agreement with the quantity of wafers received. Using tweezers, place the wafer onto a clean microscope stage or a cleanroom wipe on the stage. Under microscope magnification, verify that the wafer identification (id) number inscribed along the perimeter on one surface of the wafer is the same as the wafer id number recorded on the LBNL MIPS Wafer “Trailer” and that Implantation Data Sheets are provided.

Note: Notches are sometimes cut into the wafer for identification purposes. If the wafer has such notches, add corresponding notches to the wafer depiction on the inspection sheet.

5.2. Examine the Wafer for Contamination and Defects.

5.2.1 Review the documentation for information regarding missing metal or other noted wafer features. Visually verify the presence of the features. On the inspection sheet, indicate on the drawing the type, extent and location of the defects or features.

5.2.2 Inspect the wafer for contamination. Blow particulates from the wafer surfaces using dry N_2 or air from a blowgun. If gross contamination is present, clean the wafer by flushing both surfaces for a minimum of 20 seconds each with acetone, methanol then isopropanol. Blow the wafer dry with dry N_2 or air.

Note: To prevent redistribution of contaminating materials, or possible solvent residue from remaining on the wafer, keep the wafer wet with solvents until it is blown dry.

5.2.3 Under microscope magnification, verify the wafer is free of contamination. Examine the wafer for lifting or peeling Pd/Au metalization, chips, cracks, and fractures. As in 5.1.4, record observations on the inspection sheet.

5.3 Verify the Wafer Dimensions.

5.3.1 Using a 3-axes measuring microscope, measure the diameter and thickness of the wafer in the locations identified on the inspection sheet. Record the measured data on the inspection sheet.

Note: If a contact measuring system (i.e., a Nikon Digimicro system) is used to measure the wafer thickness, take care not to damage the wafer.

5.3.2 If the wafer fails to meet the acceptance requirements of drawing MIPSD-065, record 'reject' on the paperwork and on the label of the wafer's storage container.

If the wafer is acceptable for process continuation, identify this status on the inspection sheet.

5.4 Store the Wafer, File Paperwork.

5.4.1 Place the wafer in an appropriate clean storage/transport container (1.5" dia. Fluoroware wafer tray with cover is an example). Label the container: 'MIPS Ge: Ga Detector Wafer PIN MIPSD-065. Wafer No. xxxx' (the alpha numeric wafer id no. defined on the LBNL paperwork). Store the wafer in the appropriate area (reject or accept) of an N_2-purged desiccator, or the MIPS safe.

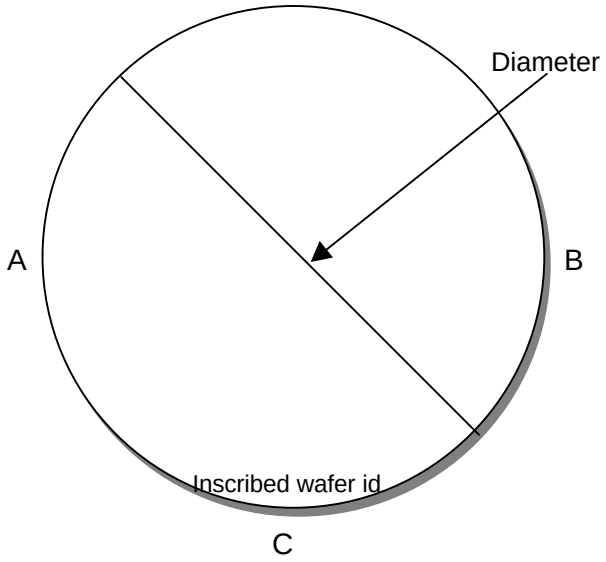
5.4.2 Provide the Process Lead Engineer with a copy of the LBNL paperwork. Place the original paperwork and the inspection sheets in the process files.

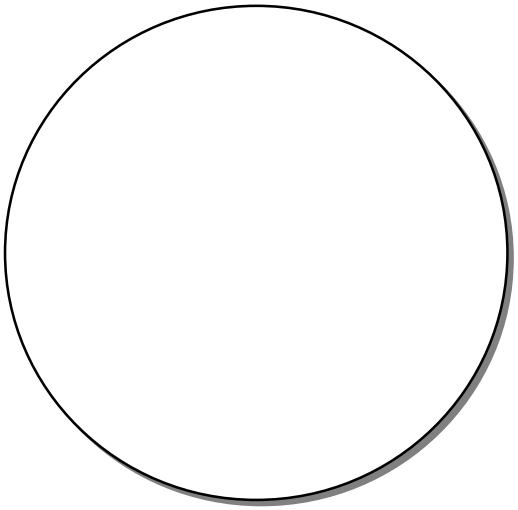
MIPS Ge: Ga Detector Wafer (PIN MIPSD-065) Incoming Inspection Sheet
Document No. M11I01-A

Wafer ID: _____ Operator: _____ Date: _____

1. Outer Packaging: No damage noted ☐ Comments:
   Damage noted ☐

2. Wafer Defects – record on wafer sketches below: (also note location of flat)





3. Dimensional Measurements

a. Diameter

	Diameter (mm)	
- Instrument Used: _____	_____	_____mm (average)
- Calibration Date: _____	_____	
- Spec: ≥ 32mm	_____	

b. Thickness

	Position A (mm)	Position B (mm)	Position C (mm)
- Instrument Used: _____	_____	_____	_____
- Calibration Date: _____	_____	_____	_____
- Spec: 0.500 + 0.050/- .025mm (0.550 – 0.475mm)	_____	_____	_____
Average:	_____	_____	_____

Wafer Status: Accept ☐ Reject ☐