

WaferRepair™ M455

Fuse Processing System



The first production-proven laser fuse processing system featuring “total solution” system technology to combine a small 0.7 μ m laser spot size with the beam placement accuracy and stable, precise energy control to enable aggressive fuse pitch shrinks below 1.5 μ m for 90nm and 70nm designs.

- Minimum laser spot size of 0.7 μ m
- Patented high-speed positioning system optimizes throughput and enables a 70,000 links/second processing rate
- Precise <math><0.150\mu\text{m}</math> ($|mean| + 3\sigma$) system accuracy assures safe, reliable processing
- High-yield process control capability: ultra stable, ultra-fine energy setting for accuracy, range, and resolution – a critical laser redundancy process requirement for today’s and the next generation of ultra fine pitch links



Driving Laser Fuse Process Technology Advances

The *WaferRepair™ M455* is based on the most advanced platform available for laser fuse processing. Combining ultra-stable, ultra-precise energy control with a remarkably small laser spot size of $0.7\mu\text{m}$, it enables aggressive fuse pitch shrinks for 90nm and 70nm designs.

Verified Quality

Superior process quality is ensured via the system's fully integrated, high resolution metal-

lurgical grade microscope. Intuitive software tools let you to pinpoint links of interest and capture excellent quality images for production floor monitoring.

High Throughput Link Processing

GSI Group has developed technologies for processing the latest fuse materials without damage to adjacent links or surrounding material, including low-k dielectrics. Innovative energy management technology provides ultra stable energy density and ultra fine energy settings for Pico Joule energy resolution to

deliver the industry's smallest spot size while enabling cuts at a 70,000Hz rate.

Worldwide Support

Throughout the semiconductor world, our applications engineers and materials scientists continue to develop new solutions in step with semiconductor process advancements. Our service technicians are trained in every aspect of maintenance and troubleshooting, and parts are stocked locally in North America, Japan, Taiwan, Korea, Europe, and China.

Specifications

Standard Laser:

- Wavelength: 0.532µm
- Type: DPL
- Maximum repetition rate: 70,000Hz
- Pulse width: 20 +/- 3ns
- Max. pulse energy: 1µJ
via acousto-optic modulator
- Polarization: Software programmable on a per-product basis
- Spot size: 0.7 to 1.8µm, selectable

System Performance:

- Accuracy: $<0.150\mu\text{m}$ (Jmean) + 3σ
- Type: Patented air-bearing stage
- Field size: 36mm x 36mm over 300mm range
- Working distance: ~ 6.5mm
- Chuck type: Waffle
- Link inspection: Metallurgical grade microscope, 10,000 X range of magnification

Wafer Handler:

- 200mm/300mm: 2 open cassettes @ 25 wafers/cassette
- 300mm: 2 FOUP or FOSB @ 25 wafers per FOUP/FOSB
- Custom wafer handling (optional)
- Wafer sensing: Presence, absence, cross-slotted, double-slotted, protruding
- Wafer ID: Reader for top side and bottom side OCR, 2-D matrix and barcode recognition. Fully-integrated camera, processor, lighting and communications unit meets the following standards: SEMI T7, M1.15, M12, M13, M1.15 and SEMI T1-93

Workstation:

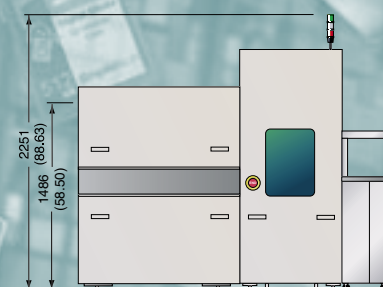
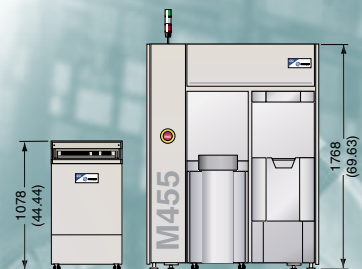
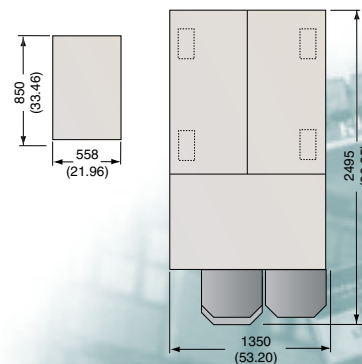
- Computer: SUNFire with Flat Panel Display
- Operating system: UNIX
- Networking: Ethernet, TCP/IP, FTP and NFS protocols, RS232
- User environment: MAX 10.1

Physical:

- Environment: 23°C ± 5°C, 30% - 70% relative humidity
- System unit
 - dimensions: 1283mm x 1276mm x 1486mm (50.5" x 50.25" x 58.5") [WxDxH]
 - weight: 1360kg (3000 lbs)
 - power: 2KVA, 200/208/220-240 selectable 50/60Hz, Single Phase
 - air: 690 - 827 KPa @ 425 SLPM (100-120 psi @ 15 SCFM)
 - vacuum: Internally generated
- Wafer handler
 - dimensions: 1350mm x 1219mm x 2251mm (53.2" x 48" x 88.9") [WxDxH]
 - weight: 681kg (1500 lbs)
- Console
 - dimensions: 558mm x 850mm x 1078mm (22" x 33.5" x 44") [WxDxH]
 - weight: 136kg (300 lbs)

Standards:

- CE Mark
- SEMI S8-1000, S2-0200
- CDRH



Dimensions in mm (inches)

Specifications are subject to change. Please consult Product Center for complete details.
The classification of the *WaferRepair M455* is Class 1/1.

www.gsig.com/systems



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For sales information, visit our web site or contact your local sales office.