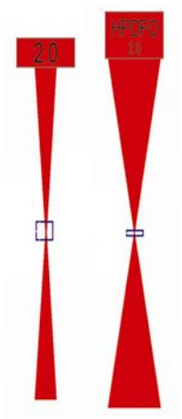
VersaLaser VLS3.60 Cutting & Engraving CO_2 Laser

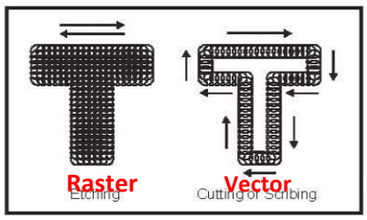
Contact: Beth Rhoades (rhoades@cnf.cornell.edu) 254-4918 Location: 224 Duffield

Specs

CO_2 (infrared) wavelength -10.6 µm
Power -0.5 to 50 Watts
Power stability -± 5%
Focal Spot Size:
Standard optics – 127 µm
High-density optics – 25.4 µm
Spot resolution -100-1000 pulses/inch
(100 PPI = 1 spot every 254 µm)
Raster (etch) speed max. -40 in/sec.
Vector (cut) speed max. - 25 in/sec.
Cutting area – 12 x 24 inches
Max substrate thickness – 4 inches



Laser Modes



Raster mode: creates horizontal lines to fill an area.
This can also cut through.
CON: Vertical edges often scalloped. Bottom is ridged.

Vector mode: traces an outline.
PRO: More precise control of features.
CON: Possible artifacts along length due to plotter.

Controls for Laser Intensity

Power	(0.5 to 50 Watts)
Speed	(0.25 to 25 in/sec; vector mode)
	(0.40 to 40 in/sec; raster mode)
Resolution	(pulses per inch)
	(pitch of 25.4 to 254 µm)
Z-axis	(100-µm increments from focal plane)

Computer Interface

Works like a printer. Has a control panel for settings and pattern placement.
Available CAD: Adobe CorelDraw X5 or AutoCAD.
Use LinkCAD to translate a .TDB → .GDS

Minimum Feature Sizes

Minimum sizes – materials that melt readily (acrylic) yield larger features than thermostable ones (PDMS).
Sidewalls – V-shaped, semi-circular or mostly straight.

Applications & Materials

Fluidics, patterning, through-cuts, ports, shadow masks, gaskets, stencils, microtoroids, etc.
Unfortunately, the laser will not cut or mark Silicon wafers or gold.
Contact Beth to test your material or application!
The list is just a portion of the potential materials.

Manufacturer: Universal Laser Systems Inc. (www.ulsinc.com)

Black means cut or etch. Blue means etch only.

POLYMERS & PAPERS

Acrylics (PMMA/Plexiglass)
PET (transparency film)
Polycarbonate
Polyimide (Kapton)
Polypropylene
Polystyrene
Polyesters
Polylactic acid
Ethylene vinyl acetate
Papers (cellulose, nylon, cardboard, wood)
Foams, rubbers, resins

RIGID INSULATORS

Fused Silica
Borosilicate (Borofloat)
Slide glass and coverslips
Ceramics
Fiberglass
Masonite

METALS and SEMICONDUCTORS*
*(May require a Metal Marking Compound)

Anodized aluminum
Aluminum*
Brass*
Carbide
Chromed Steel*
Cobalt
Copper*
Iron
Nickel*
Stainless Steel
Steel
Titanium
Tungsten
Germanium, Gallium arsenide, Silicon carbide ???