DYNAMICS RESEARCH CORPORATION
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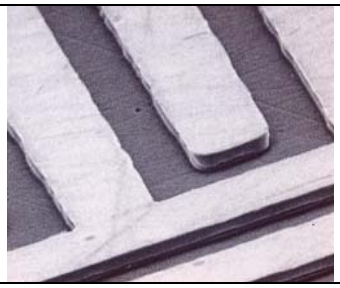
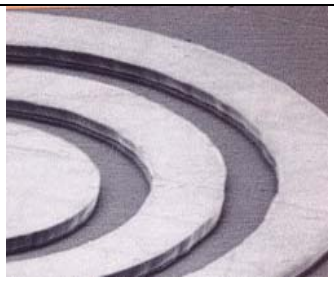
Design Guide For High Density Flexible Circuits

Suitability of Metrigraphics High Density Flexible Circuitry	Applications requiring flexible microcircuitry not available from other sources.		
Single Layer Circuits Applications: Invasive Medical Devices High Density Interconnects In-Vitro Diagnostics Environmental Sensors High Energy Measurement	 		
Small Lot Array (Sheet)	114.3 mm x 114.3 mm (4.5” x 4.5”)		
Production Lot Array (Sheet)	254.0 x 254.0mm (10.0” x 10.0”)		
Minimum Trace/Space	0.003 mm (0.00010”)		
Conductor Width/Thickness Dependent on the minimum line/space ratio of the entire circuit.	Minimum Width 0.003 mm (0.00010”) 0.005 mm (0.00019”) 0.010 mm (0.00039”)	Minimum Thickness 0.0005 mm (0.000019”) 0.0010 mm (0.000039”) 0.0020 mm (0.000078”)	Maximum Thickness 0.001 mm (.000039”) 0.002 mm (0.00008”) 0.005 mm (0.00019”)
Sheet Resistance of Plated Gold (Au) Conductors	0.09 Ohms/Square at 0.0005 mm (0.000019”) thickness 0.03 Ohms/Square at 0.0033 mm (0.00013”) thickness		
Substrate Materials (Typical) **Thickness** **Dielectric Constant** **Coefficient of Thermal Expansion (CTE)**	Dupont **Kapton®** Polyimide Film 0.0076 mm - 0.125 mm (0.000299” - 0.0049”) 3.9-4.0 20 ppm/^{o}C	Ube Industries **Upilex®S** Polyimide Film 0.0075 mm - 0.125 mm (0.000295” - 0.0049”) 3.2-3.5 1.2-2.0x10^{-5}cm/cm/^{o}C	HD Microsystems **PI 2611®** Cast Polyimide 0.005 mm - 0.025 mm (0.00019” - 0.00098”) 2.9 3 ppm/^{o}C
Two-Layer Circuits	All of the information above applies to 2-layer circuits, plus the information below:		
Vias	Recommended: 0.050 mm (0.0019”). Minimum via size: 0.025 mm (0.00098”)		
Dielectric Interlayers	Arch Probimide®7000 - Dielectric Constant 3.3, CTE 27 ppm/^{o}C HD Microsystems PI 2730® - Dielectric Constant 2.9, CTE 16 ppm/^{o}C		

Contacting Metrigraphics	**Data Format**	**Data Exchange**
metsales@drc.com	AutoCad or DXF files are preferred. Drawings should be in zero width chained polylines. Other formats may incur cost.	Data can be sent via E-Mail to: metsales@drc.com in zipped format or sent to the DRC FTP site.