

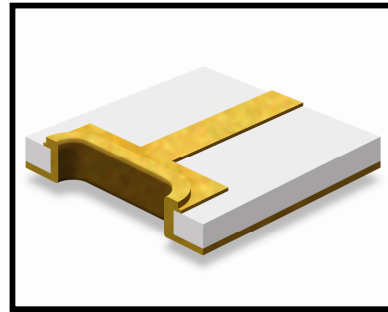


ATP1015 Samples

As-Fired Aluminum Oxide with Conductive CO₂ Laser Drilled Via Holes with ATP's ENFORCED VIA

Applied Thin-Film Products (ATP) is pleased to provide ceramic thin-film samples for your evaluation.

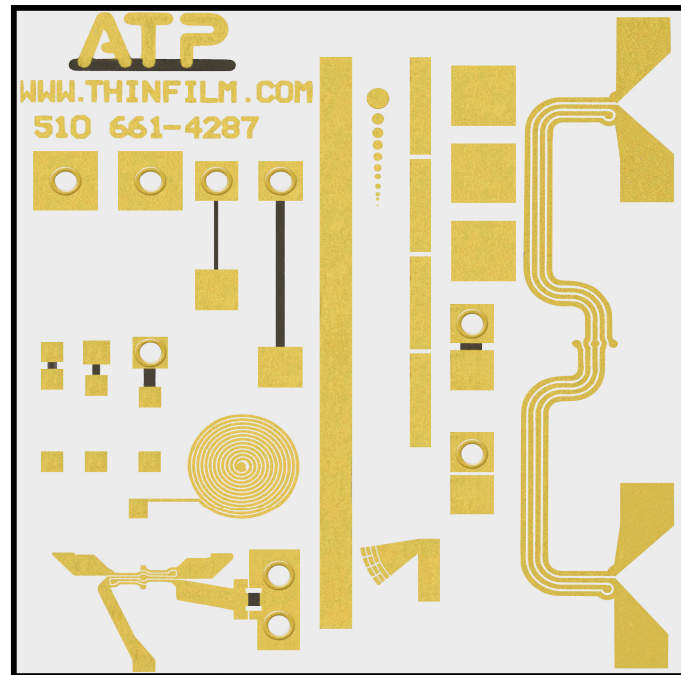
TaN/TiW/Au with conductive plated thru CO₂ drilled via holes and ATP's enforced hollow plated via wrap on Aluminum Oxide (Al₂O₃). The enhanced via wrap is an additive process to ATP's standard via process. This process will ensure increased via hole stability and conductivity.



Material Specifications:

Sample Provided:

Properties	Units	As-fired High Density 996 Aluminum Oxide Superstrate 996
Chemical Composition		Al ₂ O ₃
Purity	%	99.6
Color		White
Nominal Density	g/cm	3.88
Surface Finish As-Fired	u-inches / (nm)	3u"(76.2nm)
Coefficient of Thermal Expansion (CTE)	10 (-6)	7.0-8.3 (25-1000 °C)
Camber	inches / um(microns)	0.002/(.508um)
Thickness	inches / um(microns)	.015/(.381mm)
Thickness Tolerance	inches / um(microns)	0.001/(25.4um)
Thermal Conductivity 100 °C	Watts/m K	26.9
Dielectric Constant	1 MHz	9.9 +/- .1
	10 GHZ	9.7 +/- .1
Dissipation Factor (Loss Tangent)	1 MHz	0.0001
Hardness	Rockwell	87
Flexural Strength	K(10-3) lbs/sq.in(Mpa)	90(620)
Compressive Strength	M(10-3) lbs/sq.in.	54
Grain Size	um (microns)	<1.0



ATP1015, Material is 15 mil As-Fired Al₂O₃
TaN Resistors = 50 Ohms per Square
TiW = 400 to 800 Angstroms
Au = 120 u" minimum

Material Specifications provided by Coors Ceramic Company

ATP offers build-to-print service for a wide range of materials and metalization schemes. ATP fabricates circuits on substrates from As-Fired Alumina to Beryllium Oxide to Fused Silica, even Silicon. Metalizations range from the standard Tan/TiW/Au to films including Nickel, Palladium, or Titanium.

At ATP, we constantly evolve our processing and material capabilities to reflect our customer's changing needs. If you have a circuit requirement that is out of the "normal" thin-film type, please contact ATP at (510) 661-4287 or visit our web site www.thinfilm.com. ATP would enjoy discussing your application with you and working to develop a solution.

