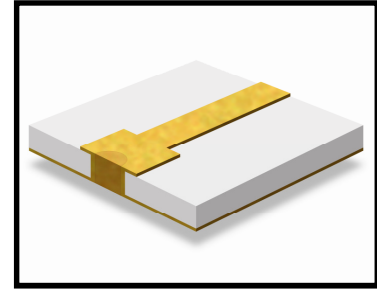


ATP1012 Samples

Polished Aluminum Oxide with Au or Cu Solid Filled Vias

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

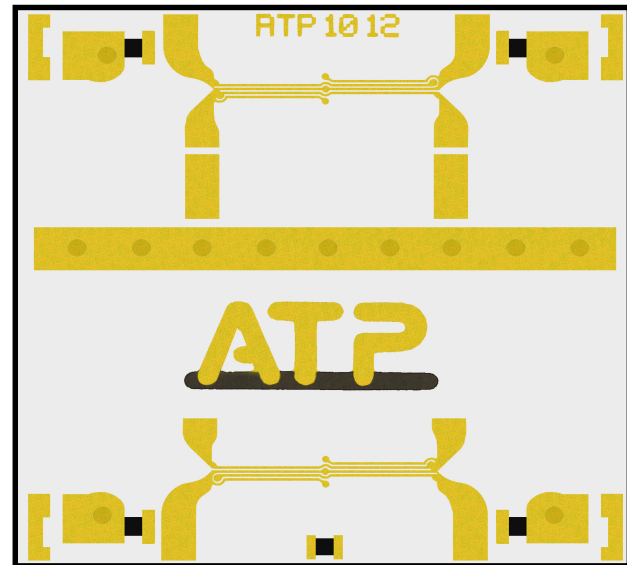


TaN/TiW/Au with solid gold- or copper- filled vias on Aluminum Oxide (Al_2O_3). The Au or Cu via is completely filled and polished to provide a planarized surface, providing a low inductance ground path on both sides without venting structures, dissimilar metals or exposed oxides. A filled via can also act as a thermal via or two-sided signal interconnect.

Material Specifications:

Properties	Units	Polished ADS 996 Aluminum Oxide
Chemical Composition		Al_2O_3
Purity	%	99.6
Color		White
Nominal Density	g/cm	3.87
Surface Finish Polished	u-inches / nm	<2.0 / (50nm)
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	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	90
Compressive Strength	M(10-3) lbs/sq.in.	54
Grain Size	um (microns)	<1.0

Samples Provided:



ATP1012, Material is 15 mil Polished Al_2O_3
 TaN Resistors = 50 Ohms per Square
 TiW = 400 to 800 Angstroms
 Au = 120 u" minimum
 Via Hole Size: .011 +/- .002"

Material Specifications provided by Accumet Engineering

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, Platinum, 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.

web site: www.thinfilm.com

