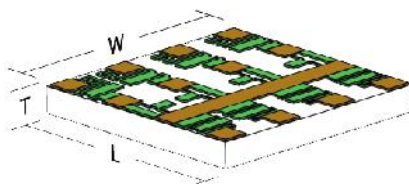


# CUSTOM PATTERNED SUBSTRATES



Advanced manufacturing methods insure superior sheet rho uniformity, metallization adhesion and thickness control. Our manufacturing capabilities allow us to meet and exceed your most demanding custom requirements.

## GENERAL CHARACTERISTICS

Resistance Tolerance	±0.01% to ±10%
Resistance Ratio	±0.01% Available
T.C.R. Tracking	To ±2 ppm/°C
Termination Material	Gold, Aluminum
Size	Up to 4" x 4"
Line Width Definition Resistor	Resistor Patterning to 0.1 mils
Line Width Definition (Cond.)	0.2 mils
Metals Available	NiChrome, Tantalum, SiChrome, Palladium, TiTungsten, Gold, Nickel, Aluminum
Specialty Materials	Metallization available on 1-6 sides, Through-Holes, Edge Wraps and Custom Laser Cutouts

## SUBSTRATE CHARACTERISTICS

SUBSTRATE MATERIAL	Available Thickness	Dielectric Constant @ 1MHz	Thermal Conductivity W/m•K	Current Noise	
				101Ω to 250kΩ	≤ 100Ω > 250kΩ
99.6% Alumina	0.005" - 0.025"	9.9	28	-35 dB	-30 dB
Silicon (with 12kÅ SiO <sub>2</sub> )	0.005" - 0.015"	N/A (SiO <sub>2</sub> 3.9)	149 (SiO <sub>2</sub> 1.38)	-40 dB	-30 dB
Quartz	0.005" - 0.010"	3.75	1.3	-40 dB	-30 dB
Beryllium Oxide	0.010" - 0.025"	6.7	300	-35 dB	-30 dB
Aluminum Nitride	0.010" - 0.025"	9.0	140 - 177	-35 dB	-30 dB

## RESISTOR CHARACTERISTICS

RESISTOR FILM	Sheet Rho	Passivation	Standard TCR	TCR Optional To
Tantalum Nitride	5Ω/sq. to 250Ω/sq.	Ta <sub>2</sub> O <sub>5</sub> (Self Passivating)	±150 ppm/°C	±10 ppm/°C
NiChrome	5Ω/sq. to 200Ω/sq.	SiO <sub>2</sub> or Si <sub>3</sub> N <sub>4</sub>	±25 ppm/°C	±5 ppm/°C
SiChrome	500Ω/sq. to 2.5kΩ/sq.	SiO <sub>2</sub> or Si <sub>3</sub> N <sub>4</sub>	±150 ppm/°C	±100 ppm/°C

8041 Rev. A



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