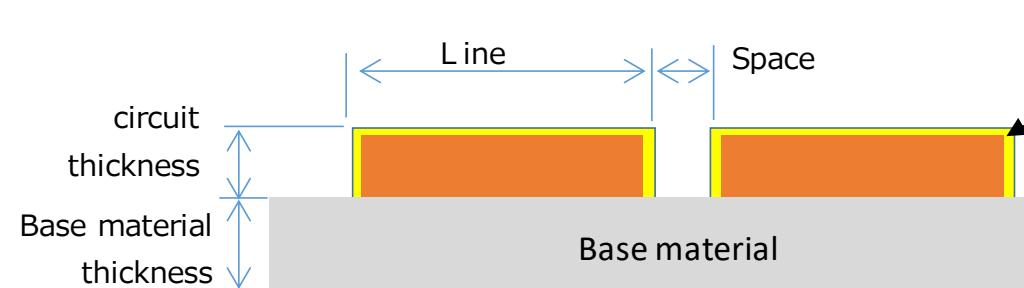


High Heat Dissipation Substrate <Physical Properties of Substrates>

Item		[unit]	Alumina Al ₂ O ₃	Aluminum Nitride ALN
Content rate		[%]	96	97
Color		-	White	Gray
Density		[g/cm ³]	3.8	3.3
Mechanical Characteristics	Flexural Strength	[MPa]	350	310
	Young's Modulus	[GPa]	320	320
Thermal Characteristics	Thermal Conductivity (20°C)	[W/m·k]	24	170
	Linear Expansion Coefficient	[×10 ⁻⁶ /K]	7.2	4.6
Electrical Characteristics	Dissipation Factor (1MHz)	[×10 ⁻⁴]	4	3
	Volume Resistivity	[Ω·cm]	> 10 ¹⁴	> 10 ¹⁴
	Dielectric Strength (DC)	[kV/mm]	15	14

※The above values are reference values

High Heat Dissipation Substrate <Design Rules>

circuit method	Thin film + Plating	Thick film Printing
circuit material	Cu	Ag,AgPd etc
circuit thickness	$\leq 50\mu\text{m}$	$\leq 10\mu\text{m}$
Base material thickness	$0.2\text{mm}\sim 1.0\text{mm}$	
L / S	min.20μm / min.20μm	min.80μm / min.80μm
	circuit tolerance $\pm 10\mu\text{m}$	
Upper Plating	Ni/Pd/Au(Electroless plating)	
	thickness Ni:4μm/Pd:0.05μm/Au:0.1μm	
Cross section		

※The above values are reference values