

# TYPE OF HEATERS

## Overview Specifications

	Silver Heater	Carbon based Heater		Etched Copper Heaters	Transparent Heater
PTC Effect	normal PTC	normal PTC	exponential PTC	normal PTC	normal PTC
Maximum Size [mm]	1400 x 1000	1401 x 1000	1402 x 1000	1200 x 1000	1200 x 1000
Base Material	PET, PEN, PC, PI, FR4	PET, PEN, PC, PI, FR4	PET, PEN, PC, PI, FR4	PI	PC, PET
Maximum Temperature short term (3s)	up to 300°C	up to 300°C	up to 300°C	260°C	up to 300°C
Maximum Temperature long term	up to 150°C	up to 150°C	up to 150°C	220°C	up to 150°C
Self-stabilizing temperature	-	-	42°C, 65°C, 85°C, 130°C	-	-
Specific Heat Density	up to 150 kW/m <sup>2</sup>	up to 150 kW/m <sup>2</sup>	up to 150 kW/m <sup>2</sup>	up to 150 kW/m <sup>2</sup>	up to 5 kW/m <sup>2</sup>
Input Voltage	up to 1000 V (AC/DC)	up to 1000 V (AC/DC)	up to 1000 V (AC/DC)	up to 300 V (AC/DC)	up to 1000 V (AC/DC)
Encapsulation possible	yes	yes	yes	yes	yes
Thermal insulation possible	yes	yes	yes	yes	-
Adhesives possible	yes	yes	yes	yes	yes
Back-Injection moldable	yes	yes	yes	no	yes
Sensor integration possible	yes	yes	yes	yes	yes
Transparency for Radar Application	yes	no	yes	no	no
Transparency for LiDaR Application	yes	no	yes	no	yes
Transparency for Optical Application	yes	no	yes	no	yes
Thermoforming capable	yes	no	no	no	yes
RoHS	yes	yes	yes	yes	yes
Reach	yes	yes	yes	yes	yes