

Flat heating elements

Basic values:

Parameter	Value
Dimensions	12 x 12 x 3.1 mm
Heated area	12 x 12 x 3.1 mm
T _{max}	500 °C

Details of Standard:

Description

With the practical square base area of 12 mm x 12 mm, the type HT heating element is often used as a heated sample carrier in research and development applications. The good chemical resistance properties of the silicon nitride ceramics of the heating element allow such use even with cases of aggressive sample material. The hardness and wear resistance guarantee a long service life. Other application areas are microelectronics and medical engineering.

* The actual power depends on resistance, temperature and voltage.

Parameter	Value
Article no.	FLE 100 589
Resistance @ 20 °C	18,3 Ω ±25 %
Nominal voltage	24 V
Nominal power @ 20 °C	31,5 W*

Basic Material

Parameter	Scale unit	Si ₃ N ₄
max. temperature (T _{max})	°C	1 000
thermal conductivity (l)	W/mK	40
temperature shock resistance (ΔT)	K	500
emissivity (1 100 °C) (ε)	-	0.96
Young's modulus (E)	GPa	320
bending strength (δ _{BB})	MPa	400
compressive strength (δ _D)	MPa	2 000
coefficient of thermal expansion (α)	10 ⁻⁶ K ⁻¹	3
density (g)	g/cm ³	3.21
specific heat (c _p)	J/kgK	750
porosity (100 - % t.D.)	%	0
critical stress intensity factor (K _{IC})	MPa m ^{1/2}	6
Weibull - modulus (m)	-	7.9

The thermal shock resistance depends on the geometric shape of the heater.

Electrical parameters

Parameter	Scale unit	Si ₃ N ₄
resistivity	Ω cm	5 · 10 ⁻³ - 5 · 10 ⁻¹
isolation resistivity	Ω mm (20 °C)	10 ¹³
dielectric strength	kV/mm	25

Emission spectrum

Fully ceramic heating elements are long-wave infrared heaters with a maximum emission of 5 to 10 μm and a radiation coefficient of ε > 0.9.



