

Flat heating elements

Basic values:

Parameter	Value
Dimensions	85 x 50(15) x 4.0 mm
Heated area	50 x 50 x 4.0 mm
T _{max}	1 000 °C

Details of with sensor hole Ø1.0 mm:

Description

The maximum temperature of 1 000 °C and the favourable dimensions of the heated zone of 50 mm x 50 mm allow - with the type HV - use of the heating element for many different application scenarios. Thus, for example, by using several heating elements of the type HV with suitably arranged "cold zone", a cuboid or cube-shaped body can be heated up to 1 000 °C.

The heating element has a blind hole, into which a temperature sensor with Ø1,0 mm, for example a mantle thermocouple, can be inserted.

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

Parameter	Value
Article no.	FLE 100 389
Resistance @ 20 °C	52 Ω ±25 %
Nominal voltage	230 V
Nominal power @ 20 °C	1 017,3 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.



