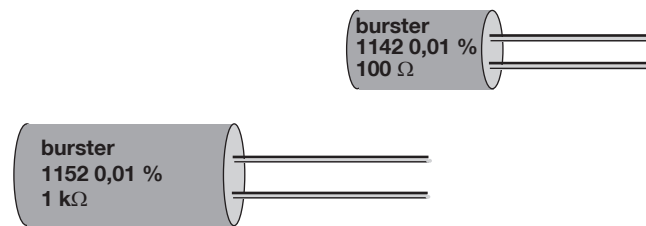


Precision and High-Precision Resistors

Series 1140
1150

Code:	1100 EN
Delivery:	ex stock (standard values)
Warranty:	36 months



1100 EN

- $TC \leq 5 \text{ ppm/K}$
- Class $\pm 0.01 \%$ or $\pm 0.05 \%$
- Production range from 5Ω ... $100 \text{ k}\Omega$
- Resistance material ZERANIN®
- Standard values available from stock
- Custom resistance values available on request
- Minimum order per resistance value 10 pcs

Application

Precision and high-precision resistors are used wherever the highest standards of temperature stability, error tolerance and durability are required.

Model 1142 and 1152 high-precision resistors, with tolerances at values of $\leq 0.01\%$, are equivalent to standard resistors and can be used as substitutes in many cases. Models 1152 and 1156 are available for higher loads up to 1 W.

Description

The resistors are supplied with two connections on the front end (suitable for mounting on circuit boards).

The high-precision resistors comprise low-capacitance, low-inductance wire coils made of ZERANIN®, which are encapsulated in small plastic cylinder housings.

Prior to trimming, the resistance bodies are exposed to a meticulous artificial aging procedure. This special process and trimming to approximately half of the nominal tolerance guarantee long-term stability of $< 0.01\%$ (ZERANIN®) over the course of years.

By selecting materials, values of $\leq 5 \text{ ppm/K}$ are achieved with ZERANIN®.

Within the specified production range, any desired resistance value can be supplied.

Technical Data

Model	1142	1152	1156
Standard values			
5 Ω			*
10 Ω, 20 Ω			*
50 Ω			*
100 Ω, 200 Ω, 500 Ω, 1 kΩ, 2 kΩ, 5 kΩ, 10 kΩ, 20 kΩ	*	*	
50 kΩ, 100 kΩ		*	
Special values			
Manufacturing range for customized Ω values	100 Ω ... 40 kΩ	100 Ω ... 100 kΩ	5 Ω ... 100 Ω
Error of tolerance	± 0.01 %	± 0.01 %	± 0.05 %
Resistance material	ZERANIN® selected	ZERANIN® selected	ZERANIN® selected
Average temperature coefficient (+ 20 °C up to + 60 °C)	≤ 5 ppm/K	≤ 5 ppm/K	≤ 5 ppm/K
Ultimate load (environmental temperature)	0.7 W	1 W	1 W
Long-term stability	0.01 % over years	0.01 % over years	0.01 % over years
Thermal resistance	90 K/W	60 K/W	60 K/W
Dimensions			
Weight	approx. 3 g	approx. 8 g	approx. 8 g

Operating voltage: max. 500 V
 Calibration temperature: 23 °C
 Balance point: for connecting wire of 5 mm range
 Temperature operating range: 0 °C ... + 85 °C
 Short-time over load: approx. 10 % < 1 min.
 Specifications: according DIN 43783 part 1 (former VDE 410)

Temperature dependence

ZERANIN®:

$$R_t = R_0(1 + \alpha t + \beta t^2 + \gamma t^3)$$

$$\alpha = 1.22 \cdot 10^{-5}$$

$$\beta = -2.12 \cdot 10^{-7}$$

$$\gamma = +9.44 \cdot 10^{-10}$$

t = Element temperature in °C
 R₀ = Resistance value at 0 °C
 R_t = Resistance value at temperature t

Special values

Extra charge per piece for special values, refer to order no. **1199S**

Minimum order quantity: 10 pcs of identical version, smaller quantities are available on extra charges.

Delivery: approx. 8 weeks

Order Code

10 pcs 1152 - 100.0 Ω (Standard model)