New Stress-Free Ultra Stable Primary Standard Resistor

FEATURES

- Utilizing New Generation Stress Free Bulk Metal® Foil technology
- Long-term stability: 0.5 ppm/yr (0.2 ppm/yr typical)
- Temperature coefficient: less than ±0.05 ppm/°C at 23°C ±5°C
- Excellent humidity coefficient of resistance less than 0.1 ppm/% RH
- Excellent pressure coefficient of resistance less than 0.001 ppm/hPa
- Available wide range of resistance values at 1Ω, 10Ω, 25Ω, 100Ω, 1KΩ, 10KΩ

Incorporated the technology of
The National Institute of
Advanced Industrial Science and Technology
(The Japanese patent number 2010-114994)

MASS

Approx. 2.5 kg (5.5 lbs)

DESCRIPTION

The USR-SF series is an ultra stable primary standard resistor which is an enhanced version of the USR/ASR series through the use of Bulk Metal® Foil technology.

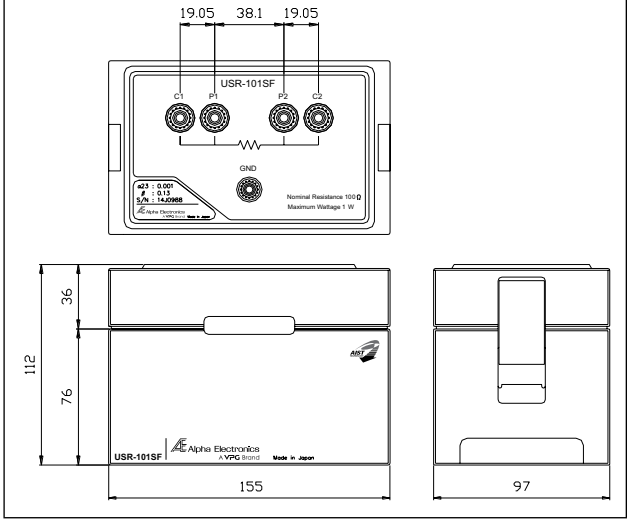
The ultra stable resistive element utilizes new generation stress-free Bulk Metal Foil technology developed by Alpha Electronics with 37 years experience and is based on using proprietary Nickel Chrome alloy. This results in extremely low temperature coefficients as ±0.05 ppm/°C at 23°C ±5°C. This performance is unique to Alpha Electronics throughout the world.

The stress-free resistance element eliminates stress factors using a special treatment process and is encapsulated in a specially-designed ceramic case to protect against humidity and oxidation. Thus, less than 0.5 ppm/year (0.2 ppm/year typical) is realized.

Alpha's Bulk Metal Foil construction provides excellent AC characteristics—superior to performance of conventional wirewound standard resistors.

The USR-SF, with its extreme long-term stability and low TCR, can be used in air which reduces cost and operation for maintenance of oil bath.

CONFIGURATION in millimeters



The resistive elements are held by special designed case so, it's suitable for environment with vibration during transportation.

SPECIFICATIONS

Series	Nominal Value	Accuracy	Uncertainty of Calibration	Temp. Coefficient	Temp. Retrace	Stability	Power Rating	Power Coefficient	Operating Temp. Range	Storage Temp. Range	Number of Terminals
		ppm	ppm	ppm/°C	ppm	ppm/yr	W	ppm/power*	°C	°C	
USR-1R0SF	1Ω	±2	±2.5 @ 23°C	±0.05 @23±5°C	±0.5 @23±5°C	±0.5 (±0.2 actual)	1.0	±1	18–28	0–50	5
USR-100SF	10Ω										
USR-250SF	25Ω										
USR-101SF	100Ω										
USR-102SF	1 kΩ										
USR-103SF	10 kΩ										

* Rated power will be different per future additional low values.

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