Wirewound Resistors, Noise Suppressor, High Performance

FEATURES

- Coating increases body strength and improves high voltage performance up to 45 kV
- Ideal for reducing RFI during electrical discharges on gasoline engines
- Variety of resistance and inductance values available
- Capability to withstand high voltage pulses at high frequency
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free
RoHS COMPLIANT
HALOGEN FREE GREEN (5-2008)

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	RESISTANCE RANGE (1) Ω	TOLERANCE (2) ± %
NSRHP	1K to 15K	10, 20

Notes

(1) Special resistance values available upon request

(2) Other tolerances available upon request

TECHNOLOGY

The resistor element is a resistive wire, which is wound in a single layer on a fiberglass core. Metallic caps are fixed to the ends of the resistive core. A coating protects the resistive element against moisture and mechanical shock, plus is able to withstand high temperatures. These products can be molded with epoxy resin, thermoplastic or thermo set materials. The resistors can be used in the spark plug leads, as well as in the spark plug caps itself.

Notes

- The image shows the resistor half coated and half un-coated
- The end caps are crimped onto the body of the resistor

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	NSRHP RESISTOR CHARACTERISTICS
Inductance Range, 2 MHz (1)	µH	9 to 78
Temperature Coefficient	ppm/°C	± 250
Operating Temperature Range	°C	-40 to +200
Dielectric Withstanding Voltage	V_{AC}	1000

Note

(1) Special inductance values available upon request

GLOBAL PART NUMBER INFORMATION

Part Number Example: NSRHP41051K25M19CE **Part Number Description: NSRHP-4105 1.25K 20% 19µH C E51**

N	S	R	H	P	4	1	0	5	1	K	2	5	M	1	9	C	E

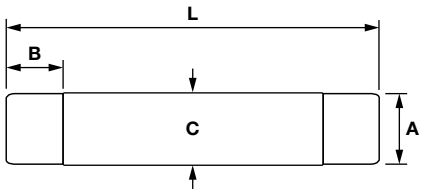
MODEL (5 digits)	TYPE (1) (4 digits)	RESISTANCE VALUE (4 digits)	TOLERANCE (1 digit)	INDUCTANCE VALUE (1) (2 digits)	CONSTRUCTION TYPE (1 digit)	PACKAGE CODE (1 digit)
NSRHP	Example: **4xxx** **5xxx** **6xxx** **7xxx**	**1K25** = 1250 Ω **500R** = 500 Ω	**K** = ± 10 % **M** = ± 20 %	**19** = 19 µH **05** = 5 µH	**C** = crimped cap	**E** = standard bulk **V** = vacuum pack

Note

(1) The “xxx” part numbers and inductance values will be assigned by Vishay Dale engineering after design / drawing review approval

For technical questions, contact: ww2aresistors@vishay.com

ELECTRICAL AND DIMENSIONAL DATA



NSRHP TYPE [1]	DIMENSIONS in millimeters (inches)				RESISTANCE RANGE [2]	INDUCTANCE RANGE [3] (2 MHz, 1 V)	ESTIMATED POWER RATING [4] [5] $P_{40\ °C}$ W / 25.4 mm
	A Typ.	B Typ.	C Max.	L Typ.			
4xxx	3.15 (0.124)	1.80 (0.071)	3.45 (0.136)	11.00 to 30.00 (0.433 to 1.181)	1 kΩ to 15 kΩ	9.0 µH to 51 µH	2.0
5xxx	3.88 (0.153)	2.20 (0.087)	4.18 (0.165)	11.00 to 30.00 (0.433 to 1.181)	1 kΩ to 15 kΩ	10.0 µH to 78 µH	3.5
6xxx	4.35 (0.171)	2.20 (0.087)	4.65 (0.183)	11.00 to 30.00 (0.433 to 1.181)	1 kΩ to 15 kΩ	10.0 µH to 78 µH	4.0
7xxx	4.75 (0.187)	2.20 (0.087)	5.05 (0.199)	11.00 to 30.00 (0.433 to 1.181)	1 kΩ to 15 kΩ	9.0 µH to 76 µH	4.5

Notes

(1) The “xxx” part numbers will be assigned by Vishay Dale engineering after design/drawing review approval

(2) Resistance range will depend on the product length selection

(3) Inductance value will depend on the product length and resistance range selection, contact factory for details

(4) Estimated power rating is based on diameter and length of the body.
For example: a 6xxx part with 20.0 mm length would have estimated power rating of 4.0 W / 25.4 mm x 20.0 mm = 3.15 W

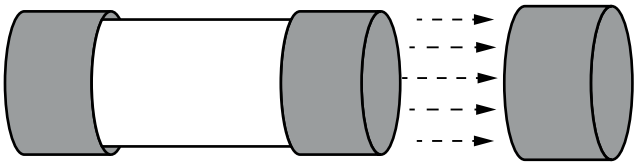
(5) The power dissipation requirement depends on the current waveform and frequency that comes from the ignition coil. The current in the ignition circuit occurs only during discharge. Although the ignition voltage is quite high, it is not practical to specify a continuous power rating of the noise suppressor because most of the “power” dissipation ability will depend on the mass of the final application assembly and encasing material and not on the NSRHP itself

PERFORMANCE

TEST	CONDITIONS OF TEST	TEST LIMITS
Biased Humidity	+85 °C, 85 % RH, 10 % bias, 1000 h	± 10 %
Operational Life	1000 h at rated power, T_A = +125 °C ± 3 °C	± 5 %
Load Life	1000 h at rated power, T_A = +40 °C ± 2 °C, 1.5 h “ON”, 0.5 h “OFF”	± 5 %
ESD (Electrostatic Discharge)	6 kV	± 5 %
Short Time Overload	Rated voltage x 2.5 or max. overload voltage for 5 s, whichever is less	± 2 %
Load Life at High Voltage Pulse	Continuous 250 h, 45 kV pulse on the test circuit	± 5 %
Rapid Change of Temperature	-55 °C to +155 °C, 500 cycles, 15 min at each extreme	± 5 %
Moisture Resistance	+40 °C ± 2 °C, 90 % to 95 % RH, 250 h, 1.5 h “ON”, 0.5 h “OFF”	± 5 %
Low Temperature Storage	-40 °C for 24 h	± 5 %
High Temperature Exposure	1000 h at +200 °C ± 3 °C	± 10 %
Resistance to Solvents	Add aqueous wash chemical - OKEM clean or equivalent. Do not use banned solvents.	Pass the test

DESIGN NOTES

Any connector (such as cap or spring) to the NSR HP end caps should have a minimum extraction (pull) force of 30N as illustrated in Fig. 1; also, to prevent electric arc and damages, this connector should not extend beyond 2/3 of the cap length as illustrated in Fig. 2.



Minimum extraction (pull) force is 30 N (3.05 kgf)

Fig. 1

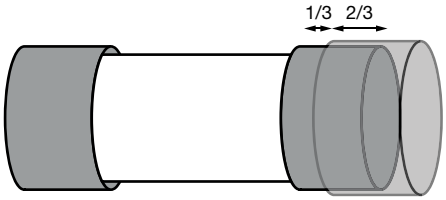


Fig. 2

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