

# WH/WN Series

## Miniature Molded Wirewound



AXIAL  
LEAD



### FEATURES

- WH precision series
- WN Aryton Perry winding Non-Inductive series: Inductance <1nH at 1MHZ test,
- Designed to meet MIL-R-26F, MIL-STD-202 standard requirements
- Manufacturing process -Wire winding/ Spot Welding- by Computer Numerical Control (CNC) machine tools to ensure consistency of product quality.
- Encapsulated by epoxy molding compound
- Advanced IC encapsulation mold/die technologies

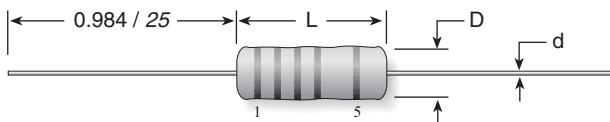
### SERIES SPECIFICATIONS

Type	Power Rating (watts)	Resistance Range ( $\Omega$ )	Weight (g/1000pc)
WHA	0.5	0.100 - 1.0K	216
WNA		0.100 - 250	
WHB	1	0.100 - 4.0K	296
WNB		0.100 - 1.0K	
WHC	2	0.10 - 8.0K	712
WNC		0.10 - 2.0K	
WHD	3	0.10 - 25K	1160
WND		0.10 - 5.0K	
WHE	5	0.10 - 50K	2920
WNE		0.10 - 10K	

### CHARACTERISTICS

<b>Ceramic Core</b>	CeramTec Rubalit® 85% alumina
<b>End Caps</b>	Stainless steel, precision formed
<b>Leads</b>	Copper wire, 100% Sn (lead free) coated
<b>Resistance Wire</b>	ISAOHM® wire TC $\pm 20$ ppm/°C
<b>Encapsulation</b>	SUMICON 1100/1200 Epoxy molding compound for IC encapsulation
<b>Standard Tolerance</b>	D (0.5%), F (1.0%), J (5.0%)
<b>Temperature Coefficient (ppm/°C)</b>	$\pm 90$ for 0.100 $\Omega$ -0.99 $\Omega$ , $\pm 50$ for 1.00 $\Omega$ -10.00 $\Omega$ , $\pm 20$ for >10.00 $\Omega$
<b>Maximum Working Voltage</b>	(P $\times$ R) <sup>1/2</sup>
<b>Derating</b>	Linearly from 100% @ +70°C to 0% @ +150°C.
<b>Operating Temp</b>	-55°C to +150°C

### DIMENSIONS



Type	Wattage	L	D	d
WH/NA	0.5	5.08 / 0.200	2.54 / 0.100	0.60 / 0.024
WH/NB	1	7.00 / 0.276	3.30 / 0.130	0.60 / 0.024
WH/NC	2	11.4 / 0.450	4.57 / 0.180	0.80 / 0.031
WH/ND	3	13.54 / 0.530	5.50 / 0.216	0.80 / 0.031
WH/NE	5	20.00 / 0.790	7.50 / 0.295	1.00 / 0.039

### Packaging

Tape Width	Pitch	Reel Diam.	Pc/reel
64 / 2.520	5.0 / 0.197	290 / 11.41	1000
64 / 2.520	5.0 / 0.197	290 / 11.41	1000
64 / 2.520	10 / 0.393	290 / 11.41	1000
84 / 3.307	10 / 0.393	290 / 11.41	500
84 / 3.307	10 / 0.393	290 / 11.41	500

# WH/WN Series

## Miniature Molded Wirewound

AXIAL LEAD

### PERFORMANCE CHARACTERISTICS

Test	Conditions of Test	Performance
<b>Thermal shock</b>	Environmental chamber, -55°C +0°C, -3°C to 150°C +3°C, -0°C, 5 cycles, minimum 15 min. at each extreme	±(1.0% + 0.5mΩ)ΔR
<b>Short-time overload</b>	Overload voltage 5x rated wattage for 5 sec.	±(0.5% + 0.5mΩ)ΔR
<b>Solderability</b>	Bath temp. 260°C ±5°, immersion time 5 sec. ±0.5, JIS C 5201 4.18	>90% of contact face covered new solder
<b>Resistance to solder heat</b>	Bath temp. 260°C ±5°, immersion time 5 sec. ±0.5, JIS C 5201 4.18	±(0.5% + 0.5mΩ)ΔR
<b>Dielectric withstanding voltage</b>	Magnitude of test voltage >500 volts rms.; duration 1 min.	Pass
<b>Insulation resistance</b>	Magnitude of test voltage 500 volts rms. ±10%; duration 1 min.	>10 <sup>9</sup> Ω
<b>High Temperature Exposure</b>	Exposed to an ambient temperature of 175°C +5°/-0° for 250 ±8 hours	±(1.0% + 0.5mΩ)ΔR
<b>Low Temperature Storage</b>	At a temperature of -65°C ±2° for a period of 24 hours ±4	±(0.5% + 0.5mΩ)ΔR
<b>Life</b>	Test temp. at 70°C ±2°, rated DC continuous working voltage applied, 1.5 hours on and 0.5 hours off, 1000 hours	±(2.0% + 0.5mΩ)ΔR

### HOW TO ORDER

H = Inductive  
N = Non Inductive

RoHS compliant

**WHA10RFE-T**

Series: W, H, A, 1, 0, R, F, E, T

Power: A = 0.5, B = 1, C = 2, D = 3, E = 5

Ohms: 1, 2, 5, 10, 15, 25, 51, 75, 100, 150, 200, 250, 330, 470, 560, 750, 1K, 2.5K, 5K, 10K, 25K

Tolerance: F = 1%, J = 5%, D = 0.5%

Package: T = Tape, blank = 25pc pack

**Part marking:**  
0.50, 1.0, 2.0 watt parts marked with 5-band color code, 3.0 and 5.0 watt parts marked with part number stamping

#### Standard part numbers

Wattage:	0.5	0.5	1.0	1.0	2.0	2.0	3.0	3.0	5.0	5.0
Series:	WHA	WNA	WHB	WNB	WHC	WNC	WHD	WND	WHE	WNE
Ohms										
0.1	WHAR10FE	WNAR10FE	WHBR10FE	WNBR10FE	WHCR10FE	WNCR10FE	WHDR10FE	WNDR10FE	WHER10FE	WNER10FE
0.25	WHAR25FE	WNAR25FE	WHBR25FE	WNBR25FE	WHCR25FE	WNCR25FE				
0.5	WHAR50FE	WNAR50FE	WHBR50FE	WNBR50FE	WHCR50FE	WNCR50FE	WHDR50FE	WNDR50FE	WHER50FE	WNER50FE
0.75	WHAR75FE	WNAR75FE	WHBR75FE	WNBR75FE	WHCR75FE	WNCR75FE				
1	WHA1R0FE	WNA1R0FE	WHB1R0FE	WNB1R0FE	WHC1R0FE	WNC1R0FE	WHD1R0FE	WND1R0FE	WHE1R0FE	WNE1R0FE
2	WHA2R0FE	WNA2R0FE	WHB2R0FE	WNB2R0FE	WHC2R0FE	WNC2R0FE				
4	WHA4R0FE	WNA4R0FE	WHB4R0FE	WNB4R0FE	WHC4R0FE	WNC4R0FE				
5	WHA5R0FE	WNA5R0FE	WHB5R0FE	WNB5R0FE	WHC5R0FE	WNC5R0FE	WHD5R0FE	WND5R0FE	WHE5R0FE	WNE5R0FE
10	WHA10RFE	WNA10RFE	WHB10RFE	WNB10RFE	WHC10RFE	WNC10RFE	WHD10RFE	WND10RFE	WHE10RFE	WNE10RFE
15	WHA15RFE	WNA15RFE	WHB15RFE	WNB15RFE	WHC15RFE	WNC15RFE	WHD15RFE	WND15RFE	WHE15RFE	WNE15RFE
25	WHA25RFE	WNA25RFE	WHB25RFE	WNB25RFE	WHC25RFE	WNC25RFE				
51	WHA51RFE	WNA51RFE	WHB51RFE	WNB51RFE	WHC51RFE	WNC51RFE				
75	WHA75RFE	WNA75RFE	WHB75RFE	WNB75RFE	WHC75RFE	WNC75RFE				
100	WHA100FE	WNA100FE	WHB100FE	WNB100FE	WHC100FE	WNC100FE	WHD100FE	WND100FE	WHE100FE	WNE100FE
150	WHA150FE	WNA150FE	WHB150FE	WNB150FE	WHC150FE	WNC150FE				
200	WHA200FE	WNA200FE	WHB200FE	WNB200FE	WHC200FE	WNC200FE				
250	WHA250FE	WNA250FE	WHB250FE	WNB250FE	WHC250FE	WNC250FE	WHD250FE	WND250FE	WHE250FE	WNE250FE
330	WHA330FE		WHB330FE	WNB330FE	WHC330FE	WNC330FE				
470	WHA470FE		WHB470FE	WNB470FE	WHC470FE	WNC470FE				
560	WHA560FE		WHB560FE	WNB560FE	WHC560FE	WNC560FE	WHD560FE	WND560FE	WHE560FE	WNE560FE
750	WHA750FE		WHB750FE	WNB750FE	WHC750FE	WNC750FE				
1K	WHA1K0FE		WHB1K0FE	WNB1K0FE	WHC1K0FE	WNC1K0FE	WHD1K0FE	WND1K0FE	WHE1K0FE	WNE1K0FE
2.5K			WHB2K5FE		WHC2K5FE			WND2K5FE		
5K							WHD5K0FE		WHE5K0FE	WNE5K0FE
10K							WHD10KFE		WHE10KFE	WNE10KFE
25K									WHE25KFE	