# Water Cooled Wirewound Resistor



## FEATURES

- Direct cooling without heat sink
- Better power / volume ratio
- Non-inductive optional
- 1 WCR = 6 wirewound resistors = 5 thick-film resistors
- Up to 6 resistive functions on 1 WCR tube
- 1 single supply for several functions (snubber and divider)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

## DESIGN SUPPORT TOOLS

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3D Models Available

## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | POWER RATING (1) W | RESISTANCE RANGE Ω | TOLERANCE ± % |
|---|---|---|---|
| WCR 30 x 250 | 1500 | 4.7 to 56K | 5 |
| WCR 38 x 250 | 2000 | 4.7 to 56K | 5 |
| WCR 38 x 300 | 2500 | 4.7 to 56K | 5 |

**Note**

(1) Water inlet temperature 60 °C with 40 % glycol, flow rate 5 l/min

## TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | RESISTOR CHARACTERISTICS |
|---|---|---|
| Temperature coefficient | ppm/°C | 100 ppm/°C (typical) |
| Maximum working voltage | V | Up to 3500 V (6600 V on specific request) |
| Operating temperature range | °C | -55 to +120 |

## GENERAL CHARACTERISTICS

| | |
|---|---|
| Core | Ceramic |
| Winding | NiCr alloy fully insulated from water |
| Hydraulic plugs | Stainless steel (corrosion free) |
| Coating | Vitreous enamel or silicone coating (1) |
| Ohmic values | E12 (4.7 Ω to 56 kΩ) |
| Inductance | Non-inductive type on request |
| Cooling | Industrial or deionized water; coolant mixtures up to 60 % glycol |
| Operating pressure | 1 bar to 6 bars |
| Test pressure | 10 bars |
| Flow | 5 l/min to 15 l/min |
| CTI Index | > 600 |
| Creeping distance | On request |
| Clearance distance | On request |
| Electrical connections | M3 screw and nut (other on request) |
| Mounting | Vertically (recommended) |
| Overload | 2 x $P_n$ 10 s ($\theta_{60\ °C}$ at 5 l/min) |
| Endurance | 1000 cycles $P_n$ 30 s/30 s; variation < 5 % |
| Pressure drop | 0.8 bar for WCR 30 mm x 250 mm; 0.25 bar for WCR 38 mm x 250 mm and WCR 38 mm x 300 mm (flow rate 10 l/min) |

**Note**

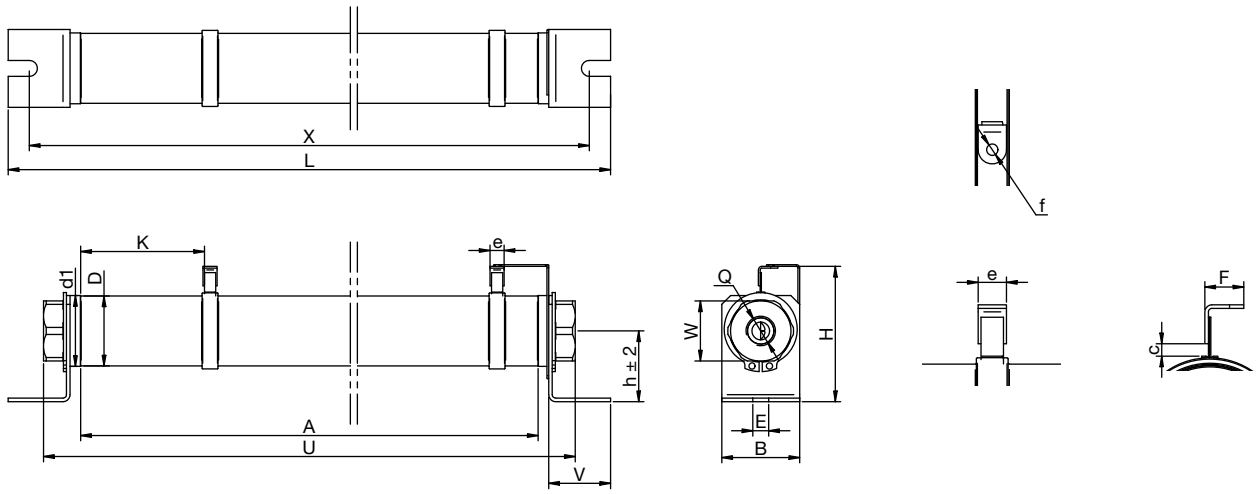
(1) For PD reason (withstand)



For technical questions, contact: mcbfixedresistors@vishay.com

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## DIMENSIONS in millimeters




| TYPE | 30 x 250 | 38 x 250 | 38 x 300 |
|---|---|---|---|
| Water pipe diameter | Ø 8 | Ø 10 | Ø 10 |
| A | 250 | 250 | 300 |
| B + 0.5 / - 0 | 32 | 44 | 44 |
| c | 3.5 | 3.5 | 3.5 |
| C | 14.5 | 14.5 | 14.5 |
| $D_{max.}$ | 35 | 43 | 43 |
| d1 | 32 | 40 | 40 |
| E | 7 | 9 | 9 |
| e | 8 | 8 | 8 |
| f | Ø 3.2 | Ø 3.2 | Ø 3.2 |
| F | 11 | 11 | 11 |
| $H_{max.}$ | 54 | 80 | 80 |
| h ± 2 | 25 | 40 | 40 |
| K | (1) | (1) | (1) |
| $L_{max.}$ | 304 | 335 | 385 |
| Ø | 30 | 38 | 38 |
| Q | G 3/8 (2) | G 3/8 (2) | G 3/8 (2) |
| U | 288 | 292 | 342 |
| V | 20 | 35 | 35 |
| W | 24 | 34 | 34 |
| X ± 2 | 286 | 308 | 358 |
| Weight | 1 kg | 1.3 kg | 1.5 kg |

**Notes**

(1) Creeping / clearance on request

(2) Other hydraulic connections on request



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## SPECIFIC CHARACTERISTICS

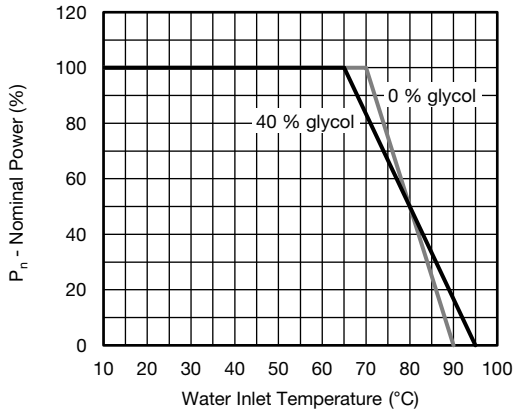



Fig. 1 - Nominal Power Dissipated According to Water Inlet Temperature
$P_n$ = f (Water Inlet Temperature)
Flow Rate = 5 l/min

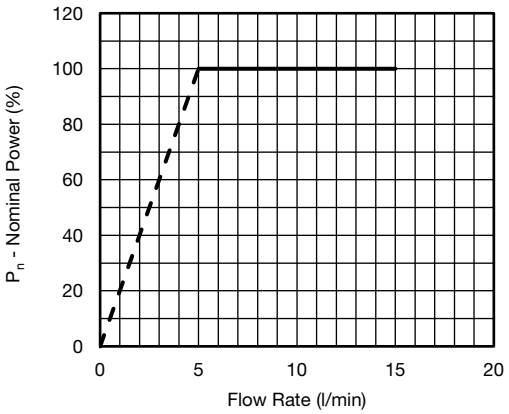



Fig. 2 - Power Dissipated According to the Flow Rate
$P_n$ = f (Flow Rate)
Temperature = 60 °C

## OPTIONS

On request

## ORDERING INFORMATION

| WCR | 30 x 250 | A | 10K | ± 5 % | XXX | BO12 |
|---|---|---|---|---|---|---|
| MODEL | STYLE | NON-INDUCTIVE WINDING | RESISTANCE VALUE | TOLERANCE | CUSTOM DESIGN | PACKAGING |
| | | Optional | | ± 5 %<br>± 10 %<br>Other on request | Optional<br>On request:<br>special value,<br>tolerance,<br>terminals, etc. | |

## GLOBAL PART NUMBER INFORMATION

| W | C | R | 3 | 8 | 2 | 5 | 0 | A | 3 | 9 | 0 | 0 | J | B | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 2 | | | | | 3 | 4 | | | | 5 | 6 | 7 | | |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| PRODUCT TYPE | SIZE | OPTION (if applicable) | RESISTANCE VALUE | TOLERANCE | PACKAGING | INDUSTRIALIZATION NUMBER |
| **WCR** | **30250<br>38250<br>38300** | **A = non-inductive winding** | **The first three digits are significant figures and the last specifies the number of zeros to follow, R designates decimal point.<br>4702 = 47 kΩ<br>47R0 = 47 Ω** | **J = 5 %<br>K = 10 %** | **B = box<br>Box quantity depends of model and size** | **3 specific digits (if applicable)** |

## EXAMPLES

| MODEL | DESCRIPTION | PART NUMBER |
|---|---|---|
| WCR | WCR 38X250 15U A 5 % BO12 | WCR38250A15R0JB |



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