CNS 020



Vishay Sfernice

High Precision (0.01 % / 10 ppm/°C) Through Hole Thin Film Conformal Coating Sil Resistor



LINKS TO ADDITIONAL RESOURCES



FEATURES

- Tight TCR to 5 ppm/°C (in 0 °C; +70 °C)
- Incorporates high stability thin film element (0.1 % at + 70 °C at Pn during 1000 h)
- Through hole (Sil)
- 100 Ω to 10 MΩ
- Tight tolerance down to 0.01 %
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

SCHEMATIC



| STANDARD ELECTRICAL SPECIFICATIONS | | | | | |
|------------------------------------|---|--|-----|---|-------|
| MODEL | $\begin{array}{c} \textbf{RESISTANCE RANGE}\\ \Omega \end{array}$ | ANCE RANGE $P_{70 \circ C}$ VOLTAGE (UL) IOLERANCE COE | | TEMPERATURE COEFFICIENT ⁽¹⁾ ± ppm/°C | |
| CNS 020 | 100 to 10M | 0.5 | 300 | 0.01, 0.02, 0.05, 0.1, 0.25, 0.5, 1 | 5, 10 |

Note

⁽¹⁾ 15 ppm/°C for $R \ge 1.5M$

| CLIMATIC SPECIFICATIONS | | | |
|-----------------------------|-----------------|--|--|
| Operating temperature range | -55 °C; +155 °C | | |

MECHANICAL SPECIFICATIONS Resistive material Nichrome Substrate material Alumina Terminals Tin / silver on Cu alloy Protection Conformal epoxy coating

| IMENSIONS AND IMPRI | NTING CNS 020 | | | |
|-----------------------------------|---|---|--|--|
| | | | | |
| | (lage and obmin value (in ()). On back aider | manufacturing and and talaranaa (in 0/) | | |
| | y logo and ohmic value (in Ω). On back side: INCHES | | | |
| On front side: Vishay DIMENSION A | y logo and ohmic value (in Ω). On back side: INCHES 0.330 | manufacturing code and tolerance (in %) MILLIMETERS 8.38 max. | | |
| DIMENSION | INCHES | MILLIMETERS | | |
| DIMENSION A | INCHES 0.330 | MILLIMETERS 8.38 max. | | |
| DIMENSION A B | INCHES 0.330 0.261 | MILLIMETERS 8.38 max. 6.62 max. | | |
| DIMENSION A B C | INCHES 0.330 0.261 0.020 | MILLIMETERS 8.38 max. 6.62 max. 0.51 | | |
| DIMENSION A B C D | INCHES 0.330 0.261 0.020 0.200 | MILLIMETERS 8.38 max. 6.62 max. 0.51 5.08 | | |



ROHS

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1 For technical questions, contact: <u>sferthinfilm@vishay.com</u> Document Number: 60051

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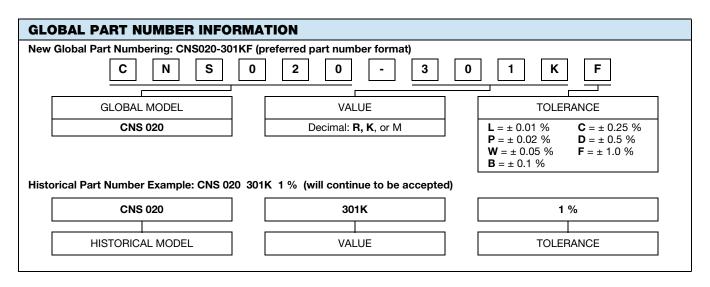
| TECHNICAL SPECIFICATIONS | | | | |
|---|-------------------------|---------------------|-------------------|--|
| TEST | | SPECIFICATIONS | CONDITIONS | |
| MATERIAL | | PASSIVATED NICHROME | | |
| Absolute TCR | Standard ⁽¹⁾ | ± 10 ppm/°C | -40 °C to +125 °C | |
| ADSOIULE TOR | On request | ± 5 ppm/°C | 0 °C to +70 °C | |
| Power rating | | 0.5 W | at +70 °C | |
| | | 0.3 W | at +125 °C | |
| Dissipation factor (in air) 1/R _{TH} (2) | | | 6.7 mW/°C | |

Notes

 $^{(1)}$ 15 ppm/°C for R $\geq 1.5 M$

⁽²⁾ For information only

| ENVIRONMENTAL TEST | | | | | |
|---------------------------|--|-------------------|------------------|---|--|
| | REQUIREMENTS | | | | |
| TEST | NFC 83220 CECC40300 | MIL-PRF 55182E | DRIFTS (MAX.) | CONDITIONS | |
| Overload | ± 0.01 % | ± 0.05 % | 0.01 % | 2.5 U _L /5 s <i>U</i> _{max} . < 2 Un | |
| Temperature cycling | ± 0.01 % | ± 0.05 % | 0.01 % | -55 °C / +155 °C 5 cycles CEI 63-2-14 Test No | |
| Terminal strength | ± 0.01 % | ± 0.02 % | 0.01 % | CEI 68-2-21 Test Ua (pulling), Ub (bending), Uc (twisting) | |
| Resistance to solder heat | ± 0.01 % | ± 0.02 % | 0.01 % | +260 °C / 10 s, CEI 68-2-20A Test T6 (Met 1A) | |
| Vibration | ± 0.01 % | ± 0.02 % | 0.01 % | 10 Hz to 500 Hz 10 g, 6 h Met B4; CEI 68-2-6 Test Fc | |
| Climatic sequence | $\begin{array}{c} \pm \ 0.05 \ \% \\ \text{insulation resistance} \\ > 10^2 \ M\Omega \end{array}$ | - | 0.05 % | -55 °C / +155 °C 6 cycles 95 % RH RH 85 mbar CEl68-1 | |
| Moisture | $\begin{array}{c} \pm \ 0.05 \ \% \\ \text{insulation resistance} \\ > 10^2 \ M\Omega \end{array}$ | - | 0.02 % | 56 days 95 % RH +40 °C CEI 68-2-3 | |
| High temperature storage | ± 0.05 % | - | 0.05 % | 1000 h / +155 °C CEI 68-2-20A; Test B | |



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