

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)



RoH:

- Through hole (Sil)
- 100 Ω to 10 M Ω
- Tight tolerance down to 0.01 %
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

SCHEMATIC



3D Models

STANDARD ELECTRICAL SPECIFICATIONS					
MODEL	RESISTANCE RANGE Ω	RATED POWER P _{70 °C} W	LIMITING ELEMENT VOLTAGE (U _L) V	TOLERANCE ± %	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

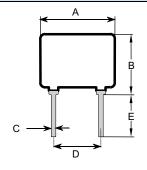
Note

(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		

DIMENSIONS AND IMPRINTING CNS 020





On front side: Vishay logo and ohmic value (in Ω). On back side: manufacturing code and tolerance (in %)

DIMENSION	INCHES	MILLIMETERS
Α	0.330	8.38 max.
В	0.261	6.62 max.
С	0.020	0.51
D	0.200	5.08
E	0.125	3.17 min.
F	0.100	2.54 max.
G	0.010	0.25



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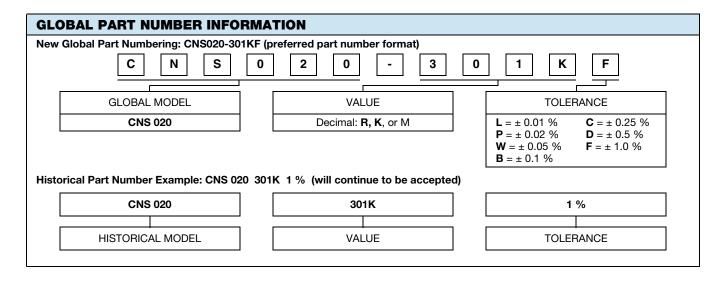
TECHNICAL SPECIFICATIONS			
TEST		SPECIFICATIONS	CONDITIONS
MATERIAL		PASSIVATED NICHROME	
Absolute TCR	Standard (1)	± 10 ppm/°C	-40 °C to +125 °C
Absolute 10h	On request	± 5 ppm/°C	0 °C to +70 °C
Power rating -		0.5 W	at +70 °C
		0.3 W	at +125 °C
Dissipation factor (in air) 1/R _{TH} (2)			6.7 mW/°C

Notes

⁽¹⁾ 15 ppm/°C for $R \ge 1.5M$

⁽²⁾ For information only

ENVIRONMENTAL TEST				
	REQUIREMENTS			
TEST	NFC 83220 CECC40300	MIL-PRF DRIFTS 55182E (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	$\begin{array}{c} \pm~0.05~\%\\ \text{insulation resistance}\\ > 10^2~\text{M}\Omega \end{array}$	-	0.05 %	-55 °C / +155 °C 6 cycles 95 % RH RH 85 mbar CEl68-1
Moisture	$\begin{array}{c} \pm~0.05~\%\\ \text{insulation resistance}\\ > 10^2~\text{M}\Omega \end{array}$	-	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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