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

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 www.vishay.com/doc?99912

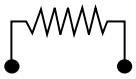
Pb-free

RoHS COMPLIANT

LINKS TO ADDITIONAL RESOURCES

3D Models

SCHEMATIC



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 ≥ 1.5M

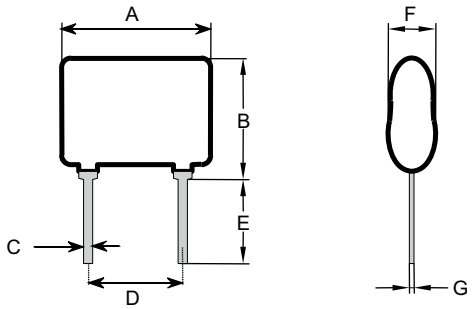
CLIMATIC SPECIFICATIONS

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
A	0.330	8.38 max.
B	0.261	6.62 max.
C	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

TECHNICAL SPECIFICATIONS

TEST		SPECIFICATIONS	CONDITIONS
MATERIAL		**PASSIVATED NICHROME**	
Absolute TCR	Standard (1)	± 10 ppm/°C	-40 °C to +125 °C
	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 ≥ 1.5M

(2) For information only

ENVIRONMENTAL TEST

TEST	REQUIREMENTS			CONDITIONS
	NFC 83220 CECC40300	MIL-PRF 55182E	DRIFTS (MAX.)	
Overload	± 0.01 %	± 0.05 %	0.01 %	2.5 U_L/5 s $U_{max.}$ < 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	± 0.05 % insulation resistance > 10^2 MΩ	-	0.05 %	-55 °C / +155 °C 6 cycles 95 % RH RH 85 mbar CEI68-1
Moisture	± 0.05 % insulation resistance > 10^2 MΩ	-	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

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: CNS020-301KF (preferred part number format)

C	N	S	0	2	0	-	3	0	1	K	F

GLOBAL MODEL	VALUE	TOLERANCE
CNS 020	Decimal: **R, K**, or M	**L** = ± 0.01 % **P** = ± 0.02 % **W** = ± 0.05 % **B** = ± 0.1 % **C** = ± 0.25 % **D** = ± 0.5 % **F** = ± 1.0 %

Historical Part Number Example: CNS 020 301K 1 % (will continue to be accepted)

CNS 020	301K	1 %
HISTORICAL MODEL	VALUE	TOLERANCE

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RESISTOR-0125-A CF18JT47K0 MRS16000C8201FCT00 RC14JT39K0 TNP10SC330RFE TNP10SC10K0FE TNP10SAR200JE MRS16000C2703FCT00 MRS16000C4703FCT00 MRS16000C7501FCT00 MRS16000C8209FCT00 TN15P7R50FE 1-1879026-5 1-1879026-8 1-1879027-2 1-1879027-6 RPA0302T0050JNBK 1622602-1 1622600-1 1622321-1 1622796-6 698-3-R27KFLF CNS020-500KP MRS16000C1000FC100 MRS16000C1000FCT00 MRS16000C1001FC100 MRS16000C1001FCT00 MRS16000C1002FC100 MRS16000C1002FCT00 MRS16000C1002FRP00 MRS16000C1003FC100 MRS16000C1003FCT00 MRS16000C1003FRP00 MRS16000C1502FRP00 MRS16000C2201FCT00 MRS16000C2202FRP00 MRS16000C2701FRP00 MRS16000C3300FRP00 MRS16000C2002FCT00 MRS16000C2001FCT00 MRS16000C3302FRP00 MRS16000C1201FRP00 MRS16000C6812FRP00 MRS16000C4701FC100 MRS16000C4701FCT00 MRS16000C4701FRP00 MRS16000C4702FRP00 MRS16000C3300FCT00 MRS16000C2201FRP00 MRS16000C2202FC100