

SMD Power Resistors

Specifications



Type		RWN 5020	RWC 5020
Styles			5020
Dimensions	mm	non inductive, no winding	wirewound on ceramic
Power rating $\vartheta_0 = 200^{\circ}\text{C}$	W		P_{25} 2,2 P_{40} 2,0 P_{70} 1,6
Single pulse	I_{max} $E_{\text{i, max}}$ $T_{\text{imp, max}}$	A mWs ms	50 625 5
periodic pulse load	i_{max} $E_{\text{i, per, max}}$ $t_{\text{imp, max}}$ t_{pause}	A mWs ms ms	30 (R003 ... R018) 40 (R022 ... R050) 225 5 100
Tolerance	%	1, 2, 5 (F, G, J)	1, 2, 5 (F, G, J)
Resistance range	Ω	0R002 ... 0R050	0R01 ... 220R
Temperature coefficient	ppm K^{-1}	see diagram	± 80
E-Series		0R003, 0R005, $\geq 0R01$: E 12	E 12
		diverging values on request	
max. cont. work. voltage	V_{RMS}		$\sqrt{P \cdot R}$
Thermal resistance	K/W		100 ¹⁾
Insulation voltage (1 min.)	V_{RMS}		1000
Insulation resistance			> 1000M Ω
Climatic category			55/175/56
Temperature range	$^{\circ}\text{C}$		-55 ... 200
Endurance (P_{70} , 70 $^{\circ}\text{C}$, 1000h)	$\left[\frac{\Delta R}{R}\right]$ %		$\leq 1,0$
Damp heat, steady state	$\left[\frac{\Delta R}{R}\right]$ %		$\leq 0,25$
Resistance to soldering heat	$\left[\frac{\Delta R}{R}\right]$ %		$\leq 0,25$
Short time overload ($5 * P_{70}/5\text{sec}$)	$\left[\frac{\Delta R}{R}\right]$ %		$\leq 1\%$
Temperature shock			$\leq 0,25$
Board-bending-test			no interruption
Solderability		suitable for wave and reflow soldering in acc. with CECC 0082	

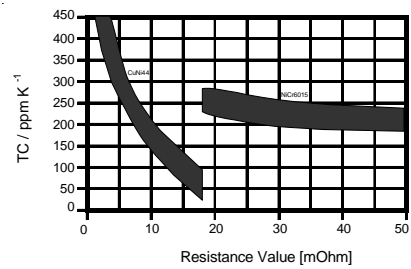
¹⁾ Thermal data according to DIN 44050 with solder pads as on next page.

Temperature Coefficient :

Range (RWC 5020):

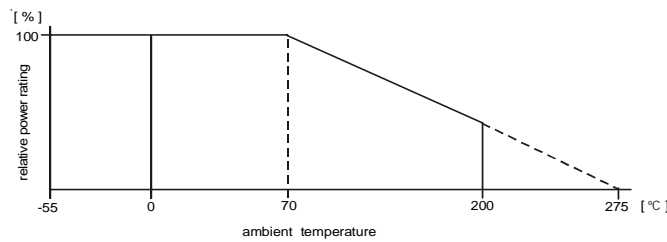
≥ 0R01	≤ 0R024	400 ± 50 ppm/K
≥ 0R027	≤ 0R091	appr. +180 ppm/K
≥ 0R1	≤ 15R	0 ± 20 ppm/K
≥ 16R	≤ 220R	0 ± 10 ppm/K

Diagram (RWN 5020):

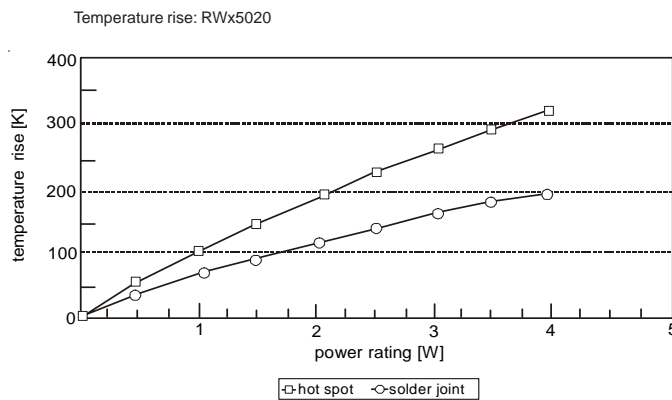


Temperature range -55 +200°C

Derating:



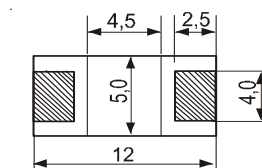
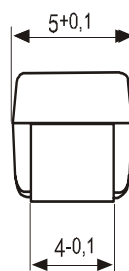
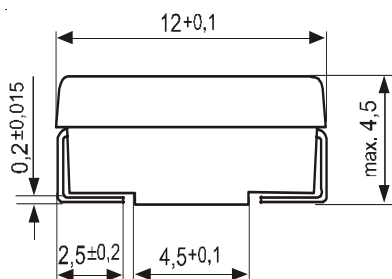
Temperature rise:



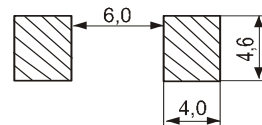
Part mounted on FR 4, pads as recommended, copper layer 35 μm

recommended solder pads:

Dimensions:



Bottom view



Solder pads

Marking:

Resistor: printed in clear: Type - Value - Tolerance

Packaging

additional Batch-No. - Production date

Packaging:

blister tape 24 mm antistatic / 1500 pcs. on reel 330 mm Ø

Ordering example:

RWC 5020 F K - 13 1R
 Type tolerance blister tape reel TC reel diameter R-value

SMD Power Metal film resistors

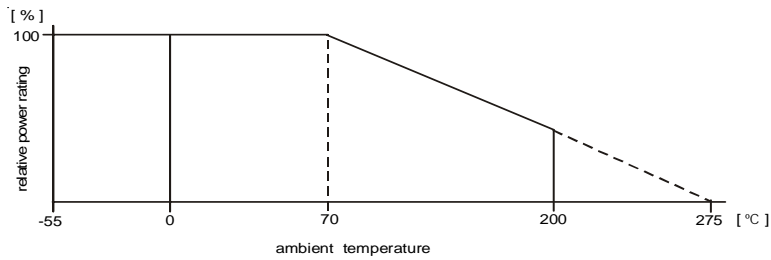


Specifications

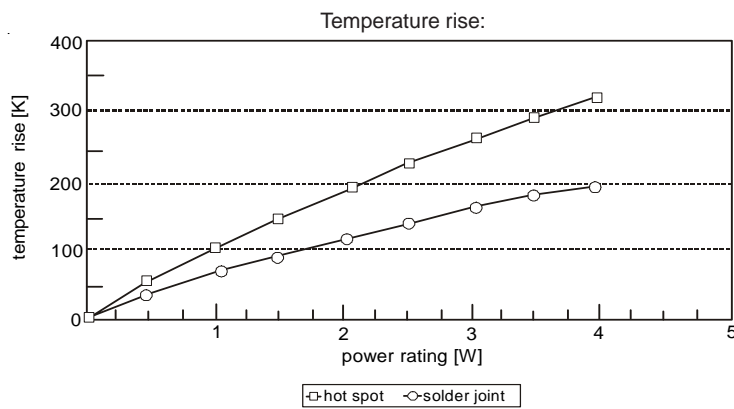
Type	RWP 5020	
Style		5020
Power rating $\vartheta_0 = 200^\circ\text{C}$	W	P_{25} 2,2 P_{40} 2,0 P_{70} 1,6 higher power depends on mounting technology
Tolerance	%	1 5
Resistance range	Ω	10R ... 1M 1R0 ... 1M
Temperature coefficient	ppm K ⁻¹	± 50 ± 200
E-Series		E 96 E 12 preferred
max. cont. work. voltage	V_{RMS}	500
Thermal resistance	K/W	90 ¹⁾
Insulation voltage (1 min.)	V_{RMS}	1000
Insulation resistance		> 1000M Ω (dry)
Climatic category		55/175/56
Temperature range	$^\circ\text{C}$	-55 ... 175
Endurance (P_{70} , 70 $^\circ\text{C}$, 1000h, intermed.)	$\left[\frac{\Delta R}{R}\right]$ %	$\leq 1,5$
Damp heat, steady state	$\left[\frac{\Delta R}{R}\right]$ %	$\leq 1,5$
Resistance to soldering heat	$\left[\frac{\Delta R}{R}\right]$ %	$\leq 0,25$
Short time overload (5 * P_{70} /2sec)	$\left[\frac{\Delta R}{R}\right]$ %	$\leq 1\%$
Temperature shock		$\leq 0,25$
Board-bending-test		no interruption
Solderability		suitable for wave and reflow soldering in acc. with CECC 0082

¹⁾ Thermal data according to DIN 44050 with solder pads as on next page.

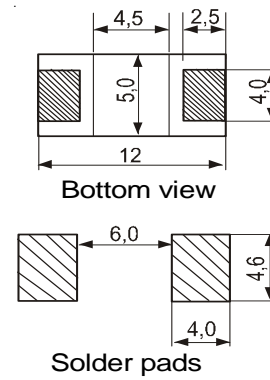
Derating:



Temperature rise:

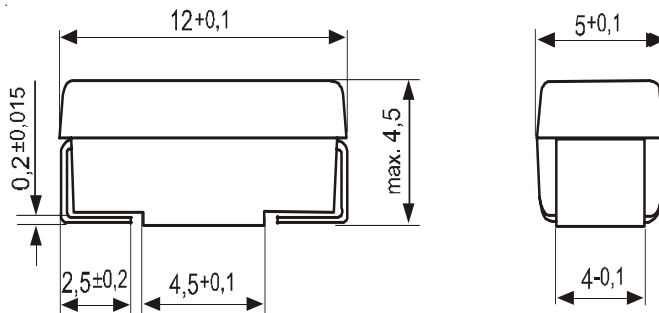


Recommended solder pads:



Part mounted on FR 4, pads as recommended, copper layer 35 μm

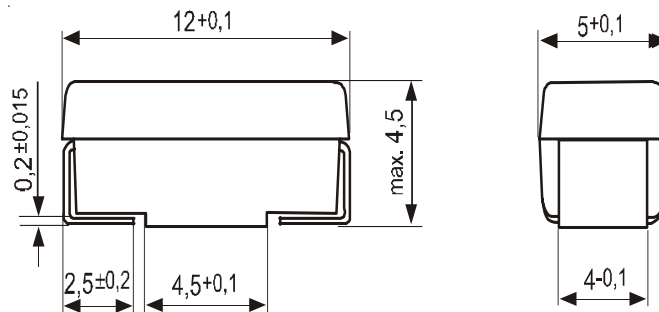
Dimensions in mm:



Marking: Resistor: Printed in clear: Type - Value - Tolerance
Package additional Batch-Nr. - Production date

Packaging: Blistertape 24 mm antistatic / 1.500 pcs on reel 330 mm Ø

Ordering example: RWP 5020 F K - 13 10K
Type Tolerance blister tape reel TC reel diameter R-value

Low-Power, moulded type, RWN family:

If power rating is not the main concern, i.e. current ranges below 5A, a current sensing device in a standard resistor package may be suitable.

VITROHM offers a SMD-version (RWN), that was designed for automatic PCB-assembly with in blister-tape.

The power rating for this type is limited by the max. temperature of the moulding material. Overheating may cause carbonizing of the plastic, short circuit may occur.

This limits also the pulse handling capacity.

50A can be carried by the internal contacts, but energy must not exceed 625 mWs.