

MPN4020S Series

Metal Alloy Wire Wound SMD Power Inductors

FEATURES

- Fe base metal material core provides large saturation current
- Metallization on ferrite core results in excellent shock resistance and damage-free durability
- Closed magnetic circuit design reduces leakage flux and Electro Magnetic Interference (EMI)
- Low DCR decreases power loss, small and slim take up less PCB real estate
- Automatic production ensures high quality and consistency
- Operate temperature range $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$ (Including self temp. rise)
- RoHS compliant



APPLICATIONS

- Smart phone, set top box, VR, AR
- Notebooks, desktop computers, servers
- Portable gaming devices, personal navigation systems, personal multimedia devices

Explanation of Part Number

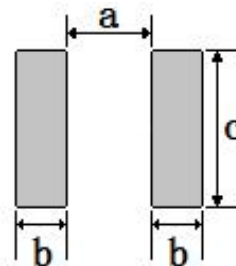
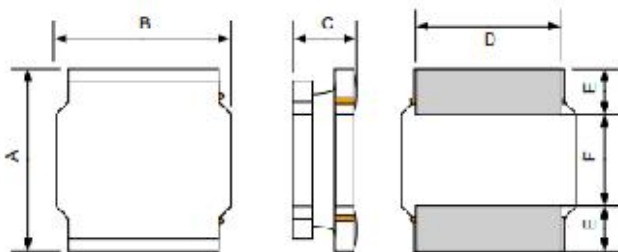
MPN 4020 S 1R0 M T

1 2 3 4 5 6

- ◆ 1:Product Series:Metal Alloy Wire Wound SMD Power Inductors
- ◆ 2:Dimensions:
- ◆ 3: Feature Type:Standard
- ◆ 4: Initial inductance value: 1R0 = 1.0uH
- ◆ 5: Tolerance of Inductance:M:±20%, N:±30%
- ◆ 6:Packing:Tape Carrier Package

SHAPE AND DIMENSIONS [mm]

Recommended Land Pattern



Series	A	B	C	D	E	F	a Typ.	b Typ.	c Typ.
MPN4020S	4.0±0.2	4.0±0.2	2.0 Max.	3.3±0.2	0.95±0.2	2.1±0.2	1.9	1.1	3.7

Electrical Characteristics List

Part Number	Inductance	DC Resistance		Isat(A)		Irms(A)	
	1MHz/0.1V	Max.	Typ.	Max.	Typ.	Max.	Typ.
Units	(μ H)	Ω	Ω	A	A	A	A
MPN4020SR47NT	0.47 $\pm$ 30%	0.032	0.021	10.00	12.00	6.40	7.50
MPN4020SR68NT	0.68 $\pm$ 30%	0.034	0.026	8.00	9.00	4.30	5.00
MPN4020S1R0NT	1.0 $\pm$ 30%	0.039	0.032	7.70	7.70	4.00	4.50
MPN4020S1R5NT	1.5 $\pm$ 30%	0.049	0.039	7.00	7.30	3.50	3.70
MPN4020S2R2MT	2.2 $\pm$ 20%	0.093	0.073	6.50	7.00	3.00	3.50
MPN4020S3R3MT	3.3 $\pm$ 20%	0.117	0.093	5.00	5.50	2.50	3.20
MPN4020S4R7MT	4.7 $\pm$ 20%	0.153	0.123	4.50	4.70	2.20	2.50
MPN4020S6R8MT	6.8 $\pm$ 20%	0.205	0.169	3.50	4.20	2.00	2.40
MPN4020S100MT	10.0 $\pm$ 20%	0.216	0.190	2.80	3.50	2.00	2.35
MPN4020S150MT	15.0 $\pm$ 20%	0.460	0.364	2.70	3.30	1.30	1.70
MPN4020S220MT	22.0 $\pm$ 20%	0.600	0.505	2.10	2.50	1.20	1.50

※1: All test data is referenced to 20°C ambient;

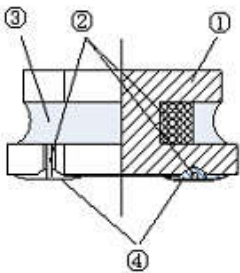
※2: Rated current: Isat or Irms, whichever is smaller;

※3: For MPN4020 size inductors, absolute maximum voltage: DC 25V;

※Isat: DC current at which the inductance drops approximate 30% from its value without current;

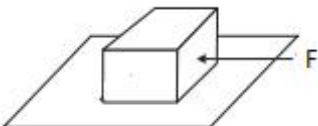
※Irms: DC current that causes the temperature rise ($\Delta T = 40^\circ\text{C}$) from 20°C ambient.

Structure

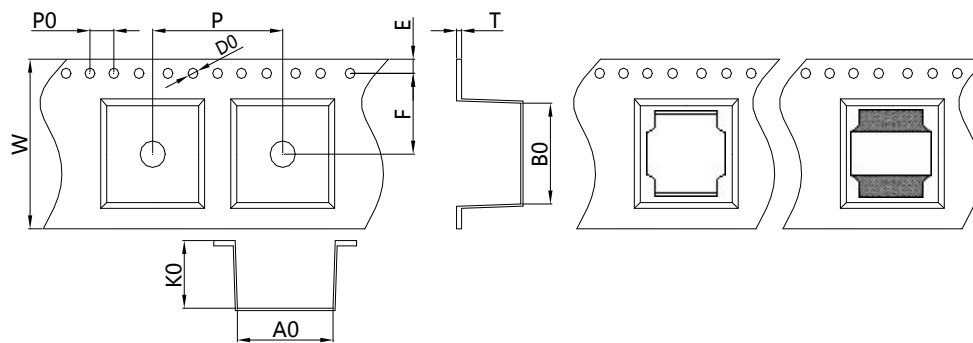


NO.	Components	Material
①	Core	Soft magnetic Metal
②	Wire	Polyurethane system enameled copper wire
③	Magnetic Glue	Epoxy resin and magnetic powder
④	Electrodes	AgNiSn or FeNiCu + Sn Alloy

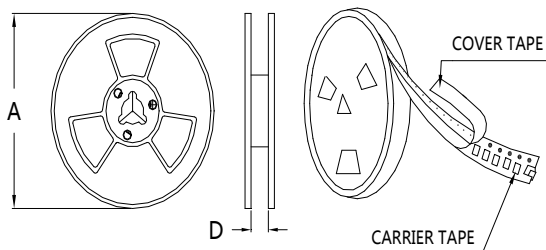
Reliability Test

No.	TEST ITEM	SPECIFICATION	TEST CONDITION
1	High temperature Storage test	1. No significant defects in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta DCR/DCR \leq 10\%$	Temperature: $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (N: Follow the product specification for the setting.) Time : 96 ± 2 hours Place the samples for one hour at room temperature and test them within two hours
2	Low temperature Storage test	1. No significant defects in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta DCR/DCR \leq 10\%$	Temperature: $-40^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (M: Follow the product specification for the setting) Time : 96 ± 2 hours Place the samples for one hour at room temperature and test them within two hours.
3	Humidity test	1. No significant defects in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta DCR/DCR \leq 10\%$	Temperature: $40 \pm 2^{\circ}\text{C}$, Humidity: $93 \pm 3\% \text{RH}$ Time : 96 ± 2 hours Place the samples for one hour at room temperature and test them within two hours
4	Solderability test	Terminals must have 95% minimum solder coverage	1. Dip pads in flux then dip in solder pot at $245 \pm 5^{\circ}\text{C}$ for 5 second. 2. Solder: lead free 3. Flux: rosin flux
5	Heat endurance of flow soldering	1. No significant defects in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta DCR/DCR \leq 10\%$	1. Refer to the above reflow curve and go through the reflow for twice. 2. The peak temperature : $260 + 0/-5^{\circ}\text{C}$
6	Vibration test	1. No significant defects in appearance. 2. No short and no open.	Apply frequency 10~55~10Hz and amplitude 1.5mm, 1 min/cycle in X Y and Z direction for 2 hours each. (total 6 hours)
7	Terminal strength push test	1. Applied force: 10N Duration: 10sec 2. Solder paste thickness: 0.12mm 3. Meet the above requirements without any loose termina	Solder the test samples to the PCB through 245°C reflow, apply a standard force on the side of the test samples for 10 seconds. 

PACKAGING SPECIFICATION :



Size	Item	W	A0	B0	K0	P	T	E	F	D0	P0
4020	(mm)	12.0±0.3	4.4±0.2	4.4±0.2	2.1±0.2	8.0±0.3	0.3±0.1	1.75±0.1	5.5±0.2	1.5±0.1	4.0±0.2



	13"
A	Φ330±2.0
D	12.5

Packing Quantity:3000pcs/Reel

Re-flowing Profile:

