■ HA

HA Series SMD Power Inductor

Operation Temperature

-40 125

Feature

* Super saturation current
* Magnetic shielding structure
* Suitable for surface mounting

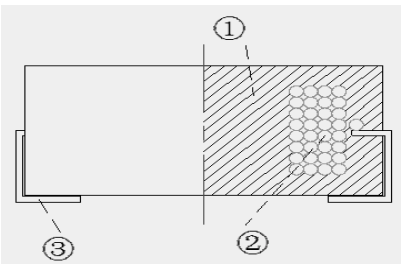
Application

* Portable communication equipment, Notebook
* DC/DC
  DC/DC conversion
* DC switching power supply circuit

Part Number

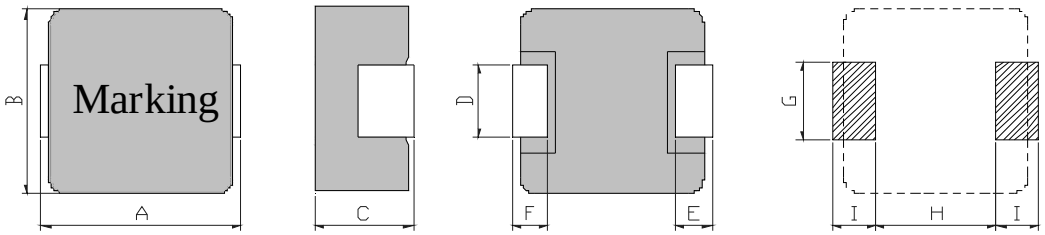
HA	0630	R10	M	T	A	00
Product Code	(×) Dimension (Length × Thickness)	Inductance	Tolerance	Packaging code	Material code	Standard code
HA	0420 4.9×2.0mm 0630 7.6×3.2mm 1250 14.5×5.2mm	R10 0.1 uH 1R0 1.0 uH 100 10 uH 101 100 uH	M ±20% N ±30%	T Tape & Reel	A Alloy powder H Carbonyl iron powder	00 Standard products 01~09 Customized products

Product Structure



No.	Component	Material
	Core	Metallic materials
	Winding	Enamelled wire H class
	Base	Phosphor bronze

Dimension



RECOMMENDED
LAND PATTERNS

(Unit) mm

Part	A	B	C	D	E	F	G (Typ.)	H (Typ.)	I (Typ.)
0420	4.90MAX	4.40MAX	2.0MAX	1.5±0.3	1.0±0.3	1.0±0.3	2.5	1.75	1.5
0520	5.90MAX	5.30MAX	2.2MAX	2.0±0.3	1.2±0.3	1.2±0.3	2.5	2.0	1.9
0530	5.90MAX	5.30MAX	3.2MAX	2.0±0.3	1.2±0.3	1.2±0.3	2.5	2.0	1.9
0630	7.6MAX	7.0MAX	3.2MAX	3.0±0.3	1.6±0.3	1.6±0.3	3.5	3.6	2.4
0650	7.6MAX	7.0MAX	5.2MAX	3.0±0.3	1.6±0.3	1.6±0.3	3.5	3.6	2.4
1040	11.5MAX	10.5MAX	4.2MAX	3.0±0.5	2.0±0.5	2.0±0.5	4.0	5.5	3.5
1050	11.5MAX	10.5MAX	5.2MAX	3.0±0.5	2.0±0.5	2.0±0.5	4.0	5.5	3.5
1250	14.5MAX	13.5MAX	5.2MAX	3.5±0.5	2.5±0.5	2.5±0.5	5.0	8.0	3.25
1265	14.5MAX	13.5MAX	6.5MAX	3.5±0.5	2.5±0.5	2.5±0.5	5.0	8.0	3.25
1770	18.5MAX	17.5MAX	7.0MAX	11.8±0.3	3.3±0.5	3.3±0.5	13.0	11.2	4.15

Electrical Characteristics

* HA0420 Type

Part No.	Inductance (μH)	Tolerance	Test Freq.	Direct Current Resistance DCR(m) Max	

* HA0520 Type

Part No.	Inductance (μH)	Tolerance	Test Freq.	Direct Current Resistance DCR(m) Max	Isat Saturation Current (A)	Irms Temperature Rise Current (A)
HA0520-1R0MTA00	1.00	± 20%	100KHz	20.0	7.50	7.00
HA0520-1R5MTA00	1.50	± 20%	100KHz	28.0	6.30	4.50
HA0520-2R2MTA00	2.20	± 20%	100KHz	45.0	5.40	3.60
HA0520-3R3MTA00	3.30	± 20%	100KHz	80.0	4.50	3.15
HA0520-4R7MTA00	4.70	± 20%	100KHz	90.0	3.15	2.70
HA0520-100MTA00	10.00	± 20%	100KHz	190.0	2.60	1.98

* HA0530 Type

Part No.	Inductance (μH)	Tolerance	Test Freq.	Direct Current Resistance DCR(m) Max	Isat Saturation Current (A)	Irms Temperature Rise Current (A)
HA0530-R68MTA00	0.68	± 20%	100KHz	12.0	11.00	9.00
HA0530-1R0MTA00	1.00	± 20%	100KHz	16.0	10.00	7.00
HA0530-1R5MTA00	1.50	± 20%	100KHz	22.0	9.00	5.00
HA0530-2R2MTA00	2.20	± 20%	100KHz	35.0	7.50	4.50
HA0530-3R3MTA00	3.30	± 20%	100KHz	38.0	7.00	4.00
HA0530-4R7MTA00	4.70	± 20%	100KHz	60.0	5.00	3.00
HA0530-6R8MTA00	6.80	± 20%	100KHz	90.0	3.20	2.30
HA0530-100MTA00	10.00	± 20%	100KHz	133.0	2.50	1.80
HA0530-150MTA00	15.00	± 20%	100KHz	190.0	2.30	1.50
HA0530-220MTA00	22.00	± 20%	100KHz	250.0	1.35	1.08

* HA0630 Type

Part No.	Inductance (μH)	Tolerance	Test Freq.	Direct Current Resistance DCR(m) Max	Isat Saturation Current (A)	Irms Temperature Rise Current (A)
HA0630-R33MTA00	0.33	± 20%	100KHz	4.0	25.00	21.00
HA0630-R47MTA00	0.47	± 20%	100KHz	5.3	20.00	15.00
HA0630-R68MTA00	0.68	± 20%	100KHz	6.0	17.00	14.00
HA0630-1R0MTA00	1.00	± 20%	100KHz	10.0	18.00	7.00
HA0630-1R5MTA00	1.50	± 20%	100KHz	15.0	13.00	7.50
HA0630-2R2MTA00	2.20	± 20%	100KHz	20.0	10.80	7.50
HA0630-3R3MTA00	3.30	± 20%	100KHz	30.0	10.00	6.00
HA0630-4R7MTA00	4.70	± 20%	100KHz	40.0	8.10	4.50
HA0630-5R6MTA00	5.60	± 20%	100KHz	45.0	7.00	4.20
HA0630-6R8MTA00	6.80	± 20%	100KHz	60.0	6.00	4.00
HA0630-8R2MTA00	8.20	± 20%	100KHz	70.0	5.40	3.60
HA0630-100MTA00	10.00	± 20%	100KHz	68.0	5.00	3.20
HA0630-150MTA00	15.00	± 20%	100KHz	130.0	4.00	3.00
HA0630-220MTA00	22.00	± 20%	100KHz	200.0	3.00	2.00
HA0630-330MTA00	33.00	± 20%	100KHz	240.0	2.50	2.00
HA0630-470MTA00	47.00	± 20%	100KHz	390.0	2.00	1.00

* HA1050 Type

Part No.	Inductance (μH)	Tolerance	Test Freq.	Direct Current Resistance DCR(m) Max	Isat Saturation Current (A)	Irms Temperature Rise Current (A)
HA1050-1R0MTH00	1.00	± 20%	100KHz	4.0	27.00	15.00
HA1050-1R5MTH00	1.50	± 20%	100KHz	6.0	22.00	14.00
HA1050-2R2MTH00	2.20	± 20%	100KHz	8.5	21.50	12.00
HA1050-3R3MTH00	3.30	± 20%	100KHz	11.0	18.60	10.00
HA1050-4R7MTH00	4.70	± 20%	100KHz	17.0	14.00	9.00
HA1050-5R6MTH00	5.60	± 20%	100KHz	20.0	13.50	9.00
HA1050-6R8MTH00	6.80	± 20%	100KHz	25.0	12.60	9.00
HA1050-8R2MTH00	8.20	± 20%	100KHz	30.0	12.50	7.00
HA1050-100MTH00	10.00	± 20%	100KHz	38.0	10.00	6.00
HA1050-150MTH00	15.00	± 20%	100KHz	50.0	9.00	5.00
HA1050-220MTH00	22.00	± 20%	100KHz	60.0	7.00	4.50
HA1050-330MTH00	33.00	± 20%	100KHz	105.0	6.00	3.50
HA1050-470MTH00	47.00	± 20%	100KHz	145.0	4.00	3.00
HA1050-680MTH00	68.00	± 20%	100KHz	250.0	3.15	2.70
HA1050-820MTH00	82.00	± 20%	100KHz	300.0	3.00	2.00
HA1050-101MTH00	100.00	± 20%	100KHz	320.0	2.30	1.00

* HA1250 Type

Part No.	Inductance (μH)	Tolerance	Test Freq.	Direct Current Resistance DCR(m) Max	Isat Saturation Current (A)	Irms Temperature Rise Current (A)
HA1250-R68MTH00	0.68	± 20%	100KHz	2.3	41.00	20.00
HA1250-R82MTH00	0.82	± 20%	100KHz	3.0	39.00	19.00
HA1250-1R0MTH00	1.00	± 20%	100KHz	4.0	36.00	18.00
HA1250-1R5MTH00	1.50	± 20%	100KHz	4.1	27.00	18.00
HA1250-2R2MTH00	2.20	± 20%	100KHz	4.5	25.00	16.00
HA1250-3R3MTH00	3.30	± 20%	100KHz	10.0	23.00	15.00
HA1250-4R7MTH00	4.70	± 20%	100KHz	15.0	22.00	12.00
HA1250-6R8MTH00	6.80	± 20%	100KHz	20.0	19.00	11.00
HA1250-8R2MTH00	8.20	± 20%	100KHz	24.0	18.00	10.00
HA1250-100MTH00	10.00	± 20%	100KHz	26.0	14.00	6.00
HA1250-150MTH00	15.00	± 20%	100KHz	35.0	12.00	6.00
HA1250-220MTH00	22.00	± 20%	100KHz	55.0	8.00	4.00
HA1250-330MTH00	33.00	± 20%	100KHz	80.0	6.00	3.00
HA1250-470MTH00	47.00	± 20%	100KHz	110.0	5.00	2.50
HA1250-560MTH00	56.00	± 20%	100KHz	180.0	3.50	2.00
HA1250-680MTH00	68.00	± 20%	100KHz	210.0	3.50	1.50

* HA1265 Type

Part No.	Inductance (μH)	Tolerance	Test Freq.	Direct Current Resistance DCR(m) Max	Isat Saturation Current (A)	Irms Temperature Rise Current (A)
HA1265-1R0MTH00	1.0	± 20%	100KHz	3.0	49.00	25.00
HA1265-1R5MTH00	1.5	± 20%	100KHz	4.0	45.00	22.00
HA1265-2R2MTH00	2.2	± 20%	100KHz	4.5	40.00	18.00
HA1265-3R3MTH00	3.3	± 20%	100KHz	8.5	25.20	15.50
HA1265-4R7MTH00	4.7	± 20%	100KHz	14.0	22.50	14.00
HA1265-5R6MTH00	5.6	± 20%	100KHz	15.0	20.00	12.00
HA1265-6R8MTH00	6.8	± 20%	100KHz	18.0	18.00	12.00
HA1265-8R2MTH00	8.2	± 20%	100KHz	25.0	16.00	10.00
HA1265-100MTH00	10.0	± 20%	100KHz	25.0	15.00	10.00
HA1265-220MTH00	22.0	± 20%	100KHz	48.0	12.00	7.00
HA1265-330MTH00	33.0	± 20%	100KHz	66.0	6.50	4.00
HA1265-470MTH00	47.0	± 20%	100KHz	90.0	5.00	3.50
HA1265-560MTH00	56.0	± 20%	100KHz	110.0	4.00	3.00
HA1265-680MTH00	68.0	± 20%	100KHz	123.0	3.00	2.50
HA1265-101MTH00	100.0	± 20%	100KHz	180.0	3.00	2.50
HA1265-121MTH00	120.0	± 20%	100KHz	250.0	2.80	2.00
HA1265-151MTH00	150.0	± 20%	100KHz	280.0	2.50	1.60

* HA1770 Type

Part No.	Inductance (μH)	Tolerance	Test Freq.	Direct Current Resistance DCR(m) Max

1V

Remarks: The test voltage is 1V.

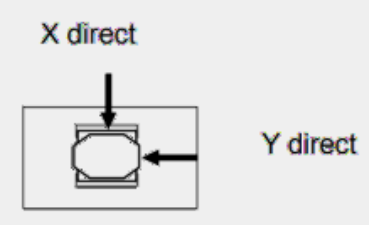
Isat 30% 1

The DC current at which the inductance drops 30% from its value without current, load current time within 1s.

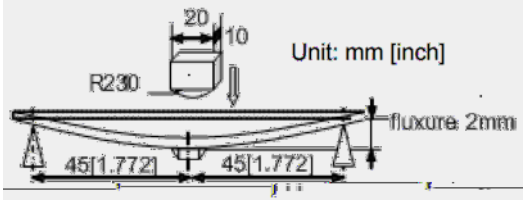
Irms 40

The DC current that increases the surface temperature of the inductor by 40 .

Reliability Test Method

No.	Items	Requirements	Test Methods and Remarks
1	Insulation Resistance	≥1MΩ	30 V 5s 30 V DC between inductor coil and core for 5 seconds.
2	Solderability	95% 95% or more of electrode area shall be coated by new solder.	245±5 96.5Sn/3.0Ag/0.5Cu 5±1s Dip pads in flux and dip in solder pot (96.5Sn/3.0Ag/0.5Cu) at 245±5 for (5±1) seconds.
3	Resistance to Soldering Heat	±10% No visible mechanical damage. Inductance change: Within ±10%	260±5 96.5Sn/3.0Ag/0.5Cu 10±1s Dip pads in flux and dip in solder pot (96.5Sn/3.0Ag/0.5Cu) at 260±5 for (10±1) seconds.
4	Terminal Strength	No looseness of shedding of terminals.	10N 10±1s The inductor is welded to the test plate with solder, and then applied 10 N force in the direction of arrow and kept for 10 ± 1s. 
5	High Temperature	± 10% No visible mechanical damage. Inductance change: Within ±10%	+125 ± 2 , 1000$^{+24}_{0}$h 2 48 Temperature 125±2 , time 1000$^{+24}_{0}$h,test within 48 hours after 2 hours of placement at room temperature.
6	Low Temperature	± 10% No visible mechanical damage. Inductance change: Within ±10%	-40 ± 2 1000$^{+24}_{0}$h 2 48 Temperature -40 ± 2 , time 1000$^{+24}_{0}$h, test within 48 hours after 2 hours of placement at room temperature.
7	Thermal Shock	±10% No visible mechanical damage. Inductance change: Within ±10%	(-40±3 , (30±3) min (125±2) /(30±3) min (2~3) min, 32 2 48 The test sample shall be placed at (-40±3) and (125±2) for (30±3) min, different temperature conversion time is 2~3 minutes. The temperature cycle shall be repeated 32 cycles. Test within 48 hours after 2 hours of placement at room temperature.
8	Temperature Characteristic	$P_{c\text{-}b}$,$P_{c\text{-}d}$ ±20% Inductance change $P_{c\text{-}b}$,$P_{c\text{-}d}$: Within ±20%	40 125 20 Based on the inductance at 20 and Measured at the ambient of 40 125 .
9	Constant Damp Heat	±10% No visible mechanical damage. Inductance change: Within ±10%	(90~95)%RH, 60±2 1000$^{+24}_{0}$H 2 48 The inductors were stored for 1000 + 240 h at humidity (90~95)%RH, temperature 60±2 , and tested within 48h after 2H at room temperature.

Continue the above table

No.	Items	Requirements	Test Methods and Remarks
10	Vibration	±10% No visible mechanical damage. Inductance change: Within ±10%	10Hz 55Hz 1.5mm ≤ 196m/s^2 1min 10Hz 55Hz 10Hz X/Y/Z 2H 6H The inductor is welded to the test plate with solder and the test plate is fixed to the vibration test fixture so that it is rigidly connected with the vibration table. The test shall be conducted according to the following conditions: Vibration frequency range: 10Hz~55Hz Amplitude: 1.5mm (Acceleration ≤ 196m/s^2) One cycle time: 1min (10Hz 55Hz 10Hz) Vibration time: 2 hours for X/Y/Z axis (Total of 6 hours)
11	Resistance to Flexure	No visible mechanical damage.	2mm 0.5mm/s 30±1s 1.0mm The inductor is welded to the test plate with solder, and then apply a vertical force (as shown in the figure). The test shall be conducted according to the following conditions: Curvature: 2mm Pressurization speed: 0.5mm/s Holding time: 30 ± 1s Thickness of test plate: 1.0mm 
12	High-temperature Load (Life-span)	±10% No visible mechanical damage. Inductance change: Within ±10%	85 ±2 1000^{+24}_{0}h, 2 48 Temperature 85 ± 2 , Time 1000^{+24}_{0}h apply a rated current, test within 48 hours after 2 hours of placement at room temperature. 125 125 Note: If the surface temperature of the part over 125 when the current is loaded, the current need to reduce until the surface temperature of the part less than 125 .

Packaging

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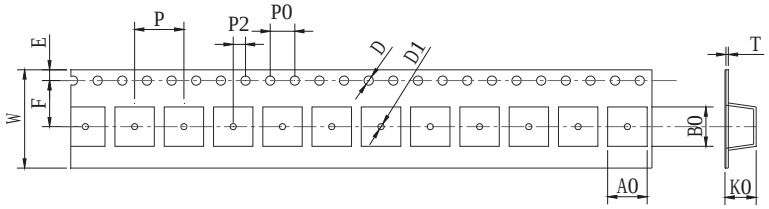
Tape Dimension



(Unit) mm

Part	W	A0	B0	D	D1	E	F	K0	P0	P2	P	T
0420	12±0.5	4.5±0.3	5.1±0.3	1.5±0.3	1.5±0.3	1.75±0.3	5.5±0.3	2.3±0.3	4.0±0.3	2.0±0.3	8.0±0.3	0.35±0.1
0520	12±0.5	5.3±0.3	5.4±0.3	1.5±0.3	1.5±0.3	1.75±0.3	5.5±0.3	2.2±0.3	4.0±0.3	2.0±0.3	8.0±0.3	0.30±0.1
0530	12±0.5	5.3±0.3	5.4±0.3	1.5±0.3	1.5±0.3	1.75±0.3	5.5±0.3	2.2±0.3	4.0±0.3	2.0±0.3	8.0±0.3	0.30±0.1
0630	16±0.5	7.0±0.3	7.0±0.3	1.5±0.3	1.5±0.3	1.75±0.3	7.5±0.3	3.3±0.2	4.0±0.3	2.0±0.3	12±0.2	0.35±0.1
0650	16±0.5	6.6±0.3	7.6±0.3	1.5±0.3	1.5±0.3	1.75±0.3	7.5±0.3	5.2±0.3	4.0±0.3	2.0±0.3	12±0.2	0.35±0.1
1040	24±0.5	10.5±0.3	11.4±0.3	1.5±0.3	1.5±0.3	1.75±0.3	11.5±0.3	4.1±0.3	4.0±0.3	2.0±0.3	16±0.3	0.35±0.1
1050	24±0.5	10.5±0.3	11.4±0.3	1.5±0.3	1.5±0.3	1.75±0.3	11.5±0.3	5.1±0.3	4.0±0.3	2.0±0.3	16±0.3	0.35±0.1
1250	24±0.5	13.0±0.3	15±0.3	1.5±0.3	1.5±0.3	1.75±0.3	11.5±0.3	5.6±0.3	4.0±0.3	2.0±0.3	16±0.3	0.40±0.1
1265	24±0.5	13.0±0.3	13±0.3	1.5±0.3	1.5±0.3	1.75±0.3	11.5±0.3	6.8±0.3	4.0±0.3	2.0±0.3	16±0.3	0.40±0.1
1770	32±0.5	17.5±0.3	18.3±0.3	1.5±0.3	---	1.75±0.3	14.2±0.3	7.7±0.3	4.0±0.3	2.0±0.3	24±0.3	0.50±0.1

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Reel Size & Direction Of Feed

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Packing quantity

Part	Reel (PCS)	Box (PCS)	Carton (PCS)
0420	3,000	15,000	45,000
0520	2,000	10,000	20,000
0530	2,000	10,000	20,000
0630	1,500	6,000	12,000
0650	1,000	4,000	8,000
1040	750	2,250	4,500
1050	750	2,250	4,500
1250	500	1,500	3,000
1265	400	1,200	2,400
1770	300	600	1800

Recommended soldering profile

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Applicable soldering process to the products is reflow soldering.

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Sn-3.0Ag-0.5Cu

Solder: Sn-3.0Ag-0.5Cu

0.2wt%

Flux: Use rosin-based flux, but not strongly acidic flux (with chlorine exceeding 0.2 wt%). Do not use water-soluble flux.

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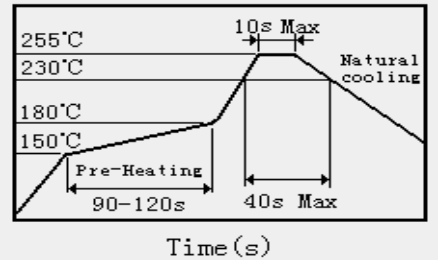
Soldering Profile



Storage Requirements

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Storage Period: In order to ensure that the welding characteristics and packaging materials of the inductor are in good