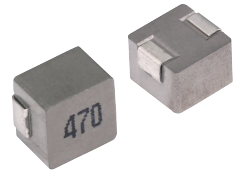


FEATURES

- Powder iron core material
- Magnetically shielded, low EMI
- High current carrying capacity, Low core losses
- Frequency range up to 3MHz
- Operate temperature range $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$ (Including self temp. rise)
- RoHS compliant



APPLICATIONS

- Voltage Regulator Module (VRM)
- Multi-phase regulators
- Point-of-load modules
- Smart phone POL modules
- SSD modules
- Notebook regulators
- Battery power systems
- Graphics cards
- Data networking and storage systems

PRODUCT IDENTIFICATION

FSA0412 -1R0 M T

1 2 3 4 5

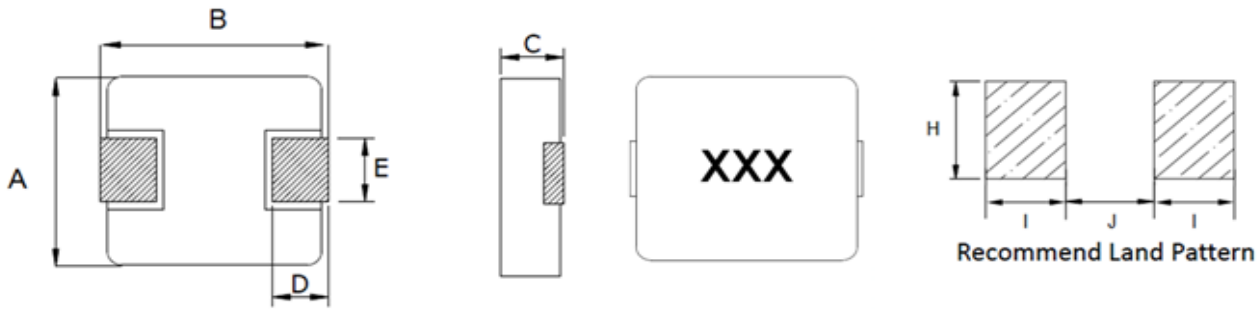
1:Product Series:Metal Alloy Molding Power Inductor

2:Dimensions:

3: Initial inductance value: 1R0 = 1.0uH

4:Tolerance of Inductance:M:±20%

5:Packing:Tape Carrier Package

Dimensions: [mm]

Series	A	B	C	D	E	I Typ.	J Typ.	H Typ.
FSA0412	4.2±0.25	4.4±0.35	1.0±0.2	0.8±0.3	2.0±0.3	1.5	2.2	2.5

Electrical Properties:

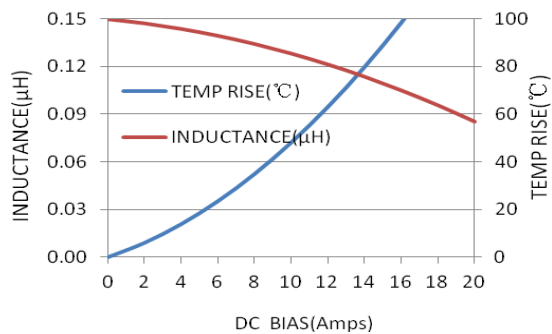
Part Number	Inductance	DC Resistance	Saturation Current		Heat Rating Current	
	@100KHz, 1V	Max.	Max.	Typ.	Max.	Typ.
Units	μH	mΩ	A		A	
Symbol	L	DCR	Isat		Irms	
FSA0412-R15MT	0.15±20%	9	12.0	15.0	6.80	7.50
FSA0412-R22MT	0.22±20%	11	8.80	11.0	6.50	7.00
FSA0412-R33MT	0.33±20%	19	6.70	8.40	5.70	6.50
FSA0412-R47MT	0.47±20%	21	5.40	6.80	5.20	6.00
FSA0412-R68MT	0.68±20%	36	4.80	6.00	4.20	4.70
FSA0412-1R0MT	1.0±20%	47	4.40	5.50	3.80	4.50
FSA0412-1R5MT	1.5±20%	75	3.20	4.00	2.70	3.25
FSA0412-2R2MT	2.2±20%	83.5	2.40	3.00	2.20	2.75
FSA0412-3R3MT	3.3±20%	160	2.38	2.70	1.77	2.00
FSA0412-4R7MT	4.7±20%	195	1.80	2.20	1.45	1.80

Notes

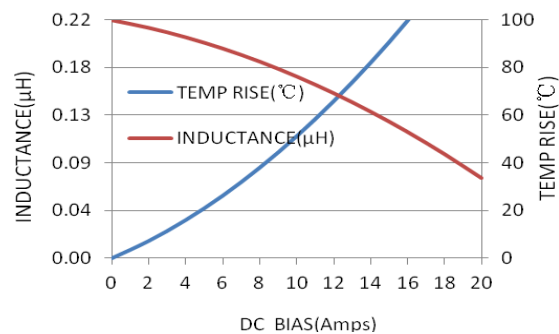
- ※1: All test data is referenced to 20°C ambient;
- ※2: Rated current: Isat or Irms, whichever is smaller;
- ※3: Isat(Typ): DC current at which the inductance drops approximate 30% from its value without current;
- ※4: Isat(Max): DC current at which the inductance drops approximate 20% from its value without current;
- ※5: Irms(Typ): DC current that causes the temperature rise ($\Delta T = 40^{\circ}\text{C}$) from 20°C ambient.
- ※6: Irms(Max): DC current that causes the temperature rise ($\Delta T = 20^{\circ}\text{C}$) from 20°C ambient.
- ※7: Absolute maximum voltage 30VDC

TYPICAL ELECTRICAL CHARACTERISTICS

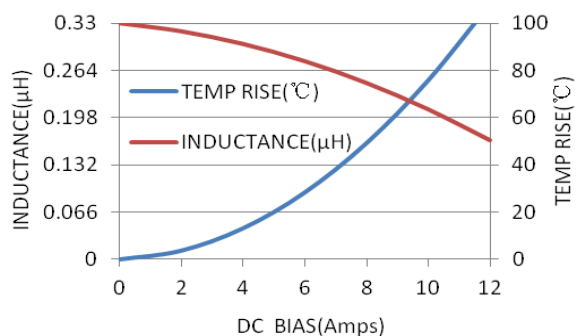
FSA0412-R15MT



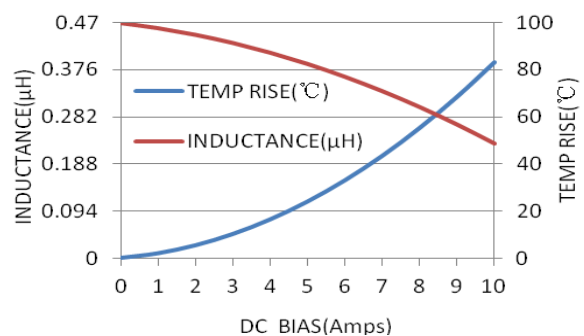
FSA0412-R22MT



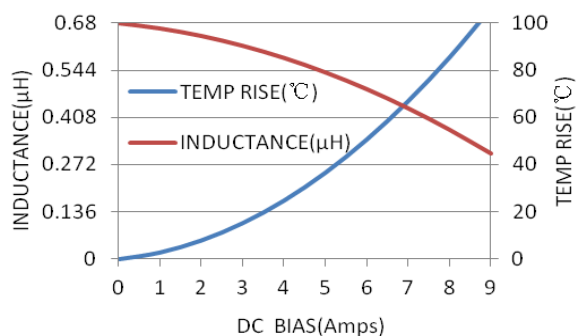
FSA0412-R33MT



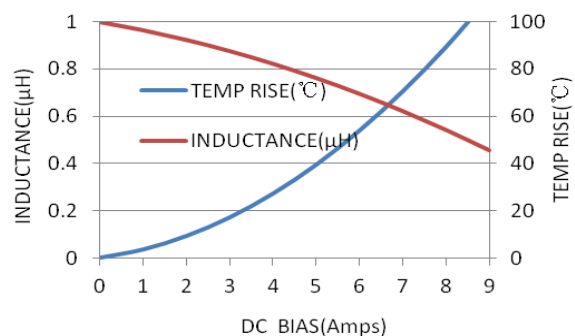
FSA0412-R47MT



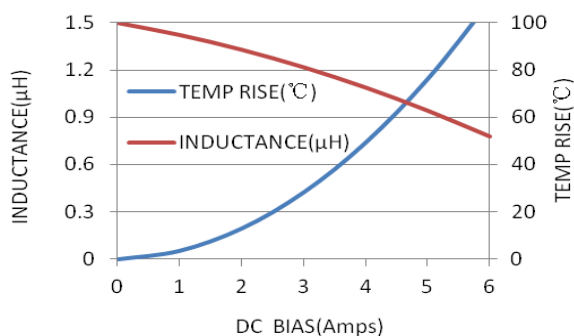
MCMB-0412-R68MT



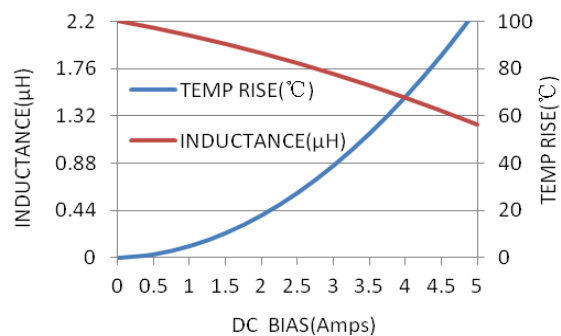
MCMB-0412-1R0MT



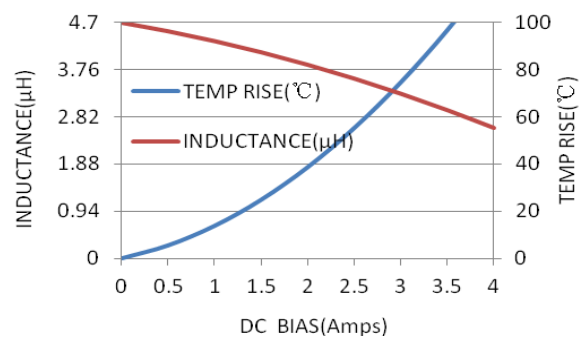
FSA0412-1R5MT



FSA0412-2R2MT



FSA0412-4R7MT



Reliability and Test Condition

Mechanical Reliability		
Item	Specification and Requirement	Test Method
Solderability	The surface of terminal immersed shall be minimum of 95% covered with a new coating of solder	Solder heat proof: 1. Preheating: 160 ± 10 °C 2. Retention time: 245 ± 5 °C for 2 ± 0.5 seconds
Vibration	Inductance change: Within $\pm 10\%$ Without mechanical damage such as break	1. Vibration frequency: (10 Hz to 55 Hz to 10Hz) in 60 seconds as a period 2. Vibration time: Period cycled for 2 hours in each of 3 mutual perpendicular directions. 3. Amplitude: 1.5 mm max.
Shock	Inductance change: Within $\pm 10\%$ Without mechanical damage such as break	1. Peak value: 100 G 2. Duration of pulse: 11ms 3. 3 times in each positive and negative direction of 3 mutual perpendicular directions
Endurance Reliability		
Item	Specification and Requirement	Test Method
Thermal Shock	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	1. Repeat 100 cycles as follow: (-55 ± 2 °C; 30 ± 3 min) → (Room temp., 5 min) → ($+125 \pm 2$ °C, 30 ± 3 min) → (Room temp., 5 min) 2. Recovery: $48 + 4 / -0$ hours of recovery under the standard condition after the test.
High Temperature Resistance	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	1. Environment condition: 85 ± 2 °C Applied Current: Rated current 2. Duration: $1000 + 4 / -0$ hours
Humidity Resistance	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	1. Environment condition: 60 ± 2 °C Humidity: 90–95% Applied Current: Rated current 2. Duration: $1000 + 4 / -0$ hours
Low Temperature Store	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	Store temperature: -55 ± 2 °C, $1000 + 4 / -0$ hours
High Temperature Store	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	Store temperature: $+125 \pm 2$ °C, $1000 + 4 / -0$ hours

Recommended Soldering Technologies

(1) Re-flowing Profile

Preheat condition: 150 ~200°C/60~180sec.

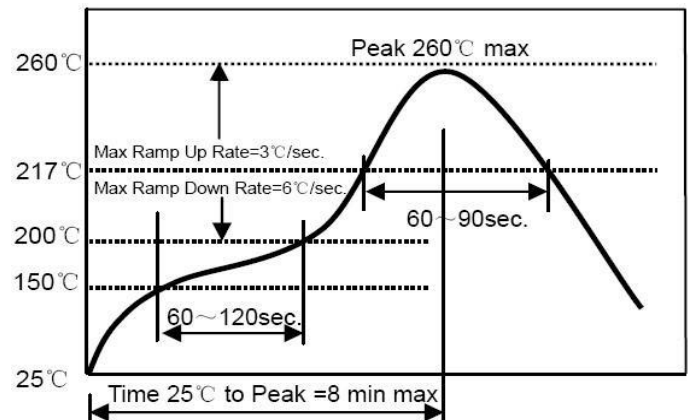
Allowed time above 217°C: 80~120sec.

Max temp: 260°C

Max time at max temp: 10 sec.

Solder paste: Sn/3.0Ag/0.5Cu

Allowed Reflow time: 2x max



(2) Iron Soldering Profile

Iron soldering power: Max.

30W Pre-heating: 150°C/60sec.

Soldering time: 3sec. Max.

Solder paste: Sn/3.0Ag/0.5Cu

Max.1 times for iron soldering

