Molded Power Inductor

SYF4012 Series

Flat Series · 4.0×4.0×1.2 mm



RoHS Compliant · Halogen-Free

Features

- **High rated current with low DCR**
- **Ultra-low profile, only 1.2 mm high**

Core material:	Composite magnetic powder
Environmental:	RoHS compliant, halogen-free
Terminal plating:	Ni-Sn (SN); SAC/SP optional
Anti-corrosion:	Terminal anti-corrosion plating
Operating temperature:	-40°C to +125°C
Max. part temperature:	+165°C (ambient + rise)
Storage temperature:	-55°C to +165°C (part); -55 to +80°C (reel)
Reflow soldering:	Max. 3 cycles, 260°C / 40 s
MSL level:	Level 1, unlimited floor life
Rated voltage:	20V

Electrical Specifications

(Ta = 25°C)

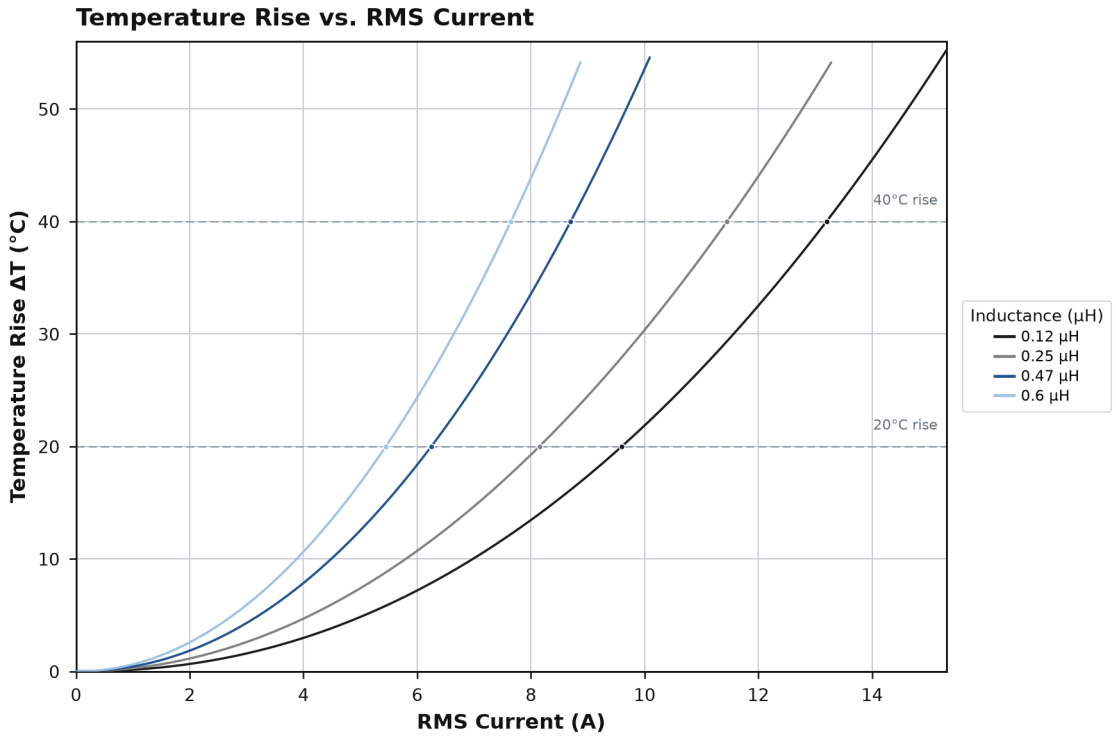
Part Number	Inductance ±20% (μH)	DCR (mΩ) typ/max	SRF typ (MHz)	Isat (A) 10%/20%/30%	Irms (A) 20℃/40℃
SYF4012-121MSN	0.12	5.2 / 5.88	220	6.9 / 9.8 / 11.3	9.6 / 13.2
SYF4012-251MSN	0.25	7.64 / 8.4	150	4.4 / 7.7 / 9.7	8.15 / 11.45
SYF4012-471MSN	0.47	14.07 / 15.48	115	3.2 / 5.5 / 6.7	6.25 / 8.7
SYF4012-601MSN	0.6	17.4 / 19.14	95	2.8 / 5 / 6.5	5.45 / 7.65

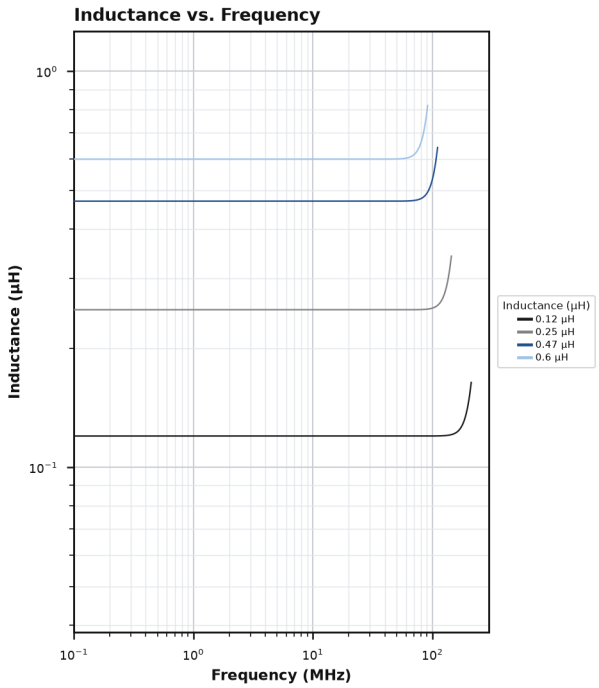
1. Inductance is measured at 1 MHz, 0.1 Vrms, 0 Adc, Ta = 25°C.
2. DCR is measured with a DC milliohm meter.
3. SRF is measured with a high-precision network analyzer.
4. Isat: DC current at which inductance drops by the stated percentage at 25°C; derating is required for high-temperature applications.
5. Irms: DC current causing the stated temperature rise (20°C/40°C). For reference only; verify by measurement in the end application.
6. Termination codes: SN = tin-nickel, SAC = tin-silver-copper; SP = tin-lead (non-RoHS).
7. Packaging: tape and reel, compliant with EIA-481; 7-inch and 13-inch reels available.
8. Electrical data are specified at Ta = 25°C. Specifications are subject to change without notice.

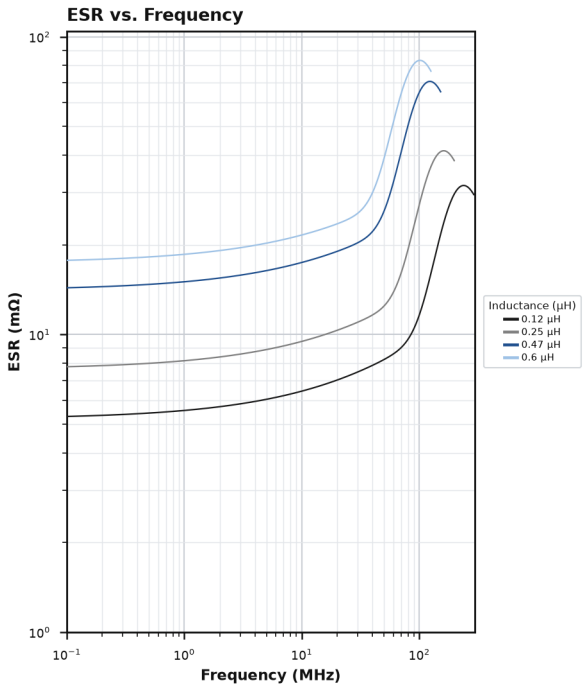
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Specifications subject to change without notice
Please refer to the latest version on our website

Performance Curves

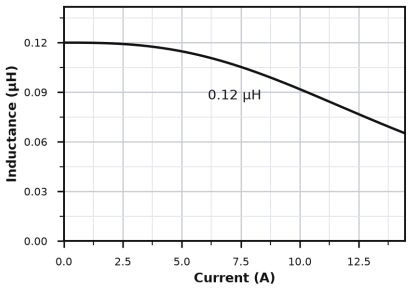


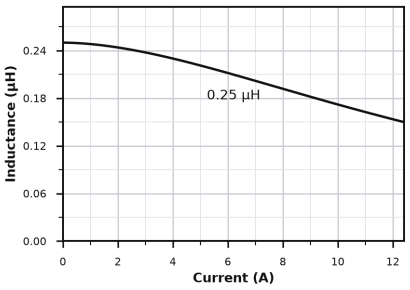


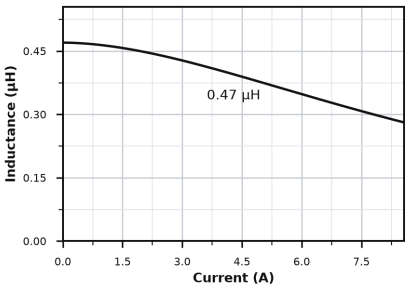


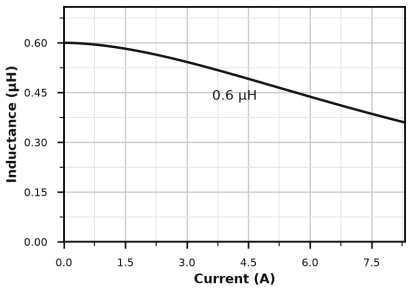
Test Condition: Ta=25℃, JEDEC standard PCB, natural convection. Curves derived from typical specifications for reference only.

Inductance vs DC Current



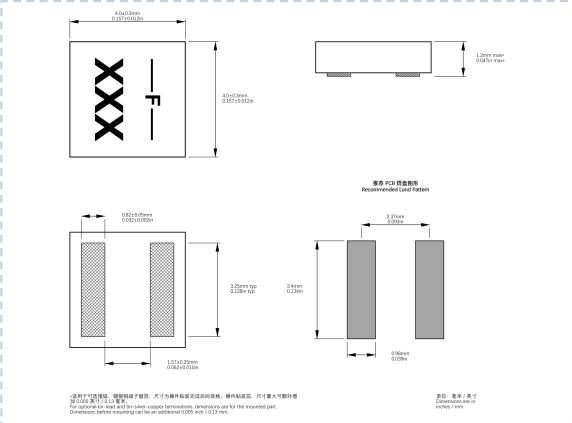






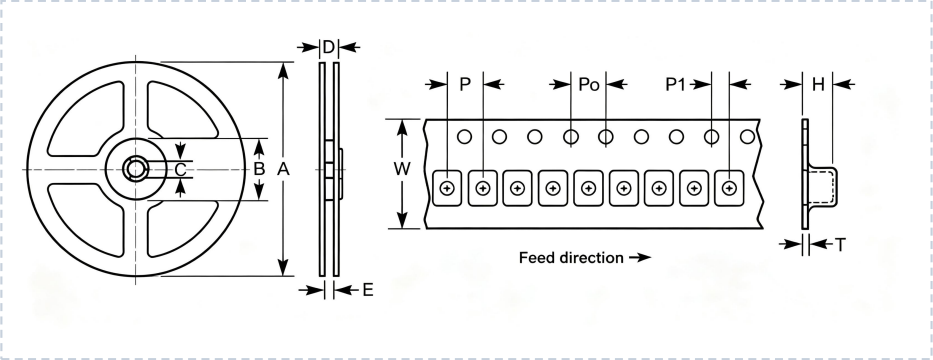
Note: Curves are plotted from Isat test points; actual performance shall be verified on the final product.

Dimensions & Recommended Land Pattern



Symbol	Parameter	Min	Typ	Max
L	Body Length (mm)	3.70	4.00	4.30
W	Body Width (mm)	3.70	4.00	4.30
H	Body Height (mm)	/	/	1.2
Wt	Weight (mg)	85	90	95

Packaging



Parts per reel		Reel dimensions (mm)				Tape dimensions (mm)						
7" (178 mm)	13" (330 mm)	A	B	C	D	E	W	P	Po	P1	H	T
1500	5000	178/330	60/100	13	14.7	12.4	12	8	4	2	1.4	0.23

Packing method: Tape and reel, compliant with EIA-481

Quantity: 7" reel: 1500 pcs; 13" reel: 5000 pcs

Tape spec: Embossed carrier tape; dimensions per actual packing

Features & Applications

Features

· High rated current with low DCR
· Ultra-low profile, only 1.2 mm high

Applications

· Slim notebooks, tablets and smartphone mainboard supplies
· Wearable devices and portable electronics
· High-density DC-DC modules and point-of-load converters
· Automotive slim modules and industrial control boards