SYNYON

Document No. SYN-DS-SYP6020
Revision V2.0 | 2026-11-02

Molded Power Inductor

SYP6020 Series

Performance Series · 6.6×6.4×2.1 mm



RoHS Compliant · Halogen-Free

Features

Lowest DCR with very low AC loss
Excellent current handling with soft saturation

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:	80V

Electrical Specifications

(Ta = 25°C)

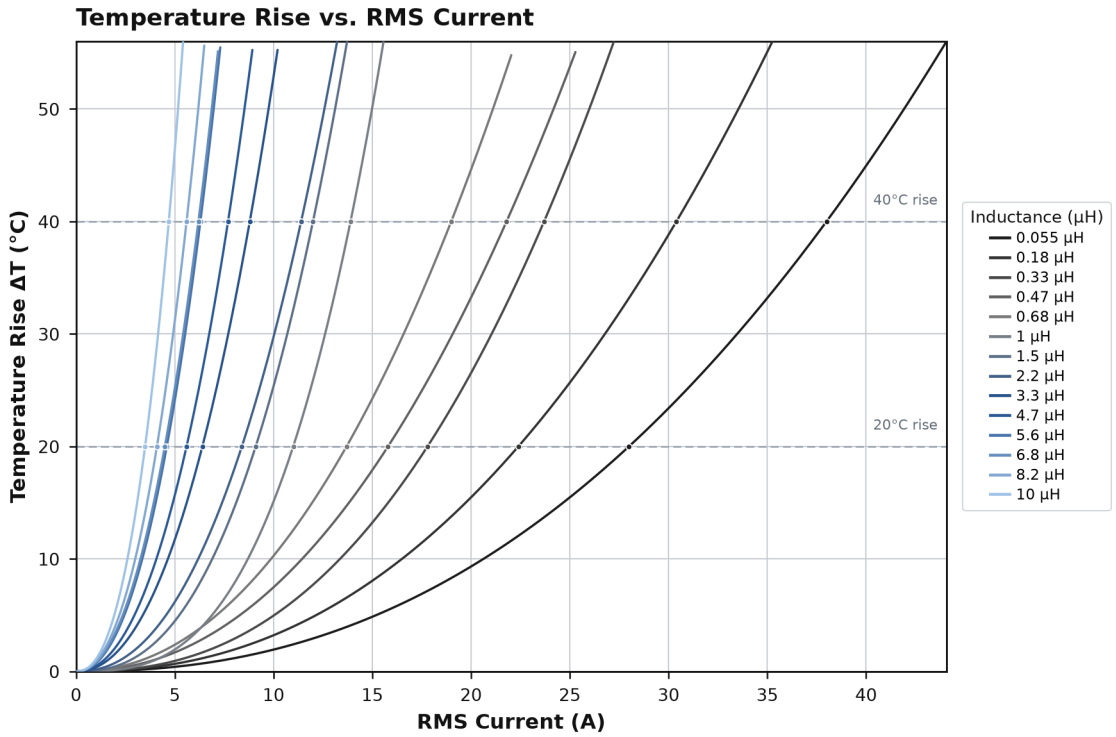
Part Number	Inductance ±20% (μH)	DCR (mΩ) typ/max	SRF typ (MHz)	Isat (A) 10%/20%/30%	Irms (A) 20℃/40℃
SYP6020-550MSN	0.055	0.75 / 0.87	485	23 / 37 / 51.5	28 / 38
SYP6020-181MSN	0.18	1.5 / 1.8	150	13.8 / 24 / 33	22.4 / 30.4
SYP6020-331MSN	0.33	2.6 / 3.1	85	9.6 / 16.9 / 25	17.8 / 23.7
SYP6020-471MSN	0.47	3.5 / 4.2	75	8.2 / 13.6 / 19.3	15.8 / 21.8
SYP6020-681MSN	0.68	4.6 / 5.5	58	6.8 / 11.6 / 16.7	13.7 / 19
SYP6020-102MSN	1	6.7 / 8	45	5.5 / 9.2 / 13.4	11 / 13.9
SYP6020-152MSN	1.5	9.2 / 11	38	4.8 / 7.9 / 11.4	9.1 / 12
SYP6020-222MSN	2.2	14 / 16.1	27	3.9 / 6.3 / 8.8	8.4 / 11.4
SYP6020-332MSN	3.3	21.1 / 24.3	23	3.2 / 5.3 / 7.6	6.4 / 8.8
SYP6020-472MSN	4.7	29.4 / 33.8	18	2.5 / 4.2 / 6	5.6 / 7.7
SYP6020-562MSN	5.6	35.1 / 40.4	17	2.4 / 4 / 5.7	4.6 / 6.3
SYP6020-682MSN	6.8	43.3 / 49.8	15	2.2 / 3.6 / 5.1	4.5 / 6.2
SYP6020-822MSN	8.2	49 / 56.4	14.5	2 / 3.3 / 4.8	4.1 / 5.6
SYP6020-103MSN	10	67.4 / 77.5	14	1.8 / 3.1 / 4.4	3.5 / 4.7

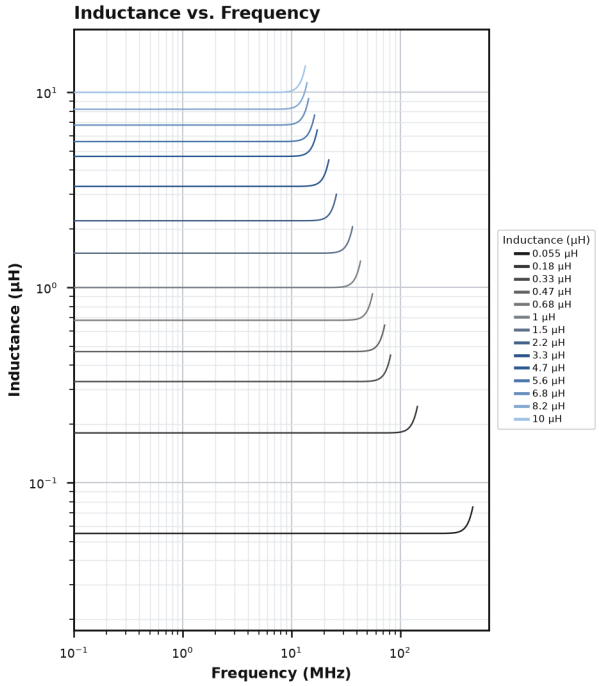
1. Inductance is measured at 1 MHz, 0.1 Vrms, 0 Adc, Ta = 25°C.
2. DCR is measured with a DC milliohm meter.
3. SRF is measured with a high-precision network analyzer.
4. Isat: DC current at which inductance drops by the stated percentage at 25°C; derating is required for high-temperature applications.
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.

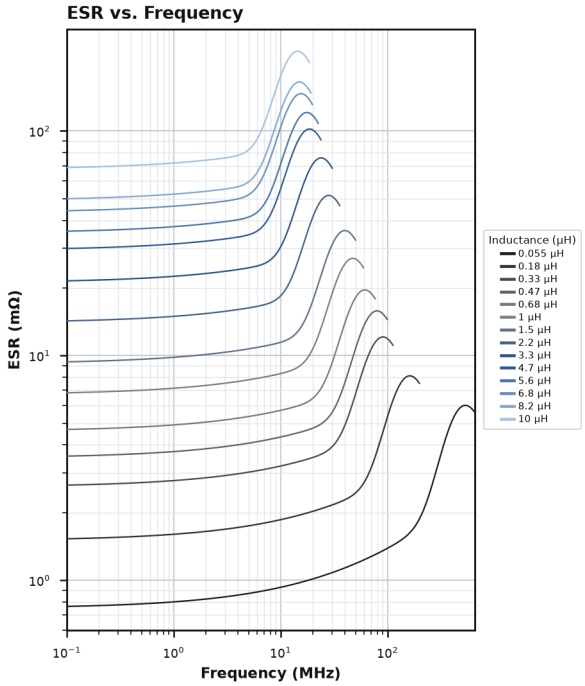
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Specifications subject to change without notice
Please refer to the latest version on our website

Performance Curves

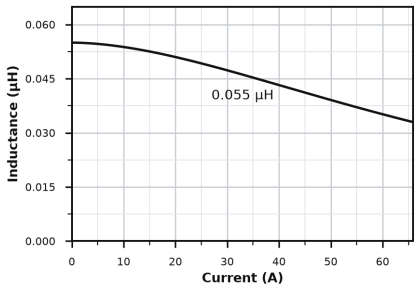


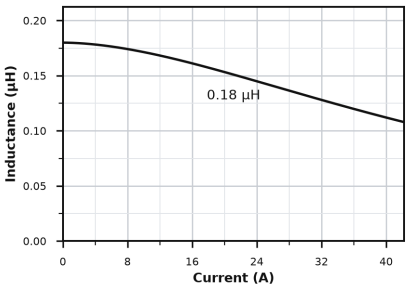


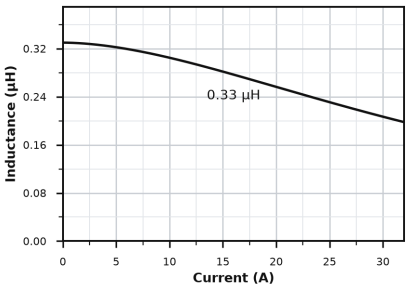


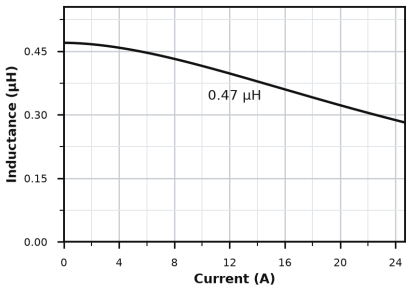
Test Condition: Ta=25℃, JEDEC standard PCB, natural convection. Curves derived from typical specifications for reference only.

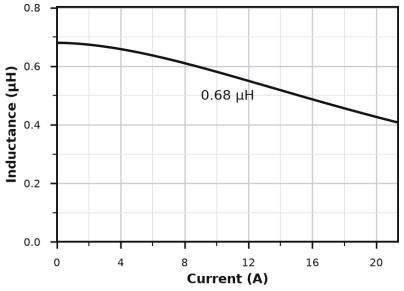
Inductance vs DC Current

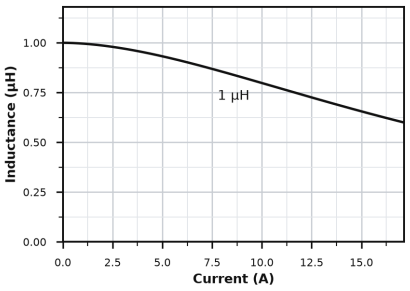


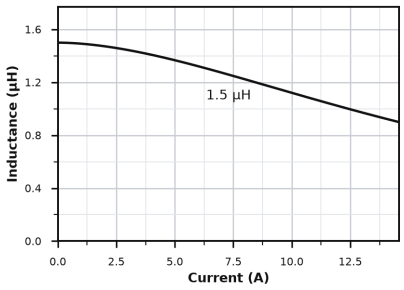


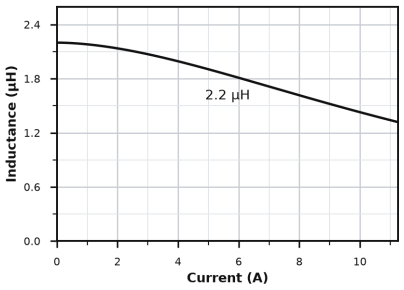


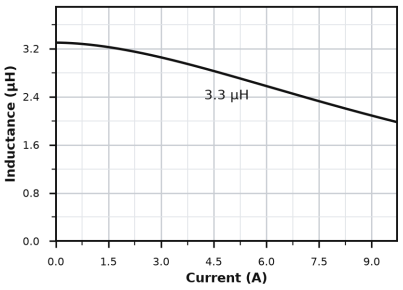


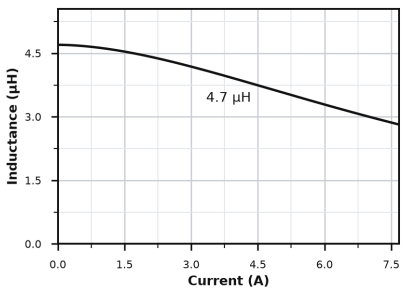


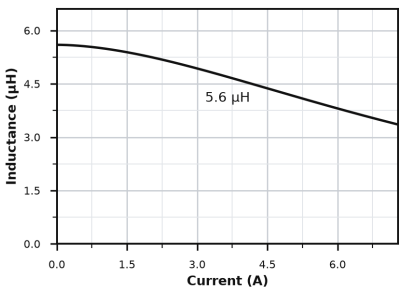


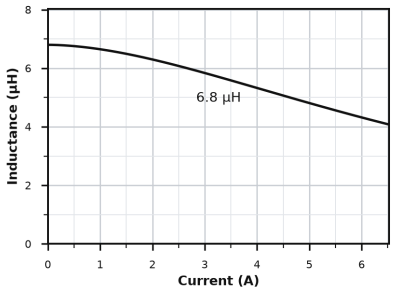


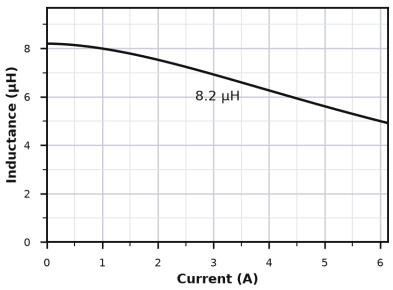


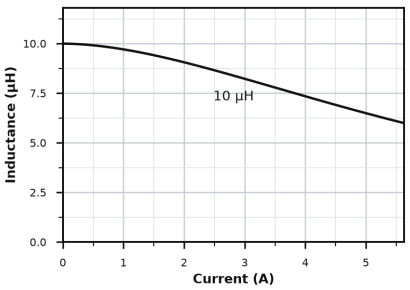






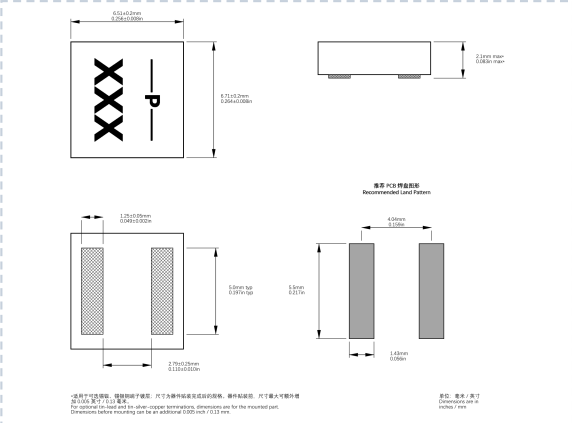






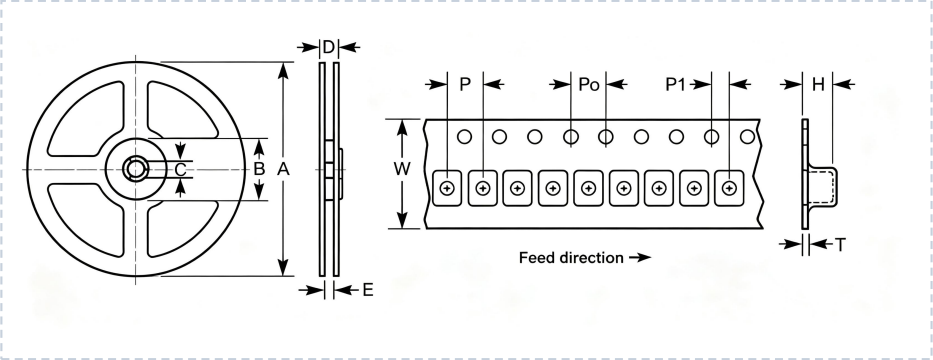
Note: Curves are plotted from Isat test points; actual performance shall be verified on the final product.

Dimensions & Recommended Land Pattern



Symbol	Parameter	Min	Typ	Max
L	Body Length (mm)	6.30	6.60	6.90
W	Body Width (mm)	6.10	6.40	6.70
H	Body Height (mm)	/	/	2.1
Wt	Weight (g)	0.46	0.48	0.51

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
500	2500	178/330	60/100	13	14.7	12.4	16	12	4	2	2.23	0.35

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

Quantity: 7" reel: 500 pcs; 13" reel: 2500 pcs

Tape spec: Embossed carrier tape; dimensions per actual packing

Features & Applications

Features

· Lowest DCR with very low AC loss
· Excellent current handling with soft saturation

Applications

· Servers and desktop motherboards: multi-phase VRM/VRD and CPU core rails
· High-density, high-current power modules; FPGA/SoC supply
· Industrial power supplies demanding high efficiency and low temperature rise
· Automotive and telecom equipment with strict size limits