SYNYON

Document No. SYN-DS-SYE4020
Revision V2.0 | 2026-11-02

# Molded Power Inductor

## SYE4020 Series

Efficient Series · 4.0×4.0×2.1 mm



RoHS Compliant · Halogen-Free

### Features

- **Very low DCR and ultra-low AC loss, suited to 2-5 MHz switching**
- **Excellent current handling with soft saturation**
- **Withstands high current spikes**

| | |
|---|---|
| **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) 30% | Irms (A) 20℃/40℃ |
|---|---|---|---|---|---|
| SYE4020-800MSN | 0.08 | 1.5 / 1.8 | 305 | 33.2 | 15.5 / 21.4 |
| SYE4020-101MSN | 0.1 | 2.04 / 2.5 | 280 | 28.5 | 14.6 / 19.9 |
| SYE4020-201MSN | 0.2 | 3.04 / 3.35 | 180 | 19.7 | 14 / 17.2 |
| SYE4020-331MSN | 0.33 | 5.18 / 5.7 | 124 | 15.7 | 11.9 / 15.4 |
| SYE4020-561MSN | 0.56 | 8 / 8.8 | 90 | 11.3 | 9.9 / 13.8 |
| SYE4020-821MSN | 0.82 | 11.8 / 13 | 69 | 10.2 | 8.1 / 11.5 |
| SYE4020-102MSN | 1 | 13.25 / 14.6 | 68 | 9 | 6.7 / 9.6 |
| SYE4020-122MSN | 1.2 | 17.75 / 19.5 | 59 | 8.1 | 6.6 / 9 |
| SYE4020-152MSN | 1.5 | 21.45 / 23.6 | 54 | 7.4 | 5.2 / 7.5 |
| SYE4020-222MSN | 2.2 | 35.2 / 38.7 | 41 | 5.9 | 4 / 5.5 |

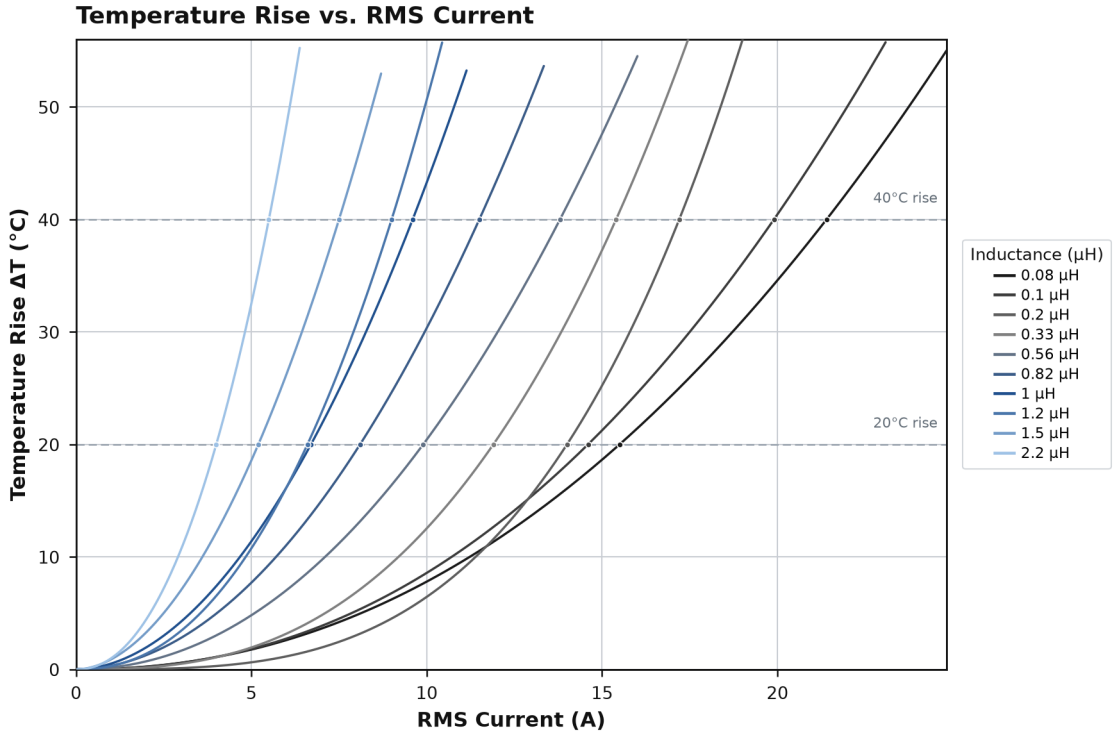
1. Inductance is measured at 1 MHz, 0.1 Vrms, 0 Adc, Ta = 25°C.
2. DCR is measured with a DC milliohm meter.
3. SRF is measured with a high-precision network analyzer.
4. Isat: DC current at which inductance drops by the stated percentage at 25°C; derating is required for high-temperature applications.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

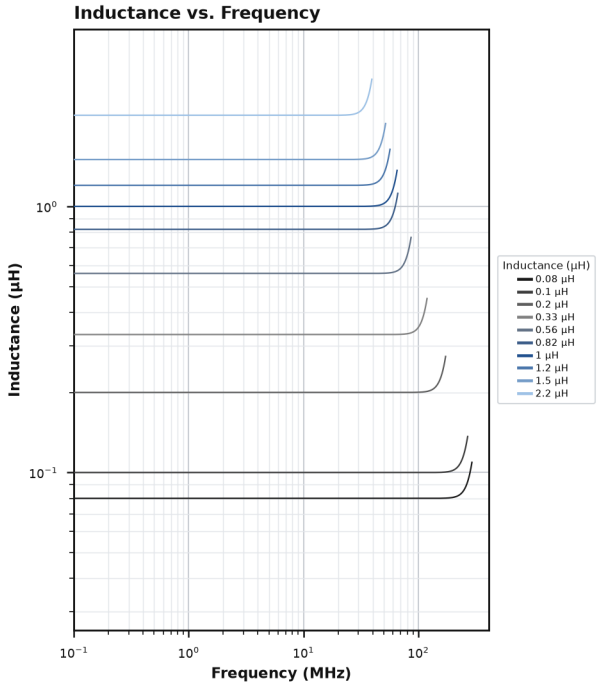
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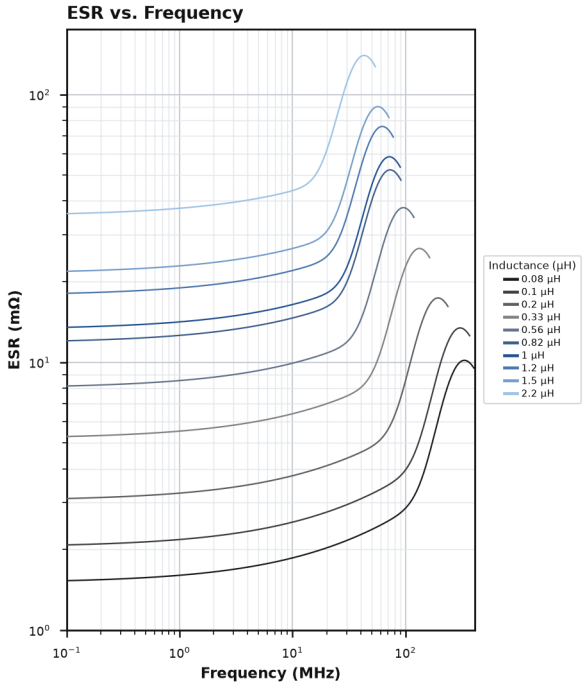


Specifications subject to change without notice
Please refer to the latest version on our website

# Performance Curves

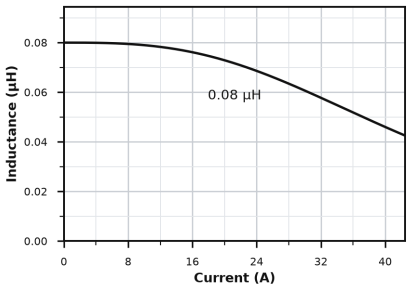


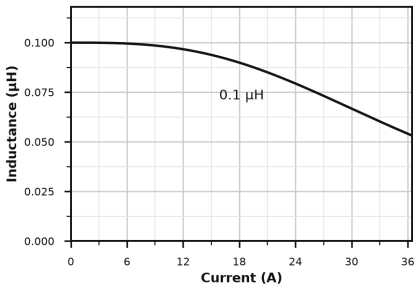



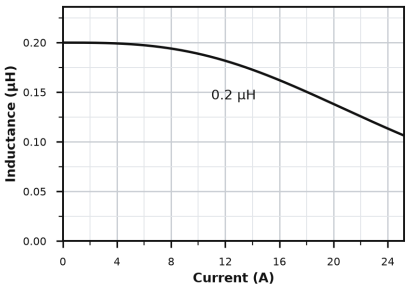



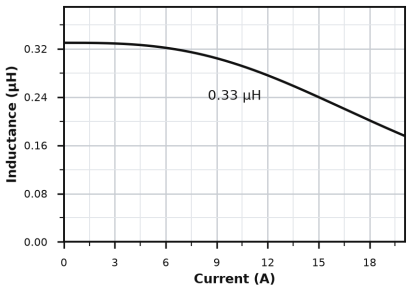

**Test Condition: Ta=25℃, JEDEC standard PCB, natural convection. Curves derived from typical specifications for reference only.**

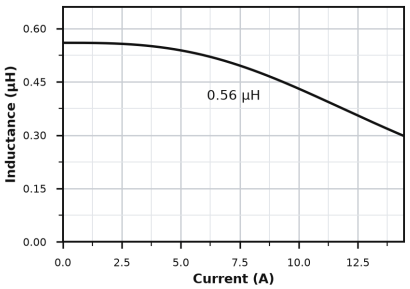
# Inductance vs DC Current

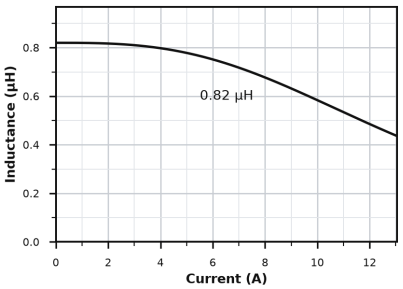


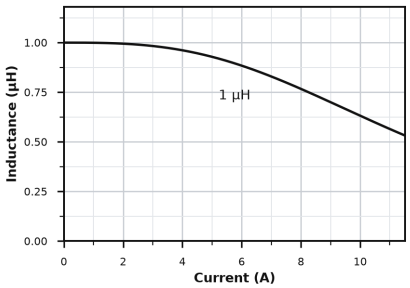



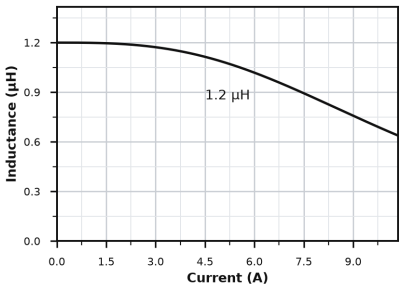



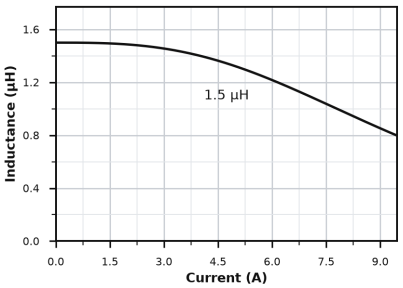



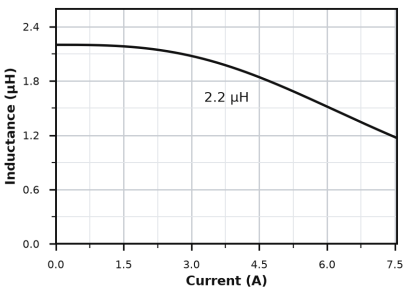



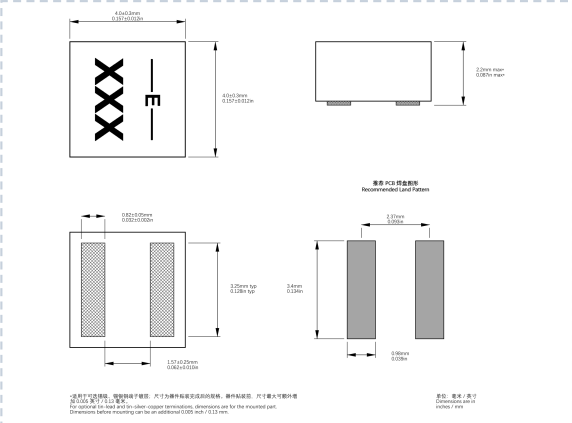



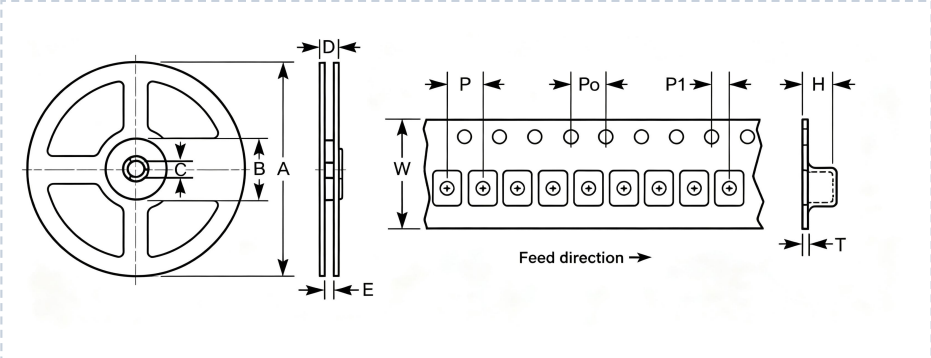

**Note: Curves are plotted from Isat test points; actual performance shall be verified on the final product.**

# 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) | / | / | 2.1 |
| Wt | Weight (g) | 0.17 | 0.17 | 0.17 |

## 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 |
| 1000 | 3500 | 178/330 | 60/100 | 13 | 14.7 | 12.4 | 12 | 8 | 4 | 2 | 2.1 | 0.23 |

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

**Quantity:** 7" reel: 1000 pcs; 13" reel: 3500 pcs

**Tape spec:** Embossed carrier tape; dimensions per actual packing

## Features & Applications

### Features

· Very low DCR and ultra-low AC loss, suited to 2-5 MHz switching
· Excellent current handling with soft saturation
· Withstands high current spikes

### Applications

· Multi-phase VRM supplies in servers and telecom equipment
· High-density DC-DC modules and point-of-load converters
· Notebook PCs, graphics cards and FPGA supplies
· Automotive electronics and industrial control power