

## Data Sheet

**Customer:**

**Product:** Shielded Molding SMD Power Inductor – SDN Series

**Sizes.:** 0412/0420/0518/0530/0618/0624/0630/1040

**Issued Date:** 03-Jul-20

**Edition:** REV.A2



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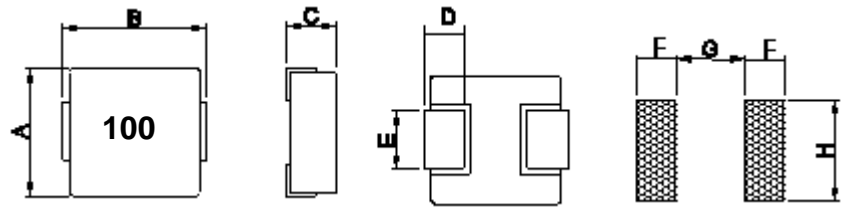
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## Shielded Molding SMD Power Inductor



### Features

- Halogen free
- Powder iron core material
- Magnetically shielded, low EMI
- High current carrying capacity, Low core losses
- Frequency range up to 5MHz
- 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

### Characteristics

- Saturation Rated Current would cause inductance to drop approximately 30%
- Temperature Rise Current would cause an approximately  $\Delta T$  of 40°C
- All test data is referred to 25°C ambient
- The part temperature (ambient + temp rise) should not exceed 125 °C under worst case operating conditions. Circuit design, component placement, PWB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.

### Dimensions

Unit: mm

Type	A	B	C	D	E	F	G	H
SDN0412	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
SDN0420	4.2±0.25	4.4±0.35	1.8±0.2	0.8±0.3	2.0±0.3	1.5	2.2	2.5
SDN0518	5.2±0.20	5.4±0.30	1.6±0.2	1.2±0.2	2.2±0.3	1.9	2.2	2.5
SDN0530	5.2±0.20	5.4±0.3	2.8±0.2	1.2±0.2	2.2±0.3	1.9	2.2	2.5
SDN0618	6.6±0.20	7.0±0.3	1.6±0.2	1.6±0.3	3.0±0.3	2.35	3.7	3.5
SDN0624	6.6±0.20	7.0±0.3	2.2±0.2	2.0±0.1	3.0±0.3	2.35	3.7	3.5
SDN0630	6.6±0.20	7.0±0.3	2.8±0.2	1.6±0.3	3.0±0.3	2.35	3.7	3.5
SDN1040	10.0±0.30	11.5 Max	3.8±0.2	2.0±0.5	3.0±0.5	4.1	5.4	4.1

### Inductance and rated current ranges

- SDN0412    0.47μH~4.7μH    @Saturation Current: 6.8~2.8A
- SDN0420    0.22μH~10μH    @Saturation Current: 12.5~2.2A
- SDN0518    0.47μH~10μH    @Saturation Current: 15.5~3A
- SDN0530    0.20μH~10μH    @Saturation Current: 14.5~3.5A
- SDN0618    0.68μH~22μH    @Saturation Current: 17~2.3A
- SDN0624    0.33μH~10μH    @Saturation Current: 24.5~4.0A
- SDN0630    0.22μH~33μH    @Saturation Current: 34~2.5A
- SDN1040    0.15μH~33μH    @Saturation Current: 75~5.0A

- Test equipment:

L: HP4284A LCR meter

DCR: Milli-ohm meter

- Electrical specifications at 25°C

- Operating temperature rang: -55°C~+125°C

Product Identification

SDN	0630	M	T	100
Product Type	Dimensions (AxC)	Inductor Tolerance	Packaging Style	Inductance
	0412: 4.2x1.0 0420: 4.2x1.8 0518: 5.2x1.6 0530: 5.2x2.8 0618: 6.6x1.6 0624: 6.6x2.2 0630: 6.6x2.8 1040: 10.0x3.8	M: ±20%	T: Tape and Reel	R10: 0.10μH 1R0: 1.0μH 100: 10μH

Electrical Characteristics

SDN0412 Type(□: Tolerance):

Part No.	Inductance (uH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN0412□TR47	0.47	M	100KHz, 0.25V	21.0	6.8	6.0
SDN0412□T1R0	1.0	M	100KHz, 0.25V	47.0	5.5	4.5
SDN0412□T2R2	2.2	M	100KHz, 0.25V	83.5	3.5	2.75
SDN0412□T4R7	4.7	M	100KHz, 0.25V	195.0	2.8	1.8

SDN0420 Type(□: Tolerance):

Part No.	Inductance (uH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN0420□TR22	0.22	M	100KHz, 0.25V	6.6	12.5	9.5
SDN0420□TR47	0.47	M	100KHz, 0.25V	14.0	9.5	7.5
SDN0420□TR68	0.68	M	100KHz, 0.25V	18.0	9.0	7.0
SDN0420□T1R0	1.0	M	100KHz, 0.25V	27.0	7.0	6.0
SDN0420□T1R5	1.5	M	100KHz, 0.25V	46.0	6.0	5.0
SDN0420□T2R2	2.2	M	100KHz, 0.25V	58.0	5.0	4.5
SDN0420□T3R3	3.3	M	100KHz, 0.25V	87.0	4.0	3.3
SDN0420□T4R7	4.7	M	100KHz, 0.25V	105.0	3.0	2.8
SDN0420□T6R8	6.8	M	100KHz, 0.25V	175.0	2.5	2.4
SDN0420□T100	10	M	100KHz, 0.25V	282.0	2.2	1.6

SDN0518 Type(□: Tolerance):

Part No.	Inductance (uH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN0518□TR47	0.47	M	100KHz, 0.25V	9.0	15.5	10.5
SDN0518□T1R0	1.0	M	100KHz, 0.25V	17.0	9.0	8.0
SDN0518□T1R5	1.5	M	100KHz, 0.25V	26.0	9.0	7.5
SDN0518□T2R2	2.2	M	100KHz, 0.25V	35.0	6.5	5.0
SDN0518□T3R3	3.3	M	100KHz, 0.25V	58.0	5.0	4.5
SDN0518□T4R7	4.7	M	100KHz, 0.25V	85.0	4.0	3.5
SDN0518□T6R8	6.8	M	100KHz, 0.25V	120.0	3.4	2.8
SDN0518□T100	10	M	100KHz, 0.25V	155.0	3.0	2.5

**■ Electrical Characteristics**

SDN0530 Type(□: Tolerance):

Part No.	Inductance (uH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN0530□TR20	0.20	M	100KHz, 0.25V	3.9	14.5	14.0
SDN0530□TR47	0.47	M	100KHz, 0.25V	8.5	12.0	11.0
SDN0530□TR68	0.68	M	100KHz, 0.25V	12.0	11.5	9.0
SDN0530□T1R0	1.0	M	100KHz, 0.25V	14.0	11.0	8.5
SDN0530□T1R5	1.5	M	100KHz, 0.25V	25.0	8.5	8.2
SDN0530□T2R2	2.2	M	100KHz, 0.25V	29.0	7.5	7.0
SDN0530□T3R3	3.3	M	100KHz, 0.25V	38.0	6.0	5.5
SDN0530□T4R7	4.7	M	100KHz, 0.25V	60.0	5.0	4.5
SDN0530□T6R8	6.8	M	100KHz, 0.25V	90.0	4.0	3.5
SDN0530□T100	10	M	100KHz, 0.25V	125.0	3.5	3.2

SDN0618 Type(□: Tolerance):

Part No.	Inductance (uH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN0618□TR68	0.68	M	100KHz, 0.25V	12.0	17.0	9.5
SDN0618□T1R0	1.0	M	100KHz, 0.25V	16.0	14.0	8.5
SDN0618□T2R2	2.2	M	100KHz, 0.25V	35.0	8.0	7.0
SDN0618□T4R7	4.7	M	100KHz, 0.25V	62.0	5.0	4.0
SDN0618□T6R8	6.8	M	100KHz, 0.25V	110.0	4.5	3.0
SDN0618□T100	10	M	100KHz, 0.25V	155.0	2.5	2.3
SDN0618□T220	22	M	100KHz, 0.25V	350.0	2.3	1.8

SDN0624 Type(□: Tolerance):

Part No.	Inductance (uH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN0624□TR33	0.33	M	100KHz, 0.25V	4.1	24.5	18.0
SDN0624□TR47	0.47	M	100KHz, 0.25V	5.1	22.0	15.0
SDN0624□TR56	0.56	M	100KHz, 0.25V	6.5	17.0	13.0
SDN0624□TR68	0.68	M	100KHz, 0.25V	7.0	16.0	12.0
SDN0624□T1R5	1.5	M	100KHz, 0.25V	20.0	15.0	9.0
SDN0624□T3R3	3.3	M	100KHz, 0.25V	39.0	10.0	5.5
SDN0624□T6R8	6.8	M	100KHz, 0.25V	70.0	6.0	4.0
SDN0624□T100	10	M	100KHz, 0.25V	101.0	4.0	3.1

SDN0630 Type(□: Tolerance):

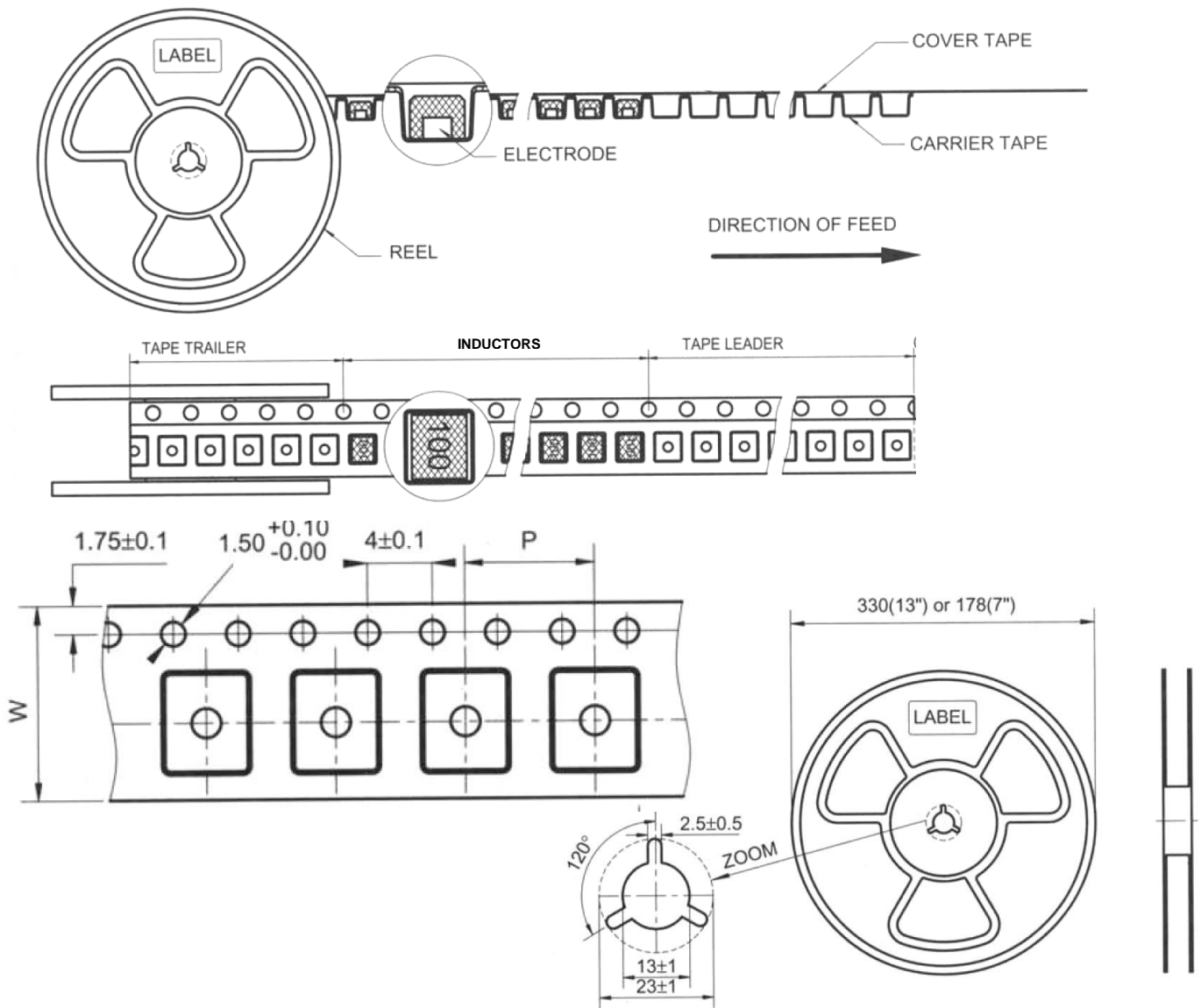
Part No.	Inductance (uH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN0630□TR22	0.22	M	100KHz, 0.25V	3.0	34.0	24.0
SDN0630□TR33	0.33	M	100KHz, 0.25V	3.5	25.0	21.0
SDN0630□TR47	0.47	M	100KHz, 0.25V	4.1	20.0	18.0
SDN0630□TR56	0.56	M	100KHz, 0.25V	4.5	18.0	16.5
SDN0630□TR68	0.68	M	100KHz, 0.25V	5.3	17.0	16.0
SDN0630□T1R0	1.0	M	100KHz, 0.25V	7.4	15.0	12.0
SDN0630□T1R5	1.5	M	100KHz, 0.25V	12.1	14.0	12.0
SDN0630□T2R2	2.2	M	100KHz, 0.25V	15.0	10.0	9.5
SDN0630□T3R3	3.3	M	100KHz, 0.25V	22.0	9.5	8.5
SDN0630□T4R7	4.7	M	100KHz, 0.25V	33.0	6.5	6.0
SDN0630□T6R8	6.8	M	100KHz, 0.25V	48.0	6.0	5.0
SDN0630□T100	10	M	100KHz, 0.25V	67.0	5.5	4.5
SDN0630□T150	15	M	100KHz, 0.25V	115.0	4.5	3.0
SDN0630□T220	22	M	100KHz, 0.25V	200.0	3.0	2.3
SDN0630□T330	33	M	100KHz, 0.25V	310.0	2.5	2.0

**Electrical Characteristics**

SDN1040 Type(□:Tolerance):

Part No.	Inductance (uH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN1040□TR15	0.15	M	100KHz, 0.25V	0.65	75.0	45.0
SDN1040□TR22	0.22	M	100KHz, 0.25V	1.0	60.0	35.0
SDN1040□TR30	0.30	M	100KHz, 0.25V	1.1	50.0	35.0
SDN1040□TR36	0.36	M	100KHz, 0.25V	1.2	50.0	30.0
SDN1040□TR47	0.47	M	100KHz, 0.25V	1.7	40.0	30.0
SDN1040□TR56	0.56	M	100KHz, 0.25V	1.8	33.0	25.0
SDN1040□TR68	0.68	M	100KHz, 0.25V	2.4	30.0	23.0
SDN1040□TR80	0.80	M	100KHz, 0.25V	2.7	29.0	23.0
SDN1040□T1R0	1.0	M	100KHz, 0.25V	3.3	28.0	19.0
SDN1040□T1R5	1.5	M	100KHz, 0.25V	4.2	26.0	16.0
SDN1040□T2R2	2.2	M	100KHz, 0.25V	7.0	18.0	12.0
SDN1040□T3R3	3.3	M	100KHz, 0.25V	11.8	16.0	11.0
SDN1040□T4R7	4.7	M	100KHz, 0.25V	20.0	15.0	9.0
SDN1040□T6R8	6.8	M	100KHz, 0.25V	25.0	12.0	8.5
SDN1040□T8R2	8.2	M	100KHz, 0.25V	27.0	9.0	8.0
SDN1040□T100	10	M	100KHz, 0.25V	30.0	8.5	7.8
SDN1040□T150	15	M	100KHz, 0.25V	45.0	7.0	6.5
SDN1040□T220	22	M	100KHz, 0.25V	66.0	5.5	5.0
SDN1040□T330	33	M	100KHz, 0.25V	92.0	5.0	4.4

**■Tape and Reel specifications**



Unit: mm

Type	Tape size		Parts Per Reel
	W	P	13"
SDN0412	12	8	3000
SDN0420	12	8	3000
SDN0518	12	8	2000
SDN0530	12	8	2000
SDN0618	16	12	1500
SDN0624	16	12	1500
SDN0630	16	12	1500
SDN1040	24	16	500

■ General Characteristics

Item	Requirement	Test Method														
Solderability	More than 95% of the terminal electrode should be covered with solder	Solder heat proof: Preheating: 160±10°C Retention time: 245±5°C for 2±0.5 seconds														
Solder Heat Resistance	Inductance within±10% of initial value No disconnection or short circuit The appearance shall not break	260±5°C for 10±1 seconds														
High Temperature Resistance		Temperature: 85±2°C Applied Current: Rated current Time: 1000+4/-0 hours														
Low Temperature Store		-55±2°C for 1000+4/-0 hours														
High Temperature Store		125±2°C for 1000+4/-0 hours														
Thermal Shock		Repeat 100 cycles as follow: <table border="1" data-bbox="901 622 1522 831"> <thead> <tr> <th>Step</th> <th>Temperature(°C)</th> <th>Time (min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55±2°C</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>5</td> </tr> <tr> <td>3</td> <td>125±2°C</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>5</td> </tr> </tbody> </table>	Step	Temperature(°C)	Time (min.)	1	-55±2°C	30±3	2	Room temperature	5	3	125±2°C	30±3	4	Room temperature
Step	Temperature(°C)	Time (min.)														
1	-55±2°C	30±3														
2	Room temperature	5														
3	125±2°C	30±3														
4	Room temperature	5														
Humidity Resistance	Temperature: 60±2°C, 90~95% relative humidity Applied Current: Rated current Time: 1000+4/-0 hours															
Vibration Test	Inductance within±10% of initial value The appearance shall not break	Vibration frequency: (10 Hz to 55 Hz to 10Hz) in 60 seconds as a period Vibration time: Period cycled for 2 hours in each of 3 mutual perpendicular directions. Amplitude: 1.5 mm max.														
Shock		Peak value: 100 G Duration of pulse: 11ms times in each positive and negative direction of 3 mutual perpendicular directions														