

SMD Power Inductors

SDS I 306 Series

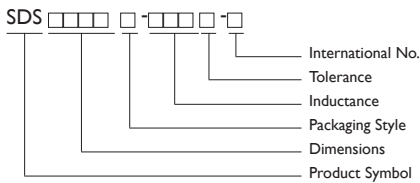


FEATURES

Smallest size and high performance

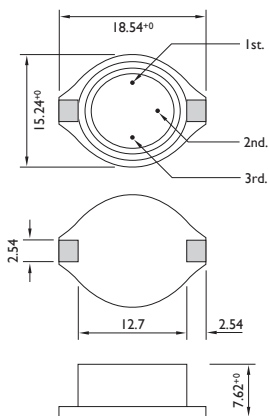
High energy storage and very low resistance.

PRODUCT IDENTIFICATION



- Packaging: T: Tape and Reel
- Tolerance: M \pm 20%
- Note: YAGEO will start to release SDS Series inductors with lead-free terminals which meet SONY SS-00259's criteria for lead-free product in Q2 of 2004, and YAGEO International No. will be changed to "N" as identification. Ex.: SDS0402BL-101M-N.

SHAPE AND DIMENSIONS



APPLICATIONS

Notebook computers, step-up and step-down converters.

Flash memory programmers, etc...

The SDSI306 Series is a family of magnetically shielded power inductors designed for the higher current requirements of portable computers, Video recorders and other DC-DC conversion applications.

They feature saturation current ratings as high 9 Amps and rms current ratings up to 3.9 Amps. Low DC resistance (as low as .040 Ohms) keeps power losses to a minimum.

Designed specifically for surface mounting, the SDSI306 has a flat top for reliable pick and place operations. The terminals wrap around the end of the base to ensure a sound solder fillet and simplify inspection.

ELECTRICAL CHARACTERISTICS

PART NO.	INDUCTANCE ($\mu\text{H} \pm 20\%$)*	DC RESISTANCE (Ω) Max.	Isat ** (A)	Irms *** (A)	SRF MHz ** (Ref.) Max.
SDSI306T-100M-S	10	0.040	5.5	3.9	24
SDSI306T-150M-S	15	0.048	4.5	3.4	16
SDSI306T-220M-S	22	0.059	3.5	3.1	14
SDSI306T-330M-S	33	0.075	3.3	2.8	11
SDSI306T-470M-S	47	0.097	2.7	2.4	8.0
SDSI306T-680M-S	68	0.138	2.2	2.0	7.0
SDSI306T-101M-S	100	0.207	1.7	1.7	5.5
SDSI306T-151M-S	150	0.293	1.3	1.3	4.8
SDSI306T-221M-S	220	0.470	1.1	1.1	4.0
SDSI306T-331M-S	330	0.780	0.86	0.86	3.0
SDSI306T-471M-S	470	1.08	0.73	0.73	2.4
SDSI306T-681M-S	680	1.40	0.64	0.64	2.0
SDSI306T-102M-S	1000	2.01	0.53	0.53	1.0

* Inductance Tested at 0.1 Vrms, 100KHz

** Inductance Drop 10% Typ. at Isat.

*** 40°C Rise Typ. at Irms.

Operating Temperature Range -40°C to +85°C



ELECTRICAL CHARACTERISTICS : LEAD-FREE & ROHS COMPLIANCE

PART NO.	INDUCTANCE at 50MHz (nH)	TEST FREQUENCY (MHZ)	Rdc Max	I _{rms} (A)	I _{sat} (A)	SRF (MHZ) TYP	Q FREQ MIN (KHz)
SDSI306T-100 □-N	10	100KHZ,0.1V	0.04	3.9	5.5	24	40/100
SDSI306T-150 □-N	15	100KHZ,0.1V	0.048	3.4	4.5	16	40/100
SDSI306T-220 □-N	22	100KHZ,0.1V	0.059	3.1	3.5	14	30/100
SDSI306T-330 □-N	33	100KHZ,0.1V	0.075	2.8	3.3	11	40/100
SDSI306T-470 □-N	47	100KHZ,0.1V	0.097	2.4	2.7	8	40/100
SDSI306T-680 □-N	68	100KHZ,0.1V	0.14	2	2.2	7	40/100
SDSI306T-101 □-N	100	100KHZ,0.1V	0.21	1.7	1.7	5.5	40/100
SDSI306T-151 □-N	150	100KHZ,0.1V	0.3	1.3	1.3	4.8	50/100
SDSI306T-221 □-N	220	100KHZ,0.1V	0.47	1.1	1.1	4	50/100
SDSI306T-331 □-N	330	100KHZ,0.1V	0.78	0.86	0.86	3	50/100
SDSI306T-471 □-N	470	100KHZ,0.1V	1.08	0.73	0.73	2.4	50/100
SDSI306T-681 □-N	680	100KHZ,0.1V	1.4	0.64	0.64	2	60/100
SDSI306T-102 □-N	1000	100KHZ,0.1V	2.01	0.53	0.53	1	60/100

NOTE : □ -tolerance K=±10% / =±15% / M=±20% / N=+40% -20%

1. Operating temperature range -40°C~85°C

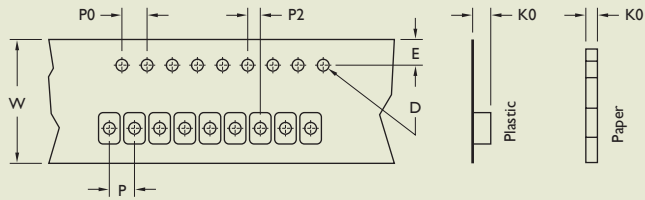
2. Inductance drop 10% typ. at last

4. 40°C rise typ. at I_{rms}.

"-N" FOR COMPLETELY LEAD FREE TYPE (INCLUDING FERRITE BODY & SOLDER)



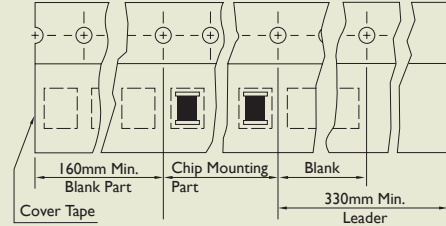
TAPE DIMENSIONS



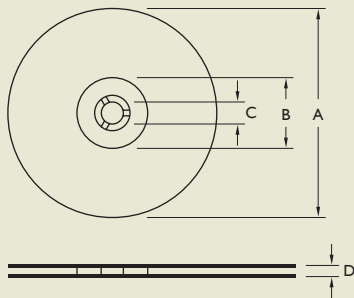
TAPE MATERIAL

Camer Tape : Polystyrene

Cover Type : Polyethylene

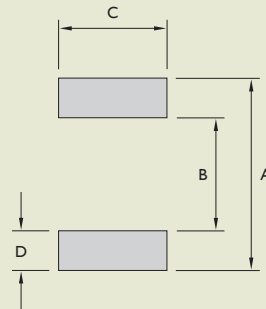


REEL DIMENSIONS



RECOMMENDED PATTERN

Land Pattern



TYPE	TAPE DIMENSIONS							RECOMMENDED PATTERN				REEL DIMENSIONS				QUANTITY (PCS/REEL)	
	K0	D	E	W	P	P0	P2	A	B	C	D	A	B	C	D	178	330
																-	2500
SDS0402BL	3.2	1.55	1.75	12	8	4	2	6.86	4.06	3.56	1.40	330	100	13	13.4	-	2500
												178	60	13	13.2	750	-
SDS0402T	3.2	1.55	1.75	12	8	4	2	6.86	4.06	3.56	1.40	330	100	13	13.4	-	2500
												178	60	13	13.2	750	-
SDS0804T	5.4	1.55	1.75	24	12	4	2	13.21	7.37	2.79	2.92	330	100	13	24.4	-	1000
SDS1306T	7.5	1.55	1.75	32	20	4	2	18.29	12.45	2.79	2.92	330	100	13	33.4	-	250

Dimensions : mm



SDS SERIES RELIABILITY TEST

I-1 MECHANICAL PERFORMANCE

NO.	ITEM	SPECIFICATION	TEST CONDITIONS
I-1-1	Vibration	Appearance : No Damage L Change : within $\pm 10\%$ Q Change : within $\pm 30\%$ RDC : within Specification	Test device shall be soldered on the substrate. Oscillation Frequency : 10 to 55 to 10Hz for 1Min. Amplitude : 1.5mm Time : 2Hrs. for each Axis (X,Y & Z), Total 6Hrs.
I-1-2	Resistance to Soldering Heat	Appearance : No Damage	Pre-heating : 150°C, 1Min. Solder Composition : Sn/Pb = 63/37 Solder Temperature : 260 \pm 5°C Immersion Time : 10 \pm 1Sec.
I-1-3	Solderability	The electrodes shall be at least 90% covered with new solder coating.	Pre-heating : 150°C, 1Min. Solder Composition : Sn/Pb = 63/37 Solder Temperature : 230 \pm 5°C Immersion Time : 4 \pm 1Sec.

I-2 ENVIRONMENTAL PERFORMANCE

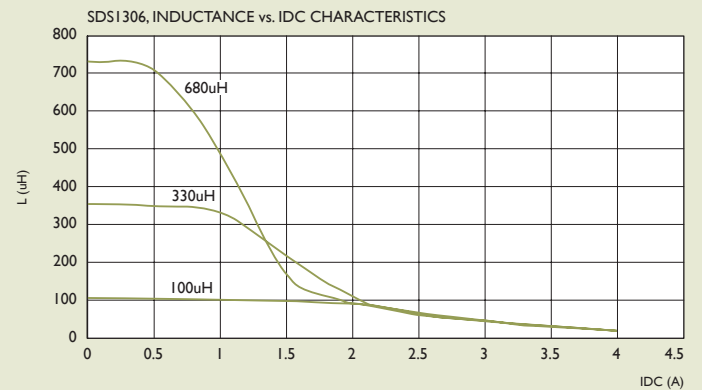
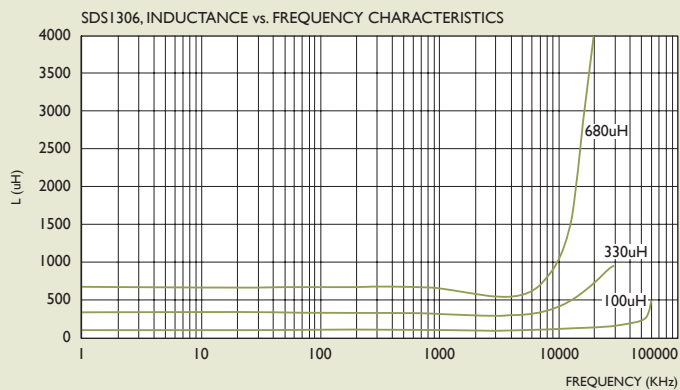
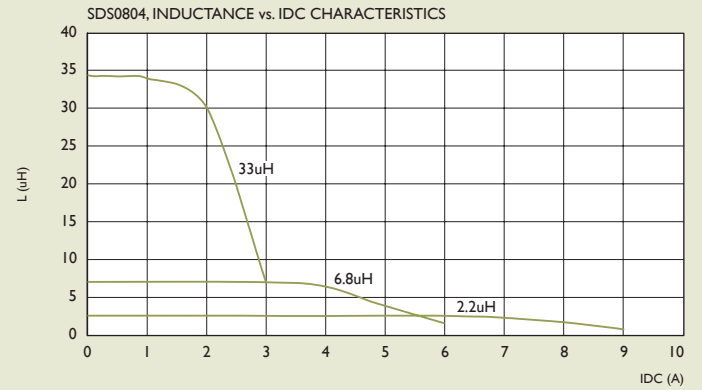
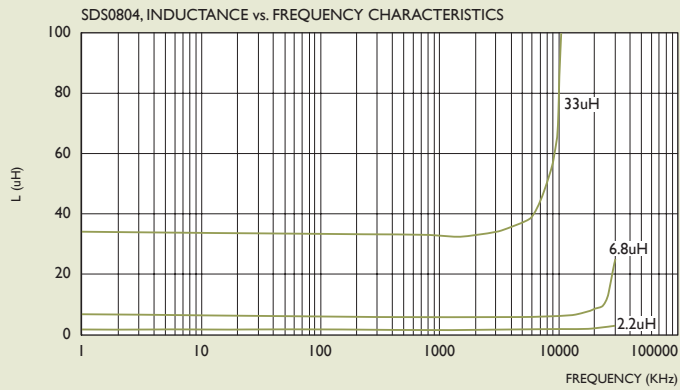
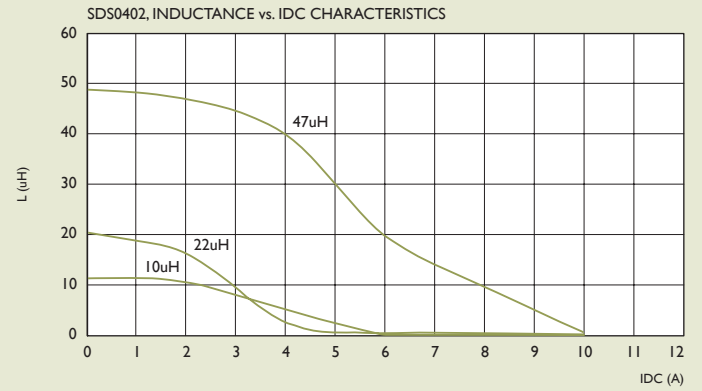
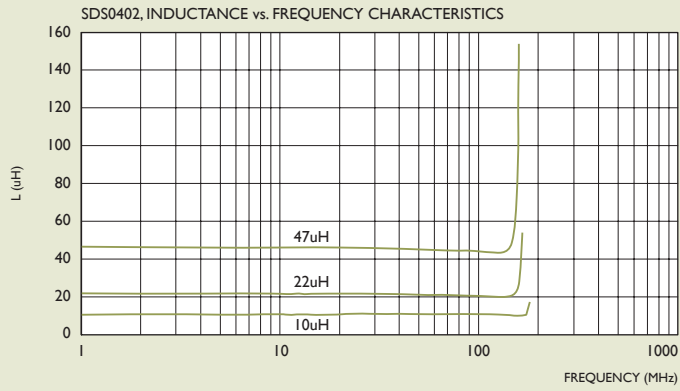
NO.	ITEM	SPECIFICATION	TEST CONDITIONS															
I-2-1	Temperature Shock	Appearance : No Damage L Change : within $\pm 10\%$ L Change : within $\pm 30\%$ RDC : within Specification	10 Cycles (Air to Air) Cycles shall Consist of : 30Min. Exposure to -55°C 30Min. Exposure to -125°C 15Sec. Max. Transition between Temperatures Measured after Exposure in the Room Condition for 24Hrs.															
I-2-2	Temperature Cycle		One Cycle <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Time (Min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-25 \pm 3</td> <td>30</td> </tr> <tr> <td>2</td> <td>25 \pm 2</td> <td>3</td> </tr> <tr> <td>3</td> <td>85 \pm 3</td> <td>30</td> </tr> <tr> <td>4</td> <td>25 \pm 2</td> <td>3</td> </tr> </tbody> </table> Total : 100 Cycles Measured after Exposure in the Room Condition for 24Hrs.	Step	Temperature (°C)	Time (Min.)	1	-25 \pm 3	30	2	25 \pm 2	3	3	85 \pm 3	30	4	25 \pm 2	3
Step	Temperature (°C)	Time (Min.)																
1	-25 \pm 3	30																
2	25 \pm 2	3																
3	85 \pm 3	30																
4	25 \pm 2	3																
I-2-3	Humidity Resistance		Temperature : 40 \pm 2°C Relative Humidity : 90 ~ 95% Time : 1000Hrs. Measured after Exposure in the Room Condition for 24Hrs.															
I-2-4	High Temperature Resistance		Temperature : 85 \pm 3°C Relative Humidity : 20% Applied Current : Rated Current Time : 1000Hrs. Measured after Exposure in the Room Condition for 24Hrs.															
I-2-5	Low Temperature Resistance		Temperature : -25 \pm 3°C Relative Humidity : 0% Time : 1000Hrs. Measured after Exposure in the Room Condition for 24Hrs.															



TYPICAL ELECTRICAL CHARACTERISTICS

Curves of SCD Series

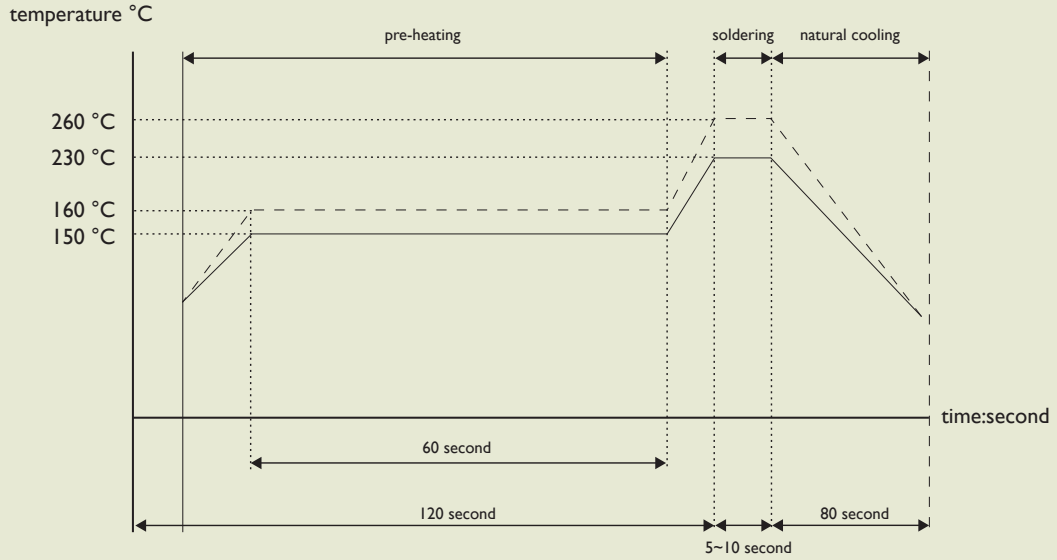
Test Instruments : HP4291A Impedance / Material Analyzer





RECOMMEND SOLDERING CONDITIONS

for: CL/ CLH/ SQV/ SMD power inductors/ SMD Chip Beads/ SMD Filters, Transformers, Current Sensors



for: lead solder	———
for: lead-free solder	-----