

SMD Power Inductors

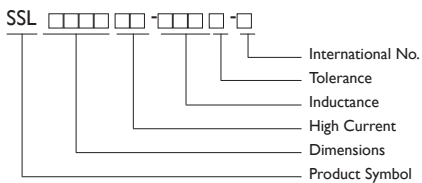
SSL0503HC Series



FEATURES

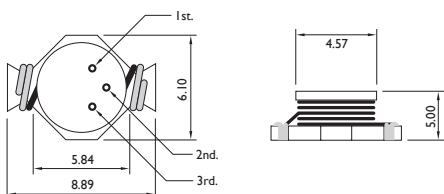
- For high current, low voltage DC-DC converter applications.

PRODUCT IDENTIFICATION



- Packaging: T : Tape and Reel, B : Bulk
- Tolerance: M: $\pm 20\%$
- Note: YAGEO will start to release SSL_HC Series inductors with lead-free terminals which meet SONY SS-00259's criteria for lead-free product in Q2 of 2004, and YAGEO Internal No will be changed to "N" as identification. Ex. SSL0503HC-R56M-N

SHAPES AND DIMENSIONS



Dimensions : mm

These series have been specially designed for high current, low voltage DC-DC converter applications.

This simple, rugged design provides current ratings normally available only in much larger packages - up to 16Arms for a .33 μ H part. With its tinned self-leaded construction, the SSL0804HC achieves very low DCR values and excellent solderability. In addition to the standard parts shown, custom values are also available.

These inductors are less than .2" (5mm) high. They have very low resistance and a rugged self-leaded construction.

APPLICATIONS

Notebook computers, Sep-up and step-down converters, memory programmers. etc...

ELECTRICAL CHARACTERISTICS

PART NO.	INDUCTANCE (μ H $\pm 20\%$) *	SRF ** (MHz)	DC RESISTANCE (Ω) Max.	Isat *** (A)	Irms **** (A)
SSL0503HC-R56M-S	0.56	200	0.010	7.7	6.0
SSL0503HC-1R2M-S	1.2	140	0.017	5.3	4.4
SSL0503HC-2R2M-S	2.2	100	0.035	3.5	3.1
SSL0503HC-4R7M-S	4.7	50	0.054	2.6	2.2
SSL0503HC-100M-S	10	40	0.111	1.9	1.5
SSL0503HC-150M-S	15	30	0.17	1.5	1.2
SSL0503HC-220M-S	22	25	0.25	1.2	1.0
SSL0503HC-330M-S	33	20	0.37	0.99	0.82
SSL0503HC-470M-S	47	15	0.47	0.87	0.72

* Inductance Tested at 0.25 Vrms, 100 KHz

** SRF measured using HP8753D network analyzer.

*** Inductance Drop = 30% Typ. at Isat.

**** $\Delta T = 40^\circ\text{C}$ Typ at I rms.

Operating Temperature Range -40°C to $+85^\circ\text{C}$

Electrical Specifications at 25°C



ELECTRICAL CHARACTERISTICS : LEAD-FREE & ROHS COMPLIANCE

PART NO.	INDUCTANCE (nH)	TOLERANCE (±%)	R _{dc} (Ω)	I _{sat} (A)	I _{rms} (A)	SRF (KHz)Typ.
SSL0503HC-R18 □ -N	0.18	20	0.0063+0	5.5	-	330
SSL0503HC-R56 □ -N	0.56	20	0.010+0	7.7	6	200
SSL0503HC-1R2 □ -N	1.2	20	0.017+0	5.3	4.4	140
SSL0503HC-2R2 □ -N	2.2	20	0.035+0	3.5	3.1	100
SSL0503HC-4R7 □ -N	4.7	20	0.054+0	2.6	2.2	50
SSL0503HC-100 □ -N	10	20	0.111+0	1.9	1.5	40
SSL0503HC-150 □ -N	15	20	0.170+0	1.5	1.2	30
SSL0503HC-220 □ -N	22	20	0.250+0	1.2	1	25
SSL0503HC-330 □ -N	33	20	0.370+0	0.99	0.82	20
SSL0503HC-470 □ -N	47	20	0.470+0	0.87	0.72	15

NOTE : □ -tolerance M=±20% / T=±30%

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

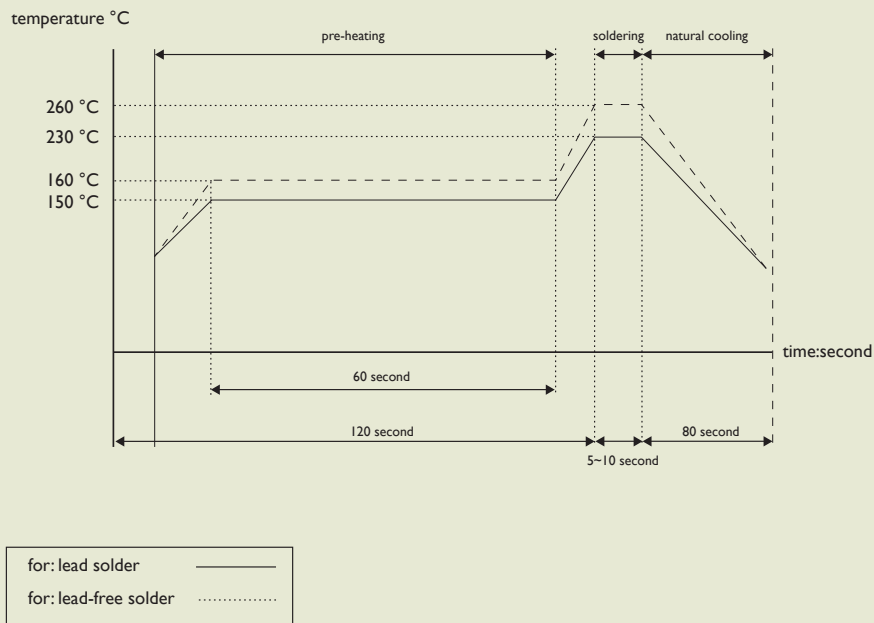
2. Inductance drop 30% typ. at last

4. ΔT=40°C rise typ. at I_{rms}.

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

RECOMMEND SOLDERING CONDITIONS

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



SMD Power Inductors

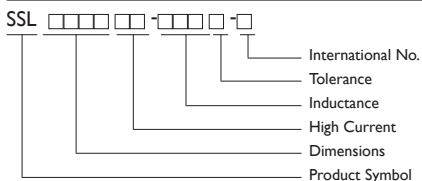
SSL0804HC Series



FEATURES

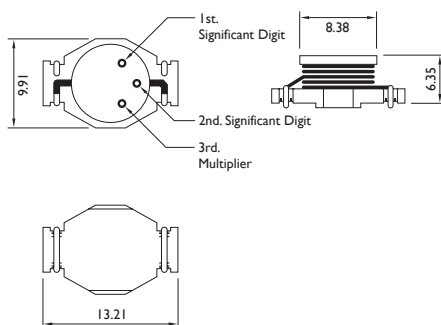
For high current, low voltage DC-DC converter applications.

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SHAPES AND DIMENSIONS



Dimensions : mm

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APPLICATIONS

Notebook computers, Sep-up and step-down converters, memory programmers. etc...

ELECTRICAL CHARACTERISTICS

PART NO.	INDUCTANCE SRF ** (μ H $\pm 20\%$) *	(MHz)	DC RESISTANCE (Ω) Max.	Isat *** (A)	Irms **** (A)
SSL0804HC-R33M-S	0.33	300	0.002	20	16
SSL0804HC-R68M-S	0.68	200	0.005	13	12
SSL0804HC-1R0M-S	1.0	100	0.006	11	10
SSL0804HC-1R5M-S	1.5	90	0.008	9.0	9
SSL0804HC-2R2M-S	2.2	90	0.011	7.8	7.4
SSL0804HC-2R7M-S	2.7	65	0.012	7.0	6.6
SSL0804HC-3R3M-S	3.3	65	0.014	6.4	5.9
SSL0804HC-4R7M-S	4.7	45	0.018	5.4	4.8
SSL0804HC-6R8M-S	6.8	35	0.035	3.6	5.0
SSL0804HC-100M-S	10	26	0.04	3.3	4.3
SSL0804HC-150M-S	15	21	0.06	2.4	3.5
SSL0804HC-220M-S	22	17	0.08	2.0	2.8
SSL0804HC-330M-S	33	14	0.15	1.7	2.1
SSL0804HC-470M-S	47	12	0.28	1.4	1.7
SSL0804HC-680M-S	68	9	0.3	1.2	1.5
SSL0804HC-101M-S	100	7	0.4	0.95	1.2

* Inductance Tested at 0.1 Vrms, 100 KHz

** SRF measured using HP8753D network analyzer.

*** Inductance Drop = 10% Typ. at Isat.

**** $\Delta T = 40^\circ\text{C}$ Typ at I rms.

Operating Temperature Range -40°C to $+85^\circ\text{C}$

Electrical Specifications at 25°C



ELECTRICAL CHARACTERISTICS : LEAD-FREE & ROHS COMPLIANCE

PART NO.	INDUCTANCE (nH)	TOLERANCE (±%)	R _{dc} (Ω)	I _{sat} (A)	I _{rms} (A)	SRF (KHz)Typ.
SSL0804HC-R33 □ -N	0.33	20	0.002+0	20	16	300
SSL0804HC-R68 □ -N	0.68	20	0.005+0	13	12	200
SSL0804HC-1R0 □ -N	1	20	0.006+0	11	10	100
SSL0804HC-1R5 □ -N	1.5	20	0.008+0	9	9	90
SSL0804HC-2R2 □ -N	2.2	20	0.011+0	7.8	7.4	90
SSL0804HC-2R7 □ -N	2.7	20	0.012+0	7	6.6	65
SSL0804HC-3R3 □ -N	3.3	20	0.014+0	6.4	5.9	65
SSL0804HC-4R7 □ -N	4.7	20	0.018+0	5.4	4.8	45
SSL0804HC-6R8 □ -N	6.8	20	0.035+0	3.6	5	35
SSL0804HC-100 □ -N	10	20	0.040+0	3.3	4.3	26
SSL0804HC-150 □ -N	15	20	0.060+0	2.4	3.5	21
SSL0804HC-220 □ -N	22	20	0.080+0	2	2.8	17
SSL0804HC-330 □ -N	33	20	0.150+0	1.7	2.1	14
SSL0804HC-470 □ -N	47	20	0.280+0	1.4	1.7	12
SSL0804HC-680 □ -N	68	20	0.300+0	1.2	1.5	9
SSL0804HC-101 □ -N	100	20	0.400+0	0.95	1.2	7

NOTE : □ -tolerance M=±20% / T=±30%

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

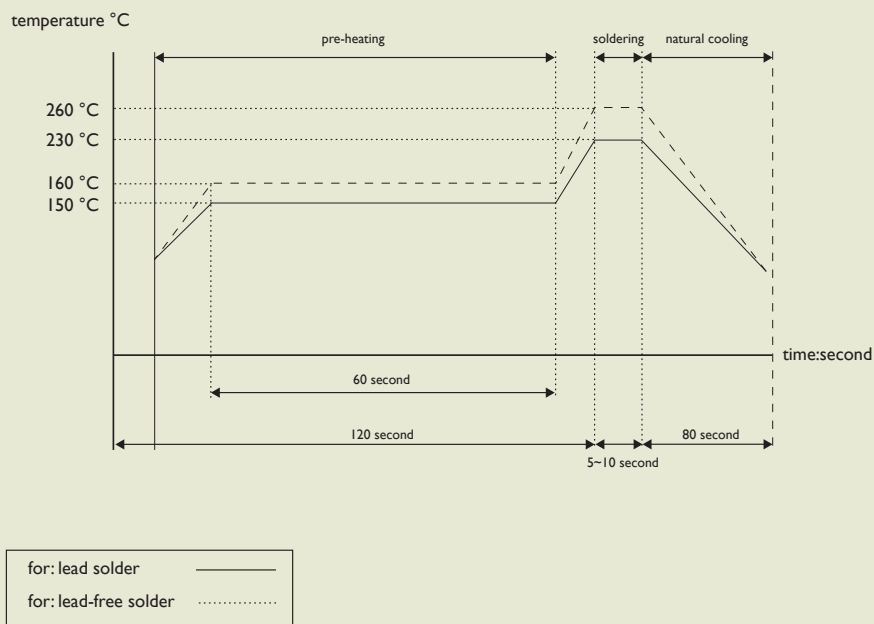
2. Inductance drop 10% typ. at last

4. ΔT=40°C rise typ. at I_{rms}.

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



SMD Power Inductors

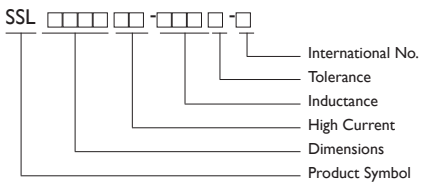
SSL I 306HC Series



FEATURES

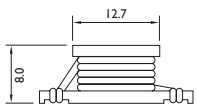
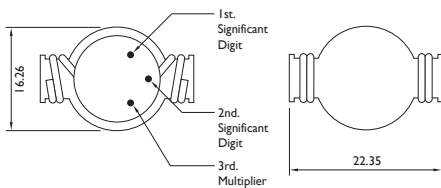
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SHAPES AND DIMENSIONS



Dimensions : mm

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APPLICATIONS

Notebook computers, Sep-up and step-down converters, memory programmers. etc...

ELECTRICAL CHARACTERISTICS

PART NO.	INDUCTANCE (μ H $\pm 20\%$)*	SRF (MHz)	DC RESISTANCE (Ω) Max.	Isat ** (A)	Irms *** (A)
SSLI306HC-R78M-S	0.78	156	2.6	30	15
SSLI306HC-1R5M-S	1.5	100	4.0	25	15
SSLI306HC-2R2M-S	2.2	75	6.1	20	12
SSLI306HC-3R3M-S	3.3	60	8.6	17	10
SSLI306HC-3R9M-S	3.9	55	10	15	9.0
SSLI306HC-4R7M-S	4.7	40	14	13	8.4
SSLI306HC-6R0M-S	6.0	35	17	12	7.5
SSLI306HC-7R8M-S	7.8	35	18	11	7.5
SSLI306HC-100M-S	10	28	26	10	6.0
SSLI306HC-150M-S	15	20	32	8	4.4

* L : Tested at 0.1 Vrms, 100 KHz (HP-4192A)

** Isat : Inductance Drop = 10% Typ.

*** $\Delta T = 40^\circ\text{C}$ Typ at Irms.

Operating Temperature Range -40°C to $+85^\circ\text{C}$



ELECTRICAL CHARACTERISTICS : LEAD-FREE & ROHS COMPLIANCE

PART NO.	INDUCTANCE (nH)	TOLERANCE (±%)	Rdc (Ω)	Isat (A)	Irms (A)	SRF (KHz)Typ.
SSL1306HC-R78 □-N	0.78	20	0.0026+0	30TYP.	15	156
SSL1306HC-1R5 □-N	1.5	20	0.0040+0	25TYP.	15	100
SSL1306HC-2R2 □-N	2.2	20	0.0061+0	20TYP.	12	75
SSL1306HC-3R3 □-N	3.3	20	0.0086+0	17TYP.	10	60
SSL1306HC-3R9 □-N	3.9	20	0.0100+0	15TYP.	9	55
SSL1306HC-4R7 □-N	4.7	20	0.0140+0	13TYP.	8.4	40
SSL1306HC-6R0 □-N	6	20	0.0170+0	12TYP.	7.5	35
SSL1306HC-7R8 □-N	7.8	20	0.0180+0	11TYP.	7.5	35
SSL1306HC-100 □-N	10	20	0.0260+0	10TYP.	6	28
SSL1306HC-150 □-N	15	20	0.0320+0	8TYP.	4.4	20

NOTE : □ -tolerance M=±20% / T=±30%

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

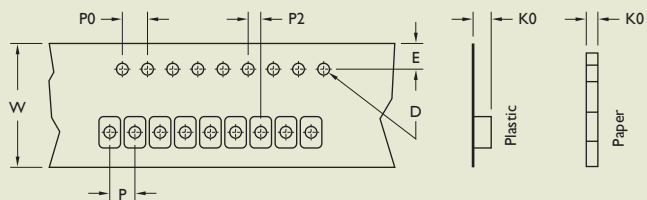
2. Inductance drop 10% typ. at last

3. ΔT=40°C rise typ. at I_{rms}.

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



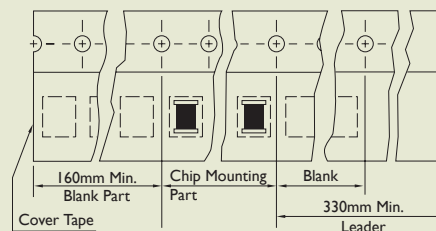
TAPE DIMENSIONS



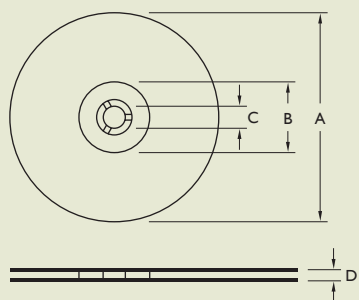
TAPE MATERIAL

Carrier Tape : Polystyrene

Cover Type : Polyethylene

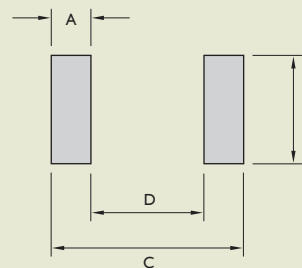


REEL DIMENSIONS



RECOMMENDED PATTERN

Land Pattern



Dimensions : mm

TYPE	TAPE DIMENSIONS							RECOMMENDED PATTERN				REEL DIMENSIONS				QUANTITY /REEL	
	K0	D	E	W	P	P0	P2	UNIT	A	B	C	D	A	B	C		D
SSL0503HC	5.3	1.55	1.75	16	12	4	2	In	0.075	0.160	0.350	0.200	330	100	13	17.4	1000
								mm	1.91	4.06	8.89	5.08					
SSL0804HC	6.1	1.55	1.75	24	16	4	2	In	0.060	0.160	0.460	0.34	330	100	13	24.2	750
								mm	1.521	4.06	11.68	8.64					
SSL1306HC	7.2	1.55	1.75	44	24	4	2	In	0.125	0.340	0.820	0.560	330	100	13	45.4	250
								mm	3.18	8.64	20.71	14.35					



SSL 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.

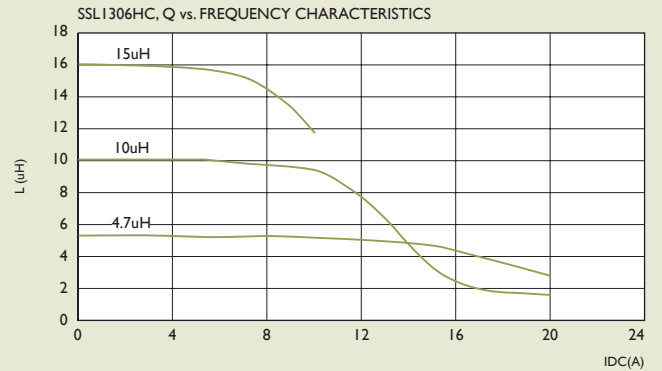
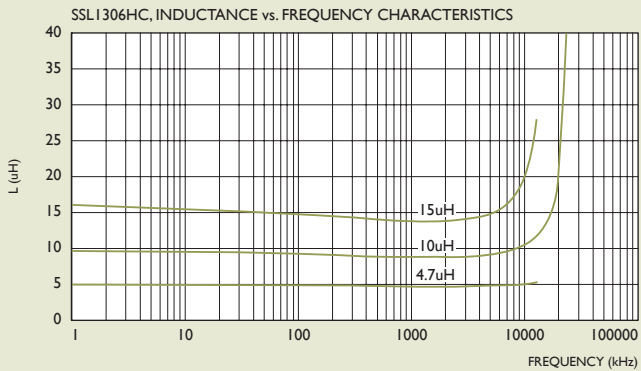
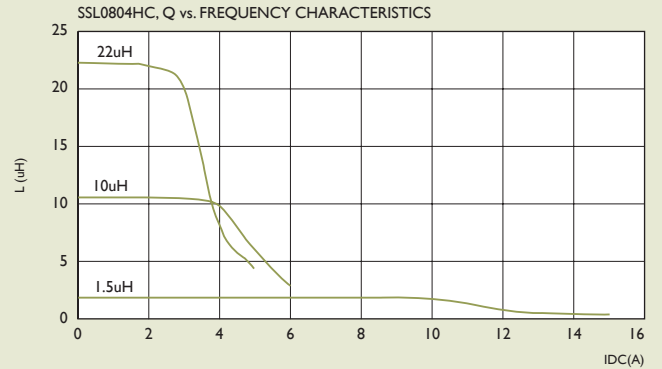
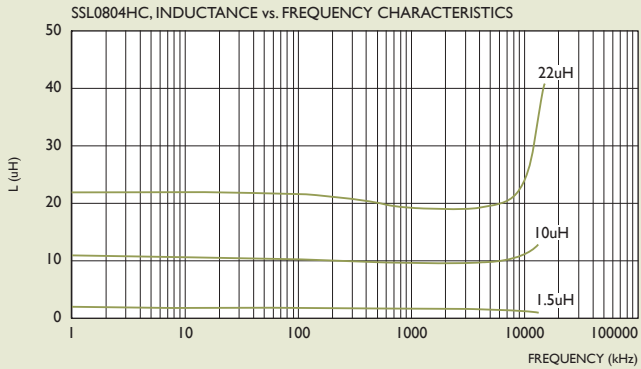
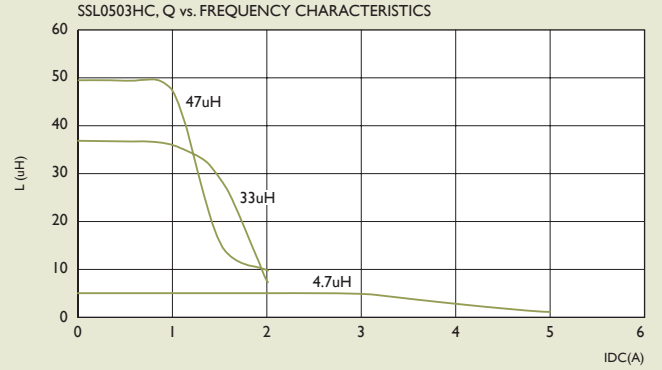
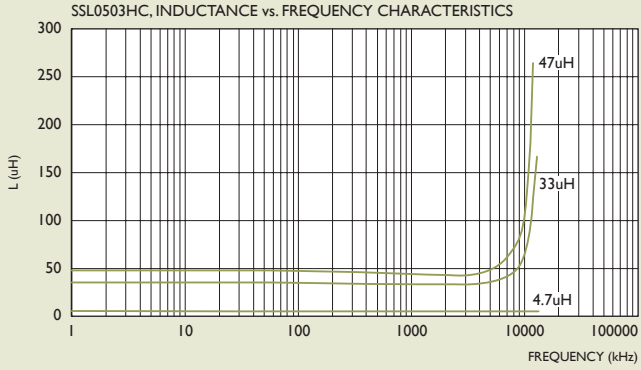
I-2 ENVIRONMENTAL PERFORMANCE

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 (ΔC)</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 (Δ 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 (Δ 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

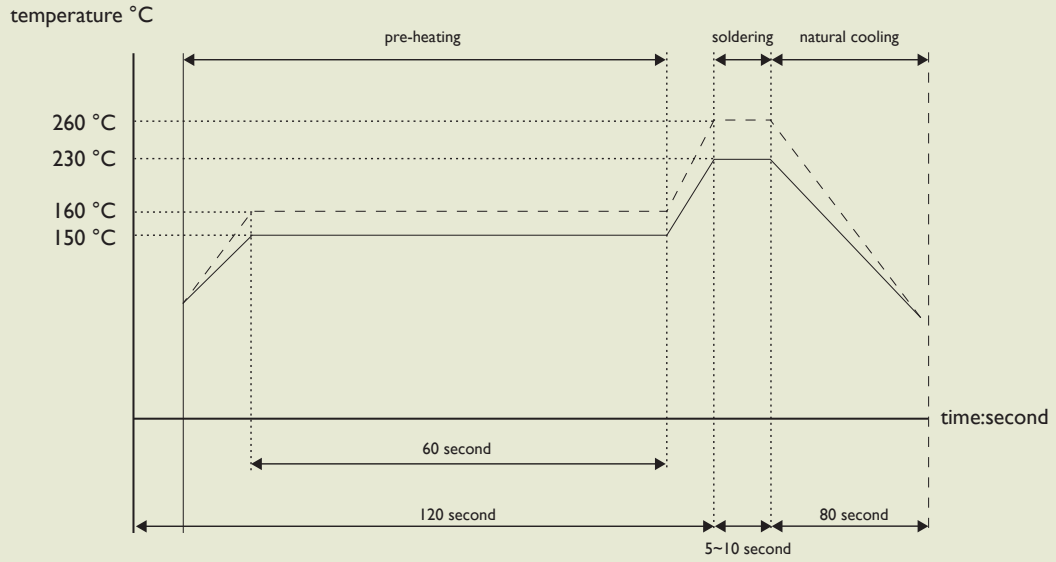
Curves of SSL Series





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