

SDT0402 Series

SMD Power Inductors

APPLICATIONS

Board mounted DC-DC converters

Miniature power supplies, and voltage multiplying circuits.

These inductors are designed for a wide variety of applications including board mounted DC-DC converters, miniature power supplies, and voltage multiplying circuits. They function equally well in filter and smoothing circuit applications.

The Yageo SDT Series represents the ultimate in cost effective miniature power inductors. They are constructed of materials specially developed for surface mount applications to ensure the best possible reliability and ease of using and handling.

Because of their "swinging" inductance vs. current characteristics, the SDT0402 Series can be used as ultra high L inductors at zero or low current.

SPECIFICATIONS

PART NO.	INDUCTANCE		OPERATING PARAMETERS				
	@100kHz, 0 Adc (μ H \pm 20%)	DC RESISTANCE (Ω) Max.	INDUCTANCE RATING * (μ H)	CURRENT RATING ** (A)	ENERGY STORAGE (μ Joules) Max.	SWITCHING FREQUENCY (MHz) Max.	SRF (MHz)
SDT0402T-1R0M-S	1.0	0.045	0.60	2.0	1.8	1 MHz	157
SDT0402T-1R5M-S	1.5	0.050	0.80	1.9	1.8	1 MHz	108
SDT0402T-2R2M-S	2.2	0.060	0.90	1.5	1.8	1 MHz	92
SDT0402T-3R3M-S	3.3	0.070	1.5	1.2	1.4	1 MHz	69
SDT0402T-4R7M-S	4.7	0.080	2.0	1.2	1.6	1 MHz	59
SDT0402T-6R8M-S	6.8	0.085	3.0	1.0	1.9	1 MHz	51
SDT0402T-100M-S	10	0.095	5.0	0.7	1.2	1 MHz	33
SDT0402T-150M-S	15	0.135	6.0	0.6	1.1	1 MHz	26
SDT0402T-220M-S	22	0.160	10	0.5	1.2	1 MHz	20
SDT0402T-330M-S	33	0.275	12	0.45	1.5	1 MHz	17
SDT0402T-470M-S	47	0.340	20	0.34	1.3	1 MHz	12
SDT0402T-680M-S	68	0.575	30	0.29	1.4	1 MHz	11
SDT0402T-101M-S	100	1.100	40	0.24	1.5	1 MHz	9.4
SDT0402T-151M-S	150	1.400	60	0.20	1.4	500 KHz	6.7
SDT0402T-221M-S	220	2.250	90	0.17	1.6	500 KHz	6.1
SDT0402T-331M-S	330	2.900	100	0.16	1.4	500 KHz	4.7
SDT0402T-471M-S	470	3.600	150	0.14	1.5	500 KHz	3.85
SDT0402T-681M-S	680	4.550	200	0.12	1.4	500 KHz	3.1
SDT0402T-102M-S	1000	8.100	400	0.08	1.4	500 KHz	2.3

* Measured at the rated current. Refer to curves below for more detail.

** Average maximum allowable current. SDT Series inductors are designed for current spikes as high as 2X the current rating.

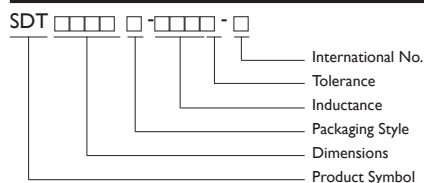
Operating Temperature Range -40°C to +85°C



FEATURES

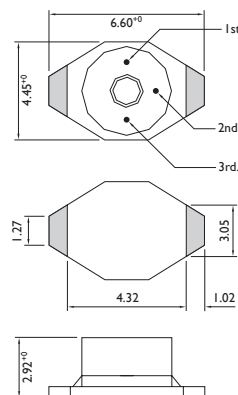
- Ultra high L and low current
- Functions equally well in filter and smoothing circuit applications.
- Available in 2 sizes.

PRODUCT IDENTIFICATION



- Packaging: T: Tape and Reel
- Tolerance: M: \pm 20%
- Note: YAGEO will start to release SDT 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. SDT0402T-1R0M-N

SHAPES AND DIMENSIONS



Dimensions : mm



ELECTRICAL CHARACTERISTICS : LEAD-FREE & ROHS COMPLIANCE

PART NO.	INDUCTANCE (UH)	RDC (Ω)MAX	SRF (MHz)typ	CURRENT RATING (A)	Inductance (uH)	MAX ENERGY (uJoules)	MAX SWITCHING Frequency
SDT0402T-1R0 □ -N	1	0.045	157	2	0.6	1.8	1MHz
SDT0402T-1R5 □ -N	1.5	0.05	108	1.9	0.8	1.8	1MHz
SDT0402T-2R2 □ -N	2.2	0.06	92	1.5	0.9	1.8	1MHz
SDT0402T-3R3 □ -N	3.3	0.07	69	1.2	1.5	1.4	1MHz
SDT0402T-4R7 □ -N	4.7	0.08	59	1.2	2	1.6	1MHz
SDT0402T-6R8 □ -N	6.8	0.085	51	1	3	1.9	1MHz
SDT0402T-100 □ -N	10	0.095	33	0.7	5	1.2	1MHz
SDT0402T-150 □ -N	15	0.135	26	0.6	6	1.1	1MHz
SDT0402T-220 □ -N	22	0.16	20	0.5	10	1.2	1MHz
SDT0402T-330 □ -N	33	0.275	17	0.45	12	1.5	1MHz
SDT0402T-470 □ -N	47	0.34	12	0.34	20	1.3	1MHz
SDT0402T-680 □ -N	68	0.575	11	0.29	30	1.4	1MHz
SDT0402T-101 □ -N	100	1.1	9.4	0.24	40	1.5	1MHz
SDT0402T-151 □ -N	150	1.4	6.7	0.2	60	1.4	500kHz
SDT0402T-221 □ -N	220	2.25	6.1	0.17	90	1.6	500kHz
SDT0402T-331 □ -N	330	2.9	4.7	0.16	100	1.4	500kHz
SDT0402T-471 □ -N	470	3.6	3.85	0.14	150	1.5	500kHz
SDT0402T-681 □ -N	680	4.55	3.1	0.12	200	1.4	500kHz
SDT0402T-102 □ -N	1000	8.1	2.3	0.08	400	1.4	500kHz

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

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

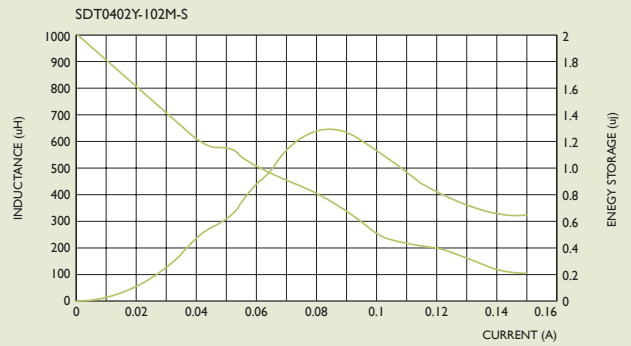
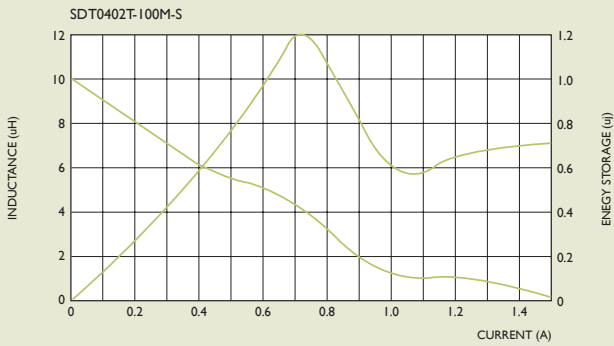
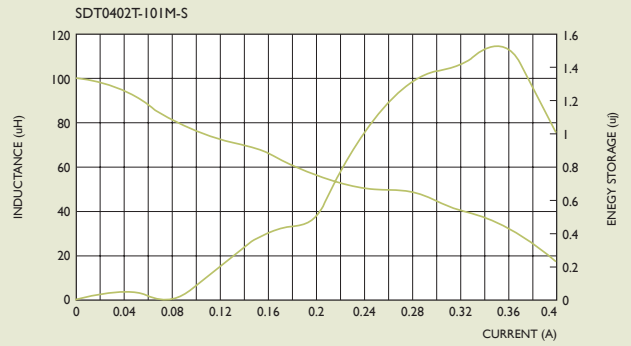
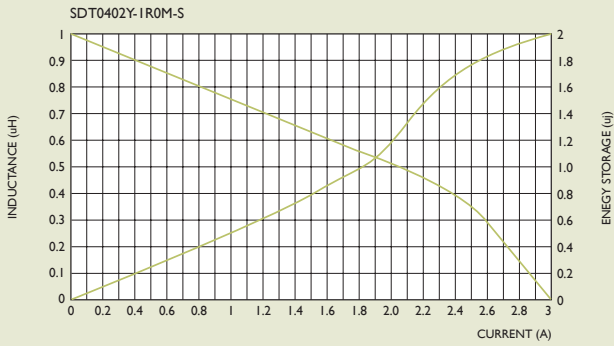
2. Inductance Rating: Measured at the rated current. SDT Series inductors are design for current

3. Current Rating: Average maximum allowable current. SDT Series inductors are design for current spikes as high as 2X the current rating; TEST FREQUENCY : 100 KHz/0.1V

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

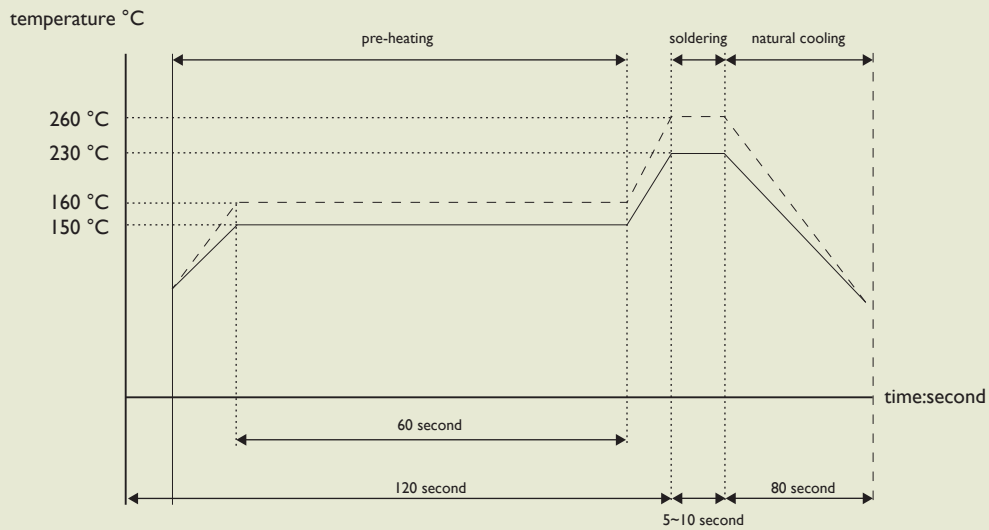


TYPICAL INDUCTANCE ENERGY STORAGE VS. CURRENT



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 ······

SMD Power Inductors

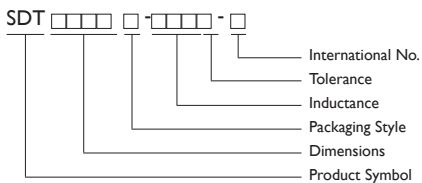
SDT0804 Series



FEATURES

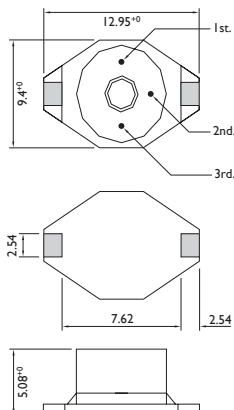
- Ultra high L and low current
- Functions equally well in filter and smoothing circuit applications.
- Available in 2 sizes.

PRODUCT IDENTIFICATION



- Packaging: T: Tape and Reel
- Tolerance: M: $\pm 20\%$
- Note: YAGEO will start to release SDT 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. SDT0402T-IR0M-N

SHAPES AND DIMENSIONS



APPLICATIONS

Board mounted DC-DC converters

Miniature power supplies, and voltage multiplying circuits.

These inductors are designed for a wide variety of applications including board mounted DC-DC converters, miniature power supplies, and voltage multiplying circuits. They function equally well in filter and smoothing circuit applications.

The Yageo SDT Series represents the ultimate in cost effective miniature power inductors. They are constructed of materials specially developed for surface mount applications to ensure the best possible reliability and ease of use and handling.

SPECIFICATIONS

OPERATING PARAMETERS

PART NO.	INDUCTANCE @100KHZ, 0 ADC (μ H $\pm 20\%$)	DC RESISTANCE (Ω) Max.	SRF TYP (MHz)	INDUCTANCE RATING* (Ω H)	CURRENT RATING** (A)	ENERGY STORAGE (μ J) Max.	SWITCHING FREQUENCY Max.
SDT0804T-IR0M-S	1.0	0.025	60	0.50	5.0	9	1 MHz
SDT0804T-IR5M-S	1.5	0.030	55	0.70	5.0	12	1 MHz
SDT0804T-2R2M-S	2.2	0.035	55	1.00	5.0	15	1 MHz
SDT0804T-3R3M-S	3.3	0.040	50	1.50	5.0	16	1 MHz
SDT0804T-4R7M-S	4.7	0.045	45	2.00	3.0	10	1 MHz
SDT0804T-6R8M-S	6.8	0.050	40	4.00	2.5	14	1 MHz
SDT0804T-100M-S	10	0.055	35	5.00	2.0	11	1 MHz
SDT0804T-150M-S	15	0.060	25	6.00	1.8	12	1 MHz
SDT0804T-220M-S	22	0.084	22	10	1.5	11	1 MHz
SDT0804T-330M-S	33	0.090	18	12	1.3	13	1 MHz
SDT0804T-470M-S	47	0.11	16	27	1.0	13	1 MHz
SDT0804T-680M-S	68	0.15	12	40	0.90	17	1 MHz
SDT0804T-101M-S	100	0.29	9	50	0.80	15	1 MHz
SDT0804T-151M-S	150	0.36	8	80	0.60	15	500 KHz
SDT0804T-221M-S	220	0.39	6	90	0.50	10	500 KHz
SDT0804T-331M-S	330	0.73	5	150	0.40	13	500 KHz
SDT0804T-471M-S	470	0.88	4	200	0.35	13	500 KHz
SDT0804T-681M-S	680	1.15	3	300	0.30	13	500 KHz
SDT0804T-102M-S	1000	1.45	2.5	420	0.25	13	500 KHz

* Measured at the rated current. Refer to curves below for more detail.

** Average maximum allowable current. SDT Series inductors are designed for current spikes as high as 2X the current rating.

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



ELECTRICAL CHARACTERISTICS : LEAD-FREE & ROHS COMPLIANCE

PART NO.	INDUCTANCE (μ H)	RDC (Ω) Max.	SRF (MHz)TYP	CURRENT RAGING (A)	INDUCTANCE CE (μ H)	MAX ENERGE (μ JOULES)	MAX SWITCHING Frequency
SDT0804T-1R0 □ -S	1.0	0.025	60	5.0	0.5	9	1 MHz
SDT0804T-1R5 □ -S	1.5	0.030	55	5.0	0.7	12	1 MHz
SDT0804T-2R2 □ -S	2.2	0.035	55	5.0	1	15	1 MHz
SDT0804T-3R3 □ -S	3.3	0.040	50	5.0	1.5	16	1 MHz
SDT0804T-4R7 □ -S	4.7	0.045	45	3.0	2	10	1 MHz
SDT0804T-6R8 □ -S	6.8	0.050	40	2.5	4	14	1 MHz
SDT0804T-100 □ -S	10	0.055	35	2.0	5	11	1 MHz
SDT0804T-150 □ -S	15	0.060	25	1.8	6	12	1 MHz
SDT0804T-220 □ -S	22	0.084	22	1.5	10	11	1 MHz
SDT0804T-330 □ -S	33	0.090	18	1.3	12	13	1 MHz
SDT0804T-470 □ -S	47	0.11	16	1.0	27	13	1 MHz
SDT0804T-680 □ -S	68	0.15	12	0.90	40	17	1 MHz
SDT0804T-101 □ -S	100	0.29	9	0.80	50	15	1 MHz
SDT0804T-151 □ -S	150	0.36	8	0.60	80	15	500 KHz
SDT0804T-221 □ -S	220	0.39	6	0.50	90	10	500 KHz
SDT0804T-331 □ -S	330	0.73	5	0.40	150	13	500 KHz
SDT0804T-471 □ -S	470	0.88	4	0.35	200	13	500 KHz
SDT0804T-681 □ -S	680	1.15	3	0.30	300	13	500 KHz
SDT0804T-102 □ -S	1000	1.45	2.5	0.25	420	13	500 KHz

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

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

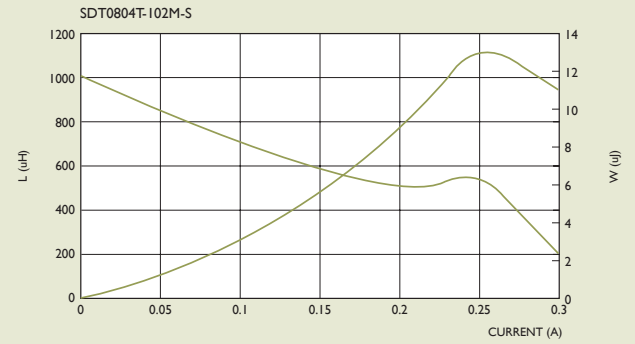
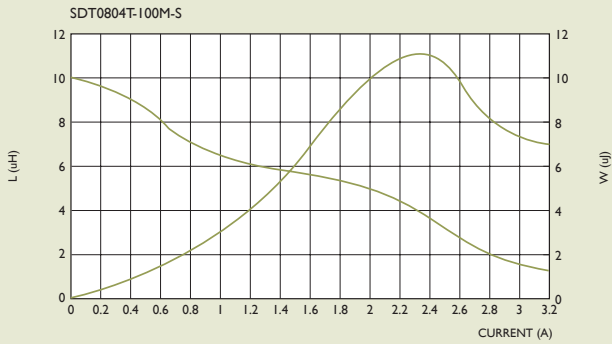
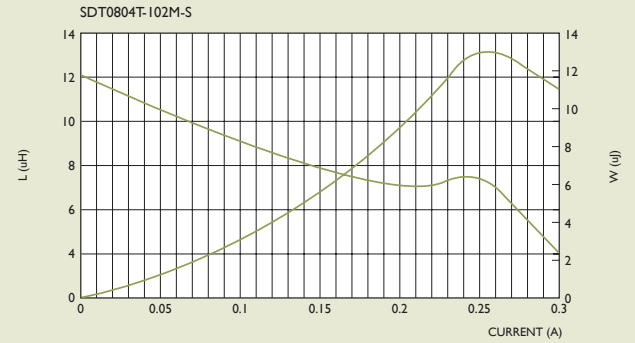
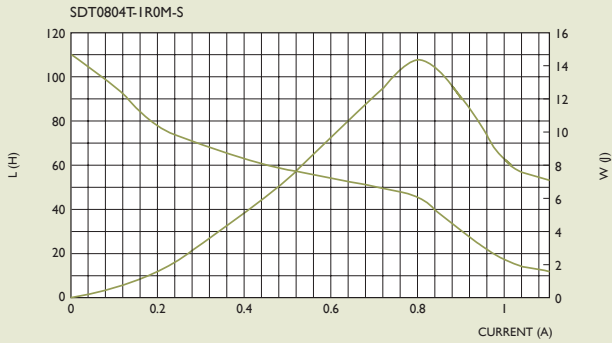
2. Inductance Rating: Measured at the ratted current.SDT Series inductors are design for current

3. Current Raging:Average maximum allowable current.SDT Series inductors are design for current spikes as high as 2X the current rating;TEST FREQUENCY :100 KHz/0.1V

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

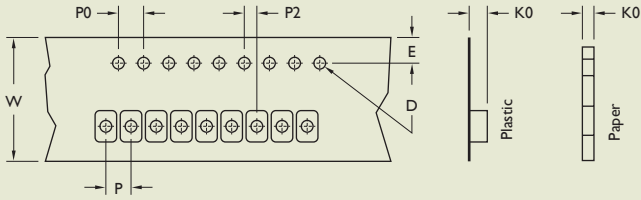


TYPICAL INDUCTANCE ENERGY STORAGE VS. CURRENT





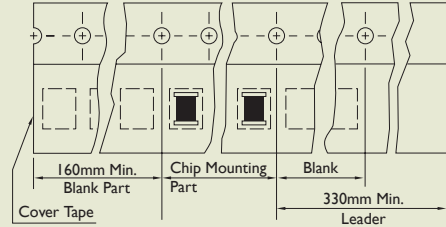
TAPE DIMENSIONS



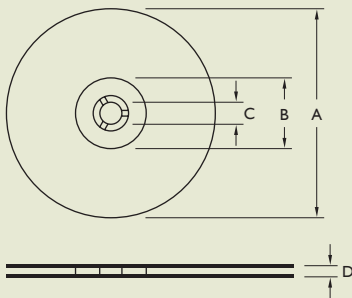
TAPE MATERIAL

Carrier Tape : Polystyrene

Cover Type : Polyethylene

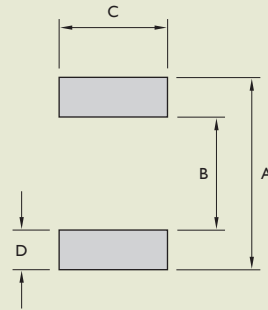


REEL DIMENSIONS



RECOMMENDED PATTERN

Land Pattern



Dimensions : mm

TYPE	TAPE DIMENSIONS						
	K0	D	E	W	P	P0	P2
SDT0402	3.2	1.55	1.75	12	8	4	2
SDT0804	5.4	1.55	1.75	24	16	4	2

RECOMMENDED PATTERN				REEL DIMENSIONS				QUANTITY PCS/REEL	
A	B	C	D	A	B	C	D	178	330
6.86	4.06	3.56	1.40	330	100	13	13.4	-	2500
				178	60	13	13.2	750	-
13.21	7.37	2.79	2.92	330	100	13	24.4	-	750



SDT 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) 1 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.															



RECOMMEND SOLDERING CONDITIONS

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

