

# V. Environmental tests



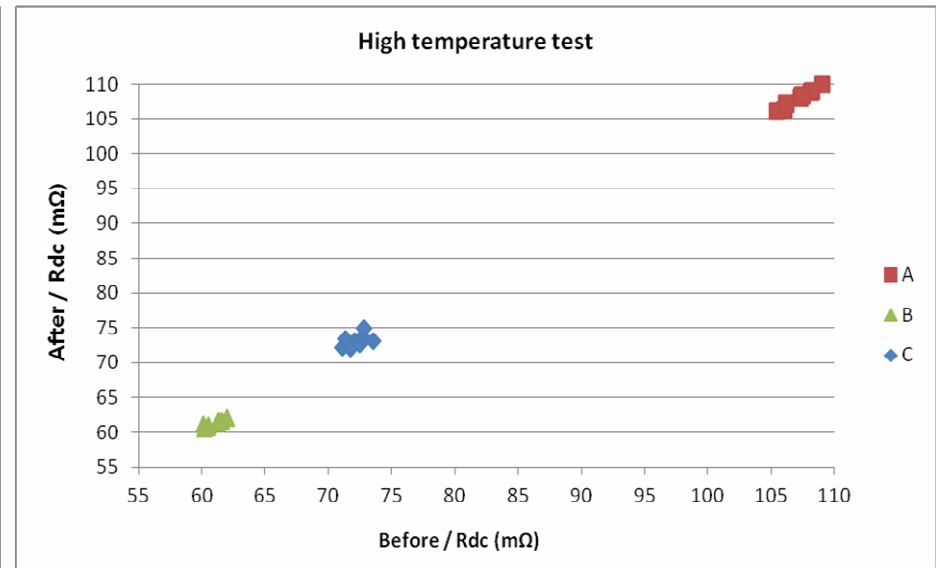
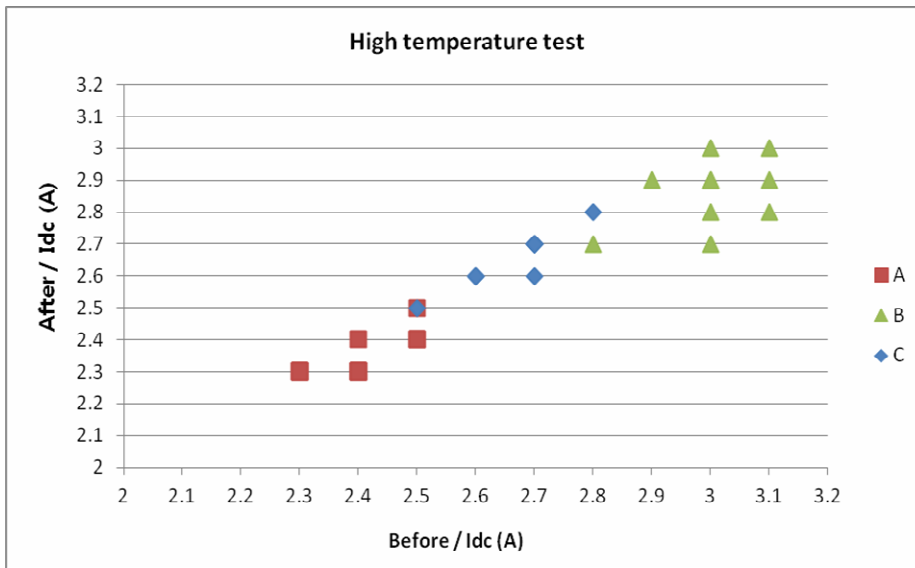
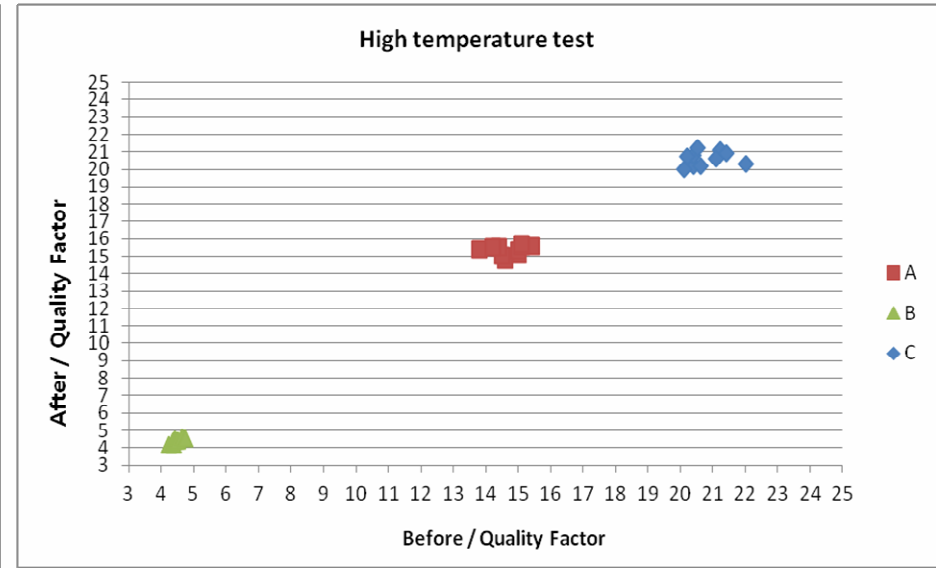
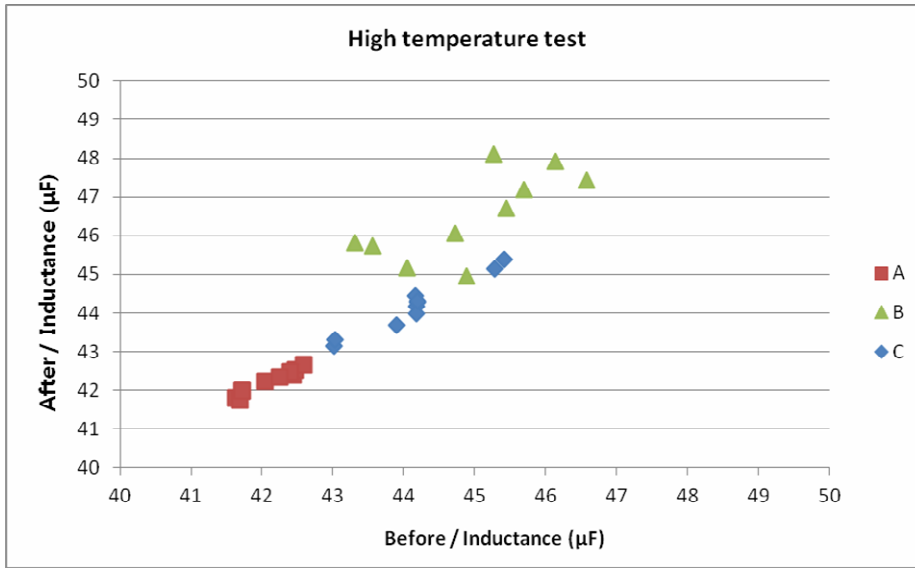
## Environmental test conditions

- **Test:**

- High temperature test:  $(125 \pm 2) ^\circ\text{C}$ , 500 hr
- Low temperature test:  $(-40 \pm 2) ^\circ\text{C}$ , 500 hr
- High temperature and high humidity operation test:  
 $(85 \pm 2) ^\circ\text{C}$ ,  $(85 \pm 3) \% \text{ R.H.}$ , 1000 hr, rated current
- Thermal shock test:  $(125 \pm 2) ^\circ\text{C}$ ,  $(-40 \pm 2) ^\circ\text{C}$ , each 15 min., 500 cycles
- 直流重疊特性

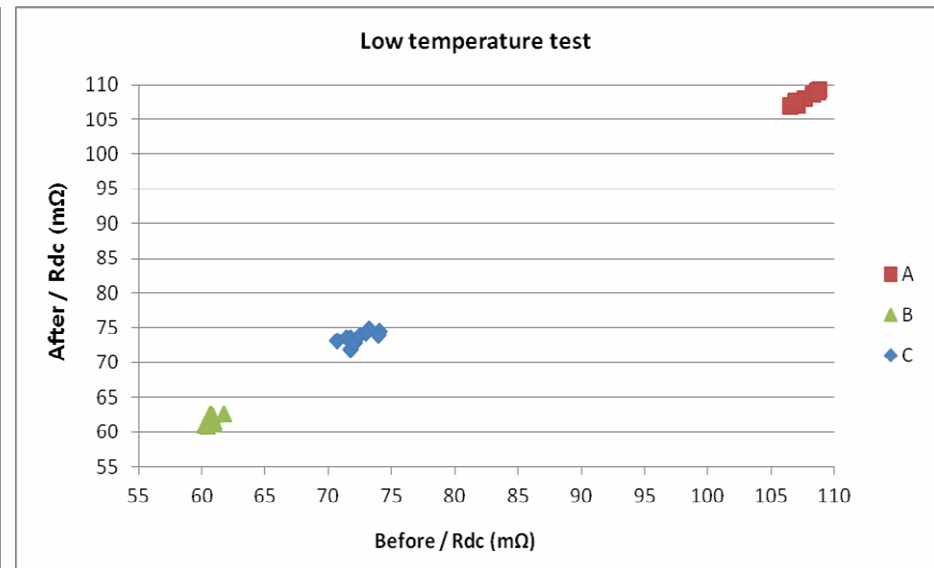
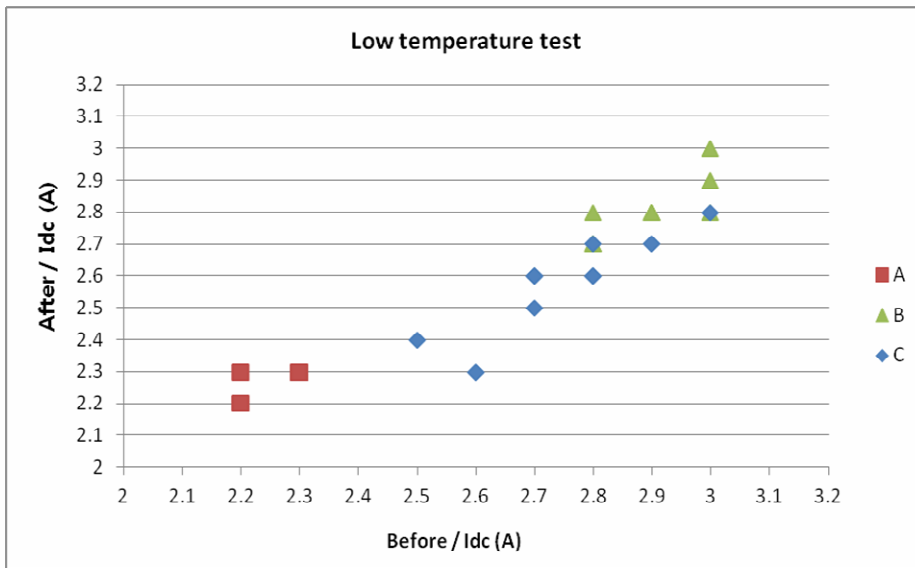
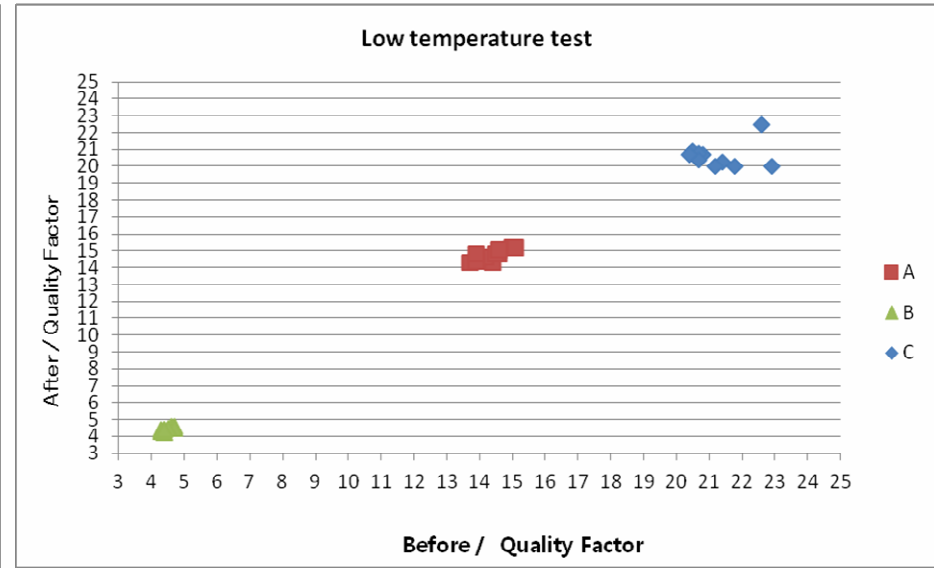
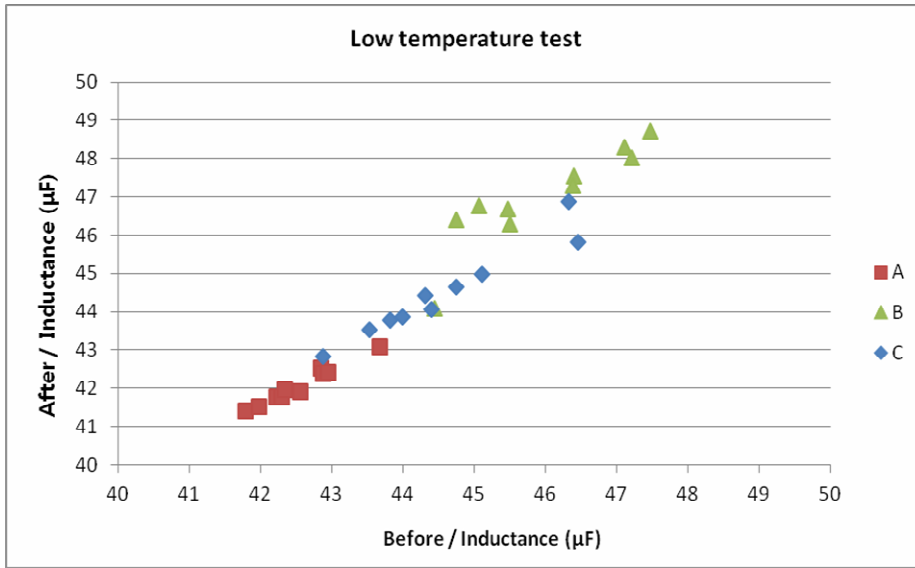
# Summary

# High temp. test



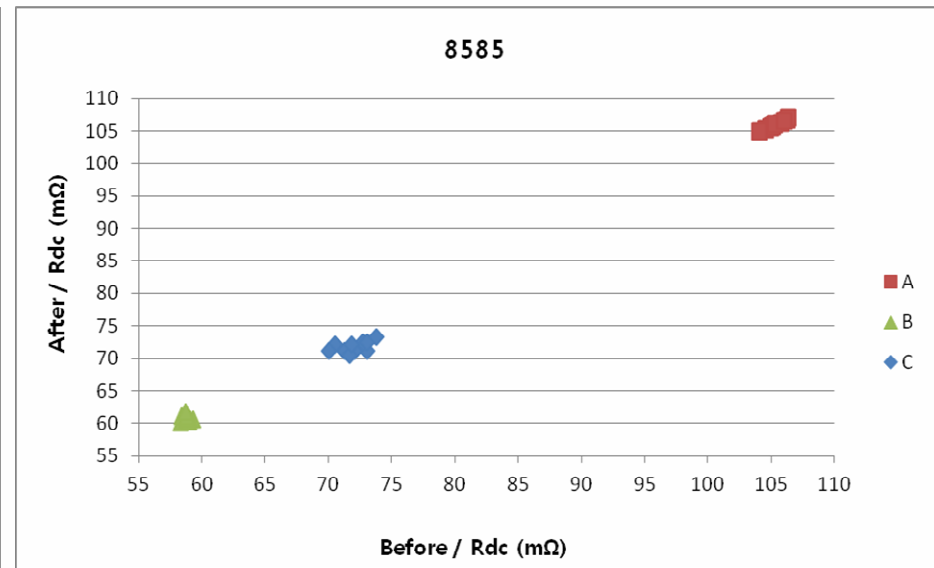
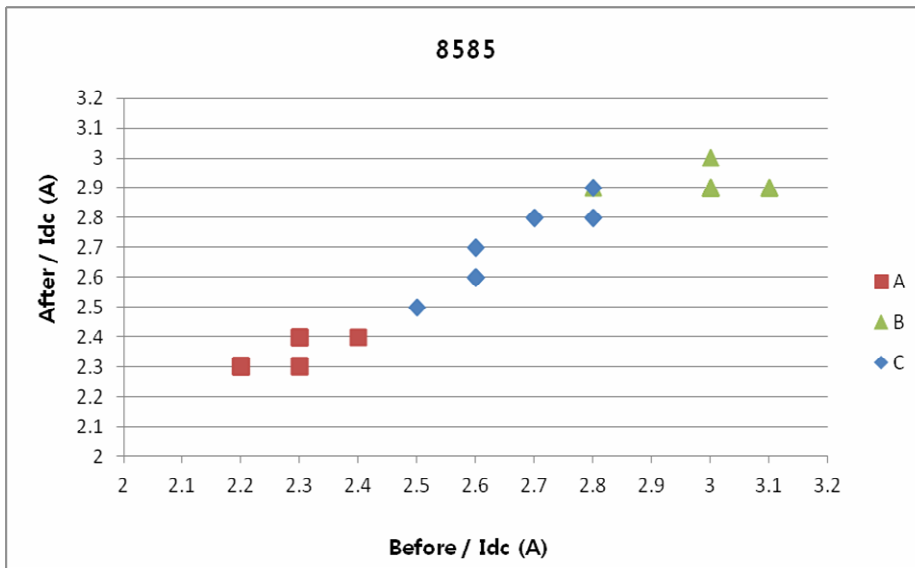
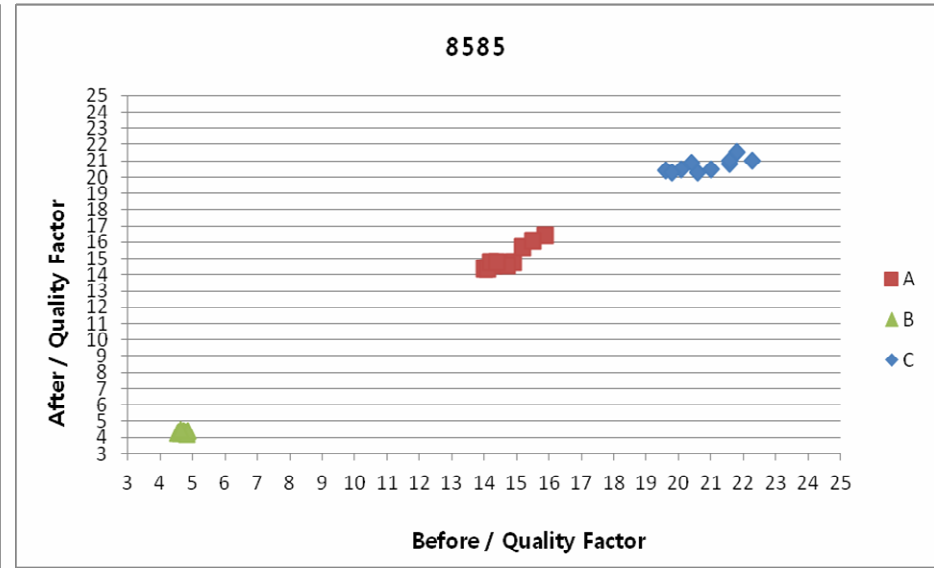
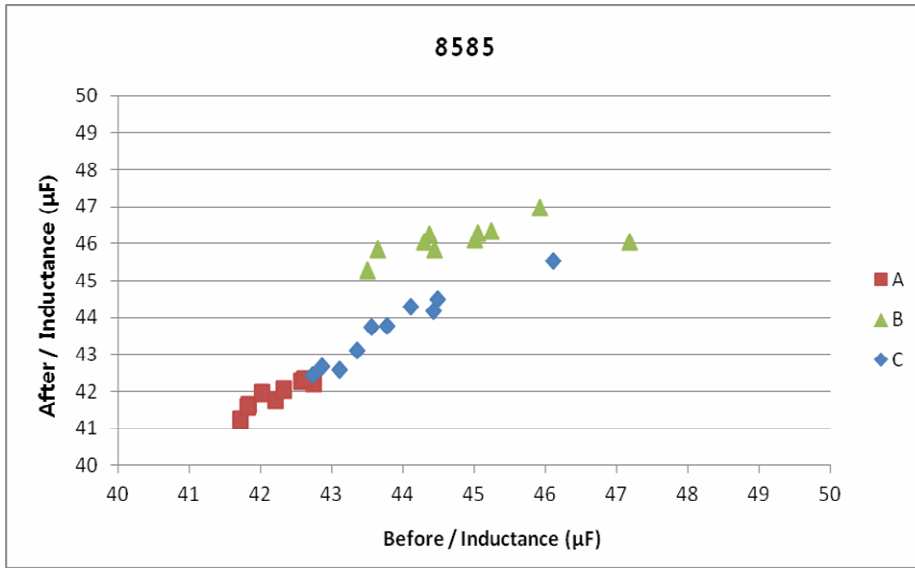
# Summary

# Low temp. test



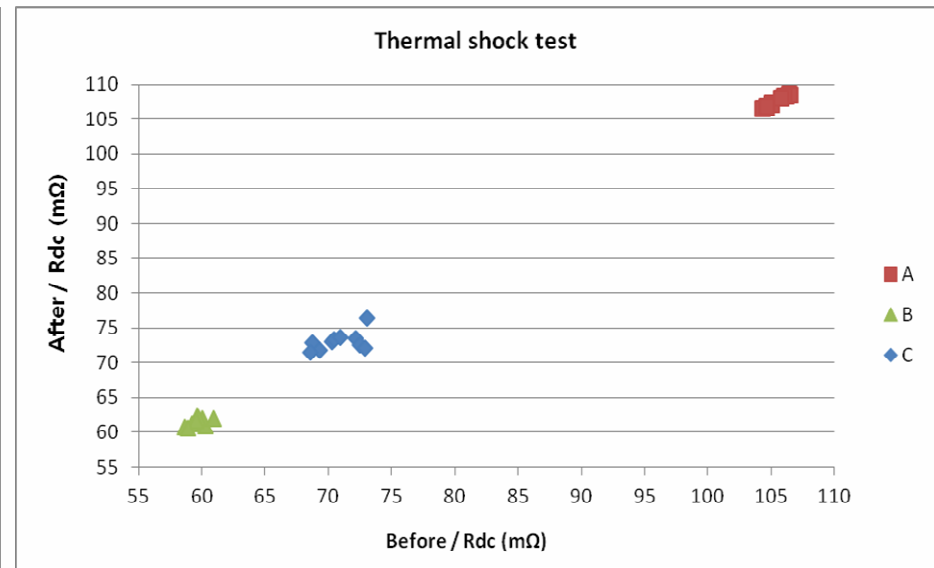
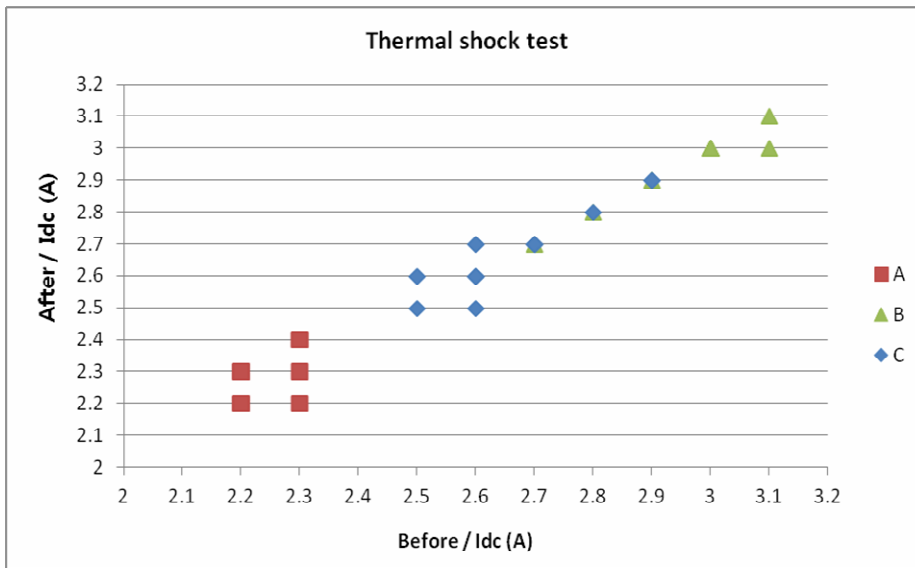
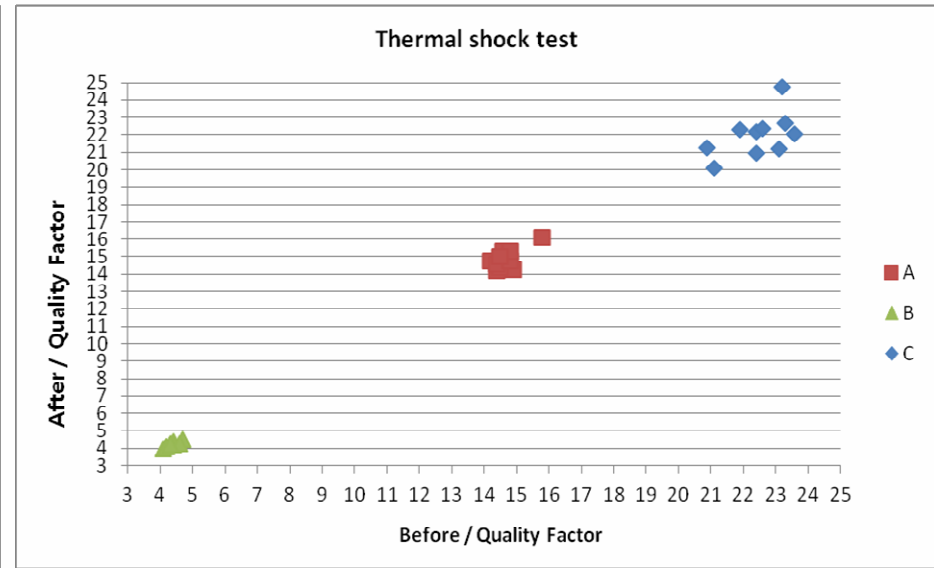
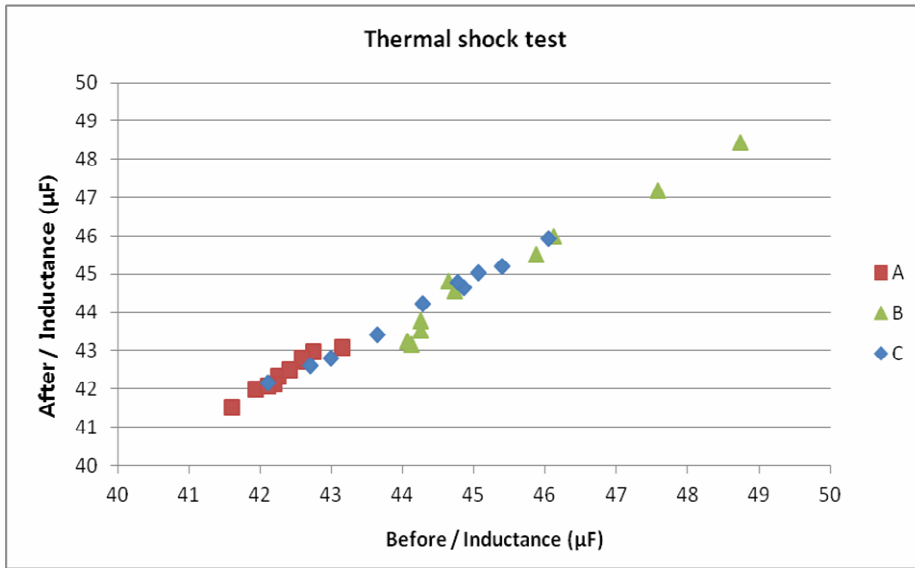
# Summary

# High temp. & high humidity



# Summary

# Thermal shock



High temperature test	Inductance ( $\mu\text{F}$ )			Quality Factor			Idc (A)			Rdc (m $\Omega$ )		
	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)
#1	42.44	42.39	-0.12	15.0	15.1	0.66	2.3	2.3	0.00	106.0	106.3	0.28
#2	41.72	41.98	0.62	14.6	14.8	1.35	2.4	2.3	-4.35	107.3	108.0	0.65
#3	42.48	42.53	0.12	14.5	15.0	3.33	2.4	2.3	-4.35	107.4	108.3	0.83
#4	42.59	42.64	0.12	14.4	15.5	7.10	2.3	2.3	0.00	105.4	106.0	0.57
#5	42.05	42.21	0.38	15.0	15.3	1.96	2.3	2.3	0.00	109.0	109.9	0.82
#6	41.64	41.79	0.36	13.8	15.4	10.39	2.5	2.4	-4.17	108.1	108.8	0.64
#7	42.40	42.46	0.14	15.4	15.6	1.28	2.5	2.4	-4.17	108.2	109.0	0.73
#8	41.70	41.74	0.10	14.2	15.5	8.39	2.5	2.5	0.00	107.3	108.1	0.74
#9	42.26	42.32	0.14	15.1	15.6	3.21	2.4	2.3	-4.35	107.5	108.3	0.74
#10	41.72	41.99	0.64	15.1	15.7	3.82	2.4	2.4	0.00	106.2	107.1	0.84
Average	42.10	42.21	0.00	14.7	15.4	0.04	2.4	2.4	-0.02	107.2	108.0	0.01

\* Test condition: 0.1 V, 100 KHz, 25 % rate current drop

High temperature test	Inductance ( $\mu\text{F}$ )			Quality Factor			Idc (A)			Rdc (m $\Omega$ )		
	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)
#1	43.32	45.81	5.44	4.2	4.2	-1.20	3.1	2.8	-10.71	61.6	61.6	0.00
#2	44.88	44.95	0.16	4.4	4.2	-4.31	3.0	3.0	0.00	62.0	62.1	0.16
#3	44.73	46.04	2.85	4.4	4.3	-0.69	3.0	2.9	-3.45	61.3	61.6	0.49
#4	45.27	48.11	5.90	4.4	4.4	0.90	3.0	2.7	-11.11	61.2	61.2	0.00
#5	43.56	45.72	4.72	4.4	4.4	1.13	3.1	2.9	-6.90	60.4	60.6	0.33
#6	44.05	45.16	2.46	4.3	4.3	-1.17	3.1	3.0	-3.33	60.5	61.0	0.82
#7	45.44	46.70	2.70	4.4	4.4	-0.45	3.0	2.9	-3.45	61.2	61.5	0.49
#8	45.70	47.19	3.16	4.5	4.4	-1.58	3.0	2.8	-7.14	61.3	61.6	0.49
#9	46.13	47.91	3.72	4.6	4.6	-0.65	2.8	2.7	-3.70	60.1	61.1	1.64
#10	46.58	47.42	1.77	4.7	4.5	-3.97	2.9	2.9	0.00	60.2	60.5	0.50
Average	44.97	46.50	0.03	4.4	4.4	-0.01	3.0	2.9	-0.05	61.0	61.3	0.00

\* Test condition: 0.5 V, 1 KHz, 25 % rate current drop



High temperature test	Inductance ( $\mu\text{F}$ )			Quality Factor			Idc (A)			Rdc (m $\Omega$ )		
	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)
#1	45.42	45.37	-0.11	20.4	20.2	-0.99	2.5	2.5	0.00	71.1	72.1	1.39
#2	44.18	44.16	-0.05	22.0	20.3	-8.37	2.7	2.6	-3.85	72.7	73.6	1.22
#3	43.90	43.69	-0.48	21.2	21.1	-0.47	2.7	2.7	0.00	72.1	73.1	1.37
#4	44.20	44.26	0.14	20.1	20.0	-0.50	2.7	2.7	0.00	72.5	73.3	1.09
#5	44.18	43.96	-0.50	20.4	20.8	1.92	2.6	2.6	0.00	73.5	73.1	-0.55
#6	44.17	44.42	0.56	20.6	20.2	-1.98	2.7	2.7	0.00	71.7	72.0	0.42
#7	43.02	43.13	0.26	21.1	20.6	-2.43	2.8	2.8	0.00	72.8	74.9	2.80
#8	44.19	44.30	0.25	20.2	20.7	2.42	2.7	2.7	0.00	71.7	72.1	0.55
#9	43.03	43.31	0.65	21.4	20.9	-2.39	2.7	2.7	0.00	71.3	73.4	2.86
#10	45.29	45.12	-0.38	20.5	21.2	3.30	2.6	2.6	0.00	72.5	72.7	0.28
Average	44.16	44.17	0.00	20.8	20.6	-0.01	2.7	2.7	0.00	72.2	73.0	0.01

\* Test condition: 0.5 V, 100 KHz, 20 % rate current drop

Low temperature test	Inductance ( $\mu\text{F}$ )			Quality Factor			Idc (A)			Rdc (m $\Omega$ )		
	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)
#1	42.84	42.52	-0.75	14.4	14.3	-0.70	2.2	2.2	0.00	106.5	106.9	0.37
#2	42.88	42.40	-1.13	13.7	14.3	4.20	2.2	2.3	4.35	107.6	108.0	0.37
#3	42.22	41.79	-1.03	15.0	15.2	1.32	2.3	2.3	0.00	108.8	109.3	0.46
#4	41.79	41.43	-0.87	15.1	15.2	0.66	2.3	2.3	0.00	106.9	107.5	0.56
#5	43.67	43.08	-1.37	14.2	14.6	2.74	2.2	2.2	0.00	107.1	107.2	0.09
#6	41.98	41.53	-1.08	14.6	14.8	1.35	2.3	2.3	0.00	108.3	108.7	0.37
#7	42.29	41.77	-1.24	14.5	14.8	2.03	2.3	2.3	0.00	107.0	107.3	0.28
#8	42.95	42.43	-1.23	13.9	14.4	3.47	2.2	2.2	0.00	106.9	107.6	0.65
#9	42.55	41.91	-1.53	13.9	14.8	6.08	2.2	2.3	4.35	108.6	109.2	0.55
#10	42.34	41.97	-0.88	14.6	15.1	3.31	2.3	2.3	0.00	108.7	109.0	0.28
Average	42.55	42.08	-0.01	14.4	14.8	0.02	2.3	2.3	0.01	107.6	108.1	0.00

\* Test condition: 0.1 V, 100 KHz, 25 % rate current drop

Low temperature test	Inductance ( $\mu\text{F}$ )			Quality Factor			Idc (A)			Rdc (m $\Omega$ )		
	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)
#1	45.50	46.29	1.71	4.4	4.4	0.00	2.8	2.8	0.00	60.2	61.0	1.31
#2	44.75	46.42	3.60	4.3	4.4	2.27	3.0	2.9	-3.45	60.5	61.3	1.31
#3	47.11	48.32	2.50	4.6	4.6	0.00	2.8	2.7	-3.70	61.7	62.6	1.44
#4	44.44	44.09	-0.79	4.4	4.2	-4.76	3.0	3.0	0.00	60.6	61.4	1.30
#5	47.47	48.74	2.61	4.7	4.6	-2.17	2.8	2.7	-3.70	60.9	61.2	0.49
#6	45.07	46.78	3.66	4.4	4.2	-4.76	3.0	2.8	-7.14	60.7	62.6	3.04
#7	47.21	48.04	1.73	4.7	4.5	-4.44	2.8	2.7	-3.70	60.4	60.8	0.66
#8	45.47	46.69	2.61	4.3	4.3	0.00	2.9	2.8	-3.57	60.8	62.3	2.41
#9	46.40	47.55	2.42	4.5	4.5	0.0%	2.9	2.8	-3.57	60.6	61.4	1.30
#10	46.38	47.30	1.95	4.4	4.4	0.00	2.9	2.8	-3.57	61.0	61.5	0.81
Average	45.98	47.02	0.02	4.5	4.4	-0.01	2.9	2.8	-0.03	60.7	61.6	0.01

\* Test condition: 0.5 V, 1 KHz, 25 % rate current drop

Low temperature test	Inductance ( $\mu\text{F}$ )			Quality Factor			Idc (A)			Rdc (m $\Omega$ )		
	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)
#1	44.39	44.06	-0.75	20.8	20.7	-0.48	2.8	2.7	-3.70	74.0	74.6	0.80
#2	44.31	44.44	0.29	22.6	22.5	-0.44	2.8	2.6	-7.69	70.7	73.2	3.42
#3	46.46	45.82	-1.40	20.5	20.9	1.91	2.5	2.4	-4.17	71.7	73.6	2.58
#4	42.87	42.84	-0.07	21.4	20.3	-5.42	2.8	2.6	-7.69	71.7	71.9	0.28
#5	45.11	44.99	-0.27	20.7	20.8	0.48	2.7	2.5	-8.00	71.4	73.7	3.12
#6	46.33	46.89	1.19	21.8	20.0	-9.00	2.6	2.3	-13.04	72.1	72.9	1.10
#7	44.74	44.64	-0.22	21.2	20.0	-6.00	2.7	2.6	-3.85	73.2	74.8	2.14
#8	43.81	43.80	-0.02	20.7	20.4	-1.47	2.9	2.7	-7.41	73.9	74.0	0.14
#9	43.99	43.88	-0.25	20.4	20.7	1.45	2.7	2.6	-3.85	72.5	74.0	2.03
#10	43.53	43.55	0.05	22.9	20.0	-14.50	3.0	2.8	-7.14	73.0	74.3	1.70
Average	44.55	44.49	0.00	21.3	20.6	-0.03	2.8	2.6	-0.07	72.4	73.7	0.02

\* Test condition: 0.5 V, 100 KHz, 20 % rate current drop

High temp. high humidity	Inductance ( $\mu\text{F}$ )				Quality Factor				Idc (A)				Rdc ( $\text{m}\Omega$ )			
	Before	Mid	After	Change rate (%)	Before	Mid	After	Change rate (%)	Before	Mid	After	Change rate (%)	Before	Mid	After	Change rate (%)
#1	41.83	41.78	41.64	-0.46	14.9	14.9	14.8	-0.68	2.3	2.3	2.3	0.00	105.2	107.1	106.1	0.81
#2	42.57	42.55	42.27	-0.71	14.0	13.9	14.4	2.78	2.2	2.2	2.3	4.35	104.5	106.2	105.3	0.72
#3	42.74	42.64	42.21	-1.26	14.3	15.0	14.6	2.05	2.2	2.2	2.3	4.35	104.9	106.4	105.6	0.63
#4	42.21	42.03	41.74	-1.13	14.1	14.7	14.4	2.08	2.3	2.3	2.3	0.00	106.3	107.9	106.8	0.50
#5	42.61	42.53	42.34	-0.64	15.2	15.2	15.7	3.18	2.2	2.3	2.3	4.35	105.1	106.5	105.8	0.67
#6	42.02	42.13	41.95	-0.17	14.7	14.1	14.6	-0.68	2.3	2.3	2.4	4.17	105.8	106.9	106.2	0.44
#7	42.32	42.38	42.07	-0.59	15.9	15.8	16.4	3.05	2.4	2.4	2.4	0.00	104.1	105.8	105.0	0.86
#8	41.72	41.66	41.24	-1.16	14.2	14.4	14.8	4.05	2.3	2.3	2.4	4.17	105.3	106.9	106.1	0.73
#9	42.32	42.57	42.04	-0.67	14.4	14.3	14.8	2.70	2.2	2.2	2.3	4.35	106.3	107.8	107.0	0.62
#10	41.82	42.02	41.57	-0.60	15.5	14.6	16.1	3.73	2.3	2.3	2.4	4.17	106.0	107.5	106.5	0.47
Average	42.22	42.23	41.91	-0.01	14.7	14.7	15.1	0.02	2.3	2.3	2.3	0.03	105.4	106.9	106.0	0.01

\* Test condition: 0.1 V, 100 KHz, 25 % rate current drop

High temp. high humidity	Inductance ( $\mu\text{F}$ )				Quality Factor				Idc (A)				Rdc ( $\text{m}\Omega$ )			
	Before	Mid	After	Change rate (%)	Before	Mid	After	Change rate (%)	Before	Mid	After	Change rate (%)	Before	Mid	After	Change rate (%)
#1	44.44	45.10	45.86	3.10	4.6	4.7	4.3	-7.41	3.0	3.0	3.0	0.00	59.3	60.8	60.6	2.23
#2	45.23	46.93	46.34	2.40	4.8	4.8	4.3	-11.09	3.0	2.9	2.9	-3.45	58.4	60.7	60.0	2.80
#3	43.64	44.22	45.86	4.84	4.5	4.5	4.3	-5.61	3.1	3.1	2.9	-6.90	59.1	60.9	60.6	2.57
#4	43.49	43.74	45.26	3.91	4.6	4.5	4.3	-8.94	3.1	3.1	2.9	-6.90	58.8	60.7	60.7	3.02
#5	45.00	44.96	46.12	2.43	4.8	4.7	4.4	-9.66	3.0	3.1	2.9	-3.45	58.9	60.3	60.4	2.34
#6	44.37	45.82	46.25	4.06	4.6	4.7	4.3	-5.53	3.0	2.9	2.9	-3.45	58.9	60.6	60.7	2.90
#7	47.18	45.31	46.04	-2.48	4.8	4.7	4.2	-14.45	2.8	3.0	2.9	3.45	58.9	60.3	60.8	3.24
#8	44.30	45.08	46.04	3.78	4.7	4.6	4.4	-7.26	3.1	3.0	2.9	-6.90	58.4	60.7	61.0	4.31
#9	45.92	46.80	46.96	2.21	4.9	4.7	4.4	-9.95	3.0	2.8	2.9	-3.45	58.8	60.6	61.1	3.78
#10	45.05	45.41	46.28	2.66	4.6	4.7	4.5	-4.27	3.0	3.0	2.9	-3.45	58.7	60.6	61.7	4.86
Average	44.86	45.34	46.10	0.03	4.7	4.7	4.3	-0.08	3.0	3.0	2.9	-0.03	58.8	60.6	60.8	0.03

\* Test condition: 0.5 V, 1 KHz, 25 % rate current drop

High temp. high humidity	Inductance ( $\mu\text{F}$ )				Quality Factor				Idc (A)				Rdc (m $\Omega$ )			
	Before	Mid	After	Change rate (%)	Before	Mid	After	Change rate (%)	Before	Mid	After	Change rate (%)	Before	Mid	After	Change rate (%)
#1	42.86	42.87	42.68	-0.42	20.1	20.5	20.5	1.95	2.8	2.8	2.8	0.00	71.2	72.3	71.1	-0.11
#2	43.35	43.42	43.12	-0.53	21.0	19.5	20.5	-2.44	2.6	2.5	2.6	0.00	70.5	71.3	72.2	2.35
#3	46.10	46.02	45.53	-1.25	20.6	21.6	20.3	-1.48	2.5	2.5	2.5	0.00	73.0	72.0	71.1	-2.73
#4	43.77	43.81	43.78	0.02	19.6	20.1	20.4	3.92	2.7	2.7	2.8	3.57	72.0	71.9	71.2	-1.22
#5	42.73	42.52	42.44	-0.68	19.8	21.5	20.3	2.46	2.7	2.8	2.8	3.57	71.7	71.5	70.4	-1.75
#6	43.11	42.65	42.60	-1.20	21.8	22.8	21.5	-1.40	2.8	2.9	2.9	3.45	70.0	72.5	71.2	1.67
#7	43.56	43.85	43.75	0.43	21.6	20.0	20.8	-3.85	2.8	2.7	2.8	0.00	72.7	74.1	72.4	-0.36
#8	44.42	44.38	44.18	-0.54	20.4	21.0	20.9	2.39	2.6	2.7	2.7	3.70	73.1	73.9	72.5	-0.70
#9	44.10	44.54	44.30	0.45	21.6	20.8	21.0	-2.86	2.6	2.6	2.6	0.00	73.8	74.1	73.4	-0.59
#10	44.48	44.49	44.49	0.02	22.3	22.6	21.0	-6.19	2.6	2.6	2.6	0.00	71.8	73.2	72.2	0.55
Average	43.85	43.86	43.69	0.00	20.9	21.0	20.7	-0.01	2.7	2.7	2.7	0.01	72.0	72.7	71.8	0.00

\* Test condition: 0.5 V, 100 KHz, 20 % rate current drop

Thermal shock test	Inductance ( $\mu\text{F}$ )			Quality Factor			Idc (A)			Rdc (m $\Omega$ )		
	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)
#1	42.64	42.73	0.21	14.4	14.2	-1.41	2.2	2.2	0.00	104.6	106.7	1.97
#2	42.74	42.98	0.56	14.9	14.3	-4.20	2.3	2.2	-4.55	106.2	108.4	2.03
#3	42.58	42.80	0.51	14.5	14.4	-0.69	2.2	2.2	0.00	105.0	107.3	2.14
#4	41.93	42.01	0.19	14.2	14.8	4.05	2.3	2.3	0.00	106.4	108.7	2.12
#5	43.14	43.10	-0.09	14.4	14.6	1.37	2.2	2.2	0.00	104.3	106.6	2.16
#6	42.25	42.33	0.19	14.8	14.8	0.00	2.2	2.3	4.35	106.5	108.5	1.84
#7	42.19	42.15	-0.09	15.8	16.1	1.86	2.3	2.4	4.17	106.0	108.3	2.12
#8	42.40	42.50	0.24	14.6	15.3	4.58	2.2	2.3	4.35	105.0	107.2	2.05
#9	42.10	42.09	-0.02	14.8	15.3	3.27	2.2	2.3	4.35	105.8	108.1	2.13
#10	41.59	41.53	-0.14	14.5	15.0	3.33	2.3	2.4	4.17	104.6	106.8	2.06
Average	42.36	42.42	0.00	14.7	14.9	0.01	2.2	2.3	0.02	105.4	107.7	0.02

\* Test condition: 0.1 V, 100 KHz, 25 % rate current drop



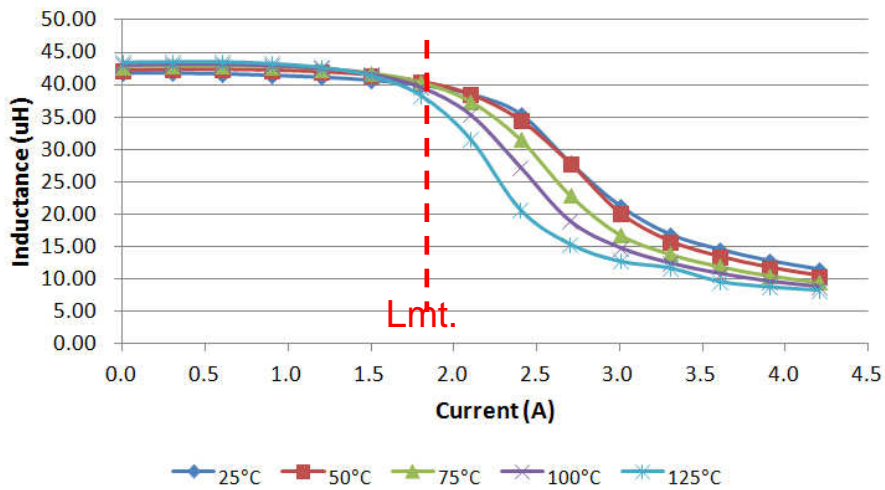
Thermal shock test	Inductance ( $\mu\text{F}$ )			Quality Factor			Idc (A)			Rdc (m $\Omega$ )		
	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)
#1	44.63	44.83	0.45	4.3	4.2	-2.38	3.0	3.0	0.00	60.3	61.0	1.15
#2	44.25	43.80	-1.03	4.2	4.1	-2.44	3.0	3.0	0.00	59.2	61.3	3.43
#3	44.11	43.17	-2.18	4.1	4.0	-2.50	3.1	3.1	0.00	60.0	62.1	3.38
#4	46.11	46.00	-0.24	4.4	4.4	0.00	2.9	2.9	0.00	59.6	62.4	4.49
#5	45.87	45.53	-0.75	4.4	4.2	-4.76	3.0	3.0	0.00	59.7	62.2	4.02
#6	44.06	43.27	-1.83	4.2	4.1	-2.44	3.0	3.0	0.00	58.6	60.8	3.62
#7	44.73	44.57	-0.36	4.3	4.3	0.00	3.1	3.0	-3.33	59.5	61.7	3.57
#8	48.73	48.44	-0.60	4.7	4.5	-4.44	2.7	2.7	0.00	60.9	62.0	1.77
#9	47.58	47.18	-0.85	4.6	4.3	-6.98	2.8	2.8	0.00	59.5	61.8	3.72
#10	44.25	43.55	-1.61	4.3	4.2	-2.38	3.0	3.0	0.00	58.9	60.6	2.81
Average	45.43	45.03	-0.01	4.4	4.2	-0.03	3.0	3.0	0.00	59.6	61.6	0.03

\* Test condition: 0.5 V, 1 KHz, 25 % rate current drop

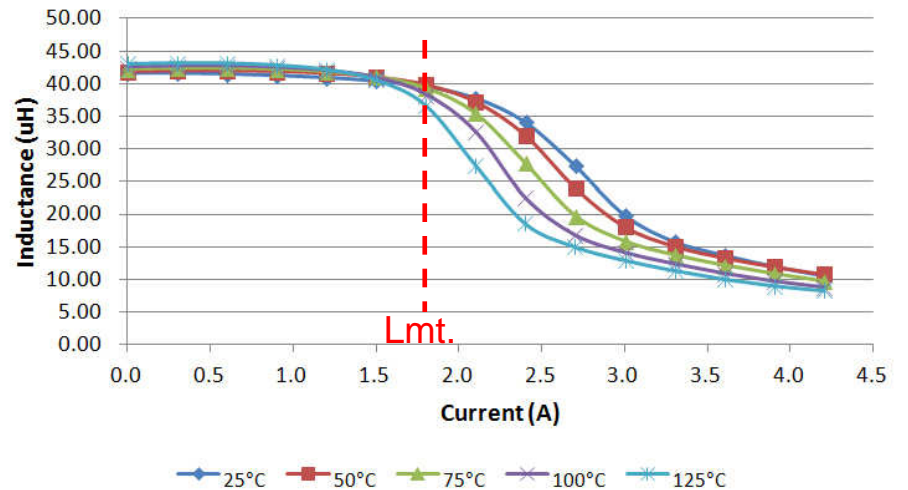
Thermal shock test	Inductance ( $\mu\text{F}$ )			Quality Factor			Idc (A)			Rdc (m $\Omega$ )		
	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)	Before	After	Change rate (%)
#1	46.04	45.93	-0.24	22.4	22.2	-0.90	2.5	2.5	0.00	68.7	72.9	5.80
#2	44.86	44.65	-0.47	23.2	24.8	6.45	2.5	2.6	3.85	72.1	73.5	1.93
#3	42.99	42.80	-0.44	21.9	22.3	1.79	2.7	2.7	0.00	69.3	71.8	3.52
#4	42.11	42.17	0.14	22.4	21.0	-6.67	2.9	2.9	0.00	72.5	72.6	0.11
#5	44.27	44.25	-0.05	23.1	21.2	-8.96	2.6	2.5	-4.00	73.0	76.5	4.55
#6	45.06	45.04	-0.04	23.3	22.7	-2.64	2.6	2.7	3.70	72.9	72.2	-0.97
#7	43.64	43.42	-0.51	22.6	22.4	-0.89	2.8	2.8	0.00	70.3	73.1	3.87
#8	44.77	44.80	0.07	23.6	22.1	-6.79	2.6	2.6	0.00	70.4	73.4	4.09
#9	42.70	42.61	-0.21	21.1	20.1	-4.98	2.7	2.7	0.00	68.6	71.5	4.10
#10	45.39	45.21	-0.40	20.9	21.3	1.88	2.6	2.6	0.00	70.9	73.8	3.88
Average	44.18	44.09	0.00	22.5	22.0	-0.02	2.7	2.7	0.00	70.9	73.1	0.03

\* Test condition: 0.5 V, 100 KHz, 20 % rate current drop

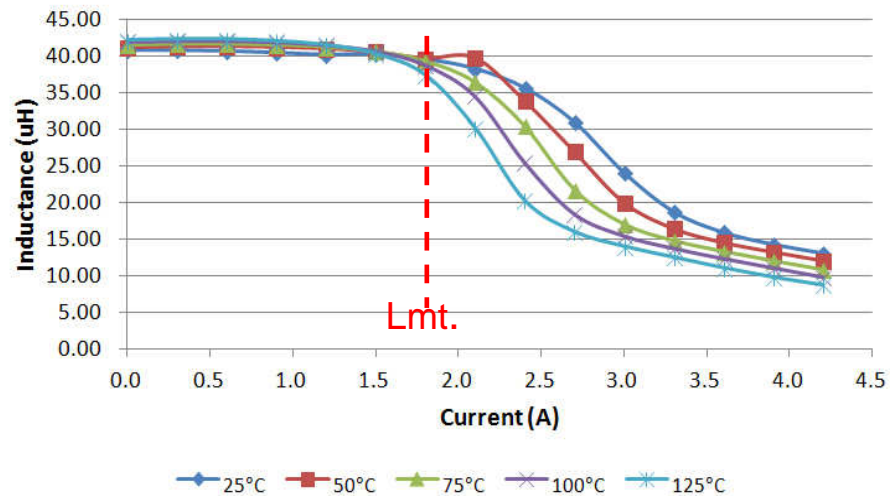
A-#1



A-#2



A-#3



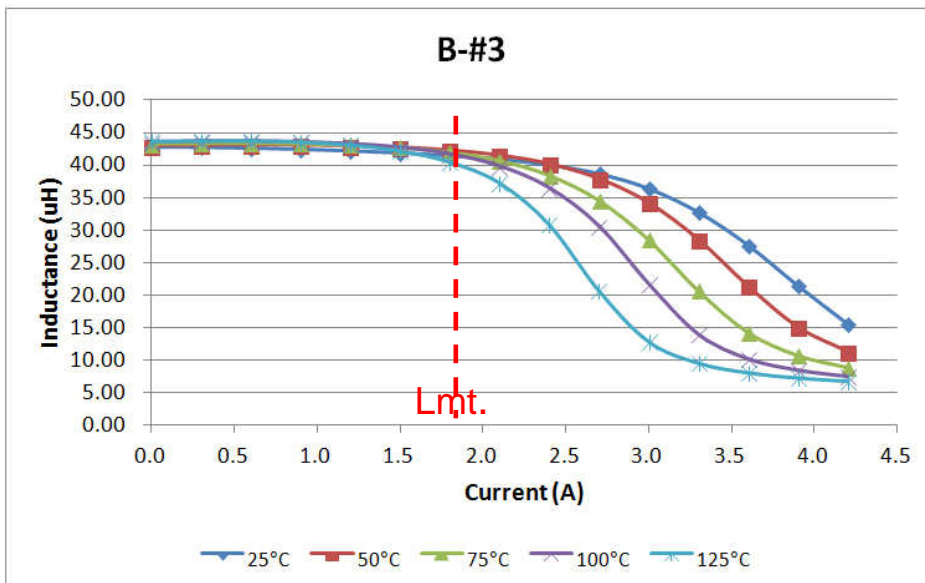
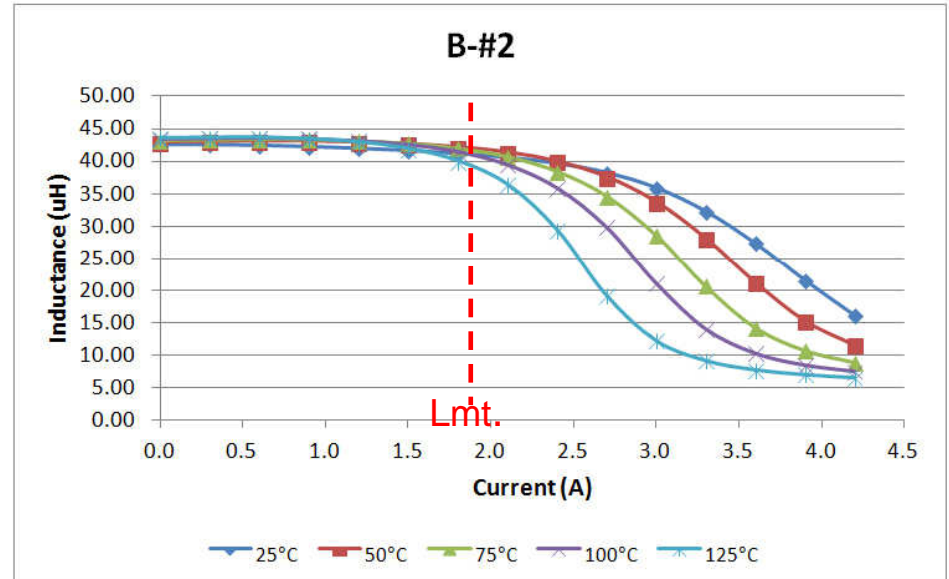
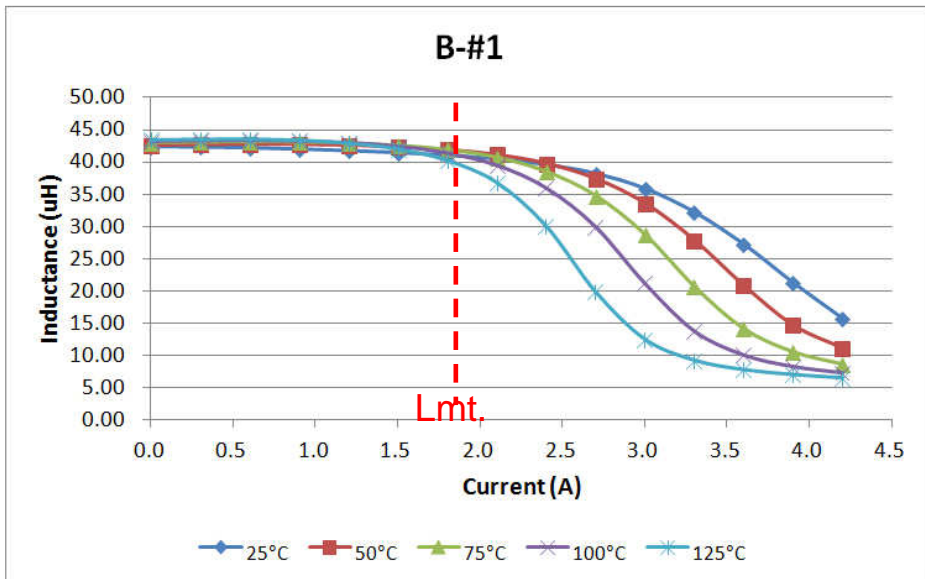
# A社

# 直流重疊特性

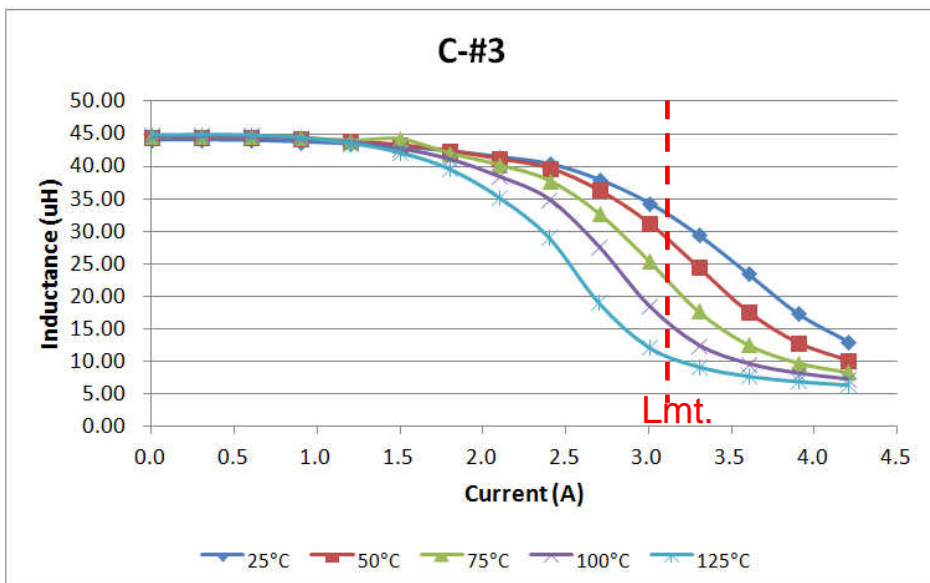
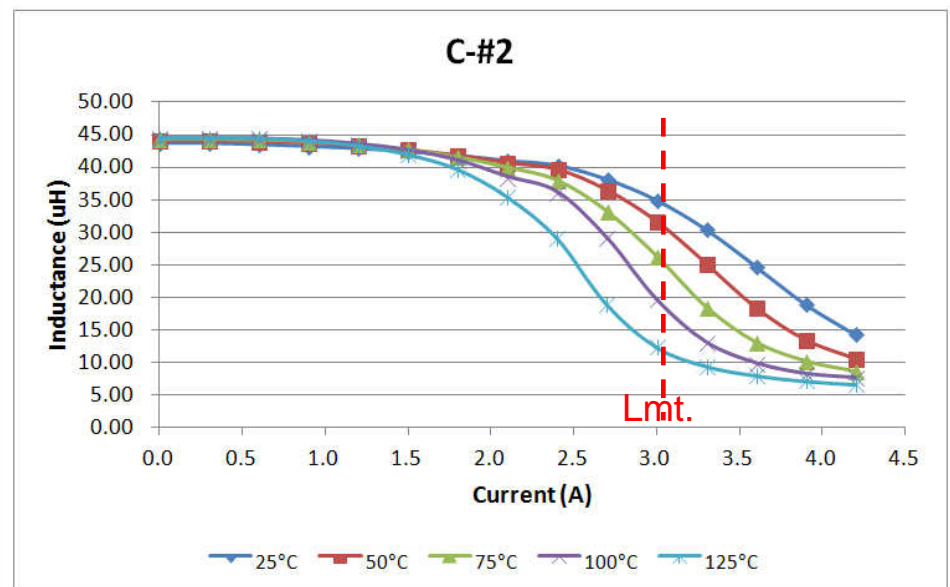
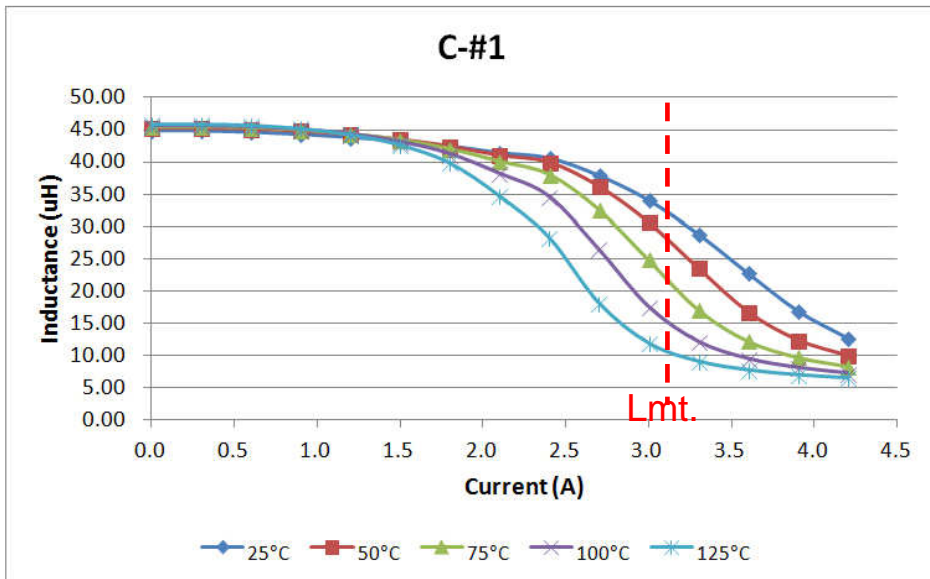
A	Current (A)	25°C	50°C	75°C	100°C	125°C	A	Current (A)	25°C	50°C	75°C	100°C	125°C
#1	0.0	41.87	42.35	42.79	43.14	43.44	#3	0.0	40.87	41.26	41.70	42.03	42.26
	0.3	41.86	42.47	42.91	43.25	43.53		0.3	40.87	41.38	41.83	42.13	42.38
	0.6	41.72	42.49	42.92	43.25	43.51		0.6	40.75	41.42	41.85	42.14	42.37
	0.9	41.50	42.38	42.78	43.06	43.25		0.9	40.54	41.33	41.72	41.98	42.13
	1.2	41.20	42.12	42.44	42.63	42.67		1.2	40.25	41.11	41.41	41.58	41.59
	1.5	40.74	41.61	41.77	41.72	41.38		1.5	40.34	40.66	40.80	40.75	40.38
	1.8	40.00	40.61	40.34	39.72	38.37		1.8	39.66	39.77	39.47	38.85	37.49
	2.1	38.59	38.61	37.38	35.47	31.63		2.1	38.35	39.84	36.60	34.61	30.32
	2.4	35.54	34.62	31.58	27.39	20.72		2.4	35.72	33.97	30.60	25.53	20.35
	2.7	28.04	27.93	22.97	19.01	15.37		2.7	31.06	27.05	21.86	18.49	16.07
	3.0	21.32	20.24	16.88	14.89	12.71		3.0	24.13	20.06	17.12	15.48	14.07
	3.3	16.92	15.86	13.88	12.51	11.69		3.3	18.76	16.50	14.85	13.77	12.58
	3.6	14.55	13.46	11.95	10.88	9.59		3.6	15.93	14.61	13.38	12.38	11.13
	3.9	12.81	11.76	10.55	9.67	8.75		3.9	14.29	13.31	12.09	11.12	9.85
4.2	11.48	10.48	9.50	8.83	8.24	4.2	13.09	12.13	10.87	9.86	8.79		
#2	0.0	41.60	41.86	42.35	42.63	43.07							
	0.3	41.61	42.00	42.46	42.75	43.19							
	0.6	41.47	42.02	42.48	42.77	43.16							
	0.9	41.24	41.90	42.33	42.56	42.87							
	1.2	40.91	41.61	41.95	42.07	42.20							
	1.5	40.39	41.04	41.16	40.98	40.60							
	1.8	39.51	39.83	39.43	38.44	36.72							
	2.1	37.75	37.25	35.55	32.74	27.58							
	2.4	34.07	32.15	27.91	22.68	18.66							
	2.7	27.44	24.16	19.83	16.94	15.07							
	3.0	19.86	18.17	15.90	14.27	13.02							
	3.3	15.76	15.19	13.78	12.51	11.43							
	3.6	13.69	13.40	12.22	11.04	10.11							
	3.9	11.95	12.03	10.90	9.85	9.08							
4.2	10.52	10.85	9.77	8.92	8.34								

B社

直流重疊特性



B	Current (A)	25°C	50°C	75°C	100°C	125°C	B	Current (A)	25°C	50°C	75°C	100°C	125°C
#1	0.0	42.50	42.58	42.97	43.26	43.40	#3	0.0	42.82	42.95	43.29	43.54	43.60
	0.3	42.42	42.68	43.06	43.36	43.47		0.3	42.77	43.03	43.35	43.64	43.68
	0.6	42.30	42.75	43.12	43.41	43.51		0.6	42.65	43.09	43.39	43.68	43.71
	0.9	42.10	42.72	43.07	43.31	43.34		0.9	42.47	43.07	43.32	43.56	43.51
	1.2	41.85	42.60	42.91	43.04	42.87		1.2	42.21	42.94	43.11	43.26	43.05
	1.5	41.55	42.34	42.53	42.50	41.99		1.5	41.90	42.68	42.72	42.72	42.15
	1.8	41.15	41.89	41.88	41.44	40.21		1.8	41.47	42.23	41.98	41.70	40.44
	2.1	40.58	41.13	40.68	39.55	36.81		2.1	40.92	41.47	40.71	39.85	37.22
	2.4	39.69	39.76	38.49	36.05	30.06		2.4	40.05	40.14	38.43	36.52	30.81
	2.7	38.32	37.42	34.77	30.03	19.87		2.7	38.71	37.87	34.58	30.68	20.62
	3.0	35.97	33.61	28.76	21.24	12.47		3.0	36.42	34.17	28.53	21.82	12.78
	3.3	32.30	27.88	20.66	13.85	9.20		3.3	32.80	28.51	20.67	14.06	9.46
	3.6	27.31	20.84	14.11	10.14	7.75		3.6	27.75	21.35	14.26	10.28	7.97
	3.9	21.31	14.66	10.51	8.35	6.98		3.9	21.53	15.05	10.72	8.55	7.17
4.2	15.74	11.10	8.60	7.39	6.48	4.2	15.65	11.27	8.87	7.59	6.67		
#2	0.0	42.67	42.92	43.19	43.37	43.56							
	0.3	42.65	43.02	43.29	43.46	43.64							
	0.6	42.53	43.09	43.35	43.51	43.67							
	0.9	42.33	43.05	43.28	43.40	43.46							
	1.2	42.06	42.91	43.07	43.08	42.95							
	1.5	41.74	42.63	42.69	42.51	41.95							
	1.8	41.28	42.15	41.96	41.41	40.06							
	2.1	40.68	41.35	40.67	39.41	36.45							
	2.4	39.75	39.94	38.41	35.84	29.48							
	2.7	38.34	37.57	34.62	29.81	19.29							
	3.0	36.01	33.74	28.56	21.11	12.31							
	3.3	32.38	28.12	20.66	14.02	9.25							
	3.6	27.45	21.28	14.23	10.25	7.83							
	3.9	21.64	15.31	10.71	8.45	7.10							
4.2	16.22	11.56	8.87	7.48	6.64								



# C社

# 直流重疊特性

C	Current (A)	25°C	50°C	75°C	100°C	125°C	C	Current (A)	25°C	50°C	75°C	100°C	125°C
#1	0.0	44.88	45.26	45.42	45.60	45.90	#3	0.0	44.08	44.43	44.61	44.73	44.82
	0.3	44.83	45.23	45.40	45.57	45.89		0.3	44.13	44.46	44.64	44.75	44.85
	0.6	44.63	45.14	45.31	45.47	45.73		0.6	44.04	44.44	44.62	44.73	44.81
	0.9	44.28	44.81	44.94	45.04	45.21		0.9	43.82	44.27	44.40	44.37	44.40
	1.2	43.82	44.26	44.33	44.32	44.28		1.2	43.50	43.89	43.93	43.85	43.57
	1.5	43.24	43.49	43.40	43.15	42.67		1.5	43.04	43.28	44.17	42.85	42.11
	1.8	42.48	42.42	42.03	41.25	39.88		1.8	42.39	42.38	41.99	41.19	39.57
	2.1	41.41	41.02	40.08	38.19	34.77		2.1	41.49	41.11	40.19	38.52	35.18
	2.4	40.58	39.94	38.03	34.62	28.28		2.4	40.42	39.72	37.80	35.02	29.02
	2.7	37.88	36.21	32.59	26.49	18.13		2.7	38.02	36.31	32.74	27.74	19.04
	3.0	34.06	30.66	24.84	17.57	11.87		3.0	34.44	31.29	25.50	18.66	12.24
	3.3	28.86	23.55	17.08	12.13	9.04		3.3	29.50	24.45	17.71	12.56	9.23
	3.6	22.78	16.75	12.17	9.48	7.68		3.6	23.52	17.58	12.55	9.67	7.76
	3.9	16.90	12.35	9.67	8.07	6.94		3.9	17.42	12.82	9.78	8.17	6.95
4.2	12.67	9.92	8.27	7.22	6.45	4.2	13.14	10.11	8.31	7.27	6.43		
#2	0.0	43.68	44.13	44.34	44.40	44.47	#3	0.0	44.08	44.43	44.61	44.73	44.82
	0.3	43.66	44.09	44.32	44.43	44.47		0.3	44.13	44.46	44.64	44.75	44.85
	0.6	43.46	44.03	44.26	44.39	44.40		0.6	44.04	44.44	44.62	44.73	44.81
	0.9	43.19	43.78	44.00	44.12	44.01		0.9	43.82	44.27	44.40	44.37	44.40
	1.2	42.85	43.35	43.50	43.56	43.24		1.2	43.50	43.89	43.93	43.85	43.57
	1.5	42.39	42.72	42.73	42.62	41.89		1.5	43.04	43.28	44.17	42.85	42.11
	1.8	41.76	41.84	41.60	41.06	39.61		1.8	42.39	42.38	41.99	41.19	39.57
	2.1	40.97	40.71	40.02	38.55	35.38		2.1	41.49	41.11	40.19	38.52	35.18
	2.4	40.23	39.68	38.02	36.20	29.03		2.4	40.42	39.72	37.80	35.02	29.02
	2.7	38.09	36.51	33.27	29.17	18.94		2.7	38.02	36.31	32.74	27.74	19.04
	3.0	34.88	31.70	26.39	19.77	12.35		3.0	34.44	31.29	25.50	18.66	12.24
	3.3	30.36	25.20	18.53	13.14	9.42		3.3	29.50	24.45	17.71	12.56	9.23
	3.6	24.72	18.45	13.13	9.95	7.98		3.6	23.52	17.58	12.55	9.67	7.76
	3.9	18.90	13.45	10.24	8.32	7.14		3.9	17.42	12.82	9.78	8.17	6.95
4.2	14.24	10.56	8.66	7.69	6.63	4.2	13.14	10.11	8.31	7.27	6.43		



## Summary

TEST ITEM	A: BOURNE SRR1 240-470M	B: SUMIDA CDRH1 25NP-470M	C: ABCO LPF1 260T-470M
High temp. test	Within limit	Within limit	Within limit
Low temp. test	Within limit	Within limit	Within limit
High temp. and Humidity test	Within limit	Within limit	Within limit
Thermal shock test	Within limit	Within limit	Within limit
直流重疊電流特性	Within limit	Within limit	Without limit

### <Total Judgement>

A/B samples are satisfied with regulation (specification limits ). Besides, C sample is not satisfied with regulation by **直流重疊電流特性**.

# KETI試験結果の考察

## ■インダクター各種試験結果比較

KETIにて実施しました3社の各種試験結果を比較して纏めました。

TEST ITEM	A: BOURNE SRR1 240-470M	B: SUMIDA CDRH1 25NP-470M	C: ABCO LPF1 260T-470M
内部断面観察	問題なし	問題なし	問題なし
内部構造観察	問題なし	問題なし	問題なし
環境試験	合格(規格内)	合格(規格内)	合格(規格内)
直流重畳電流特性	合格(規格内)	合格(規格内)	不合格(規格外)

※ ABCO社LPF1260T-470Mの直流重畳電流特性は規格外であり**仕様規定方法**に問題があると推測出来ます。

# KETI試験結果の考察

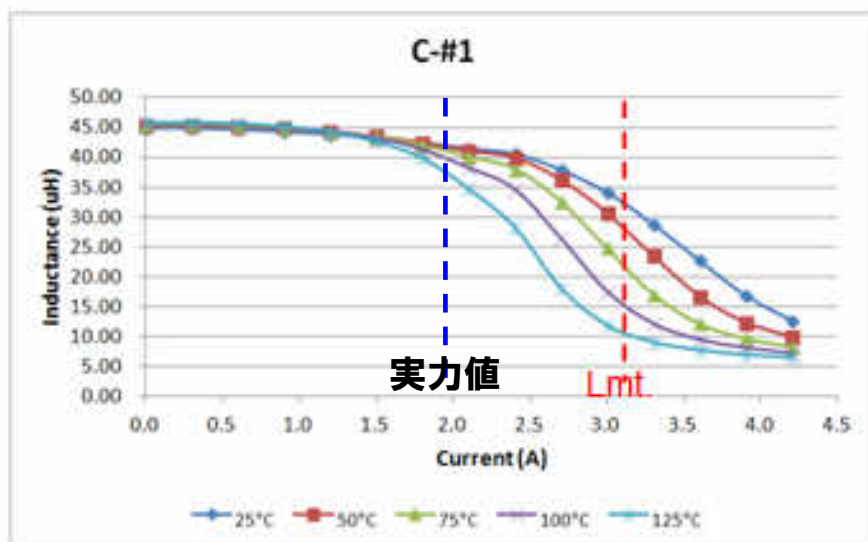
## •ABC社LPF1260T-470Mの仕様規定考察

### LPF1260 Series



<http://www.abco.co.kr>

Ordering Code	Inductance		Freq.	DC Resistance( $\Omega$ )	Rated DC current(A)	
	L (uH)	Tol. (%)	F (KHz)	Rdc (Max.)	Idc1 (Max.)	Idc2 (Typ.)
LPF1260T-100M	10			0.025	5.0	7.55
LPF1260T-150M	15			0.030	4.0	6.54
LPF1260T-220M	22			0.040	3.5	5.38
LPF1260T-330M	33			0.057	3.0	4.75
LPF1260T-470M	47			0.075	2.5	3.13



同社の仕様書ではIdc2(重畳電流規格)は3.13Aと規定されています。その測定試験を行った結果、3.13Aではインダクタンス値が最高で**80%低下**しています。明らかに重畳電流値の実力は3.13Aを満足していません。測定結果よりその値は比較2社と同等の**2A程度**と定義できます。何を根拠として3.13Aを定義しているかが問題であると言えます。韓国メーカーでは、このような仕様定義の差異(誤記含む)があるので注意が必要です。

