

CUT-CORES FOR HIGH POWER APPLICATIONS

PRODUCT SUMMARY

Description RC Series Cut cores are the ideal solutions for implementing energy chokes in several types of SMPS topologies even in high frequency ranges and high power ranges.

Significant component size reduction and / or increased power throughput is achieved using RC Series Amorphous Cut cores. RC Series Amorphous Cut cores made by iron based thin amorphous ribbon with high saturation level of 1.5T. with this high saturation level, RC Series Amorphous Cut cores enable up to 50% reduction in volume for typical applications compared more conventional materials like ferrite, sendust, iron powder and silicon steel. The thin ribbon reduces the unwanted eddy current losses at high frequencies. SHINHOM new technology on Cut core manufacturing ensures lower magnetic reversal losses than ever before.

RC Series amorphous Cut cores are being used in a growing number of high frequency power applications.

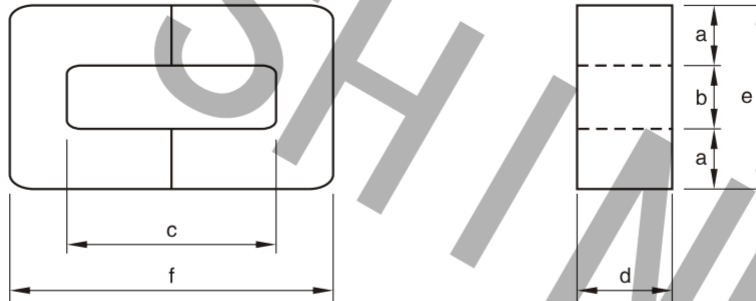
SHINHOM will offer a fully designed solutions and a customer oriented solutions with a free design service whenever you need it.

- Feature**
- Low eddy current losses
 - Low hysteresis losses
 - High efficiency
 - Low temperature rise
 - High saturation flux density $B_{\text{saturation}} = 1.56\text{T}$
 - UL94V-0 compliant
 - UL Temp class F compliant

- Application**
- PFC chokes for power supplies
 - Output chokes for power supplies
 - PFC choke for UPS system
 - Harmonic choke for UPS system
 - PFC choke for home appliance & industrial air conditioning
 - Inverter choke for high power supplies
 - X-ray power supplies
 - Choke for induction furnaces
 - Choke for weight / efficiency sensitive applications in high speed rail car car power supplies
 - Choke for induction furnaces

CUT-CORES FOR HIGH APPLICATIONS

STANDARD CORE DIMENSIONS & SPECIFICATIONS

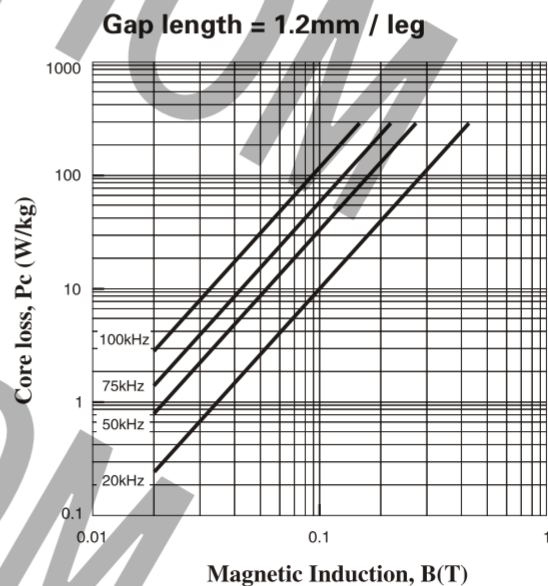
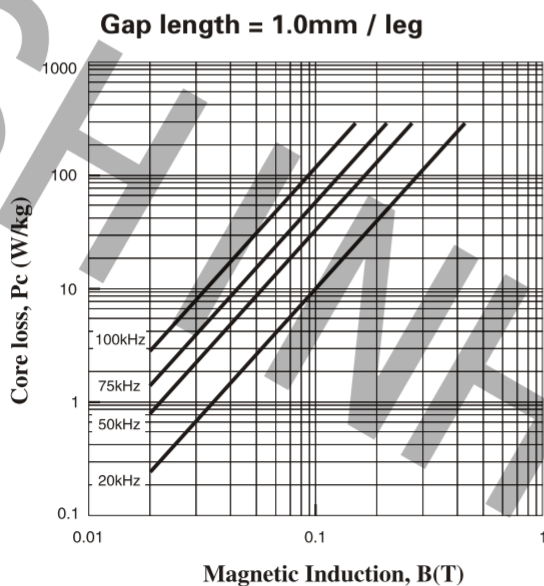
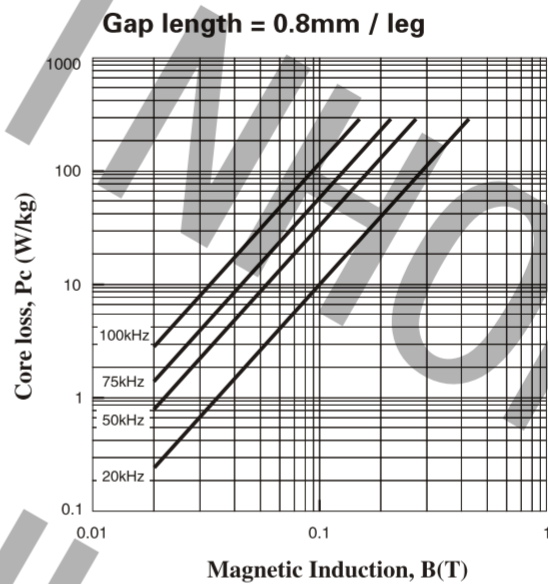
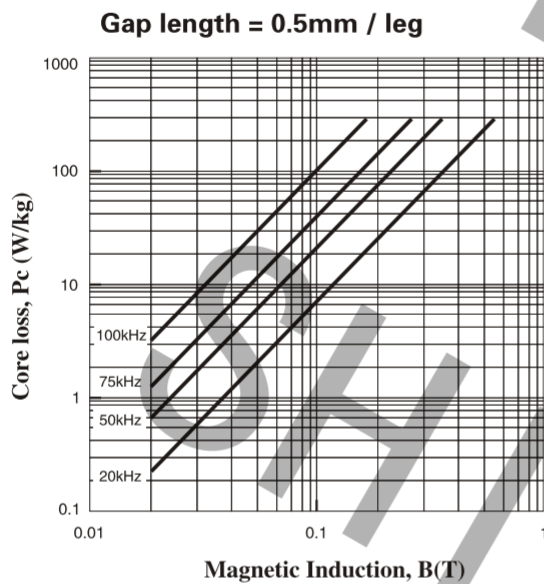


Part Number	a	b	c	d	e	f	Mass	$L_m(\text{cm})$	$A_c(\text{cm}^2)$	$V_e(\text{cm}^3)$	$W_A(\text{cm}^2)$	$W_A A_c(\text{cm}^4)$
RC-4	9	10	33	15	29	51	95	11.5	1.0	13.20	3.4	3.5
RC-6.3	10	11	33	20	31	53	150	13.1	1.6	20.86	3.6	5.8
RC-6.3B	9.9	9.7	33	20	29.5	53	145	12.9	1.6	20.61	3.2	5.1
RC-8	11	13	30	20	35	52	170	13.2	1.8	23.64	3.9	7.0
RC-10	11	13	40	20	35	62	200	15.4	1.8	27.82	5.2	9.4
RC-16A	11	13	40	25	35	62	250	15.1	2.3	34.77	5.2	12.0
RC-16B	11	13	50	25	35	72	280	16.9	2.3	38.94	6.5	15.0
RC-20	11	13	50	30	35	72	340	17.5	2.7	47.29	6.5	17.6
RC-25	13	15	56	25	41	82	380	19.6	2.7	52.85	8.4	22.7
RC-32	13	15	56	30	41	82	460	20.0	3.2	63.89	8.4	26.9
RC-40	13	15	56	35	41	82	530	19.9	3.7	73.71	8.4	31.1
RC-50	16	20	70	25	52	102	590	24.9	3.3	82.06	14.0	46.2
RC-63	16	20	70	30	52	102	710	25.3	3.9	98.75	14.0	54.6
RC-80	16	20	70	40	52	102	950	25.4	5.2	132.13	14.0	72.8
RC-100	16	20	70	45	52	102	1060	25.0	5.9	147.43	14.0	52.6
RC-125	19	25	83	35	63	121	1170	30.2	5.4	162.73	20.8	112.1
RC-160	19	25	83	40	63	121	1330	28.5	6.5	184.98	20.8	135.2
RC-200	19	25	83	50	63	121	1670	29.8	7.8	232.27	20.8	162.2
RC-250	19	25	90	60	63	128	2100	31.4	9.3	292.07	22.5	209.3
RC-320	22	35	85	50	79	129	2170	32.5	9.0	301.81	29.8	267.8
RC-500	25	40	85	55	90	135	2900	35.6	11.3	403.34	34.0	384.2
RC-630	25	40	85	70	90	135	3670	35.6	14.3	510.43	34.0	486.2
RC-800A	25	40	85	85	90	135	4450	35.6	17.4	618.92	34.0	591.6
RC-800B	30	40	95	85	100	155	5930	39.3	21.0	824.76	38.0	798.0
RC-1000	33	40	105	85	106	171	7060	42.7	23.0	981.92	42.0	966.0

All mechanical dimensions shows a nominal ones. Please consult sales department for tolerances.

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TYPICAL HYSTERESIS LOSS WITH GAP SIZE, $P_c(f, \mu)$

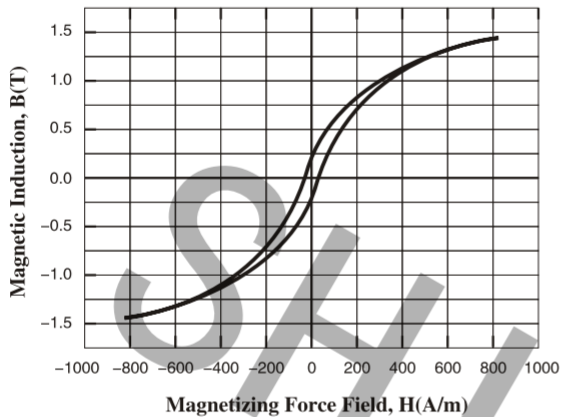


* Hysteresis losses are measured at room temperature, $25^\circ\text{C} \pm 3^\circ\text{C}$

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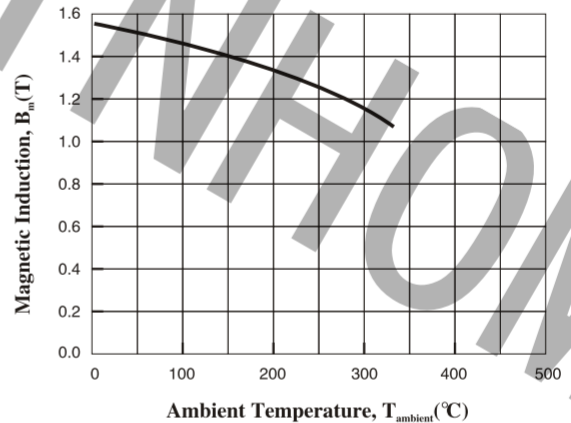
TYPICAL MAGNETIC & ELECTRIC CHARACTERISTICS

Typical hysteresis loop shape

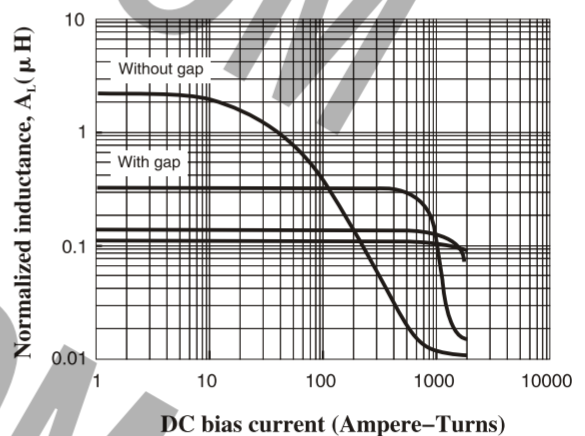
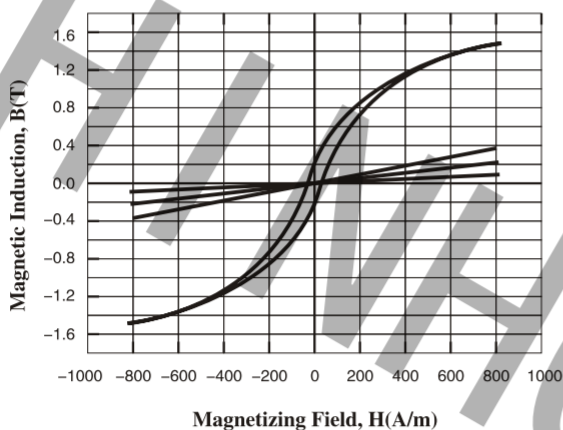


* Without gap after cutting

Temperature behavior of $B_m(T)$



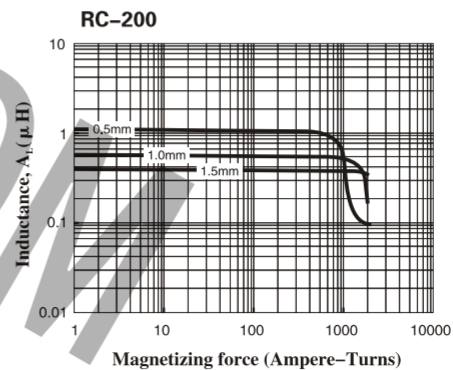
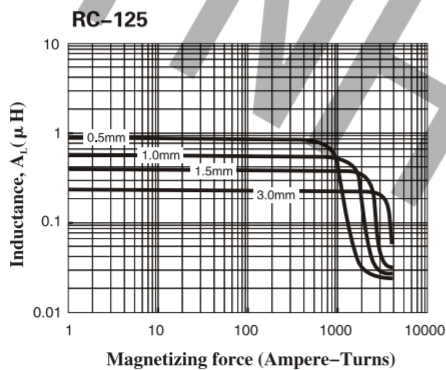
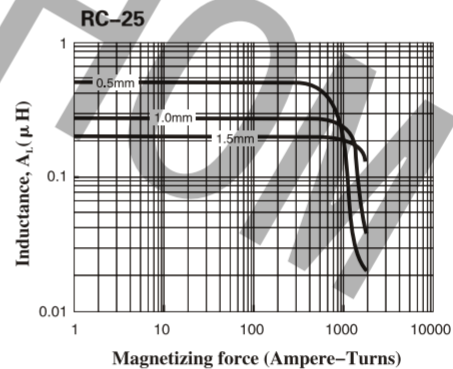
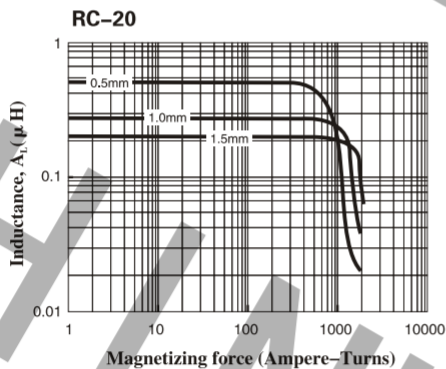
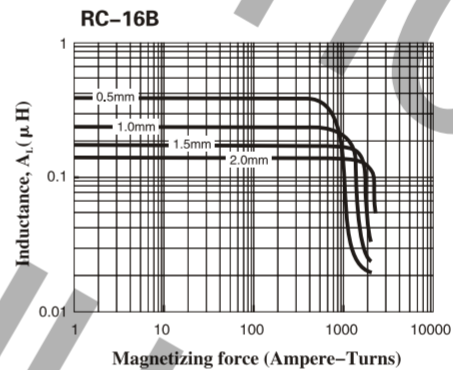
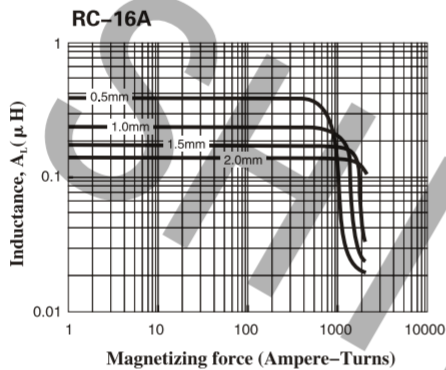
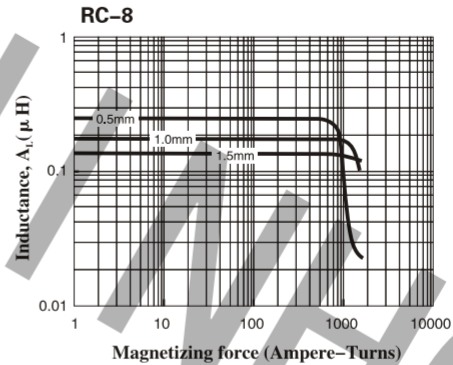
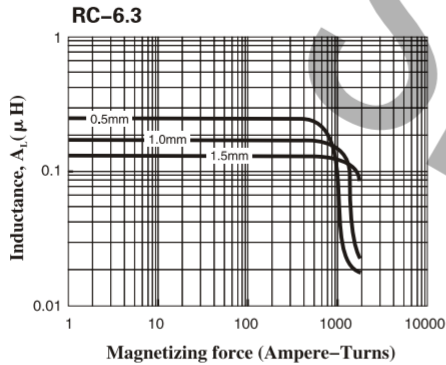
Typical hysteresis loop and it's corresponding DC Bias characteristics with gap



- * These comparison shows a typical relations between B-H loop shapes and superimposed inductance behavior with gap
- * The DC bias properties depends on cross-section area, magnetic path length and wound structures of each Cut-cores.

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TYPICAL DC BIAS CHARACTERISTICS WITH GAP SIZE@10kHz



* Gap size(mm): total air gap size with both air gaps.