



EC, ETD, EER and ER Cores

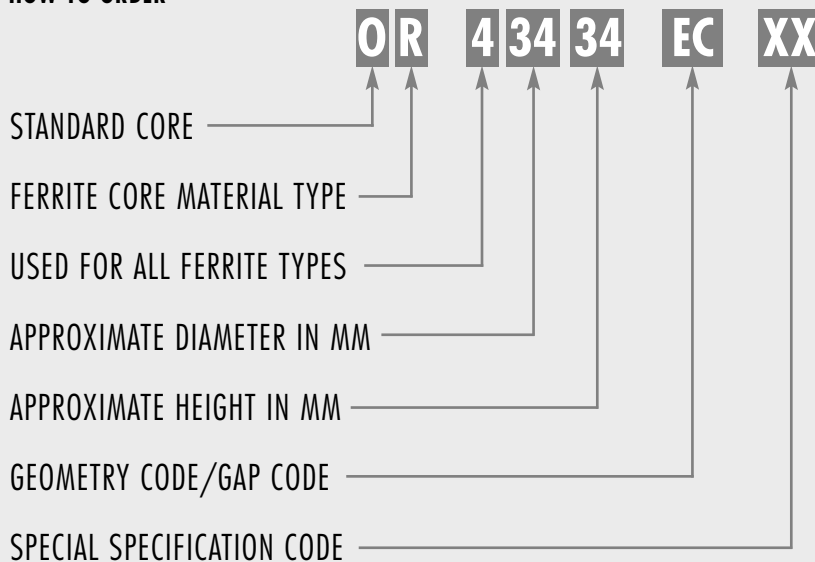
Section 12

EC, ETD, EER AND ER CORES

EC, ETD, EER, and ER cores are a cross between E cores and pot cores. Like E cores they provide a wide opening on each side. This gives adequate space for the large size wire required for low output voltage switched mode power supplies. It also allows for a flow of air which keeps the assembly cooler.

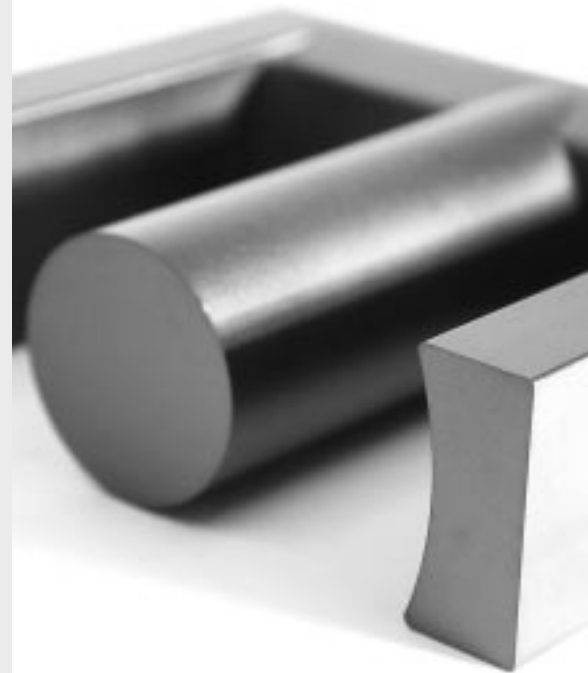
The center posts of these cores are round, like that of the pot core. One of the advantages of the round center post is that the winding has a shorter path length (11% shorter) than the wire around a square center post with an equal area. This reduces the losses of the windings by 11% and enables the core to handle a higher output power. The round center post also eliminates the sharp bend in the wire that occurs with winding on a square center post. The most common application is switched mode power supplies.

HOW TO ORDER



GEOMETRY CODE

EC — All E cores including ETD, EC, ER, EER, EEM, EFD, planar and lamination sizes.



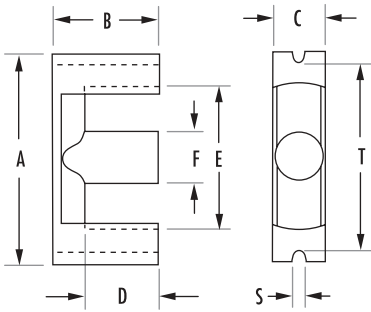
Core Data (ungapped)

Any practical gap available. See pages 1.8-1.11

MECHANICAL DIMENSIONS (mm)										
PART	CORE TYPE	FIG.	A	B	C	D	E	F	S	T
0_43517EC	EC 35	1	34.5 ± .8	17.3 ± .15	9.5 ± .3	12.3 ± .4	22.75 ± .55	9.5 ± .3	2.75 ± .25	28.5 ± .8
0_44119EC	EC41	1	40.6 ± 1.0	19.5 ± .15	11.6 ± .3	13.9 ± .4	27 ± .7	11.6 ± .3	3.25 ± .25	33.6 ± 1
0_45224EC	EC52	1	52.2 ± 1.3	24.2 ± .15	13.4 ± .35	15.9 ± .4	33 ± .9	13.4 ± .35	3.75 ± .25	44 ± 1.3
0_47035EC	EC70	1	70 ± 1.7	34.5 ± .15	16.4 ± .4	22.75 ± .45	44.5 ± 1.2	16.4 ± .4	4.75 ± .25	59.6 ± 1.7

To order, add material code to part number.

FIGURE 1



Core Data (ungapped)

A_L (mH/1000T) min

POWER MATERIALS				HIGH PERMEABILITY MATERIALS		MAGNETIC DATA					
PART	R	P	F*	J	W	l_e (mm)	A_e (mm ²)	A_{min} (mm ²)	V_e (mm ³)	CORE WEIGHT (grams per set)	W_{aAc} (cm ⁴)
0_43517EC	1,660	1,800	3,000	-	-	77.4	84.3	71	6,530	36	0.833
0_44119EC	2,605	2,400	3,700	-	-	89.3	121	106	10,800	52	1.67
0_45224EC	2,900	3,150	5,040	-	-	105	180	141	18,800	111	3.87
0_47035EC	3,310	3,600	5,760	-	-	144	279	211	40,100	253	13.4

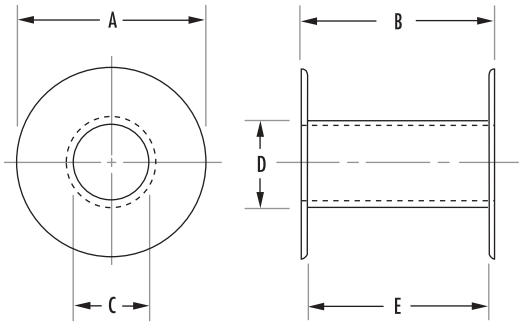
* F material nominal $\pm 25\%$

AVAILABLE HARDWARE	STANDARD BOBBIN	PRINTED CIRCUIT BOBBIN	MOUNTING CLAMP
0_43517EC	✓	✓	✓
0_44119EC	✓	✓	✓
0_45224EC	✓	✓	✓
0_47035EC	✓	✓	✓

Bobbins

PART	CORE SIZE	FIG.	MECHANICAL DIMENSIONS (mm)					NOMINAL WINDING AREA PER SECTION	AVG. LENGTH OF TURN (mm)	MATERIAL
			A MAX	B MAX	C MAX	D MAX	E NOM	cm ²		
00B351701	43517EC	1	21.94	23.57	9.88	11.65	21.79	1.12	52.4	Glass filled Nylon*
00B411901	44119EC	1	26.03	26.74	12.06	14.09	24.61	1.45	62.4	Glass filled Nylon*

FIGURE 1



Bobbins

PART	CORE SIZE	FIG.	MECHANICAL DIMENSIONS (mm)					NOMINAL WINDING AREA PER SECTION	AVG. LENGTH OF TURN (mm)	MATERIAL
			A MAX	B MAX	C MAX	D MAX	E NOM	cm ²		
00B703501	47035EC	1	42.79	44.32	16.91	19.48	41.60	4.82	97.2	Glass filled Nylon*

* UL 94 HB rated

Printed Circuit Bobbins

MECHANICAL DIMENSIONS (mm)									
PART	CORE SIZE	FIG.	A MAX	B MAX	C MAX	D NOM	E NOM	F MAX	G NOM
PCB351701	43517EC	1	34.11	28.8	31.64	2.03	10	23.74	21.48
PCH351701	43517EC	3	34.1	29	26.7	2.03	10	23.62	21.49
PCB411901	44119EC	1	38.63	28.62	36.55	2.03	12.09	26.94	24.51
PCH411901	44119EC	3	38.65	28.9	31.19	2.03	12.09	26.82	24.51
PCB522401	45224EC	2	44.52	44.01	41.63	2.03	13.94	30.7	28.29
PCH522401	45224EC	4	44.55	44.09	36.49	2.03	13.94	30.7	28.29
PCB703501	47035EC	2	57.93	56.79	51.81	4.49	17.14	44.27	41.45
PCH703501	47035EC	4	57.93	56.89	47.11	4.49	17.14	44.27	41.45

FIGURE 1

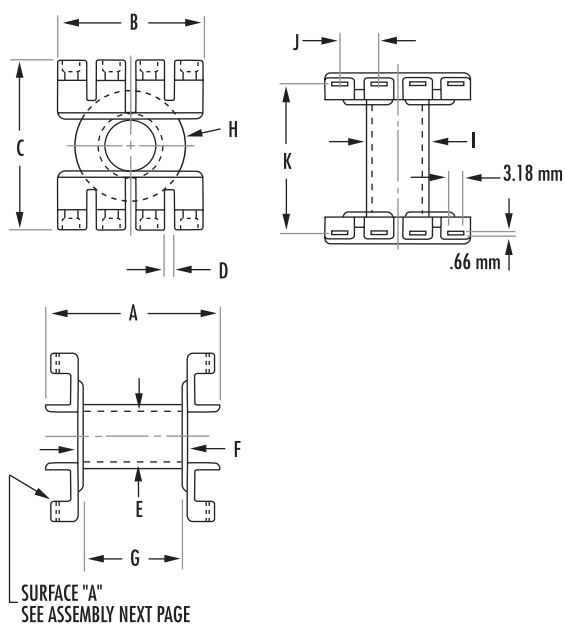
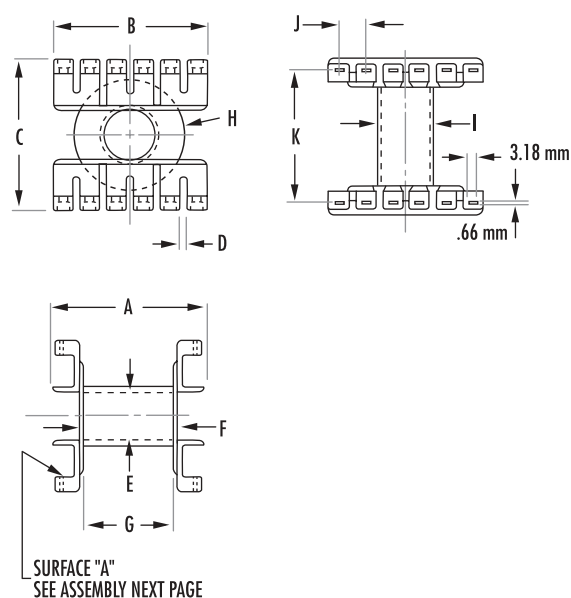


FIGURE 2



Printed Circuit Bobbins

PART	MECHANICAL DIMENSIONS (mm)				NOMINAL WINDING AREA PER SECTION	AVG. LENGTH OF TURN (mm)	BOBBIN MATERIAL
	H NOM	I NOM	J NOM	K MAX	cm ²		
PCB351701	21.64	12.19	7.62	30.48	0.97	50	Glass Filled Nylon*
PCH351701	21.64	12.19	7.62	30.48	0.97	50	Glass Filled Nylon*
PCB411901	25.65	14.09	7.62	33.02	1.35	60	Glass Filled Nylon*
PCH411901	25.65	14.09	7.62	33.02	1.35	60	Glass Filled Nylon*
PCB522401	31.44	16.2	7.62	38.1	2.13	72.8	Glass Filled Nylon*
PCH522401	31.44	16.2	7.62	38.1	2.13	72.8	Glass Filled Nylon*
PCB703501	42.44	19.5	10.16	50.8	4.77	95.1	Glass Filled Nylon*
PCH703501	42.54	19.5	10.16	50.8	4.77	95.1	Glass Filled Nylon*

* UL 94 V-1 rated

FIGURE 3

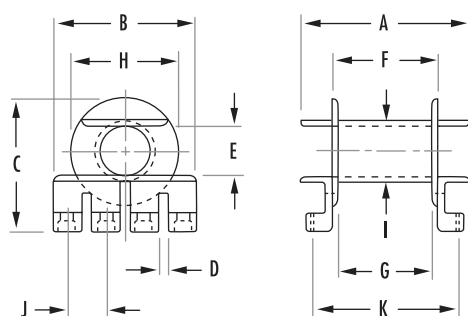
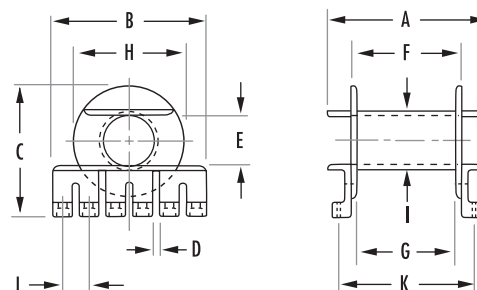
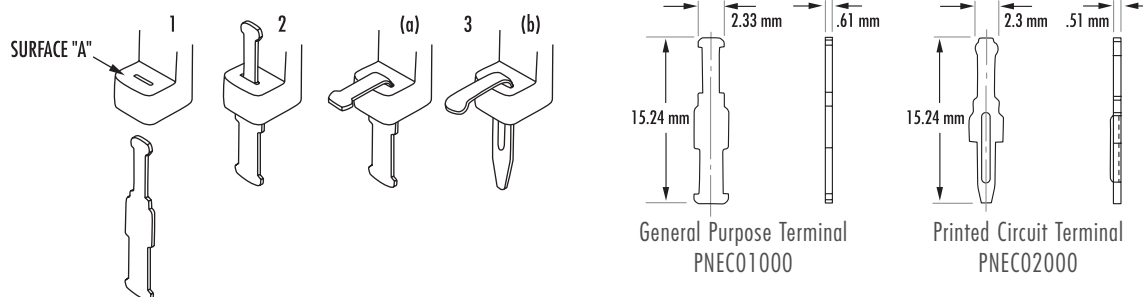


FIGURE 4



TERMINAL ASSEMBLY



NOTE: Terminals are not normally inserted but shipped separately in strip form. See above Terminal Assembly.

Mounting Clamps

MECHANICAL DIMENSIONS (mm)								
PART	ITEM	CORE SIZE	FIG.	A	B	C	D	E
0AC351717	U Bolt	43517EC	3	32.38	42.16	2.11	12.7	-
0BC351740	Plate	43517EC	1	39.37	9.52	31.59	3.88	4.44
0CC351700	Nut (2 required)	43517EC	-	-	-	-	-	-
0AC411919	U Bolt	44119EC	4	38.1	47	2.36	12.7	-
0BC411940	Plate	44119EC	1	46.73	11.12	37.21	4.77	4.69
0CC411900	Nut (2 required)	44119EC	-	-	-	-	-	-
0AC522440	U Bolt	45224EC	3	49	57.1	2.92	15.24	-
0BC522440	Plate	45224EC	1	59.69	12.70	48.1	5.91	5.71
0CC522400	Nut (2 required)	45224EC	-	-	-	-	-	-
0AC703531	U Bolt	47035EC	3	65.4	78.7	2.92	15.24	-
0BC703540	Plate	47035EC	2	76.96	15.87	64.69	6.27	5.71

FIGURE 1

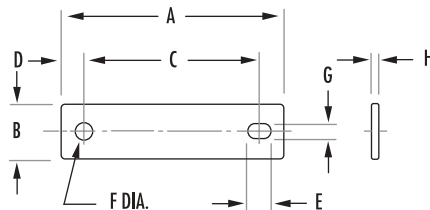
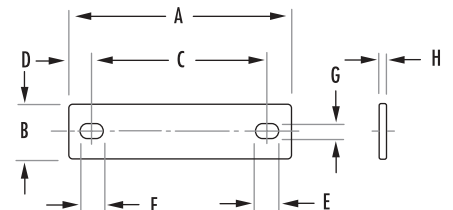


FIGURE 2



Mounting Clamps

MECHANICAL DIMENSIONS (mm)								
PART	ITEM	CORE SIZE	FIG.	F	G	H	THREAD	MATERIAL
OAC351717	U Bolt	43517	3	-	-	-	#3-48-2A	Brass
OBC351740	Plate	43517EC	1	2.64	2.64	1.01	-	Aluminum
OOC351700	Nut (2 required)	43517	-	-	-	-	-	-
OAC411919	U Bolt	44119	4	-	-	-	#4-40-2A	Brass
OBC411940	Plate	44119EC	1	3.04	3.04	1.01	-	Aluminum
OCC411900	Nut (2 required)	44119	-	-	-	-	-	-
OAC522440	U Bolt	45224EC	3	-	-	-	#6-32-2A	Brass
OBC522440	Plate	45224EC	1	3.65	3.65	1.01	-	Aluminum
OCC522400	Nut (2 required)	45224EC	-	-	-	-	-	-
OAC703531	U Bolt	47035EC	3	-	-	-	#6-32-2A	Brass
OBC703540	Plate	47035EC	2	5.71	3.65	1.01	-	Aluminum

FIGURE 3

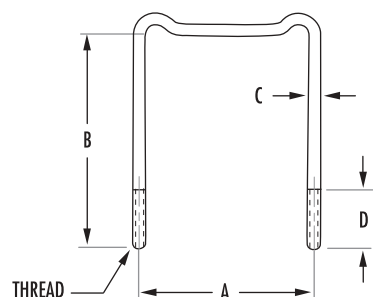
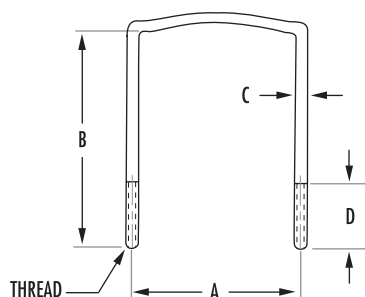


FIGURE 4



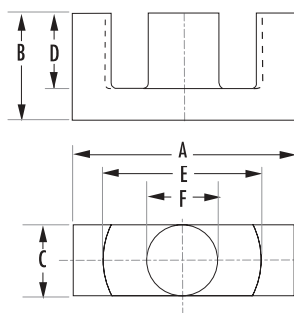
Core Data (ungapped)

Any practical gap available. See pages 1.8-1.11

MECHANICAL DIMENSIONS (mm)								
PART	CORE TYPE	FIG.	A	B	C	D	E	F
0_42929EC	ETD 29	1	30.6 + 0, -1.6	15.8 ± .2	9.8 + 0, -6	11 ± .3	22 + 1.4, -0	9.8 + 0, -6
0_43434EC	ETD 34	1	35 + 0, -1.6	17.3 ± .2	11.1 + 0, -6	11.8 + 0, -6	25.6 + 1.4, -0	11.1 + 0, -6
0_43939EC	ETD 39	1	40 + 0, -1.8	19.8 ± .2	12.8 + 0, -6	14.2 + .8, -0	29.3 + 1.6, -0	12.8 + 0, -6
0_44444EC	ETD 44	1	45 + .0, -2	22.3 ± .2	15.2 + .0, -6	16.1 + .8, -0	32.5 + 1.6, -0	15.2 + 0, -6
0_44949EC	ETD 49	1	49.8 + 0, -2.2	24.7 ± .2	16.7 + 0, -6	17.7 + .8, -0	36.1 + 1.8, -0	16.7 + 0, -6
0_45454EC	ETD 54	1	54.5 ± 1.3	27.6 ± .2	18.9 ± .4	20.2 ± .4	41.2 ± 1.1	18.9 ± .4
0_45959EC	ETD 59	1	59.8 ± 1.3	31 ± .2	21.65 ± .45	22.1 min	44.7 ± 1.09	21.65 ± .45

To order, add material code to part number.

FIGURE 1



Core Data (ungapped)

 A_L (mH/1000T) min

POWER MATERIALS				MAGNETIC DATA					
PART	R	P	F*	l_e (mm)	A_e (mm ²)	A_{min} (mm ²)	V_e (mm ³)	CORE WEIGHT (grams per set)	WdAc (cm ⁴)
0_42929EC	1,688	2,132	3,316	72	76	71	5,470	28	-
0_43434EC	2,030	2,200	3,600	78.6	97.1	91.6	7,640	40	1.21
0_43939EC	2,230	2,420	4,050	92.2	125	123	11,500	60	2.21
0_44444EC	2,750	3,000	4,950	103	173	172	17,800	94	3.75
0_44949EC	3,070	3,330	5,400	114	211	209	24,000	124	5.83
0_45454EC	3,900	4,711	7,400	127	280	280	35,500	180	-
0_45959EC	4,310	4,680	7,500	139	368	360	51,500	248	13.7

* F material nominal $\pm 25\%$ AVAILABLE
HARDWAREPRINTED CIRCUIT BOBBIN
MOUNTING CLAMP

0_43434EC

0_43939EC

0_44444EC

0_44949EC

0_45959EC



Printed Circuit Bobbins

MECHANICAL DIMENSIONS (mm)										
PART	CORE SIZE	FIG.	A MAX	B MAX	C MAX	D NOM	E NOM	F MAX	G NOM	H NOM
PCB3939SA	43939EC	1	44.29	26.18 nom	15.29	12.7 min	30.2	32.79 ref	5.58	40.1 min
PCB4949WA	44949EC	2	53.79	33.09 nom	19.5	16.48 min	40.38	40.69 ref	5.08	49.5 min
PCB5959AA	45959EC	3	66.04	41.37 nom	24.86	22.35 min	50.8	48.51 ref	4.19	61.34 min

FIGURE 1

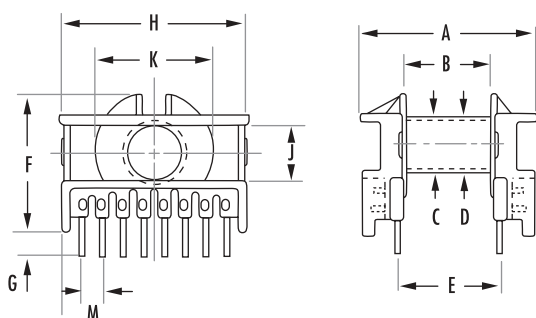


FIGURE 2

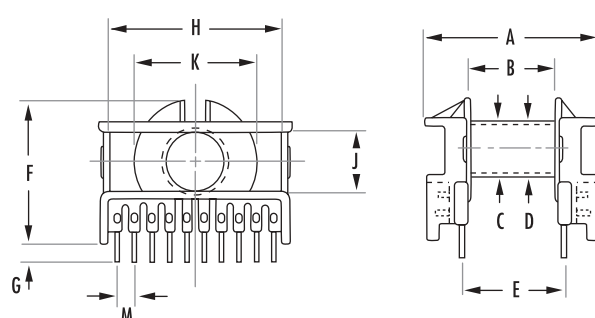
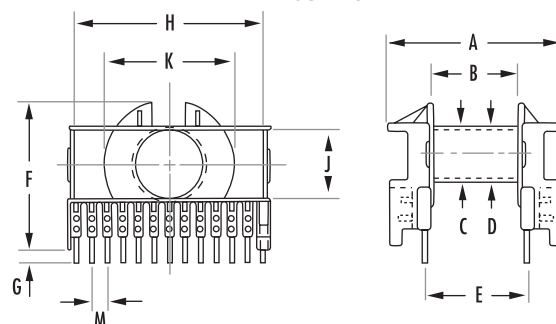


FIGURE 3



Printed Circuit Bobbins

MECHANICAL DIMENSIONS (mm)				NOMINAL WINDING AREA PER SECTION	AVG. LENGTH OF TURN (mm)	BOBBIN MATERIAL	PIN MATERIAL	PIN DIAMETER (mm)	BOARD CLEARANCE (mm)		
PART	J NOM	K MAX	M NOM	cm ²					L	W	H
PCB3939SA	13.0 min	28.9	5.0	1.740	67	Phenolic*	CP Wire	.99	48.2	45.7	37.5
PCB4949WA	16.89 min	35.5	5.0	2.71	85.3	Phenolic*	CP Wire	.99	57.8	55.2	42.7
PCB5959AA	22.35 min	43.18	5.08	3.72	106.7	Rynite FR530L**	Phosphor Bronze	.90	72.2	66.9	49.2

* UL 94 V-1 rated **UL 94 V-0 rated

Mounting Clamps

MECHANICAL DIMENSIONS (mm)							
PART	ITEM	CORE SIZE	FIG.	A	B	C	MATERIAL
00C343416	Clamp (2 required per set)	43434EC	1	22.8	10.8	39.6	Stainless Steel
00C393916	Clamp (2 required per set)	43939EC	1	25.3	12.5	44.7	Stainless Steel
00C444416	Clamp (2 required per set)	44444EC	1	28.6	14.9	49.6	Stainless Steel
00C494916	Clamp (2 required per set)	44949EC	1	30.8	16.3	54.61	Stainless Steel
00C595916	Clamp (2 required per set)	45959EC	2	12.9	22	65.4	Stainless Steel

FIGURE 1

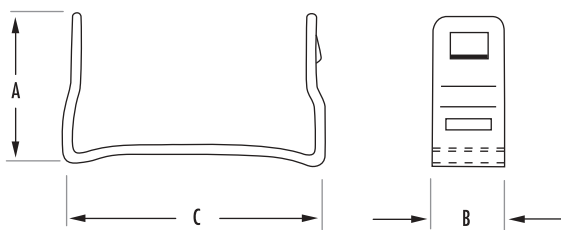
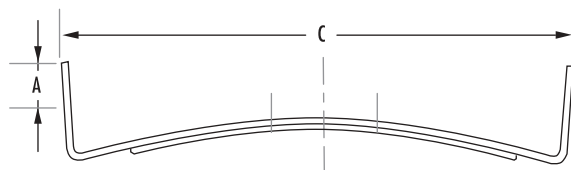


FIGURE 2



Section 12

Notes

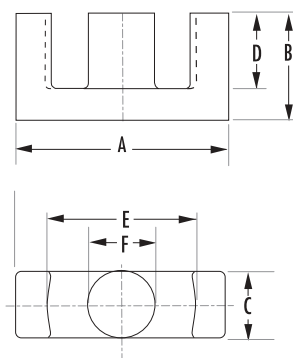
Core Data (ungapped)

Any practical gap available. See pages 1.8-1.11

MECHANICAL DIMENSIONS (mm)								
PART	CORE TYPE	FIG.	A	B	C	D MIN	E	F
O_42814EC		1	28.55 ± .55	14 ± .2	11.4 ± .35	9.75 ± .4	21.75 ± .5	9.9 ± .2
O_42817EC		1	28.55 ± .55	16.7 ± .25	11.4 ± .35	12.65 ± .4	21.75 ± .5	9.9 ± .25
O_43521EC	EER 35L	1	35 ± .65	20.7 ± .2	11.4 ± .35	14.75 ± .35	26.15 ± .55	11.3 ± .25
O_44013EC		1	40 ± .7	22.4 ± .2	13.4 ± .35	15.45 ± .35	29.6 ± .6	13.3 ± .25
O_44216EC	EER 42	1	42.15 ± .85	21.6 ± .2	14.7 ± .3	15.6 min	31 ± .6	14.7 ± .3
O_44818EC		1	48 ± 1	18 ± .2	17.6 ± .4	11.45 ± .25	36.8 ± .8	17.6 ± .4
O_44821EC		1	48 ± 1	21.2 + 0, -.4	21 + .3, -.5	14.7 + .7, -0	38 + .5, -.8	18 ± .3
O_45418EC		1	53.5 ± 1	18.3 ± .2	17.95 ± .35	11.1 ± .3	40.65 ± .85	17.9 ± .4

To order, add material code to part number.

FIGURE 1



Core Data (ungapped)

 A_L (mH/1000T) min

POWER MATERIALS				MAGNETIC DATA					
PART	R	P	F*	l_e (mm)	A_e (mm ²)	A_{min} (mm ²)	V_e (mm ³)	CORE WEIGHT (grams per set)	WdAc (cm ⁴)
O_42814EC	2,025	2,514	3,896	64	81.4	77	5,260	28	-
O_42817EC	1,875	2,184	3,400	75.5	81.4	77	6,142	32	-
O_43521EC	2,020	2,220	3,550	90.8	107	100	9,710	49	1.91
O_44013EC	2,475	2,640	-	98	149	139	14,600	74	-
O_44216EC	2,880	3,130	5,000	98.7	175	166	17,300	106	3.55
O_44818EC	4,800	5,140	7,950	86	232	223	19,900	102	-
O_44821EC	4,275	5,294	8,274	100	255	248	25,500	128	-
O_45418EC	4,575	4,875	7,440	91.8	250	240	23,000	122	-

* F material nominal $\pm 25\%$ AVAILABLE
HARDWARE**O_43521EC**
O_44216EC

PRINTED CIRCUIT BOBBIN

Printed Circuit Bobbins

MECHANICAL DIMENSIONS (mm)										
PART	CORE SIZE	FIG.	A	B	C	D	E	F	G	H
PCB3521LA	43521EC	1	29.21 nom	26.16 nom	14.17 max	11.65 min	25.4 nom	39.82 ref	4.82 nom	29.21 min
PCB4216FA	44216EC	2	30.98 max	27.3 nom	17.98 max	15.39 min	24.99 nom	45.59 ref	5.08 nom	39.87 min

FIGURE 1

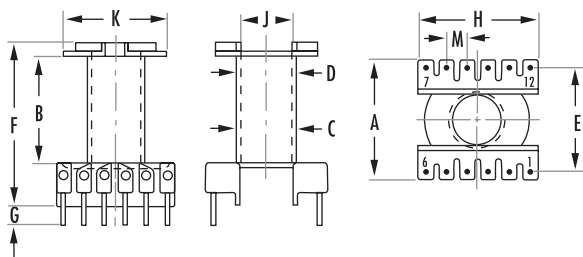
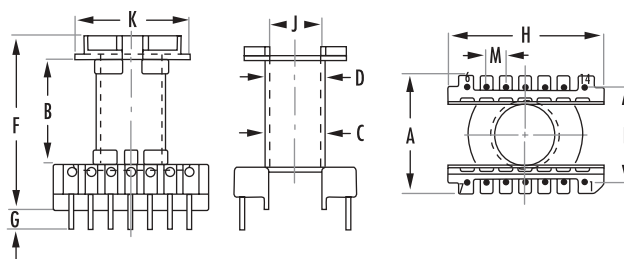


FIGURE 2



Printed Circuit Bobbins

MECHANICAL DIMENSIONS (mm)				NOMINAL WINDING AREA PER SECTION	AVG. LENGTH OF TURN (mm)	BOBBIN MATERIAL	PIN MATERIAL	PIN DIAMETER (mm)
PART	J NOM	K MAX	M NOM	cm ²				
PCB3521LA	12.7	25.5	5.08	1.48	61	Rynite FR530*	CP Wire	.79
PCB4216FA	15.69	30.48 ref	5	3.15	91.4	Rynite FR530*	CP Wire	.99

*UL 94 V-0 rated

Core Data (ungapped)

Any practical gap available. See pages 1.8-1.11

MECHANICAL DIMENSIONS (mm)								
PART	FIG.	A	B	C	D	E	F	G
O_40906EC	1	9.5 + 0, -3	2.45 ± .05	5 + 0, -2	1.6 + .15, -0	7.5 + 25, -0	3.5 + 0, -2	7.21 ± .10
O_41126EC	1	11 + 0, -35	2.45 ± .05	6 + 0, -2	1.5 + .15, -0	8.7 + 3, -0	4.25 + 0, -25	8 + .2, -0
O_41308EC	1	12.8 ± .3	2.85 ± .08	8.7 ± .25	1.75 ± .13	11.2 ± .3	5 ± .15	9.05 ± .3
O_41308IC	2	12.8 ± .3	1.1 ± .1	8.7 ± .25	-	-	-	-
O_41426EC	1	14.7 + 0, -4	2.95 ± .05	6.8 + 0, -2	1.55 + .2, -0	11.6 + .4, -0	4.8 + 0, -2	-
O_41826EC	1	18 ± .35	3.15 ± .1	9.7 ± .2	1.6 ± .1	15.6 ± .3	6.2 ± .15	13.5 min
O_42014EC	3	20 ± .35	6.8 ± .1	14 ± .3	4.6 ± .15	18 ± .35	8.8 ± .15	-
O_42014IC	2	20 ± .35	1.9 ± .05	14 ± .3	-	-	-	-
O_42313EC	1	23.2 ± .45	3.6 ± .1	12.5 ± .25	1.6 ± .1	20.2 ± .4	8 ± .217.5 min	
O_42517EC	1	25 ± .4	5.6 ± .1	18 ± .3	2.75 ± .15	22 ± .4	11 ± .2	15.2 ± .7
O_42517IC	2	25 ± .4	2.3 ± .05	18 ± .3	-	-	-	-
O_42521EC	1	25 ± .4	8 ± .1	18 ± .3	5.15 ± .15	22 ± .4	11 ± .2	15.2 ± .7
O_43021EC	1	30 ± .4	8 ± .15	20 ± .3	5.3 ± .2	26 ± .4	11 ± .2	19.45 ± .4
O_43021IC	2	30 ± .4	2.7 ± .1	20 ± .3	-	-	-	-

To order, add material code to part number.

FIGURE 1

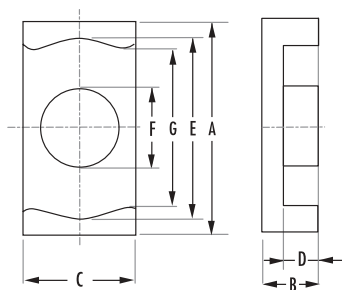
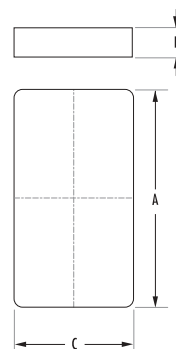


FIGURE 2



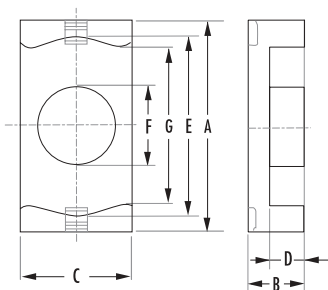
Core Data (ungapped)

A_L (mH/1000T) min

POWER MATERIALS					MAGNETIC DATA					
PART	COMB.	R	P	F*	l_e (mm)	A_e (mm ²)	A_{min} (mm ²)	V_e (mm ³)	CORE WEIGHT (grams per set)	WdAc (cm ⁴)
O_40906EC	EE	730	790	1,270	14.2	8.47	7.6	120	0.6	.0026
O_41126EC	EE	1,200	1,267	1,780	14.7	11.9	10.3	174	1	-
O_41308EC	EE	1,275	1,350	1,950	17.5	19.9	19.2	348	1.6	-
O_41308IC	EI	1,350	1,425	2,000	15.9	19.8	19.2	315	1.4	-
O_41426EC	EE	1,200	1,275	1,850	19	17.6	17.3	333	1.8	-
O_41826EC	EE	1,967	2,078	3,104	22.1	30.2	30.1	667	3.2	-
C_42014EC	EE	2,841	3,019	4,575	33.2	59	55	1,960	10.2	-
O_42014IC	EI	3,359	3,555	5,338	25.5	57.3	52.5	1,460	8.1	-
O_42313EC	EE	2,850	3,025	4,540	26.6	50.2	50	1,340	6.4	-
O_42517EC	EE	5,266	5,586	8,427	26.4	89.7	82.8	2,370	16.4	-
O_42517IC	EI	5,266	5,586	8,427	26.4	89.7	82.8	2,370	13.1	-
O_42521EC	EE	4,080	4,351	6,649	41.4	100	95	4,145	22	-
O_43021EC	EE	4,098	4,381	6,729	46	108	95	4,970	26.4	-
O_43021IC	EI	4,913	5,838	8,850	36.2	108	95	3,910	20.8	-

* F material nominal $\pm 25\%$

FIGURE 3



AVAILABLE
HARDWARE

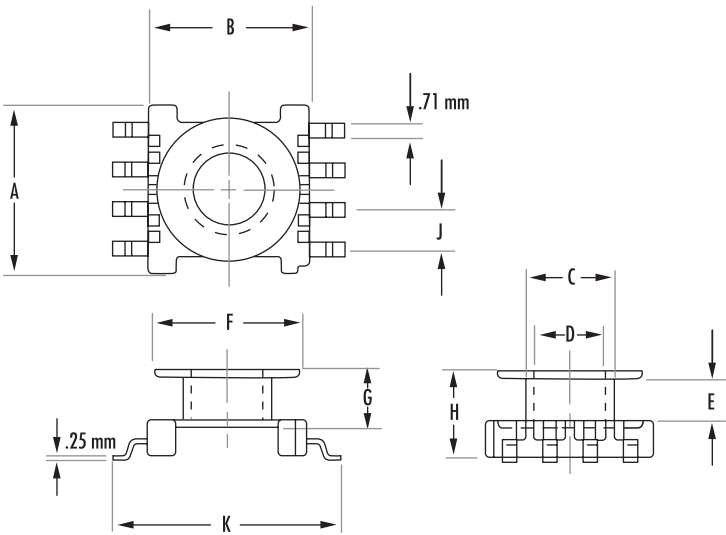
O_40906EC

MOUNTING CLAMP
SURFACE MOUNT HEADER

Surface Mount Bobbin

PART	CORE SIZE	FIG.	MECHANICAL DIMENSIONS (mm)										NOMINAL WINDING AREA PER SECTION	AVERAGE LENGTH OF TURN (mm)
			A NOM	B NOM	C MAX	D MIN	E NOM	F MAX	G MAX	H NOM	J TYP	K NOM	cm ²	
SMB09068A	40906EC	1	8.5	8.1	4.55	3.5	2.15	7.39	2.99	4.29	2.0	11.55	.030	8.64

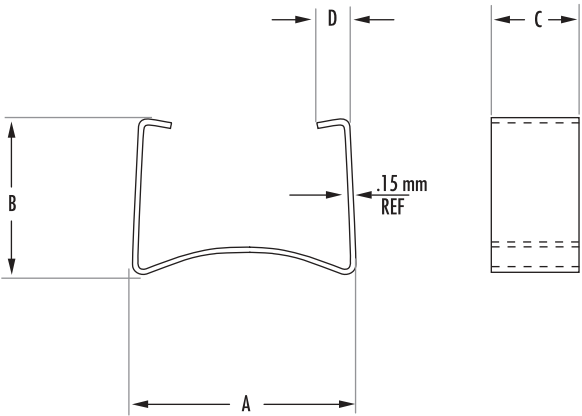
FIGURE 1



Mounting Clamps

MECHANICAL DIMENSIONS (mm)								
PART	ITEM	CORE SIZE	FIG.	A	B	C	D	E
00C09061A	Clamp	40906EC	1	10	5.38	3.98	13.97	Stainless Steel

FIGURE 1



Section 12

Notes