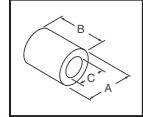


**Low Frequency (300kHz – 30MHz)  
Cores for Round Cables**

Steward LFB ferrite material provides excellent impedance at lower frequencies. Optimum EMI attenuation is between 300kHz and 30MHz, however, with additional wire turns, much broader EMI frequencies can be effectively attenuated.



Additional wire turns will multiply impedance.

Dimensions (mm)			Net Impedance (Ω)						Digi-Key Part No.	Pricing					Steward Part No.
			@ 1MHz (1 Turn)	@ 1MHz (2 Turn)	@ 1MHz (5 Turn)	@ 5MHz (1 Turn)	@ 5MHz (2 Turn)	@ 5MHz (5 Turn)		1	10	50	100	500	
9.00	7.00	5.00	21	90	558	36	140	867	240-2135-ND	.15	1.26	5.44	9.79	39.15	LFB090050-000
9.50	19.05	5.10	63	240	1464	86	332	2514	240-2277-ND	.45	3.71	15.99	28.78	115.11	LFB095051-000
12.70	7.00	7.92	16	70	436	25	102	593	240-2278-ND	.19	1.55	6.66	11.99	47.97	LFB127079-000
14.27	28.58	6.35	122	490	2842	120	480	2646	240-2279-ND	1.71	14.14	60.94	109.69	438.75	LFB143064-000
14.27	13.46	6.35	57	220	1169	53	215	1552	240-2136-ND	.79	6.57	28.30	50.94	203.76	LFB143064-100
15.88	28.58	7.87	105	410	2615	100	390	2305	240-2281-ND	1.09	9.05	39.00	70.20	280.80	LFB159079-000
17.40	28.58	9.50	91	350	2184	85	340	2044	240-2282-ND	2.16	17.92	77.25	139.05	556.20	LFB174095-000
18.10	10.00	10.00	31	138	809	29	115	722	240-2283-ND	.51	4.23	18.25	32.85	131.40	LFB180100-000
18.70	28.58	10.16	91	350	1969	84	330	1863	240-2284-ND	2.34	19.36	83.44	150.19	600.75	LFB187102-000
22.10	12.70	14.00	30	30	818	28	110	699	240-2137-ND	.65	5.41	23.30	41.94	167.76	LFB220140-000
25.00	13.00	15.00	34	136	850	26	80	624	240-2285-ND	.92	7.66	33.00	59.40	237.60	LFB250150-000
25.91	28.58	12.83	106	420	2647	62	240	1487	240-2138-ND	3.30	27.37	117.96	212.33	849.33	LFB259128-000
28.98	15.21	19.05	34	155	963	22	70	573	240-2286-ND	1.47	12.16	52.41	94.34	377.37	LFB290190-000
31.00	13.00	19.00	33	143	845	22	88	554	240-2139-ND	1.45	11.98	51.63	92.93	371.70	LFB310190-000
36.00	15.00	23.00	27	110	653	19	75	438	240-2287-ND	2.80	23.18	99.90	179.82	719.28	LFB360230-300

§ 240-2508-ND Ferrite Low Frequency EMI Cores for Round Cables and Wire Bundles Sample Kit (4-16 each of parts denoted) ..... \$60.00

**E**

**Ferrite Cylinders and Toroids for Electromagnetic Interference (EMI)**



**Broad Band (optimized 30MHz – 800MHz +)  
Bead Cores for Round Cables and Wire Bundles**

One-piece ferrite tubular bead cores for effectively attenuating a broad range of conducted and radiated electromagnetic interference (EMI). Install over round cables or wire bundles. Ferrite beads can be over molded or covered with heat shrink coating if desired. Additional wire turns will multiply impedance. Steward's cylindrical beads for round cables in Broad Band 28 material provide

the smallest and most cost effective EMI solution when filtering both common mode and differential mode EMI on internal and external cable assemblies. By using Steward's high performance material, one is able to use the smallest and lowest weight core size possible with the highest EMI attenuation performance available.

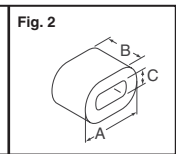
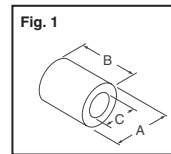
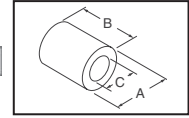


Fig.	Dimensions (mm)			Typical Impedance Ω			Digi-Key Part No.	Pricing					Steward Part No.	
	A	B	C	@ 50MHz	@ 100MHz	@ 300MHz		1	10	50	100	500		
1	6.35	15.88	3.18	131	182	300	240-2289-ND	.14	1.17	5.04	9.07	36.27	28B0250-100	
	6.78	14.22	3.99	100	138	260	240-2112-ND	.14	1.12	4.83	8.69	34.74	28B0268-000	
	7.00	13.50	3.80	84	146	268	240-2290-ND	.14	1.16	4.99	8.98	35.91	28B0275-000	
	8.00	4.78	3.17	69	100	220	240-2291-ND	.12	.97	4.19	7.54	30.15	28B0315-000	
	8.00	10.06	3.17	112	158	281	240-2292-ND	.15	1.22	5.26	9.47	37.89	28B0315-100	
	8.60	10.00	3.80	85	143	264	240-2293-ND	.15	1.27	5.46	9.83	39.33	28B0339-000	
	9.00	20.00	4.75	148	205	360	240-2295-ND	.21	1.76	7.58	13.64	54.54	28B0355-000	
	9.53	14.48	5.08	114	154	282	240-2067-ND	.19	1.55	6.69	12.04	48.15	28B0375-100	
	9.53	19.05	5.08	146	194	310	240-2113-ND	.22	1.82	7.86	14.15	56.61	28B0375-300	
	9.53	4.83	5.08	52	81	200	240-2296-ND	.12	1.02	4.39	7.90	31.59	28B0375-400	
	9.75	10.00	3.80	125	159	286	240-2297-ND	.18	1.45	6.26	11.27	45.09	28B0384-000	
	9.75	25.00	3.80	254	322	473	240-2298-ND	.30	2.51	10.84	19.51	78.03	28B0384-200	
	9.91	15.00	6.35	88	128	248	240-2299-ND	.18	1.50	6.46	11.63	46.53	28B0390-200	
	12.00	10.00	3.55	152	195	320	240-2240-ND	.23	1.87	8.08	14.54	58.14	28B0473-000	
	12.00	25.00	3.55	318	424	558	240-2241-ND	.43	3.60	15.51	27.92	111.69	28B0473-200	
	12.32	25.40	4.88	253	320	450	240-2114-ND	.43	3.60	15.50	27.90	111.60	28B0485-000	
	12.70	6.35	7.92	52	83	200	240-2301-ND	.16	1.29	5.58	10.04	40.14	28B0500-100	
	14.27	10.16	6.35	101	145	270	240-2302-ND	.26	2.18	9.38	16.88	67.50	28B0562-000	
	14.27	28.58	6.35	262	317	470	240-2078-ND	.58	4.81	20.74	37.33	149.31	28B0562-200	
	14.27	15.24	7.26	121	173	295	240-2303-ND	.33	2.76	11.91	21.44	85.77	28B0563-000	
	14.27	28.57	7.26	197	287	406	240-2304-ND	.55	4.53	19.54	35.17	140.67	28B0563-200	
	14.48	5.51	8.51	51	82	200	240-2305-ND	.17	1.41	6.06	10.91	43.65	28B0570-000	
	15.00	35.00	5.90	348	450	580	240-2242-ND	.79	6.57	28.31	50.96	203.85	28B0591-200	
	15.65	28.58	7.00	232	310	450	240-2306-ND	.68	5.64	24.30	43.74	174.96	28B0616-000	
	15.88	14.27	7.87	87	163	273	240-2307-ND	.38	3.11	13.43	24.17	96.66	28B0625-000	
	15.88	28.58	7.87	209	280	400	240-2115-ND	.66	5.49	23.65	42.57	170.28	28B0625-100	
	16.00	28.00	9.25	171	243	370	240-2308-ND	.60	4.94	21.29	38.32	153.27	28B0631-100	
	17.42	6.35	9.52	61	91	214	240-2310-ND	.23	1.93	8.30	14.94	59.76	28B0686-000	
	17.42	28.57	9.52	191	242	390	240-2079-ND	.73	6.06	26.11	47.00	188.01	28B0686-200	
	18.67	28.58	10.16	197	250	400	240-2080-ND	.83	6.88	29.66	53.39	213.57	28B0735-000	
	18.67	14.27	10.16	108	150	270	240-2311-ND	.46	3.79	16.35	29.43	117.72	28B0735-300	
	22.10	6.35	13.72	53	85	205	240-2312-ND	.29	2.41	10.39	18.70	74.79	28B0870-000	
	22.10	12.70	13.72	80	122	236	240-2116-ND	.49	4.05	17.46	31.43	125.73	28B0870-100	
	25.40	12.70	15.49	83	122	247	240-2313-ND	.63	5.21	22.45	40.41	161.64	28B0999-000	
	25.40	12.70	12.70	106	151	278	240-2117-ND	.74	6.10	26.29	47.32	189.27	28B1000-000	
	25.91	28.58	12.83	104	276	412	240-2081-ND	1.62	13.40	57.78	104.00	415.98	28B1020-100	
	28.50	28.58	13.77	218	307	440	240-2243-ND	1.96	16.21	69.89	125.80	503.19	28B1122-100	
	29.01	7.49	19.00	53	85	200	240-2118-ND	.47	3.87	16.68	30.02	120.06	28B1142-000	
	29.01	13.84	19.00	77	114	235	240-2314-ND	.79	6.55	28.23	50.81	203.22	28B1142-100	
	31.12	15.93	19.05	100	140	270	240-2315-ND	1.10	9.15	39.43	70.97	283.86	28B1225-000	
	31.12	10.00	19.05	70	110	240	240-2316-ND	.72	6.00	25.88	46.58	186.30	28B1225-300	
	31.75	22.22	19.05	134	186	292	240-2119-ND	1.60	13.28	57.24	103.03	412.11	28B1250-000	
	36.00	12.70	23.00	78	115	230	240-2317-ND	1.11	9.22	39.76	71.57	286.29	28B1417-200	
	39.12	22.22	16.76	204	254	405	240-2319-ND	3.03	25.07	108.05	194.49	777.96	28B1540-000	
	50.80	28.70	25.40	218	305	442	240-2244-ND	5.97	49.46	213.20	383.76	1535.04	28B2000-100	
	60.96	12.70	35.56	90	135	285	240-2120-ND	3.07	25.46	109.75	197.55	790.20	28B2400-000	
	2	38.86	28.58	12.95	161	210	347	240-2318-ND	2.25	18.66	80.43	144.77	579.06	28B1531-000
		19.64	12.70	5.10	100	141	273	240-2497-ND	.67	5.54	23.90	43.02	172.08	28B0773-050

240-2505-ND Ferrite Broad Band EMI Cores for Round Cables and Wire Bundles Sample Kit (1-12 each of 36 part sizes) ..... \$60.00

(Continued)

**More Product Available Online: [www.digikey.com](http://www.digikey.com)**



**High Frequency (300MHz – 2GHz) Cylindrical Cores for Round Cables**

Made from special high frequency material, these ferrite cylinders and toroids have EMI attenuation (impedance) that peaks above 1GHz for most part sizes. Also available in split clamp-on shapes (in plastic cases) listed at the bottom of this page. Size and shape of the part can affect performance and frequency response.

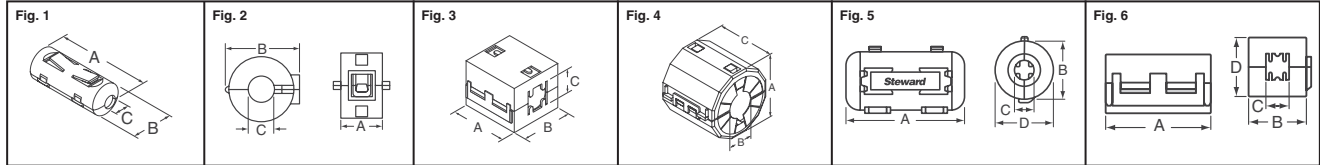
Dimensions (mm)			Net Impedance (Ω)		Digi-Key Part No.	1	10	Pricing 50	100	500	Steward Part No.
A	B	C	@ 500MHz	@ 800MHz							
7.52	10.00	2.39	136	138	240-2146-ND	25	2.04	8.80	15.84	63.36	HFB075024-000
9.52	10.00	5.08	74	85	240-2145-ND	29	2.41	10.40	18.72	74.88	HFB095051-100
9.52	19.00	5.08	135	163	240-2140-ND	48	3.95	17.03	30.65	122.58	HFB095051-200
12.32	5.00	4.88	56	62	240-2269-ND	29	2.39	10.29	18.52	74.07	HFB123049-000
12.32	10.00	4.88	110	127	240-2149-ND	49	4.10	17.66	31.79	127.17	HFB123049-100
12.32	25.40	4.88	287	305	240-2270-ND	1.13	9.39	40.46	72.83	291.33	HFB123049-300
14.27	5.00	6.35	50	64	240-2271-ND	.33	2.78	11.96	21.53	86.13	HFB143064-000
14.27	10.00	6.35	100	113	240-2147-ND	.60	4.93	21.25	38.25	153.00	HFB143064-100
14.27	28.58	6.35	315	306	240-2148-ND	1.56	12.94	55.76	100.37	401.49	HFB143064-300
15.24	10.00	3.38	190	189	240-2151-ND	.78	6.48	27.91	50.24	200.97	HFB152034-000
15.65	20.00	6.99	200	216	240-2273-ND	1.32	10.94	47.16	84.89	339.57	HFB157070-000
15.88	28.58	7.87	290	302	240-2142-ND	1.83	15.13	65.23	117.41	469.62	HFB159079-100
16.00	19.00	9.25	145	155	240-2274-ND	1.11	9.23	39.79	71.62	286.47	HFB160093-200
16.00	27.99	9.25	198	261	240-2152-ND	1.60	13.28	57.25	103.05	412.20	HFB160093-300
16.99	10.00	7.01	115	127	240-2153-ND	.84	6.96	30.00	54.00	216.00	HFB170070-000
16.99	20.00	7.01	215	234	240-2275-ND	1.59	13.21	56.93	102.47	409.86	HFB170070-100
18.67	30.00	10.16	250	276	240-2143-ND	2.40	19.91	85.81	154.46	617.85	HFB187102-100
25.91	28.58	12.83	246	268	240-2154-ND	4.67	38.67	166.66	299.99	1199.97	HFB259128-100

240-2225-ND High Frequency Ferrite Clamp-On and Solid Cylinder Core Sample Kit for Round Cables (one each of 18 different sizes) ..... \$30.00

**Clamp-On, Split Ferrite Cores in Plastic Cases for Round Cables and Wire Bundles**



Split ferrite bead cores in clamp-on (or snap-on) plastic cases can be easily used for EMI attenuation where one-piece cores cannot be installed. Clamp-on cores are also convenient for use during EMI testing. Cylinder, round and box shaped plastic cased part shapes available. Additional wire turns will multiply impedance. High performance material.



**Broad Band Plastic Clamp-On Cores Optimized for 30MHz – 800MHz +**

Fig.	Case Color	Plastic Case Dimensions (mm)			Max. Cable Diameter (mm)	Typical Impedance (Ω)		Digi-Key Part No.	Price Each				Steward Part No.
		A	B	C		100MHz	300MHz		1	10	50	100	
<b>Cylinder Clamp-On Ferrite</b>													
1	Black	25.20	13.00	3.50	3.50	240	400	240-2233-ND\$‡	1.37	1.14	.98	.89	28A0350-0B2
	White	29.08	12.80	5.44	4.65	170	320	240-2068-ND	.94	.79	.68	.61	28A0392-0A0
	Black	29.08	12.80	5.44	4.65	170	320	240-2070-ND\$‡	.94	.79	.68	.61	28A0392-0A2
	Black	42.55	14.30	5.35	5.10	277	449	240-2344-ND\$‡	1.17	.97	.84	.76	28A0434-0A2
	Black	53.39	18.75	4.80	4.50	572	688	240-2245-ND\$‡	1.76	1.46	1.26	1.13	28A0592-0A2
	Black	53.39	18.75	6.60	6.55	471	575	240-2246-ND\$‡	1.80	1.49	1.29	1.16	28A0593-0A2
	White	40.36	19.10	9.09	8.95	240	390	240-2065-ND	1.30	1.08	.94	.84	28A0640-0A0
	Black	40.36	19.10	9.09	8.95	240	390	240-2066-ND\$‡	1.30	1.08	.94	.84	28A0640-0A2
	Black	55.91	24.82	10.00	10.00	348	514	240-2580-ND	3.68	3.05	2.63	2.37	28A0807-0A2
	Black	41.68	21.03	7.00	6.35	270	460	240-2122-ND\$‡	1.36	1.13	.98	.88	28A2026-0A2
	Black	35.10	18.00	9.00	9.00	220	360	240-2124-ND\$‡	1.16	.96	.83	.75	28A2736-0A2
	Black	33.70	30.00	13.00	12.85	260	410	240-2127-ND\$‡	6.08	5.04	4.34	3.91	28A3851-0A2
<b>Round Clamp-On Ferrite</b>													
2	Black	19.90	19.20	8.20	8.13	160	300	240-2123-ND\$‡	1.86	1.55	1.33	1.20	28A2432-0A2
	Black	13.60	24.55	10.20	10.19	130	250	240-2125-ND‡	1.96	1.63	1.40	1.26	28A3039-0A2
	Black	15.40	28.80	13.60	13.55	120	230	240-2128-ND‡	2.25	1.87	1.61	1.45	28A4155-0A2
<b>Box Clamp-On Ferrite</b>													
3	White	32.50	29.00	13.00	12.70	280	440	240-2072-ND	2.92	2.43	2.09	1.88	28A2024-0A0
	Black	32.50	29.00	13.00	12.70	280	440	240-2073-ND\$‡	2.92	2.43	2.09	1.88	28A2024-0A2
	White	32.03	17.58	7.26	6.35	320	510	240-2074-ND	1.28	1.06	.92	.83	28A2025-0A0
	Black	32.03	17.58	7.26	6.35	320	510	240-2075-ND\$‡	1.28	1.06	.92	.83	28A2025-0A2
	White	32.84	21.77	10.00	9.91	250	420	240-2076-ND	1.67	1.39	1.20	1.08	28A2029-0A0
	Black	32.84	21.77	10.00	9.91	250	420	240-2077-ND\$‡	1.67	1.39	1.20	1.08	28A2029-0A2
	Black	42.00	29.20	19.30	18.80	210	360	240-2121-ND\$‡	7.15	5.93	5.11	4.60	28A5776-0A2
<b>Large Round Clamp-On</b>													
4	Black	56.64	19.50	45.00	25.40	425	533	240-2199-ND	9.87	8.18	7.05	6.35	28A5131-0A2

§ 240-2224-ND Split Clamp-On Broad Band EMI Ferrite Cores Small Sample Kit for Round Cables (one each of parts denoted) ..... \$30.00  
 ‡ 240-2506-ND Split Clamp-On Broad Band EMI Ferrite Cores Large Sample Kit for Round Cables (1-12 each of parts denoted) ..... \$60.00

**High Frequency (300MHz – 2GHz) Clamp-On Ferrite Cores**

Fig.	Case Color	Plastic Case Dimensions (mm)				Max. Cable Diameter (mm)	Net Impedance (Ω)		Digi-Key Part No.	1	Price Each			Steward Part No.
		A	B	C	D		500MHz	800MHz			10	50	100	
<b>Cylinder Clamp-On Ferrite</b>														
5	Black	29.30	12.80	5.30	12.40	4.65	152	168	240-2129-ND	1.11	.92	.80	.72	HFA100049-0A2
		41.68	21.03	8.13	21.03	6.35	340	281	240-2132-ND	2.63	2.19	1.89	1.70	HFA150068-0A2
		40.36	19.10	9.09	20.80	8.95	260	262	240-2130-ND	2.42	2.01	1.73	1.56	HFA163090-0A2
<b>Box Clamp-On Ferrite</b>														
6	Black	32.50	17.88	7.00	18.39	6.35	350	339	240-2131-ND	2.66	2.21	1.90	1.71	HFA150066-0A2
		32.64	21.77	10.00	21.84	9.91	290	280	240-2133-ND	3.60	2.99	2.58	2.32	HFA187102-0A2
		32.51	29.01	13.00	29.60	12.70	315	275	240-2134-ND	6.64	5.51	4.75	4.28	HFA259131-0A2

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