

TOROIDAL CHOKES - NICKEL POWDER (MPP)

APPLICATION FEATURES

The HL Series chokes are offered for use in high-frequency DC power-supply applications and also for AC applications which require linearity and temperature stability.

This series uses MPP (Molybdenum Permalloy Powder) cores which are the best combination of high flux density, low core loss, and temperature stability. The toroidal configuration minimizes stray field effects.

For DC filter choke applications, the useful frequency range is up to approximately $\frac{1}{3}$ of the self resonant frequency.

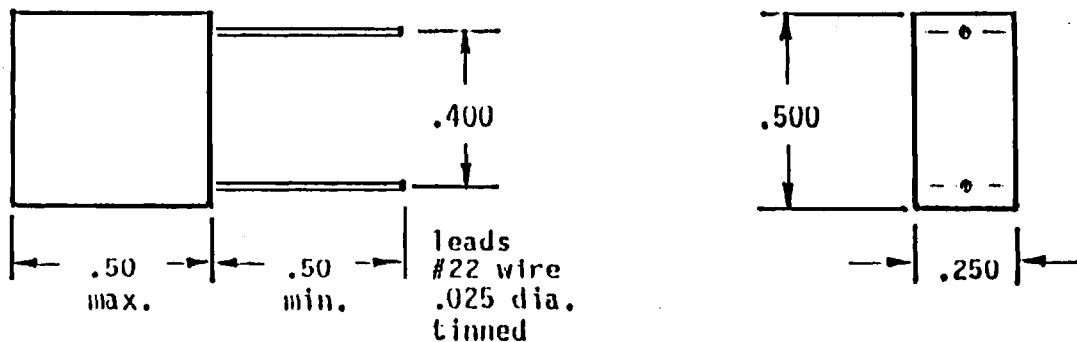
PACKAGING

The two small sizes EC15 and EC30 can be mounted either vertically or horizontally. The remaining ED parts are all horizontal for low profile with mounting inserts. Modified Standard Parts are available. Examples of options are open coils, special winding for high voltage or higher self resonant frequency.

PART NUMBER	L-MILLI.H +/- 15%	DCR-OHMS +/-20%	DC-AMPS FOR 70%L	MAX AMPS 50 C RISE	TYP.SELF RES. FREQ-KHz
EC15HL23	.0041	.0083	4.7	8.0	> 1000
EC15HL24	.0067	.012	3.8	6.7	> 1000
EC15HL25	.010	.017	3.0	5.7	> 1000
EC15HL26	.016	.025	2.4	4.7	> 1000
EC15HL27	.027	.038	1.9	3.8	> 1000
EC15HL28	.040	.058	1.5	3.0	> 1000
EC15HL29	.065	.084	1.2	2.5	> 1000
EC15HL30	.10	.15	.95	1.9	> 1000
EC15HL31	.16	.24	.75	1.5	> 1000
EC15HL32	.25	.38	.60	1.2	> 1000
EC15HL33	.40	.60	.47	.94	> 1000
EC15HL34	.63	.96	.38	.76	> 1000
EC15HL35	1.0	1.5	.30	.60	> 1000
EC15HL36	1.6	2.4	.24	.48	750
EC15HL37	2.5	3.8	.19	.38	690
EC15HL38	4.0	6.0	.15	.30	420
EC15HL39	6.3	9.6	.12	.24	290
EC15HL40	10.	15.	.095	.190	220
EC15HL41	16.	24.	.075	.150	155
EC15HL42	25.	38.	.060	.120	125
EC15HL43	40.	60.	.047	.094	100
EC15HL44	63.	96.	.038	.072	75
EC15HL45	100.	155.	.030	.060	50

NOTES:

1. PACKAGING. Encapsulated unit. MIL-T-27 GRADE 5.
2. INITIAL INDUCTANCE L, is measured at 1 KHz.
3. MAXIMUM CURRENT rating is combined DC and RMS AC for a 50 C rise at an ambient of 20 C and with no heat sink.
4. INDUCTANCE AT MAX AMPS is approx 30% of L.
5. MAXIMUM OPERATING TEMPERATURE 155 C MIL-T-27 CLASS V.
6. DIELECTRIC WITHSTANDING VOLTAGE = 1500 V RMS 60Hz
7. SELF RESONANT FREQUENCY is for reference only.
8. All electrical data at 20 +/- 5 C.
9. For very low values of L and R, measure adjacent to case.



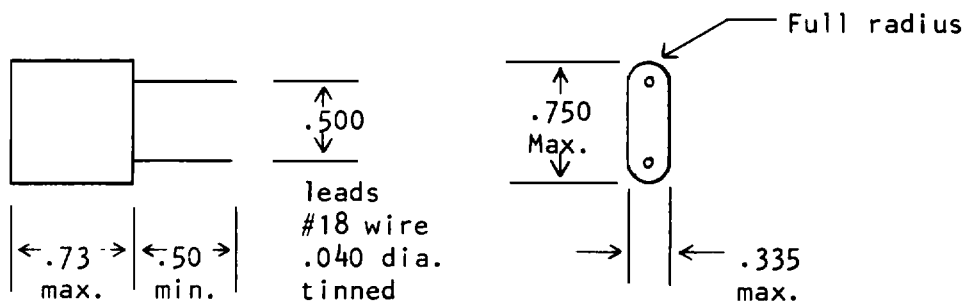
weight 3.5 grams

DWN.	A.L.H.	7-86	FSC 09349	MAGNETIC CIRCUIT ELEMENTS, INC.					
ENGR.				TOROIDAL CHOKES					
APP.	JSC	7-86		DECIMALS	FRAC.	ANGLE	SIZE	DWN. NO.	REV.
REV.				.XX = ± .03	± 1/32	± 1°/2	A	EC15HL	A
	INT.	DATE	SCALE 2X	SHEET 1 OF 1					

PART NUMBER	L-MILLI. H ± 15 %	DCR-OHMS ± 20 %	DC-AMPS FOR 70 % L	MAX. AMPS 50°C RISE	TYP. SELF RES. FREQ-KHz
EC30HL19A	.0095	.007	6.3	9.6	> 1000
EC30HL20A	.016	.011	5.0	7.5	> 1000
EC30HL21A	.025	.016	4.0	6.3	> 1000
EC30HL22A	.041	.025	3.2	5.0	> 1000
EC30HL23A	.061	.038	2.5	4.1	> 1000
EC30HL24A	.10	.063	2.0	3.2	> 1000
EC30HL25A	.16	.10	1.6	2.5	> 1000
EC30HL26A	.25	.16	1.3	2.0	> 1000
EC30HL27A	.40	.25	1.0	1.6	> 1000
EC30HL28A	.63	.40	.80	1.3	930
EC30HL29A	1.0	.63	.63	1.0	690
EC30HL30A	1.6	1.0	.50	.80	510
EC30HL31A	2.5	1.6	.40	.63	380
EC30HL32A	4.0	2.5	.32	.50	280
EC30HL33A	6.3	4.0	.25	.40	210
EC30HL34A	10.	6.3	.20	.32	160
EC30HL35A	16.	10.	.16	.25	130
EC30HL36A	25.	16.	.13	.20	100
EC30HL37A	40.	25.	.10	.16	75
EC30HL38A	63.	40.	.080	.13	60
EC30HL39A	100.	63.	.063	.10	45
EC30HL40A	160.	100.	.050	.080	36
EC30HL41A	250.	160.	.040	.063	28
EC30HL42A	400.	250.	.032	.050	21

NOTES:

1. PACKAGING. Encapsulated unit. MIL-T-27 GRADE 5.
2. INITIAL INDUCTANCE L, is measured at 1 KHz.
3. MAXIMUM CURRENT rating is combined DC and RMS AC for a 50°C rise at an ambient of 20°C and with no heat sink.
4. INDUCTANCE AT MAX AMPS is approx. 40% of L.
5. MAXIMUM OPERATING TEMPERATURE 155°C MIL-T-27 CLASS V.
6. DIELECTRIC WITHSTANDING VOLTAGE = 1500 V RMS 60Hz.
7. SELF RESONANT FREQUENCY is for reference only.
8. All electrical data at 20 ± 5°C.
9. For very low values of L and R, measure adjacent to case.



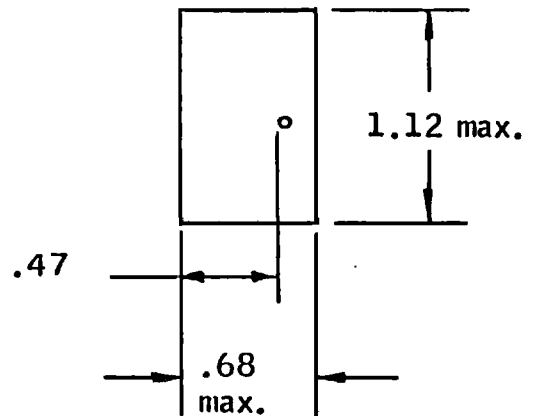
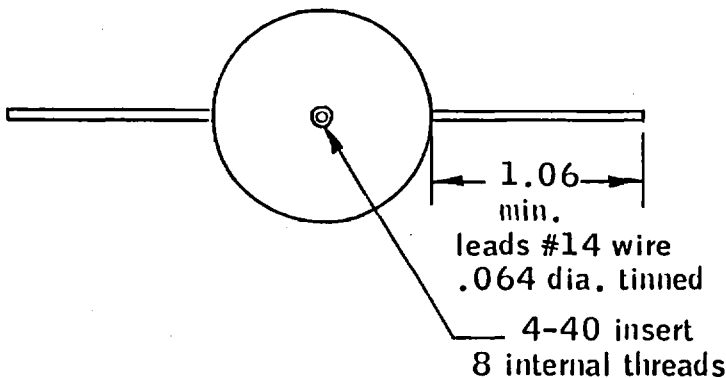
weight 7.5 grams

DWN.	BILL T	12-88	FSC 09349	MAGNETIC CIRCUIT ELEMENTS, INC.				
ENGR.								
APP.	JSC	12-88		TOROIDAL CHOKES				
REV.	C	1-88						
	INT.	DATE	DECIMALS .XX = ± .03 .XXX = ± .010	FRAC. ± 1/32	ANGLE ± 1°/2	SIZE A	DWN. NO. EC30HL	REV. c
SCALE	SHEET	OF						

PART NUMBER	L-MILLI.H +/- 15%	DCR-OHMS +/-20%	DC-AMPS FOR 70%L	MAX AMPS 50 C RISE	TYP.SELF RES. FREQ-KHz
ED50HL18	.10	.019	3.2	7.7	> 1000
ED50HL19	.16	.031	2.5	6.0	> 1000
ED50HL20	.25	.049	2.0	4.8	> 1000
ED50HL21	.40	.078	1.6	3.8	> 1000
ED50HL22	.63	.12	1.3	3.1	800
ED50HL23	1.0	.19	1.0	2.4	600
ED50HL24	1.6	.31	.80	1.9	400
ED50HL25	2.5	.49	.63	1.5	300
ED50HL26	4.0	.78	.50	1.2	200
ED50HL27	6.3	1.2	.40	.96	160
ED50HL28	10	1.9	.32	.77	150
ED50HL29	16	3.1	.25	.60	120
ED50HL30	25	4.9	.20	.48	95
ED50HL31	40	7.8	.16	.38	73
ED50HL32	63	12	.13	.31	58
ED50HL33	100	19	.10	.24	45
ED50HL34	160	31	.08	.19	35
ED50HL35	250	49	.063	.15	28
ED50HL36	400	78	.050	.12	22
ED50HL37	630	120	.040	.096	17
ED50HL38	1000	190	.032	.077	13

NOTES:

1. PACKAGING. Encapsulated unit. MIL-T-27 GRADE 5.
2. INITIAL INDUCTANCE L, is measured at 1 KHz.
3. MAXIMUM CURRENT rating is combined DC and RMS AC for a 50 C rise at an ambient of 20 C and with no heat sink.
4. INDUCTANCE AT MAX AMPS is approx 20% of L.
5. MAXIMUM OPERATING TEMPERATURE 155 C MIL-T-27 CLASS V.
6. DIELECTRIC WITHSTANDING VOLTAGE = 1500 V RMS 60Hz
7. SELF RESONANT FREQUENCY is for reference only.
8. All electrical data at 20 +/- 5 C.
9. For very low values of L and R, measure adjacent to case.



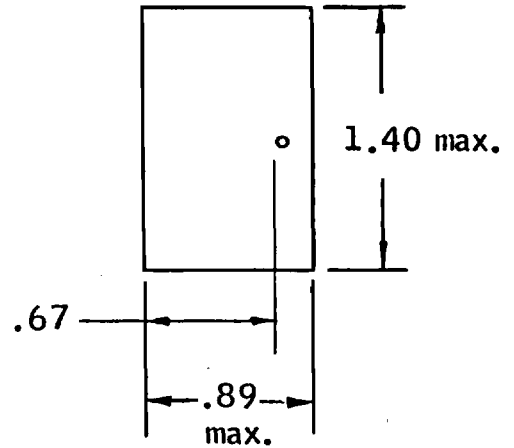
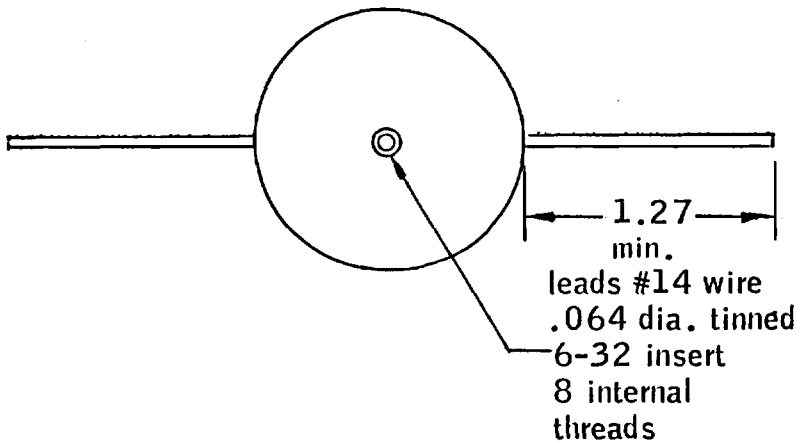
weight 33 grams

DWN.	GOH	4-77	FSC 09349	MAGNETIC CIRCUIT ELEMENTS, INC.					
ENGR.									TOROIDAL CHOKES
APP.	JSC	4-77		DECIMALS .XX = ± .03 .XXX = ± .010	FRAC. 1/32	ANGLE 1° ± 1/2	SIZE A	DWN. NO. ED50HL	
REV.	C	11-86		SCALE	SHEET	OF			

PART NUMBER	L-MILLI.H +/- 15%	DCR-OHMS +/-20%	DC-AMPS FOR 70%L	MAX AMPS 50 C RISE	TYP. SELF RES. FREQ-KHz
ED58HL16	.10	.013	6.0	14	> 1000
ED58HL17	.16	.021	4.8	11	> 1000
ED58HL18	.25	.032	3.8	8.9	> 1000
ED58HL19	.40	.052	3.1	7.3	> 1000
ED58HL20	.63	.080	2.4	5.6	770
ED58HL21	1.0	.13	1.9	4.5	550
ED58HL22	1.6	.21	1.5	3.5	400
ED58HL23	2.5	.32	1.2	2.8	290
ED58HL24	4.0	.52	1.0	2.4	210
ED58HL25	6.3	.80	.75	1.8	150
ED58HL26	10	1.3	.60	1.4	120
ED58HL27	16	2.1	.48	1.1	90
ED58HL28	25	3.2	.38	.89	70
ED58HL29	40	5.2	.31	.73	50
ED58HL30	63	8.0	.24	.56	40
ED58HL31	100	13	.19	.45	32
ED58HL32	160	21	.15	.35	25
ED58HL33	250	32	.12	.28	19
ED58HL34	400	52	.10	.24	15
ED58HL35	630	80	.075	.18	11
ED58HL36	1000	130	.060	.14	10

NOTES:

1. PACKAGING. Encapsulated unit. MIL-T-27 GRADE 5.
2. INITIAL INDUCTANCE L, is measured at 1 KHz.
3. MAXIMUM CURRENT rating is combined DC and RMS AC for a 50 C rise at an ambient of 20 C and with no heat sink.
4. INDUCTANCE AT MAX AMPS is approx 20% of L.
5. MAXIMUM OPERATING TEMPERATURE 155 C MIL-T-27 CLASS V.
6. DIELECTRIC WITHSTANDING VOLTAGE = 1500 V RMS 60Hz
7. SELF RESONANT FREQUENCY is for reference only.
8. All electrical data at 20 +/- 5 C.
9. For very low values of L and R, measure adjacent to case.



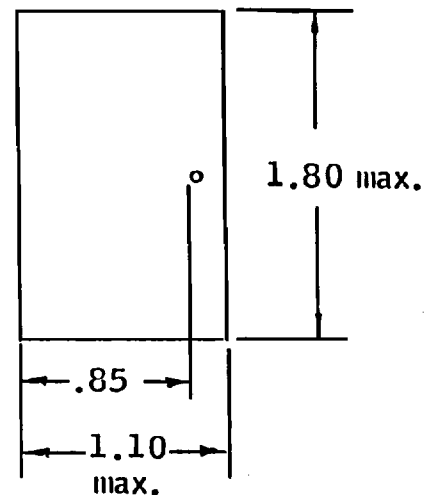
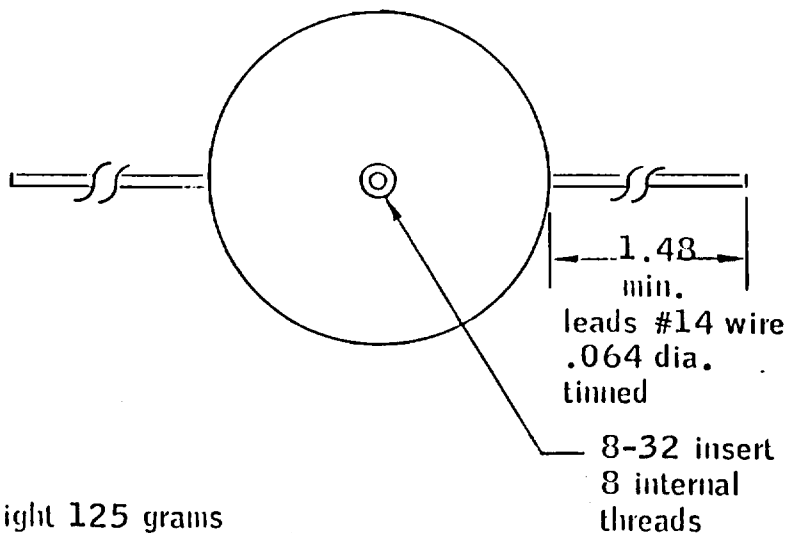
weight 75 grams

DWN.	GOH	4-77	FSC 09349	MAGNETIC CIRCUIT ELEMENTS, INC.					
ENGR.									TOROIDAL CHOKES
APP.	JSC	4-77		DECIMALS	FRAC.	ANGLE	SIZE	DWN. NO.	
REV.	C	11-86		.XX = ± .03	± 1/32	± 1°/2	A	ED58HL	C
INT.	DATE		.XXX = ± .010						
SCALE	1X	SHEET 1 OF 1							

PART NUMBER	L-MILLI.H +/- 15%	DCR-OHMS +/-20%	DC-AMPS FOR 70%L	MAX AMPS 50 C RISE	TYP.SELF RES. FREQ-KHz
ED78HL12	.10	.0061	7.0	18	> 1000
ED78HL13	.16	.010	5.6	14	> 1000
ED78HL14	.25	.015	4.4	11	> 1000
ED78HL15	.40	.024	3.5	8.8	750
ED78HL16	.63	.039	2.8	7.0	580
ED78HL17	1.0	.061	2.2	5.5	430
ED78HL18	1.6	.10	1.8	4.5	330
ED78HL19	2.5	.15	1.4	3.5	250
ED78HL20	4.0	.24	1.1	2.8	190
ED78HL21	6.3	.39	.89	2.2	140
ED78HL22	10	.61	.70	1.8	120
ED78HL23	16	1.0	.56	1.4	90
ED78HL24	25	1.5	.44	1.1	70
ED78HL25	40	2.4	.35	.88	60
ED78HL26	63	3.9	.28	.70	45
ED78HL27	100	6.1	.22	.55	35
ED78HL28	160	10	.18	.45	28
ED78HL29	250	15	.14	.35	22
ED78HL30	400	24	.11	.28	17
ED78HL31	630	39	.089	.22	14
ED78HL32	1000	61	.070	.18	11

NOTES:

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4. INDUCTANCE AT MAX AMPS is approx 20% of L.
5. MAXIMUM OPERATING TEMPERATURE 155 C MIL-T-27 CLASS V.
6. DIELECTRIC WITHSTANDING VOLTAGE = 1500 V RMS 60Hz
7. SELF RESONANT FREQUENCY is for reference only.
8. All electrical data at 20 +/- 5 C.
9. For very low values of L and R, measure adjacent to case.



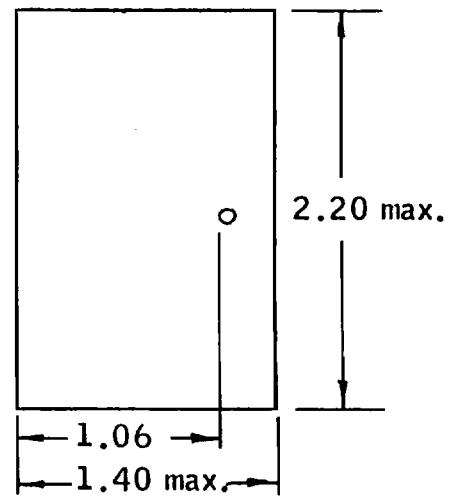
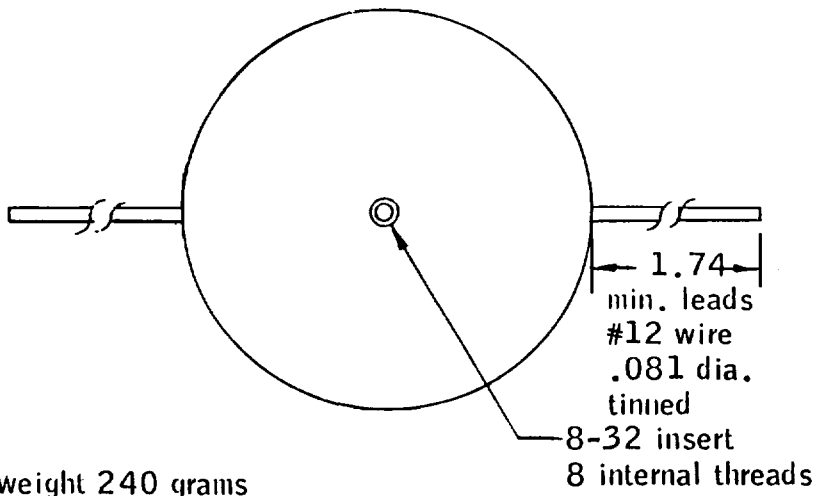
weight 125 grams

DWN. GOH 4-77	FSC 09349	MAGNETIC CIRCUIT ELEMENTS, INC.			
ENGR					
APP. JSC 4-77		DECIMALS .XX = ± .03 .XXX = ± .010	FRAC. ± 1/32	ANGLE ± 1/2°	SIZE A
REV. B 11-86		DWN. NO. ED78HL	REV. B		
INT. DATE	SCALE 1X SHEET 1 OF 1				

PART NUMBER	L-MILLI.H +/- 15%	DCR-OHMS +/-20%	DC-AMPS FOR 70%L	MAX AMPS 50 C RISE	TYP.SELF RES. FREQ-KHz
ED95HL10	.10	.0042	10	29	> 1000
ED95HL11	.16	.0065	8.2	24	> 1000
ED95HL12	.25	.011	6.5	19	> 1000
ED95HL13	.40	.017	5.2	15	700
ED95HL14	.63	.026	4.1	12	500
ED95HL15	1.0	.042	3.3	9.5	370
ED95HL16	1.6	.065	2.6	7.5	260
ED95HL17	2.5	.11	2.1	6.0	190
ED95HL18	4.0	.17	1.6	4.6	130
ED95HL19	6.3	.26	1.3	3.7	75
ED95HL20	10	.42	1.0	2.9	60
ED95HL21	16	.65	.82	2.4	45
ED95HL22	25	1.1	.65	1.9	40
ED95HL23	40	1.7	.52	1.5	30
ED95HL24	63	2.6	.41	1.2	27
ED95HL25	100	4.2	.33	.95	25
ED95HL26	160	6.5	.26	.75	18
ED95HL27	250	11	.21	.60	15
ED95HL28	400	17	.16	.46	13
ED95HL29	630	26	.13	.37	10
ED95HL30	1000	42	.10	.29	8

NOTES:

1. PACKAGING. Encapsulated unit. MIL-T-27 GRADE 5.
2. INITIAL INDUCTANCE L, is measured at 1 KHz.
3. MAXIMUM CURRENT rating is combined DC and RMS AC for a 50 C rise at an ambient of 20 C and with no heat sink.
4. INDUCTANCE AT MAX AMPS is approx 20% of L.
5. MAXIMUM OPERATING TEMPERATURE 155 C MIL-T-27 CLASS V.
6. DIELECTRIC WITHSTANDING VOLTAGE = 1500 V RMS 60Hz
7. SELF RESONANT FREQUENCY is for reference only.
8. All electrical data at 20 +/- 5 C.
9. For very low values of L and R, measure adjacent to case.



DWN.	GOH	4-77	FSC 09349	MAGNETIC CIRCUIT ELEMENTS, INC.					
ENGR.									TOROIDAL CHOKES
APP.	JSC	4-77		DECIMALS .XX = ± .03 .XXX = ± .010	FRAC. ± 1/32	ANGLE ± 1/2°	SIZE A	DWN. NO. ED95HL	
REV.	C	11-86		SCALE 1X	SHEET 1	OF 1			

APPLICATION		REVISIONS			
NEXT ASSY	USED ON	REV.	DESCRIPTION	DATE	APPROVED

PERCENT OF I_{DC}	PERCENT OF L_0
0	100
50	85
100	65
150	45
200	30
250	22
300	18

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES \pm .XX \pm \pm \pm .XXX \pm	CONTRACT NO.		MAGNETIC CIRCUIT ELEMENTS CALIFORNIA			
	APPROVALS	DATE				INDUCTANCE vs DIRECT CURRENT CHARACTERISTIC for HL SERIES
	DRAWN <i>Bud</i>	3/31/80	SIZE	FSCM NO.	DWG. NO.	
TERIAL	CHECKED <i>Bud</i>	3/31/80	A	09349		
FINISH	ISSUED <i>gpc</i>	3/31/80	SCALE		SHEET	
DO NOT SCALE DRAWING						