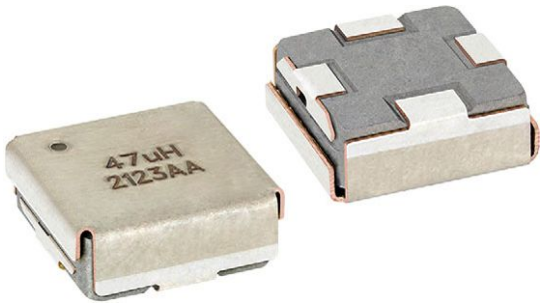
IHLE® High Current Inductors With E-Field Shield



Manufactured under one or more of the following:

US Patents:

6,198,375/6,204,744 / 6,449,829/6,460,244, 10,446,309 B2

Several foreign patents, and other patents pending.

FEATURES

- High temperature, continuous operation up to 155 °C
- Improved radiated E-Field reduction over standard IHLE
- Polarity marked for more consistent performance in uni-polar applications
- Patented shielded construction
- Excellent DC/DC energy storage up to 2 MHz. Filter inductor applications up the SRF (see standard electrical specifications table)
- Integrated E-Field shield eliminates need for separate shielding
- Up to 20 dB radiated E-Field reduction at 1 cm - Measured vertically from top center of device
- B-Field is contained by powdered iron encapsulataion
- AEC-Q200 qualified
- Low DCR/µH
- Handles high transient current spikes without saturation
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE

Pb-free

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

APPLICATIONS

- High current storage inductor for synchronous buck converter (switch-node interference cancellation)
- High frequency SMPS inductor as storage and EMI filter to reduce the conducted emissions with grounding of E-Shield cover
- DC/DC converters for entertainment/navigation systems
- Noise suppression for motors: windshield wipers, power seats, power mirrors, heating and ventilation blower, connectivity, audio, and navigation power supply
- LED drivers

STANDARD ELECTRICAL SPECIFICATIONS

L_0 INDUCTANCE ± 20 % AT 100 kHz, 0.25 V, 0 A (µH)	DCR TYP. 25 °C (mΩ)	DCR MAX. 25 °C (mΩ)	HEAT RATING CURRENT DC TYP. (A) (1)	SATURATION CURRENT DC TYP.		SRF TYP. (MHz)
				(A) (2)	(A) (3)	
0.47	1.55	1.66	32	28	40.1	32.0
1.0	2.87	3.07	23	23	33.3	23.0
1.5	4.2	4.5	20	18	26.3	20.0
2.2	8.15	8.76	13.7	8.5	12.3	13.7
3.3	11	11.81	13.4	9.2	13.3	13.4
4.7	14.3	15.32	10	8.1	11.7	10.0
6.8	20.9	22.36	8.4	8	11.6	8.4
10	30.9	33.06	7	7.3	10.6	7.3
15	47	50.29	5.6	6.1	8.9	6.1
22	70.5	75.44	5.1	5.4	7.8	5.4
33	110	117.7	4	4.5	6.5	4.5
47	167	178	3.2	4	5.6	4.0
68	240	252	2.6	3.5	4.9	3.5

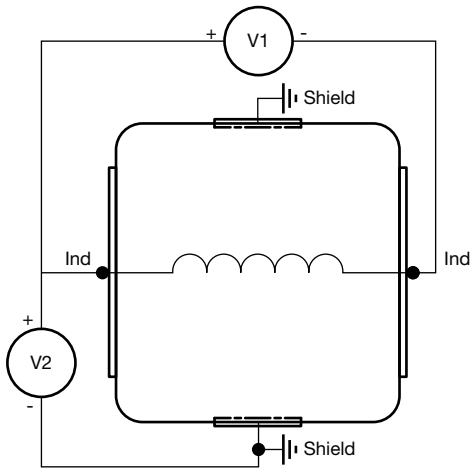
Notes

- All test data is referenced to 25 °C ambient
- Operating temperature range -55 °C to +155 °C
- The part temperature (ambient + temp. rise) should not exceed 155 °C under worst case operating conditions. Circuit design, component placement, PWB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application
- Rated operating voltage, across inductor (V1) = 75 V
- Rated isolation voltage, inductor lead to shield (V2) = 100 V

(1) DC current (A) that will cause an approximate ΔT of 40 °C

(2) DC current (A) that will cause L_0 to drop approximately 20 %

(3) DC current (A) that will cause L_0 to drop approximately 30 %



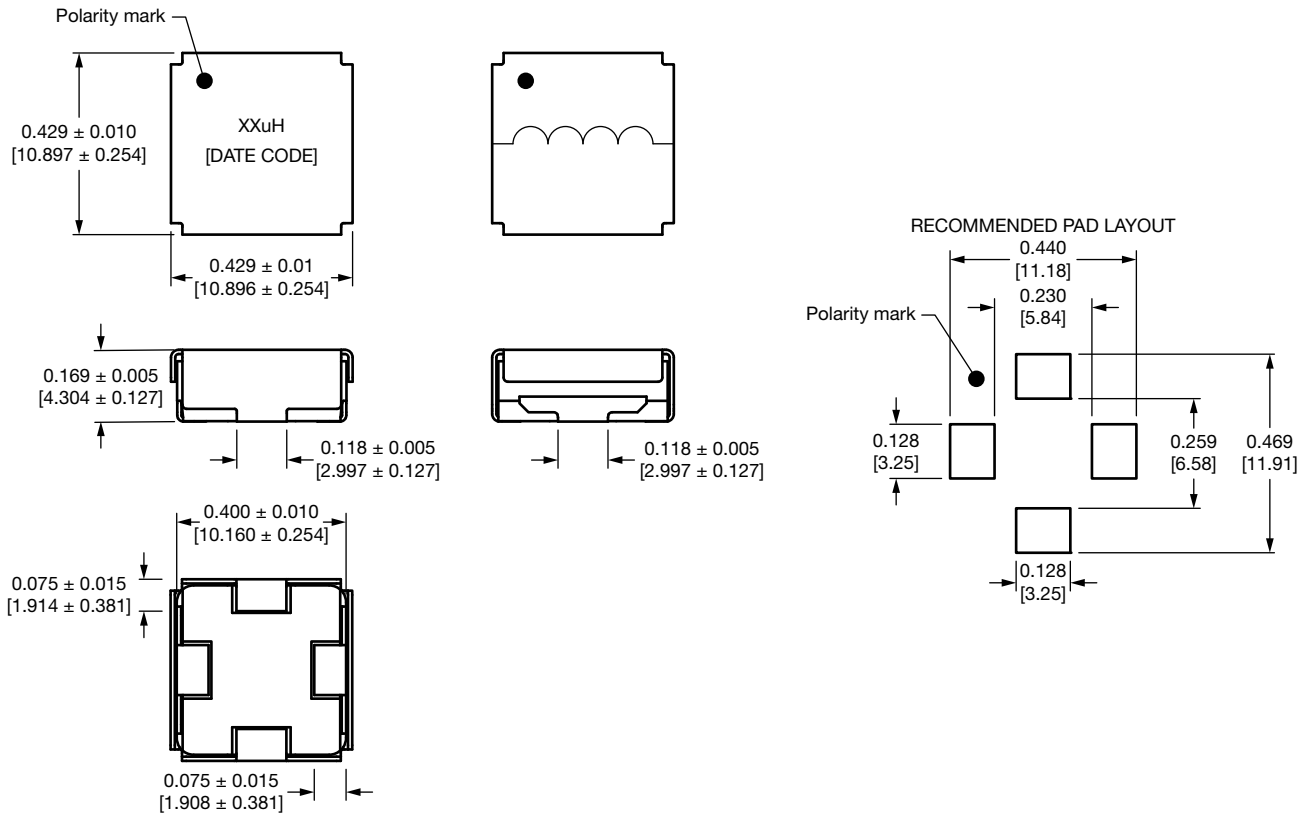
DESCRIPTION

IHLE-4040DD-5A	4.7 µH	± 10 %	EW	e3
MODEL	INDUCTANCE VALUE	INDUCTANCE TOLERANCE	PACKAGE CODE	JEDEC® LEAD (Pb)-FREE STANDARD

GLOBAL PART NUMBER

I	H	L	E	4	0	4	0	D	D	E	W	4	R	7	K	5	A
PRODUCT FAMILY				SIZE						PACKAGE CODE		INDUCTANCE VALUE			TOL.	SERIES	

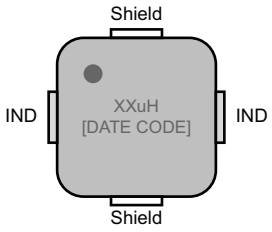
DIMENSIONS in inches [millimeters]

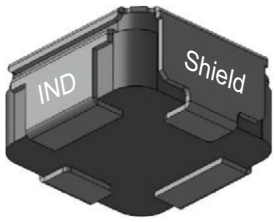


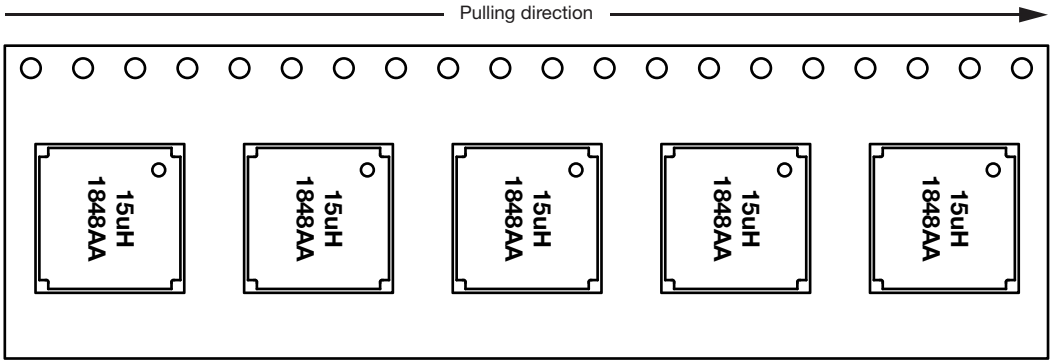
Note

- Coplanarity of 4 terminals: 0.004” [0.10]

PART MARKING / POCKET TAPE ORIENTATION

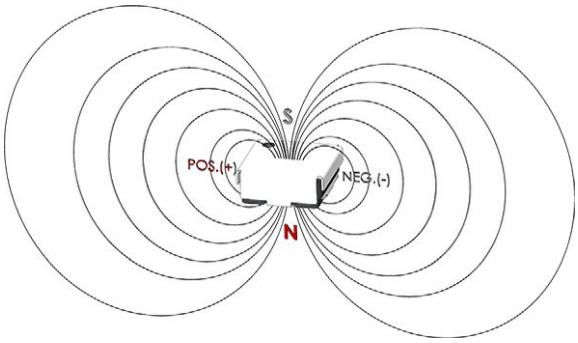






MAGNETIC FIELD AND POLARITY MARKING

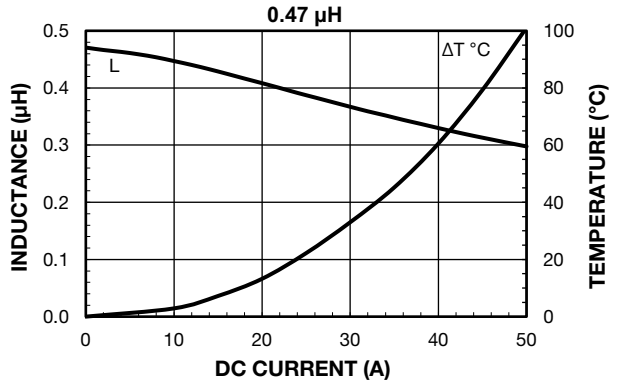
CONFIGURATION OF THE “B” (FLUX) FIELD FOR THE IHLE

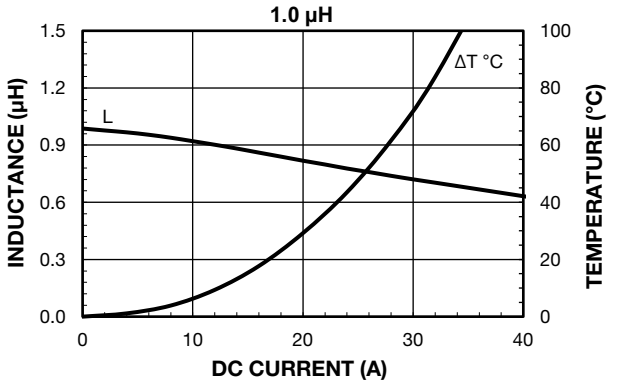


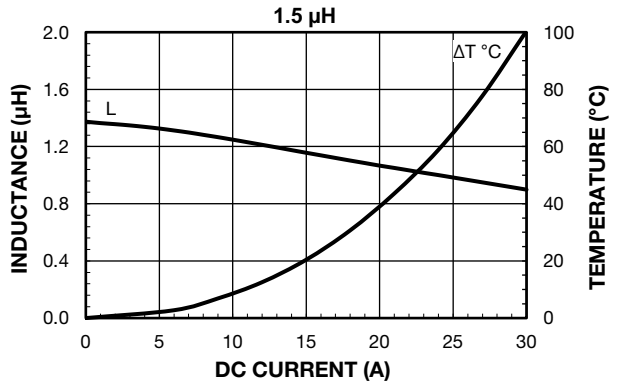
When a positive (+) voltage is placed on the terminal marked with the polarity dot and the opposite terminal is negative (-), the resulting current flow will create a magnetic south pole on the top side of the IHLP. Observing the polarity orientation when mounting the IHLP will insure the most consistent EMI reduction performance.

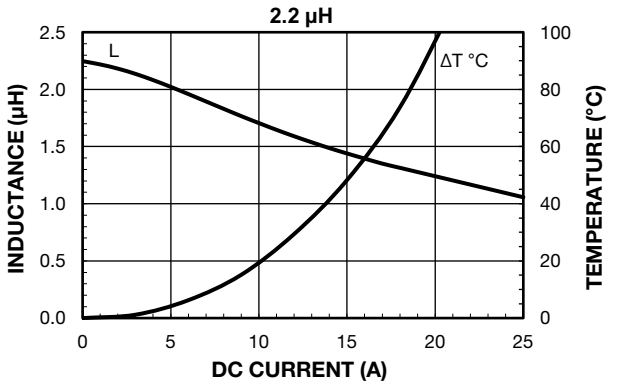
Drawing is for illustrative purposes only. The flux leakage from the inductor is minimal.

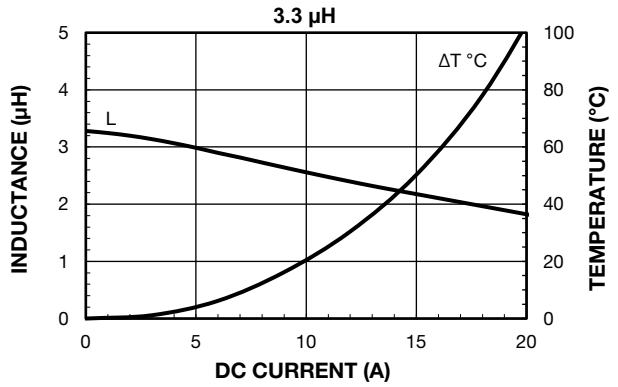
PERFORMANCE GRAPHS

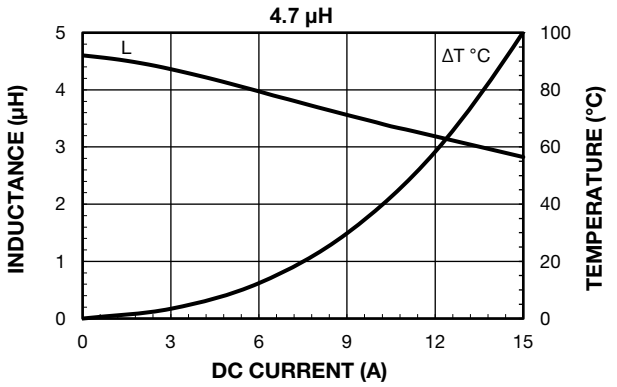


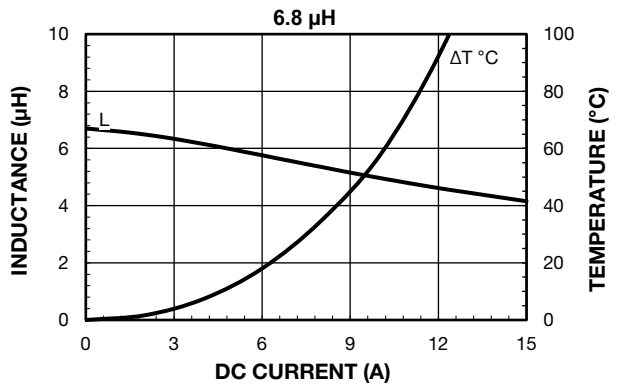


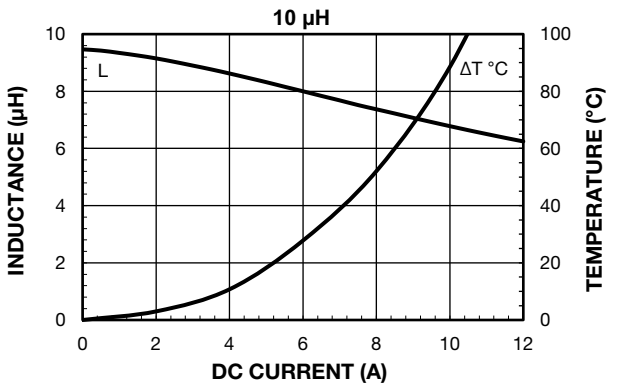












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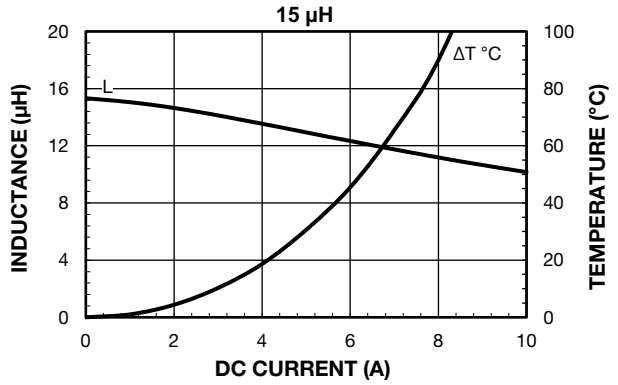
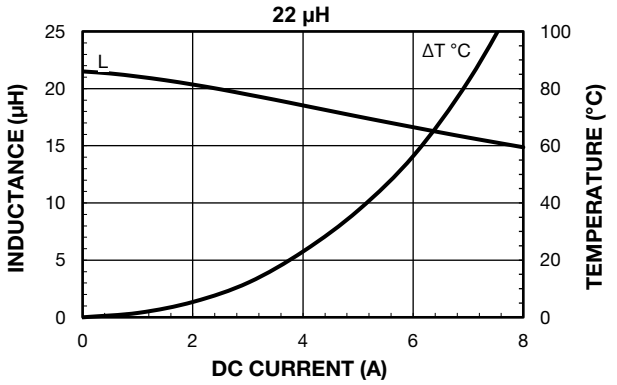
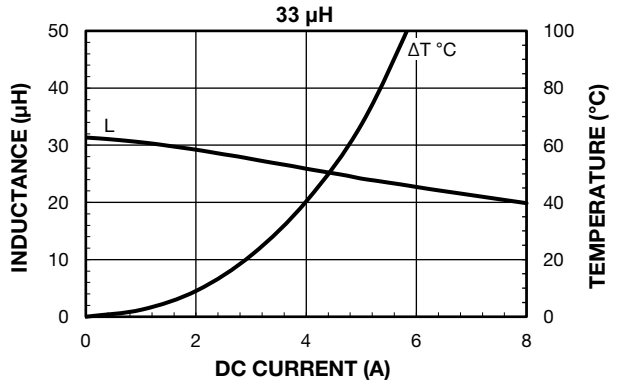
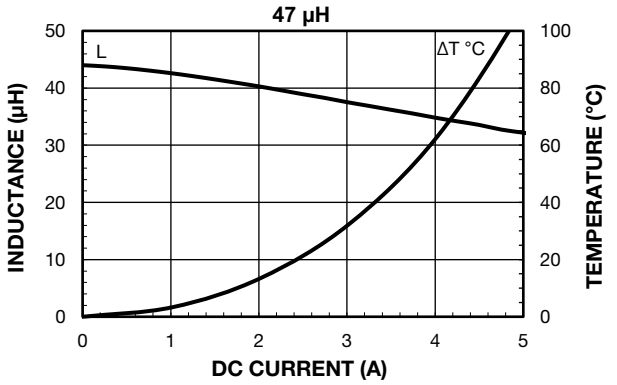
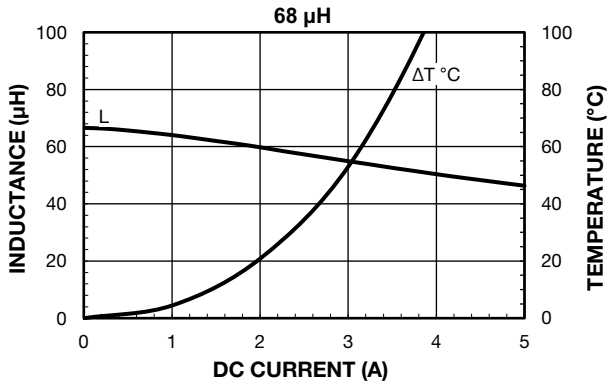


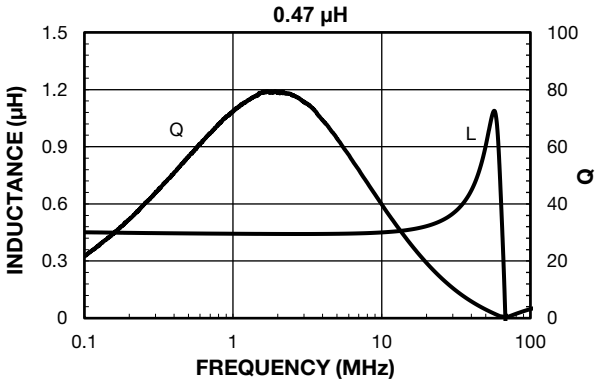


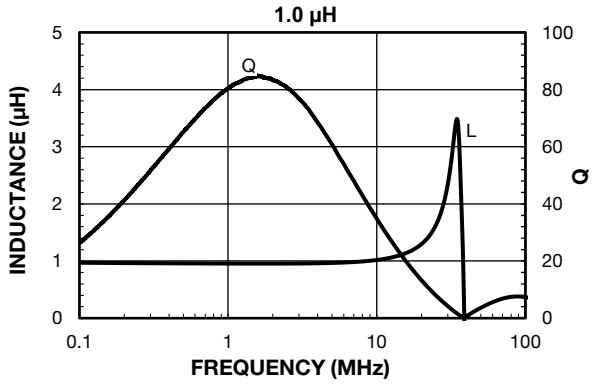


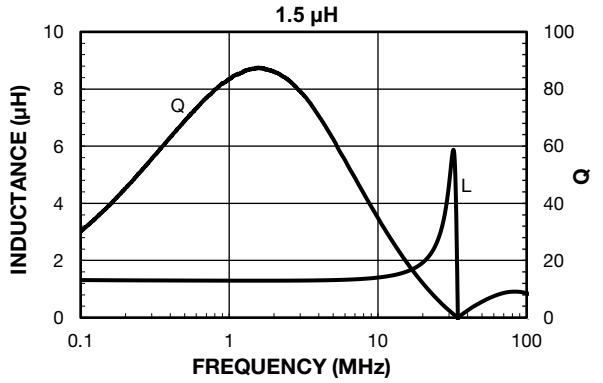


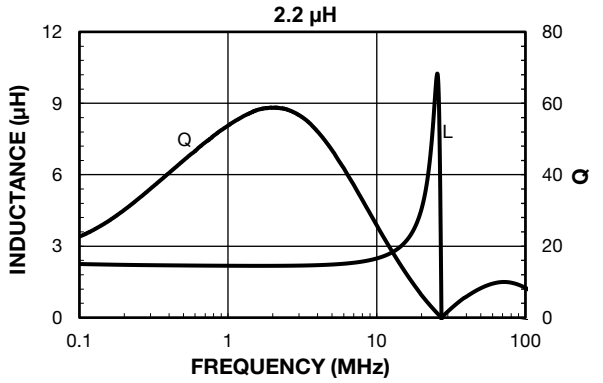


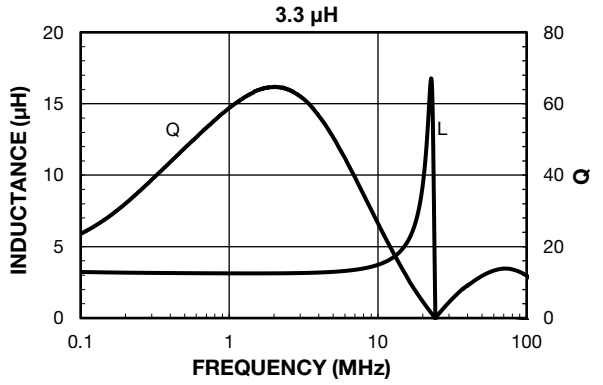
PERFORMANCE GRAPHS: INDUCTANCE AND Q VS. FREQUENCY

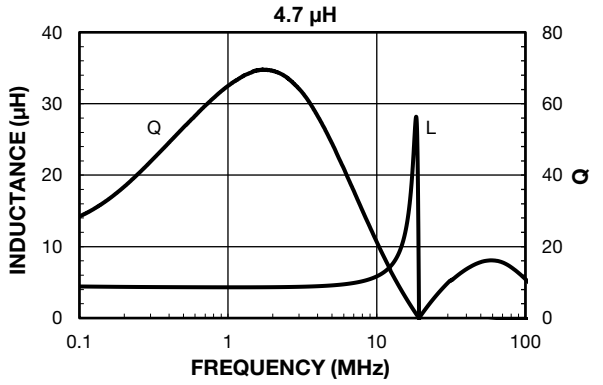


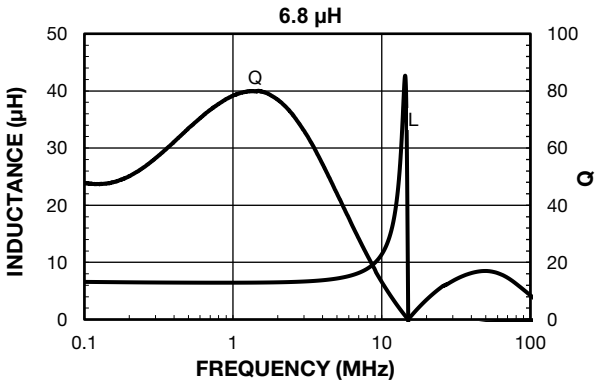


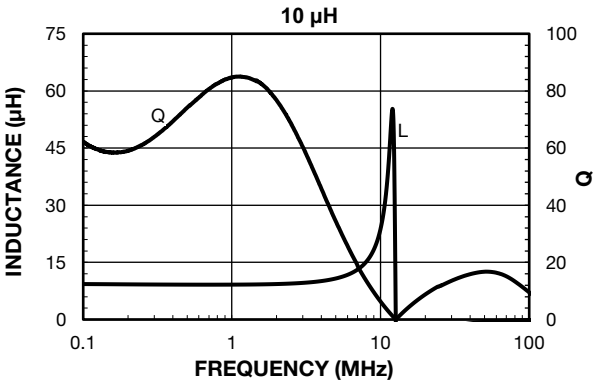












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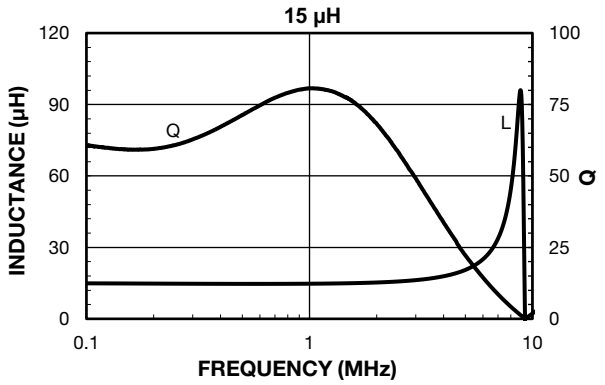

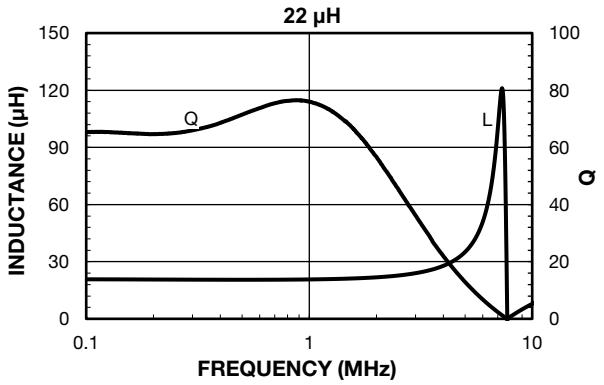

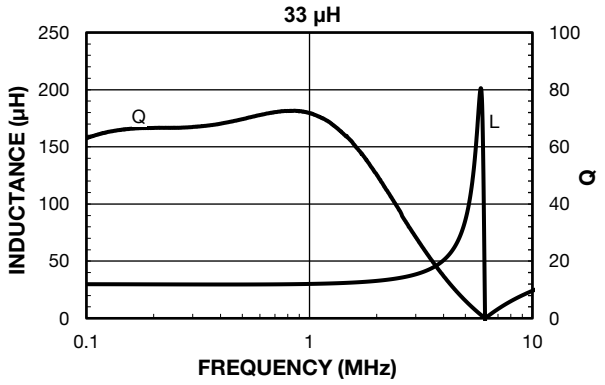

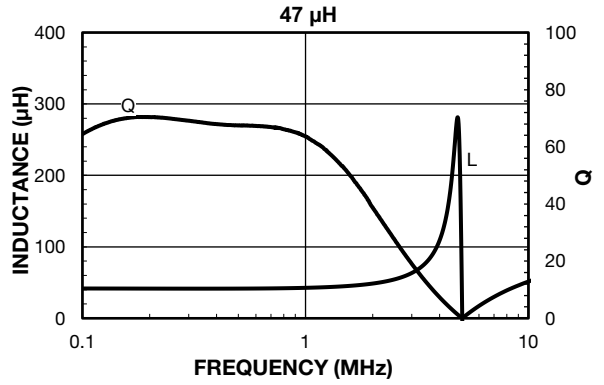

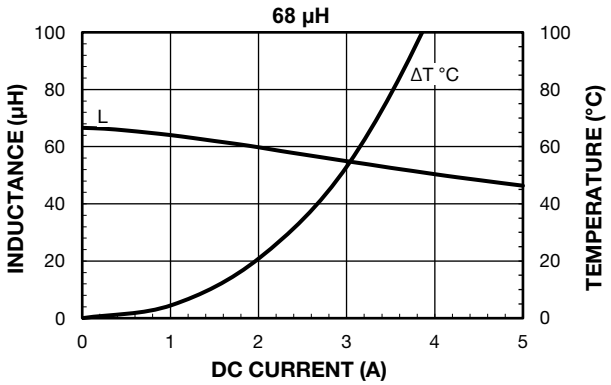

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