

## IHLP® Automotive Inductors, Low DCR Series



### LINKS TO ADDITIONAL RESOURCES



### FEATURES

- 10.8 mm x 10.16 mm x 4.0 mm package
- Magnetically shielded metal construction
- Optimized for low DCR for up to 20 % reduction in DC power losses over other IHLP series
- AEC-Q200 qualified
- Polarity marking available for EMI sensitive applications (see “EP” package code below for more information)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc299912](http://www.vishay.com/doc299912)



### APPLICATIONS

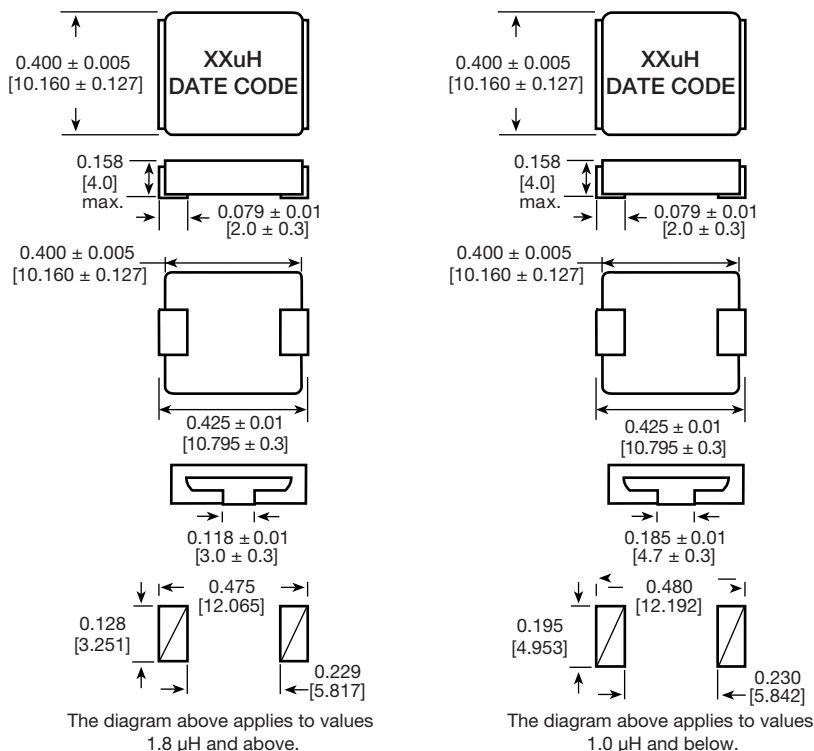
- Engine and transmission control units
- DC/DC converters for infotainment, navigation systems, lighting
- Noise suppression and filtering
- LED drivers

### STANDARD ELECTRICAL SPECIFICATIONS

| PART NUMBER        | L <sub>0</sub> INDUCTANCE ± 20 %<br>AT 100 kHz, 0.25 V, 0 A<br>(μH) | DCR TYP.<br>25 °C<br>(mΩ) | DCR MAX.<br>25 °C<br>(mΩ) | HEAT RATING CURRENT<br>DC TYP.<br>(A) <sup>(1)</sup> | SATURATION CURRENT<br>DC TYP.<br>(A) <sup>(2)</sup> |
|--------------------|---------------------------------------------------------------------|---------------------------|---------------------------|------------------------------------------------------|-----------------------------------------------------|
| IHLP4040DZE_R19M1A | 0.19                                                                | 0.70                      | 0.80                      | 40                                                   | 46                                                  |
| IHLP4040DZE_R24M1A | 0.24                                                                | 0.85                      | 0.95                      | 33                                                   | 44                                                  |
| IHLP4040DZE_R36M1A | 0.36                                                                | 1.05                      | 1.15                      | 32                                                   | 30                                                  |
| IHLP4040DZE_R47M1A | 0.47                                                                | 1.53                      | 1.68                      | 30                                                   | 30                                                  |
| IHLP4040DZE_R56M1A | 0.56                                                                | 1.61                      | 1.80                      | 32                                                   | 22                                                  |
| IHLP4040DZE_R78M1A | 0.78                                                                | 1.80                      | 1.90                      | 27                                                   | 22                                                  |
| IHLP4040DZE_1R0M1A | 1.0                                                                 | 2.30                      | 2.50                      | 25                                                   | 20                                                  |
| IHLP4040DZE_1R8M1A | 1.8                                                                 | 4.50                      | 5.00                      | 17                                                   | 16                                                  |
| IHLP4040DZE_2R0M1A | 2.0                                                                 | 5.20                      | 5.80                      | 16                                                   | 14                                                  |
| IHLP4040DZE_4R7M1A | 4.7                                                                 | 12.9                      | 14.2                      | 9.5                                                  | 7.6                                                 |
| IHLP4040DZE_6R8M1A | 6.8                                                                 | 17.5                      | 19.3                      | 9.0                                                  | 7.5                                                 |
| IHLP4040DZE_100M1A | 10                                                                  | 27.8                      | 30.5                      | 7.5                                                  | 7.1                                                 |
| IHLP4040DZE_150M1A | 15                                                                  | 40.9                      | 45.0                      | 6.25                                                 | 6.0                                                 |
| IHLP4040DZE_180M1A | 18                                                                  | 46.40                     | 51.90                     | 5.6                                                  | 4.6                                                 |
| IHLP4040DZE_220M1A | 22                                                                  | 60.4                      | 66.0                      | 5.0                                                  | 4.5                                                 |
| IHLP4040DZE_330M1A | 33                                                                  | 87.5                      | 94.5                      | 4.4                                                  | 4.0                                                 |
| IHLP4040DZE_470M1A | 47                                                                  | 132.0                     | 145.0                     | 3.3                                                  | 3.0                                                 |
| IHLP4040DZE_101M1A | 100                                                                 | 249.0                     | 270.0                     | 2.5                                                  | 2.25                                                |

### Notes

- All test data is referenced to 25 °C ambient
  - Operating temperature range -55 °C to +125 °C
  - The part temperature (ambient + temp. rise) should not exceed 125 °C under worst case operating conditions. Circuit design, component placement, PCB 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) = 50 V (40 V max. for 100 μH value)
  - Moisture Sensitivity Level (MSL) = 1 floor life - unlimited
  - Resistance to solder heat: 260 °C for 30 s (3 times max. through reflow)
- <sup>(1)</sup> DC current (A) that will cause an approximate ΔT of 40 °C
- <sup>(2)</sup> DC current (A) that will cause L<sub>0</sub> to drop approximately 20 %

**DIMENSIONS** in inches [millimeters]

**DESCRIPTION**

|                       |                              |                               |              |                                |
|-----------------------|------------------------------|-------------------------------|--------------|--------------------------------|
| <b>IHLP-4040DZ-1A</b> | <b>2.0 <math>\mu</math>H</b> | <b><math>\pm 20 \%</math></b> | <b>EK</b>    | <b>e3</b>                      |
| MODEL                 | INDUCTANCE VALUE             | INDUCTANCE TOLERANCE          | PACKAGE CODE | JEDEC® LEAD (Pb)-FREE STANDARD |

**GLOBAL PART NUMBER**

|                |                    |                    |                   |                      |            |
|----------------|--------------------|--------------------|-------------------|----------------------|------------|
| <b>I H L P</b> | <b>4 0 4 0 D Z</b> | <b>E K</b>         | <b>2 R 0</b>      | <b>M</b>             | <b>1 A</b> |
| PRODUCT FAMILY | SIZE               | PACKAGE CODE       | INDUCTANCE VALUE  | INDUCTANCE TOLERANCE | SERIES     |
|                |                    | EK = tape and reel | 2R0 = 2.0 $\mu$ H | M = $\pm 20 \%$      |            |

**PACKAGE CODE OPTIONS**

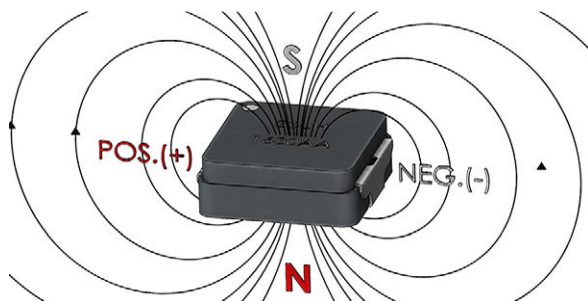
- EK** = tape and reel packaging (1000 pieces on 13-inch reel)
- EE** = tape and reel packaging (900 pieces on 13-inch reel)
- ER** = tape and reel packaging (500 pieces on 13-inch reel)
- EP** = tape and reel packaging (1000 pieces on 13-inch reel), includes polarity part marking

**Notes**

- 1000 piece reels for IHLP4040DZ models contains tape pitch change
- For additional packaging details see "[Packaging Methods](#)"

## MAGNETIC FIELD

### CONFIGURATION OF THE "B" (FLUX) FIELD FOR THE IHLP WITH POLARITY MARKING



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.

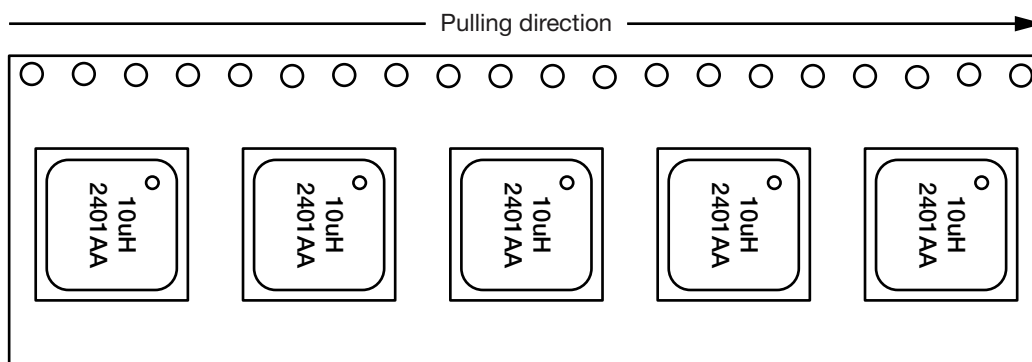
For the IHLP-4040DZ-1A series, the polarity mark also indicates the "start" or "inside" lead of the winding.

Observing the polarity orientation when mounting the inductor will ensure the most consistent EMI reduction performance.

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

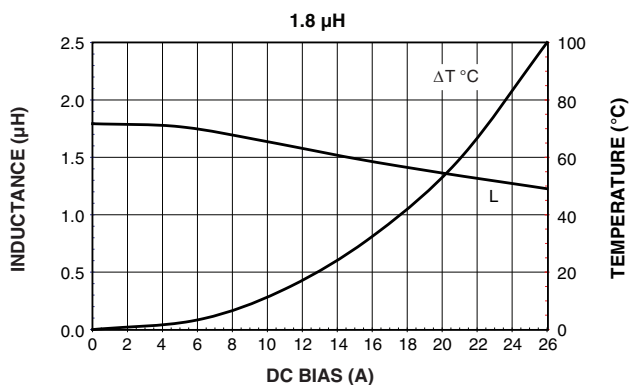
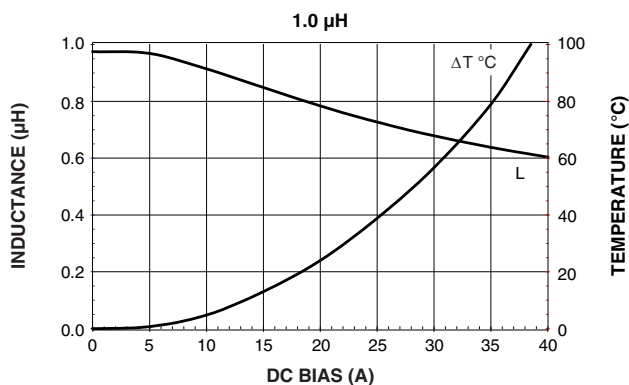
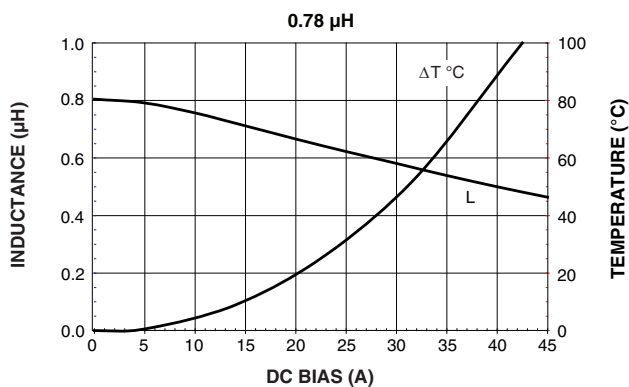
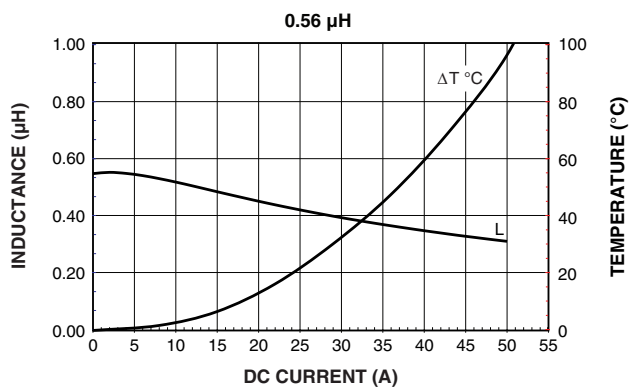
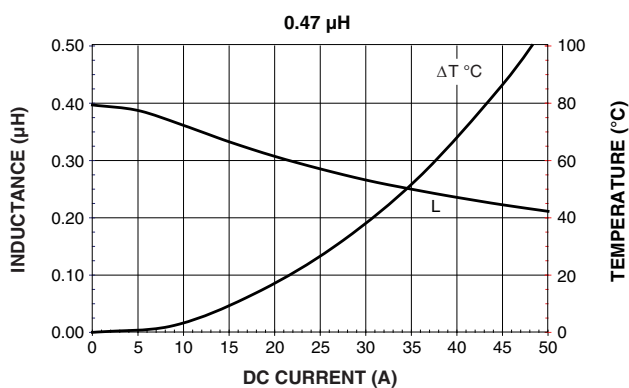
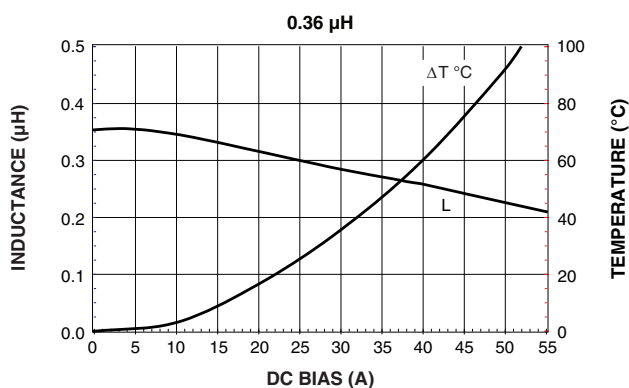
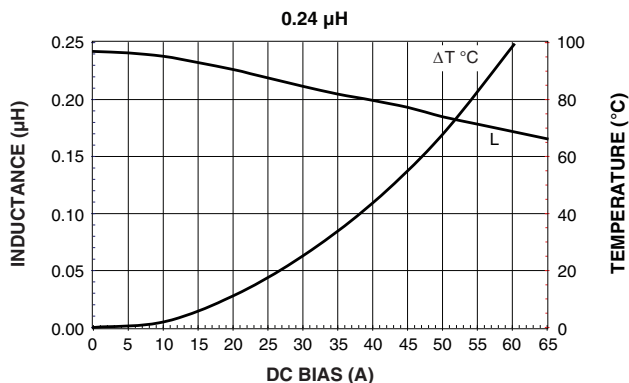
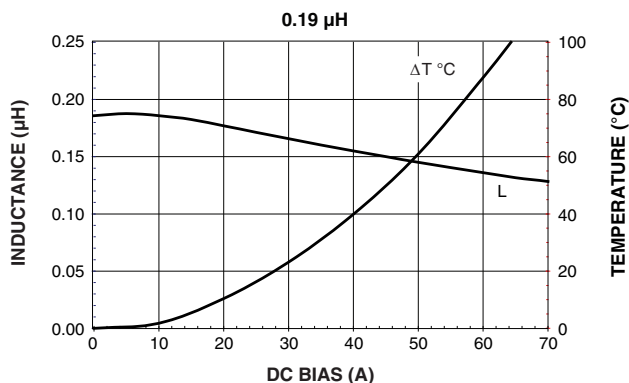
## PART MARKING / POCKET TAPE ORIENTATION

Part marking and tape orientation for IHLP with polarity marking



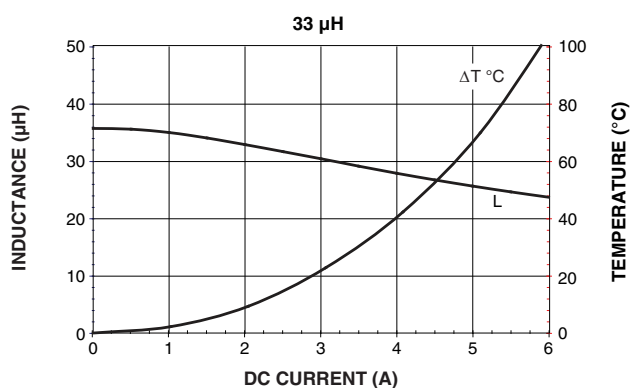
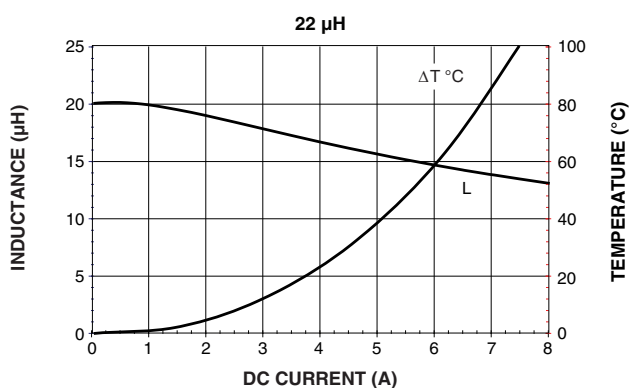
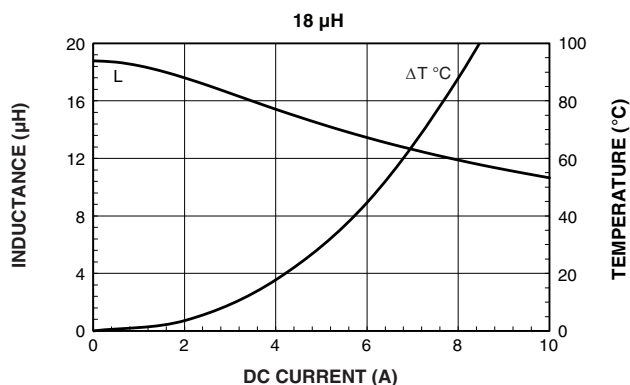
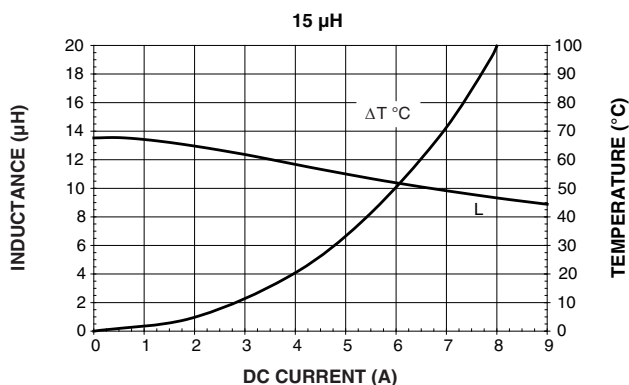
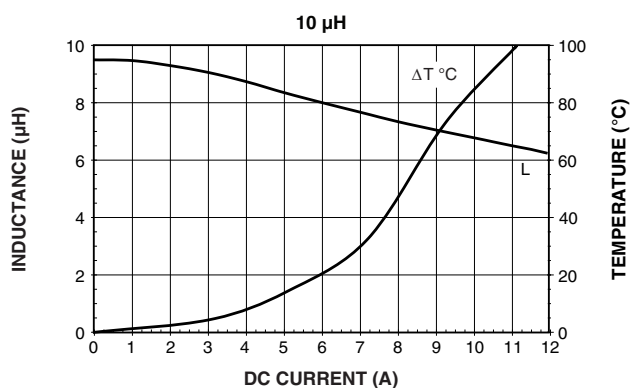
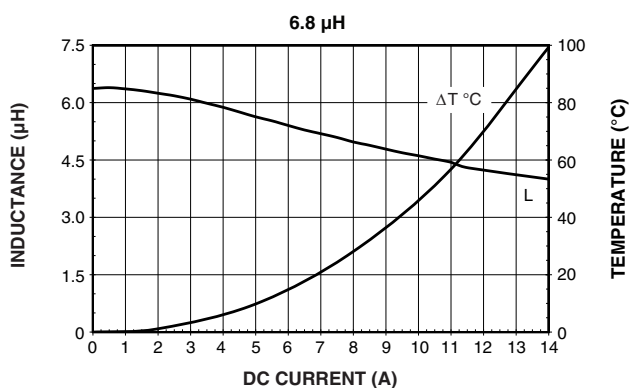
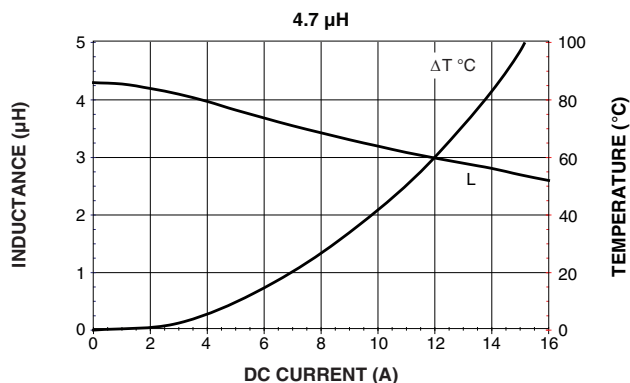
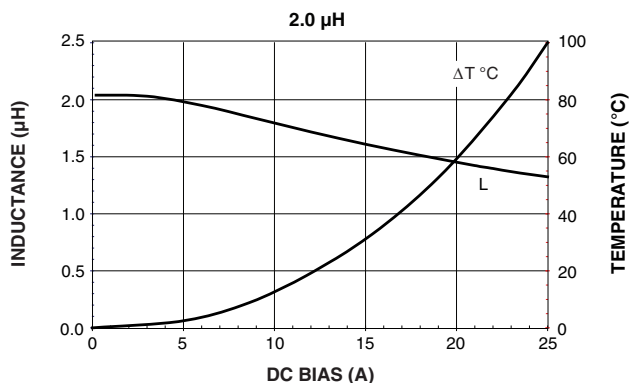


PERFORMANCE GRAPHS



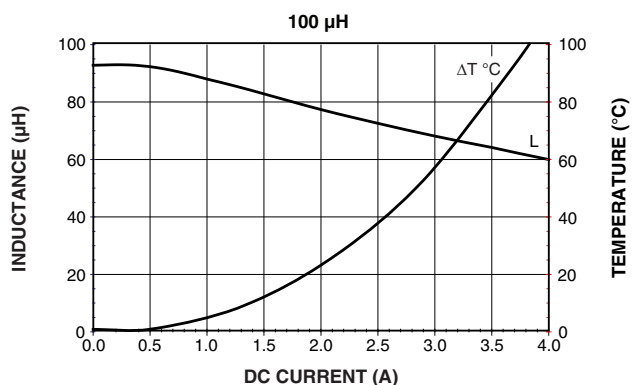
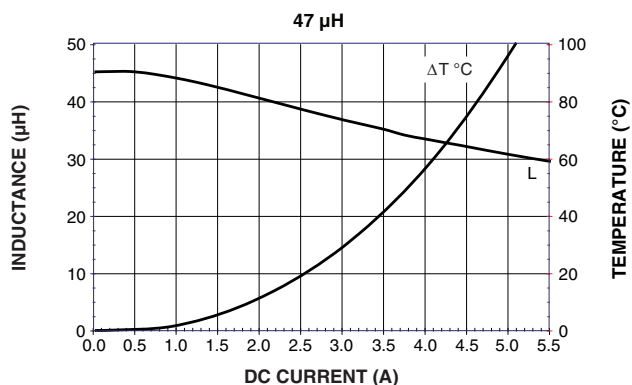


PERFORMANCE GRAPHS





PERFORMANCE GRAPHS





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