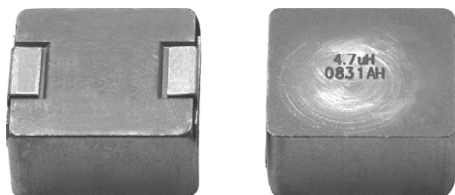


## IHLP® Automotive Inductors, High Temperature (180 °C) Series



## LINKS TO ADDITIONAL RESOURCES



## STANDARD ELECTRICAL SPECIFICATIONS

| <b>L<sub>0</sub><br/>INDUCTANCE<br/>± 20 %<br/>AT 100 kHz,<br/>0.25 V, 0 A<br/>(μH)</b> | <b>DCR<br/>TYP.<br/>25 °C<br/>(mΩ)</b> | <b>DCR<br/>MAX.<br/>25 °C<br/>(mΩ)</b> | <b>HEAT<br/>RATING<br/>CURRENT<br/>DC TYP.<br/>(A) <sup>(1)</sup></b> | <b>SATURATION<br/>CURRENT<br/>DC TYP.<br/>(A) <sup>(2)</sup></b> | <b>SRF<br/>TYP.<br/>(MHz)</b> |
|-----------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------|
| 0.22                                                                                    | 0.73                                   | 0.81                                   | 66                                                                    | 68                                                               | 113                           |
| 0.33                                                                                    | 0.83                                   | 0.92                                   | 62                                                                    | 44                                                               | 79.9                          |
| 0.47                                                                                    | 1.05                                   | 1.16                                   | 54                                                                    | 42                                                               | 65.6                          |
| 0.56                                                                                    | 1.24                                   | 1.33                                   | 50                                                                    | 32                                                               | 63.1                          |
| 0.68                                                                                    | 1.33                                   | 1.42                                   | 40                                                                    | 29                                                               | 48.1                          |
| 1.0                                                                                     | 1.65                                   | 1.77                                   | 40                                                                    | 26                                                               | 33.4                          |
| 1.2                                                                                     | 1.98                                   | 2.12                                   | 29                                                                    | 24.5                                                             | 32.0                          |
| 1.5                                                                                     | 2.4                                    | 2.57                                   | 27.5                                                                  | 23.5                                                             | 29.2                          |
| 1.8                                                                                     | 2.75                                   | 2.94                                   | 26                                                                    | 22.5                                                             | 25.9                          |
| 2.2                                                                                     | 3.43                                   | 3.67                                   | 25.5                                                                  | 21.5                                                             | 23.3                          |
| 3.3                                                                                     | 5.08                                   | 5.44                                   | 20.2                                                                  | 16.7                                                             | 17.8                          |
| 4.7                                                                                     | 7.41                                   | 7.93                                   | 19.7                                                                  | 18.5                                                             | 15.8                          |
| 5.6                                                                                     | 8.51                                   | 9.11                                   | 16.8                                                                  | 14.2                                                             | 12.3                          |
| 6.8                                                                                     | 11.3                                   | 12.09                                  | 14.9                                                                  | 14.1                                                             | 13.4                          |
| 7.8                                                                                     | 12.6                                   | 13.48                                  | 13.5                                                                  | 8.5                                                              | 13.4                          |
| 8.2                                                                                     | 13.2                                   | 14.12                                  | 13.2                                                                  | 7.6                                                              | 10.3                          |
| 10                                                                                      | 16.60                                  | 17.76                                  | 12.1                                                                  | 7.8                                                              | 10.7                          |
| 12                                                                                      | 19.00                                  | 20.33                                  | 11.4                                                                  | 7.9                                                              | 9.5                           |
| 15                                                                                      | 24.00                                  | 25.68                                  | 10.1                                                                  | 7.7                                                              | 8.8                           |
| 22                                                                                      | 31.30                                  | 33.49                                  | 9.0                                                                   | 6.3                                                              | 6.6                           |
| 33                                                                                      | 46.03                                  | 49.25                                  | 6.9                                                                   | 6.2                                                              | 5.5                           |
| 47                                                                                      | 77.00                                  | 79.60                                  | 5.6                                                                   | 4.5                                                              | 3.9                           |
| 82                                                                                      | 141.10                                 | 150.98                                 | 3.7                                                                   | 3.7                                                              | 3.0                           |
| 100                                                                                     | 175.00                                 | 187.0                                  | 3.1                                                                   | 4.3                                                              | 2.8                           |

## Notes

- All test data is referenced to 25 °C ambient
  - Operating temperature range -55 °C to +180 °C
  - The part temperature (ambient + temp. rise) should not exceed 180 °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) = 75 V
- (1) DC current (A) that will cause an approximate  $\Delta T$  of 40 °C
- (2) DC current (A) that will cause  $L_D$  to drop approximately 20 %

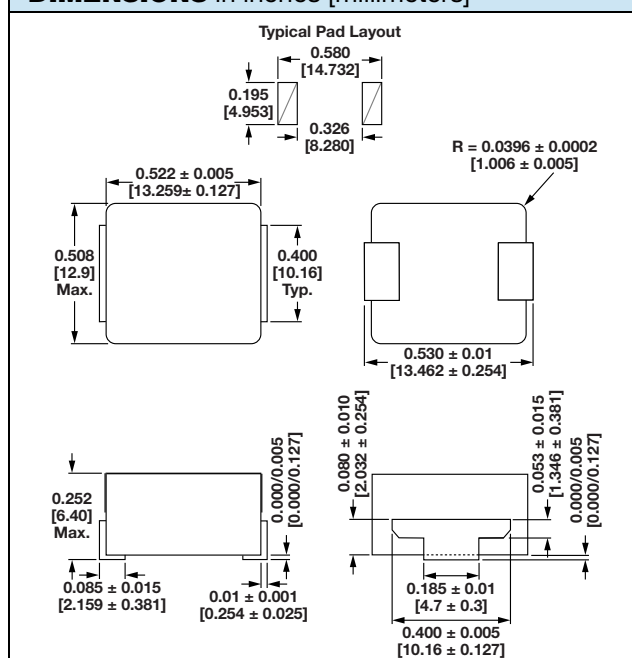
## FEATURES

- High temperature, up to 180 °C
- Shielded construction
- Excellent DC/DC energy storage up to 1 MHz to 2 MHz. Filter inductor applications up the SRF (see Standard Electrical Specifications table)
- Lowest DCR/μH, in this package size
- Handles high transient current spikes up to 10 times the current rating, depending on the duration
- Ultra low buzz noise, due to composite construction
- AEC-Q200 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



## APPLICATIONS

- Brushless DC motor for auto EGR (exhaust gas recycle) pump
- ADAS (advanced driver-assistance systems)
- Body electronics
  - LED lighting
  - Infotainment / driver information
  - Mirror / window / door soft close control
- EMI filter up to 180 °C
- Storage inductors for GaN switched-mode power supply applications

**DIMENSIONS** in inches [millimeters]



## DESCRIPTION

|                       |                              |                              |              |                                |
|-----------------------|------------------------------|------------------------------|--------------|--------------------------------|
| <b>IHLP-5050FD-8A</b> | <b>4.7 <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</b>       | <b>H</b> | <b>L</b> | <b>P</b> | <b>5</b> | <b>0</b> | <b>5</b> | <b>0</b> | <b>F</b>           | <b>D</b> | <b>E</b>          | <b>K</b> | <b>4</b> | <b>R</b>             | <b>7</b> | <b>M</b> | <b>8</b> | <b>A</b> |
| PRODUCT FAMILY |          |          |          | SIZE     |          |          |          | PACKAGE CODE       |          | INDUCTANCE        |          |          | INDUCTANCE TOLERANCE |          | SERIES   |          |          |
|                |          |          |          |          |          |          |          | EK = tape and reel |          | 4R7 = 4.7 $\mu$ H |          |          | M = $\pm 20\%$       |          |          |          |          |

## PACKAGE CODE OPTIONS

**EK** = tape and reel packaging (500 pcs on 13-inch reel)

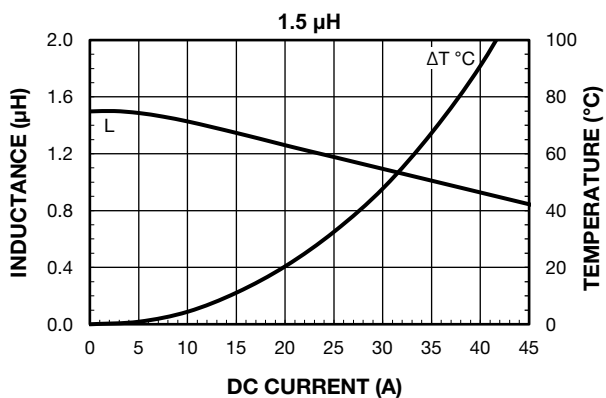
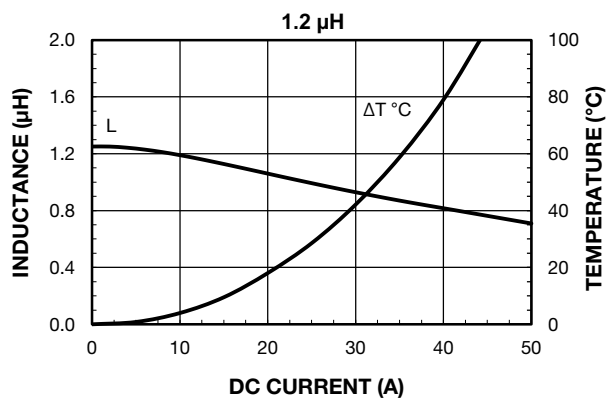
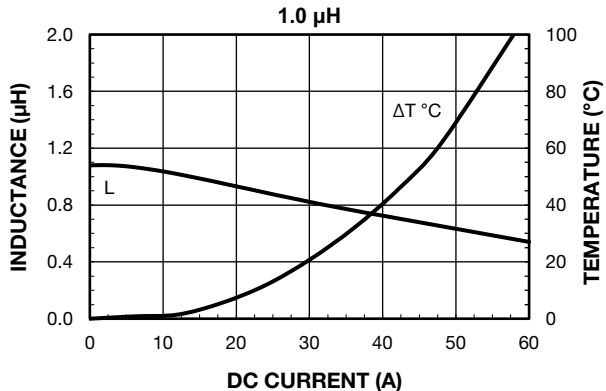
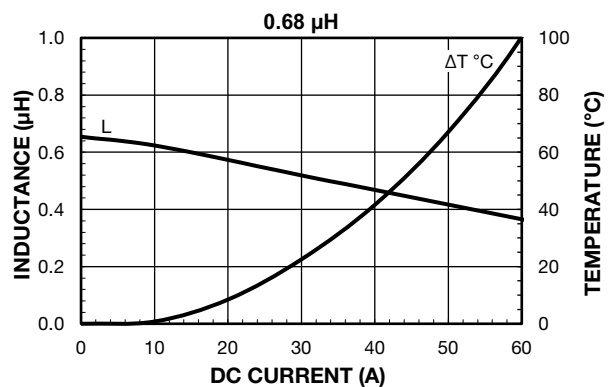
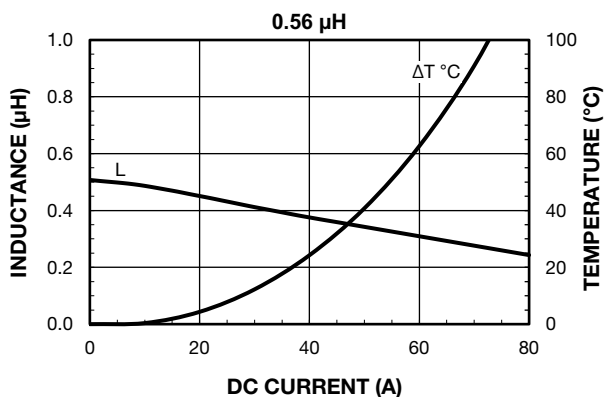
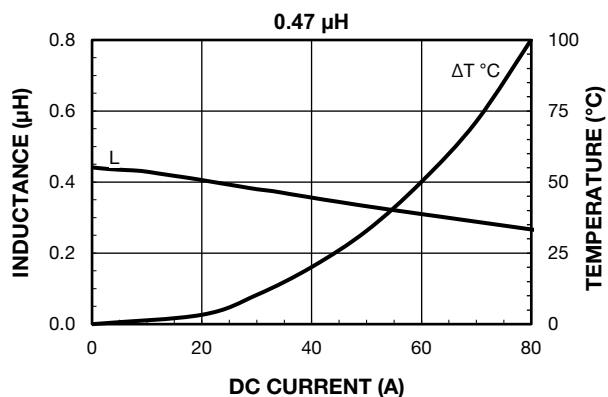
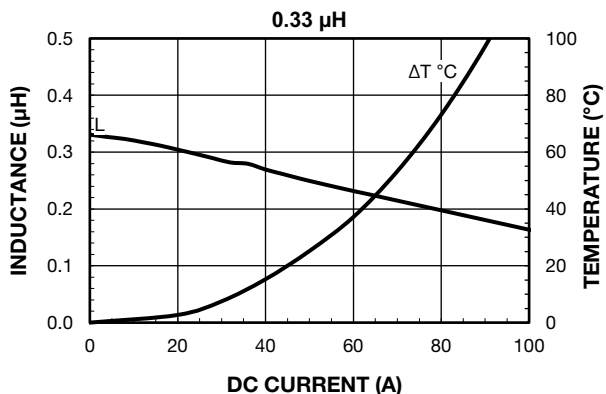
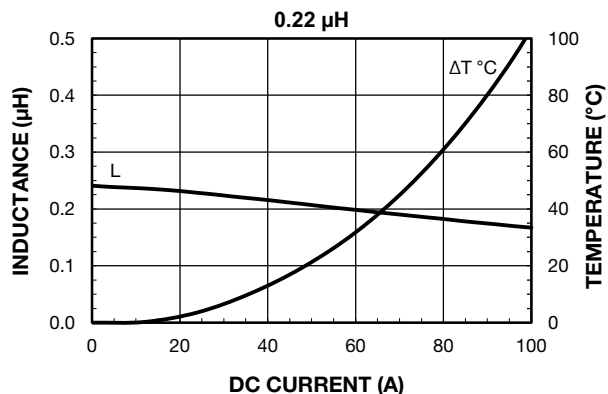
**ER** = tape and reel packaging (250 pcs on 13-inch reel)

### Note

- For additional packaging details see "[Packaging Methods](#)"

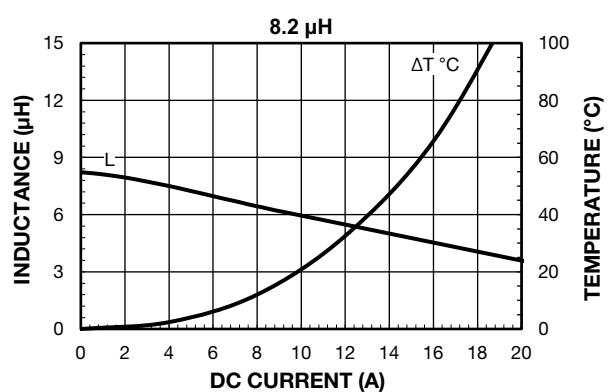
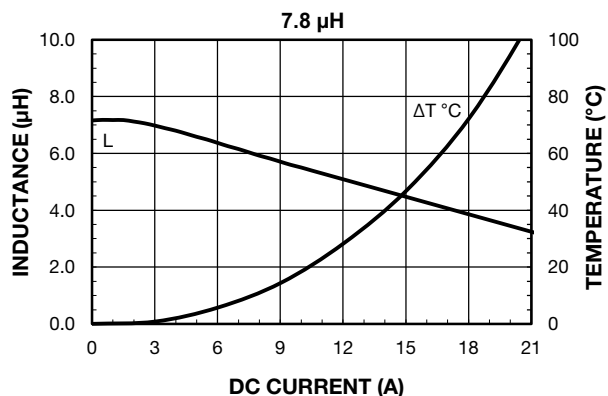
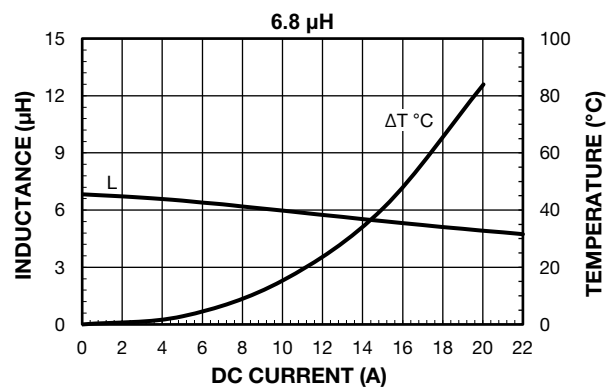
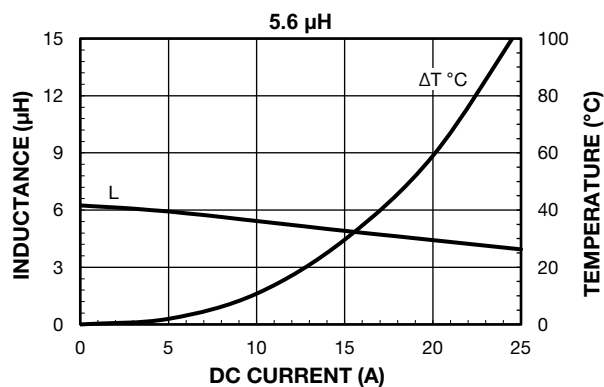
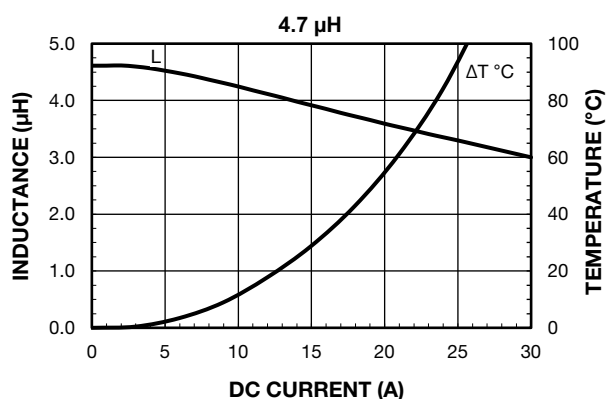
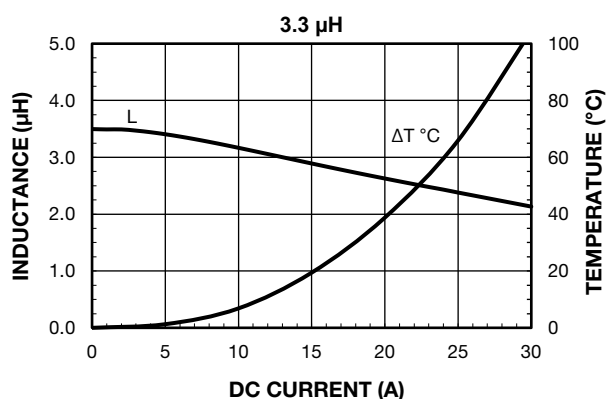
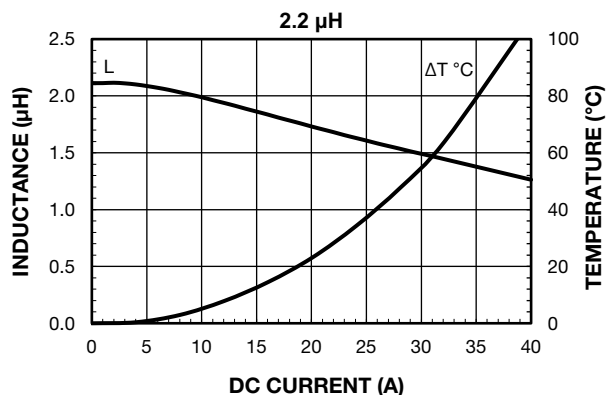
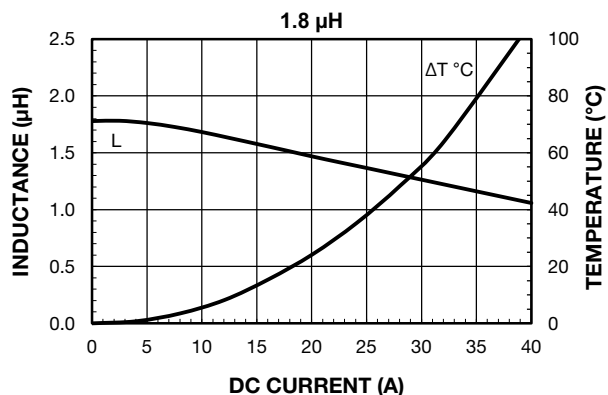


PERFORMANCE GRAPHS



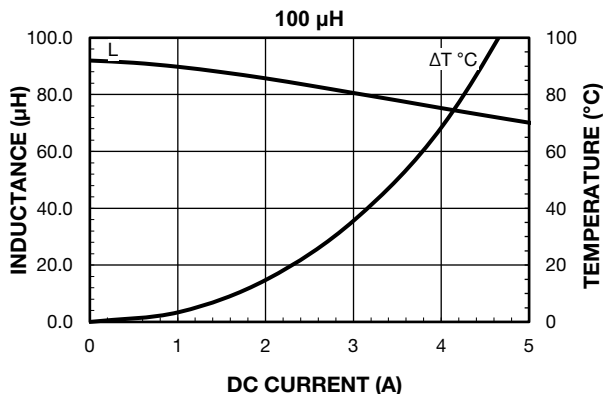
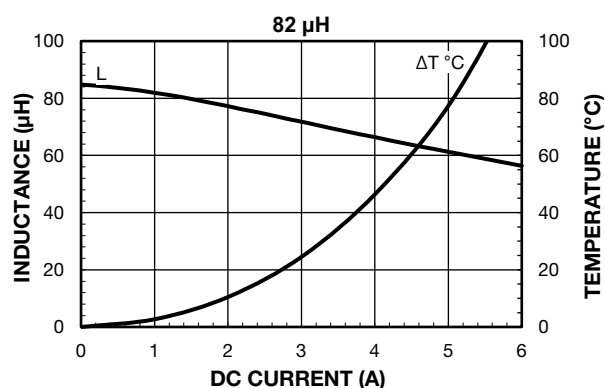
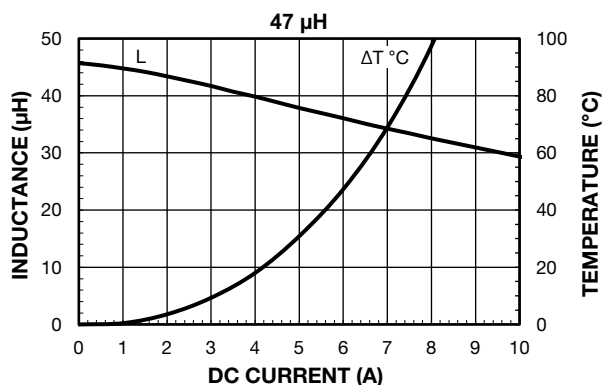
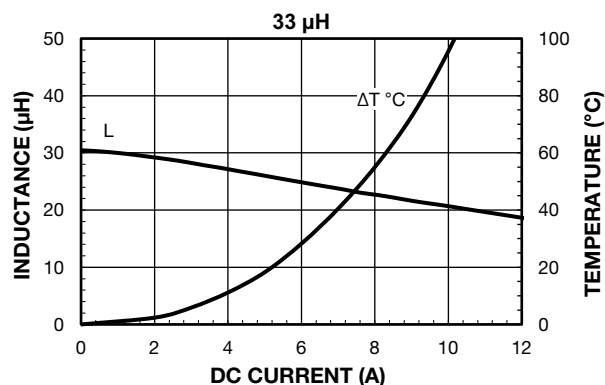
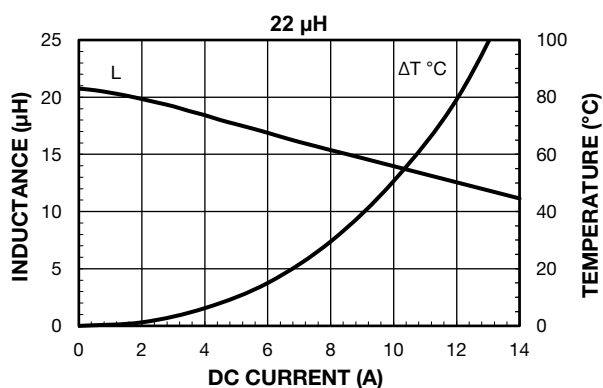
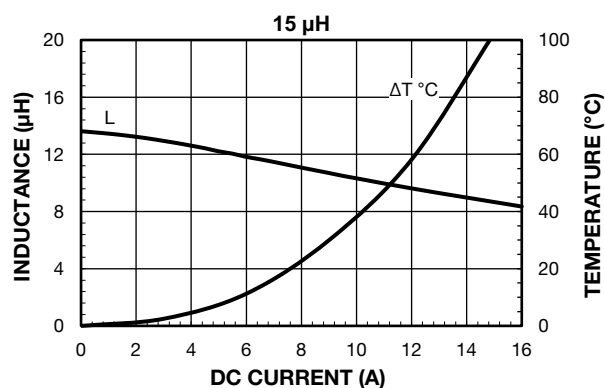
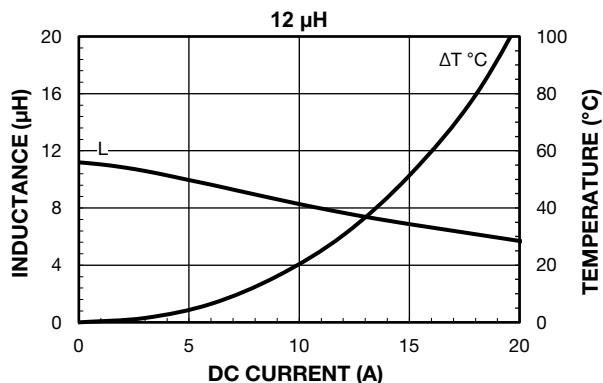
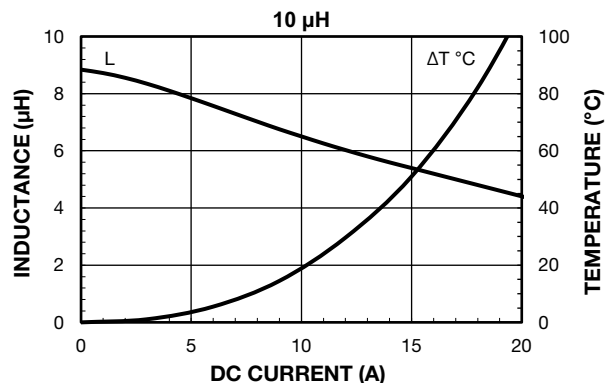


PERFORMANCE GRAPHS



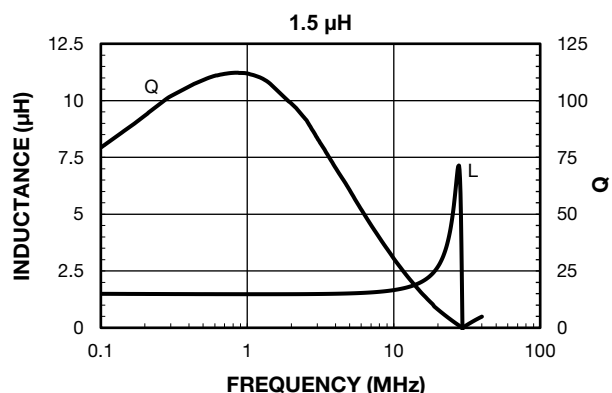
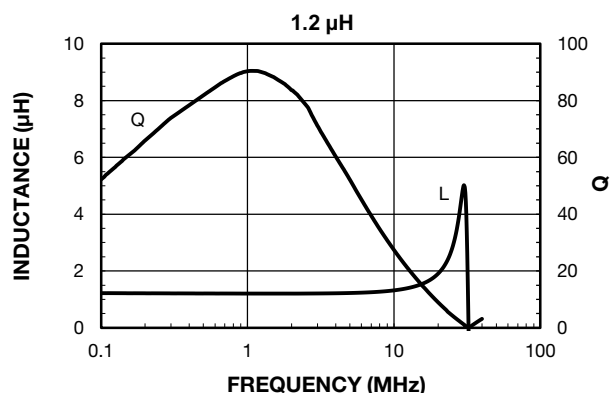
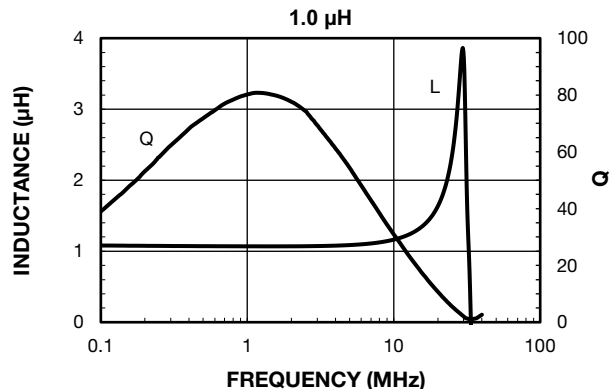
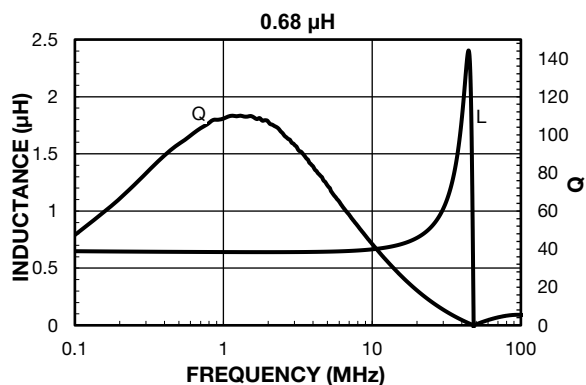
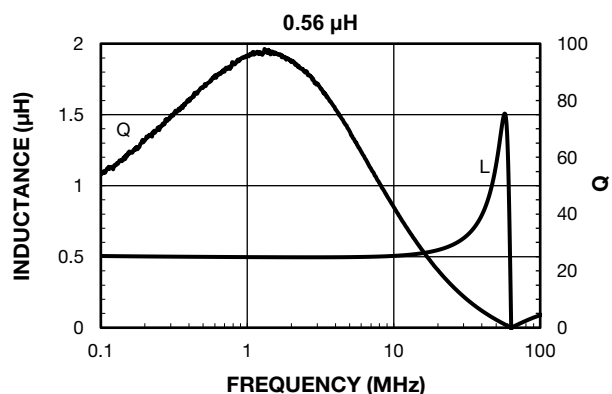
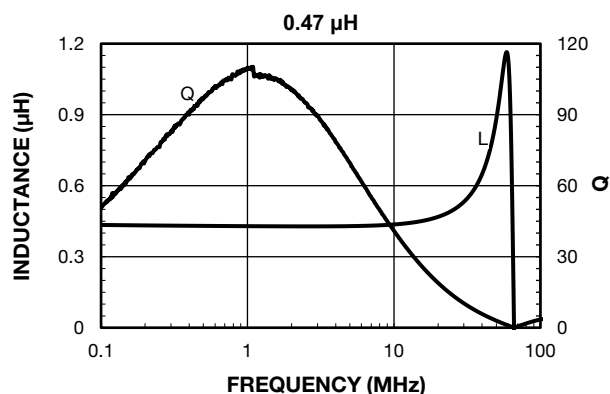
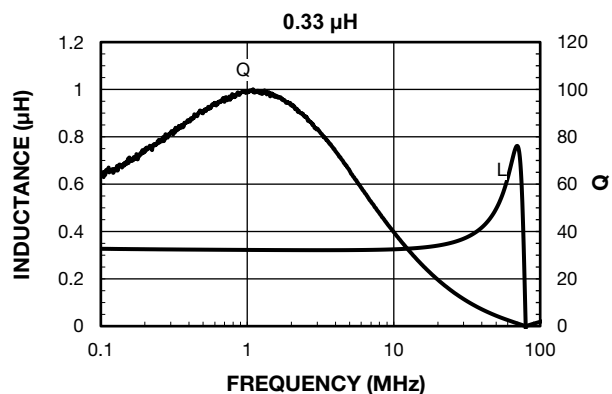
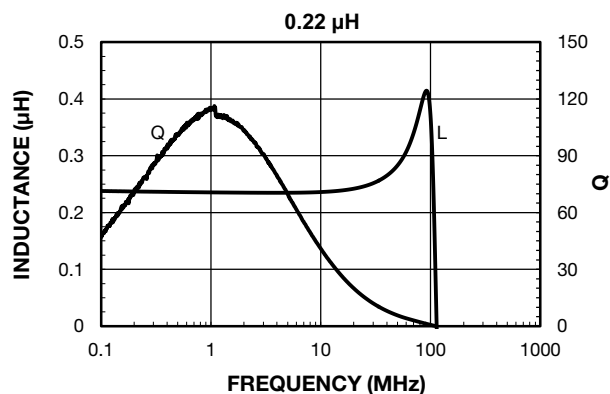


PERFORMANCE GRAPHS



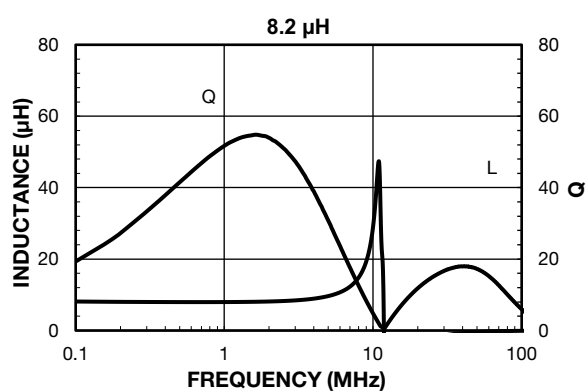
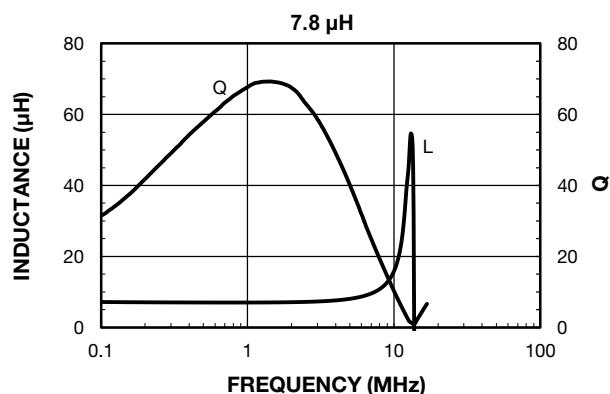
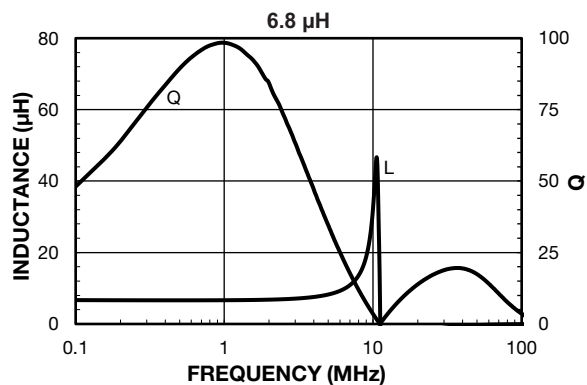
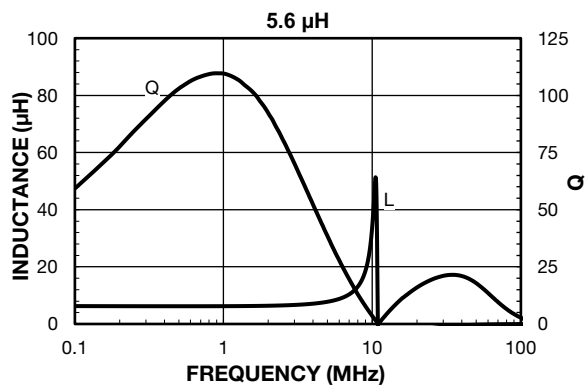
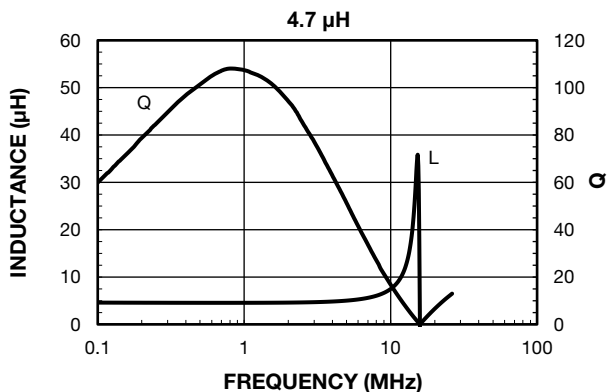
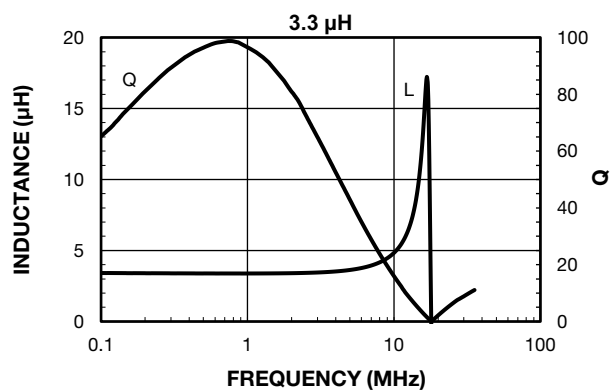
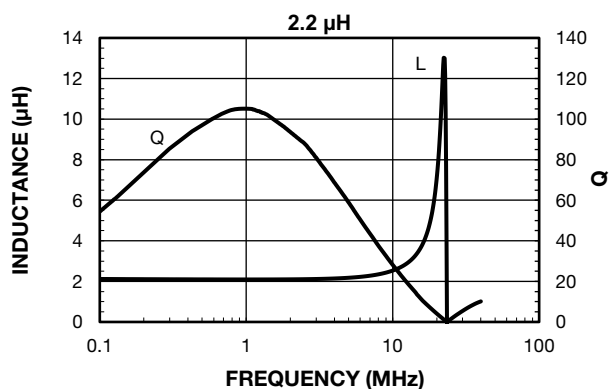
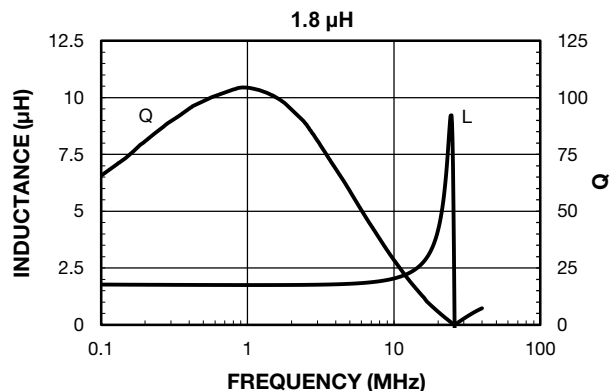


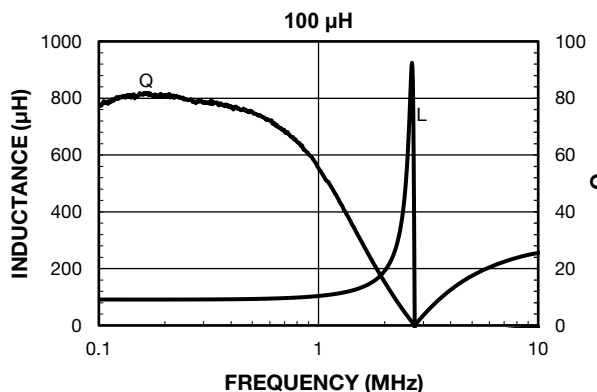
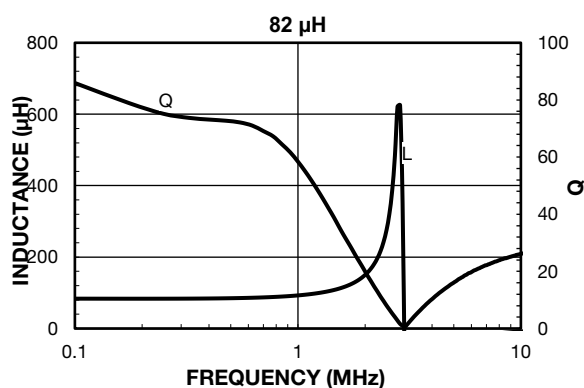
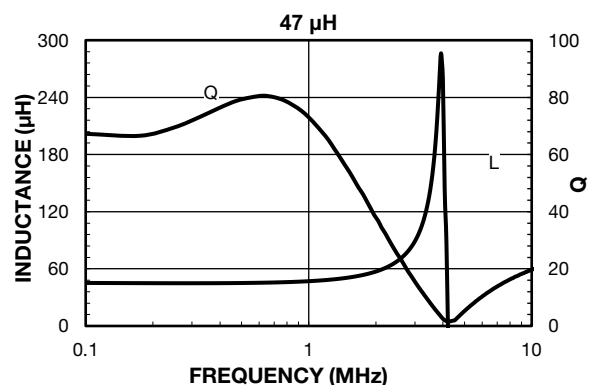
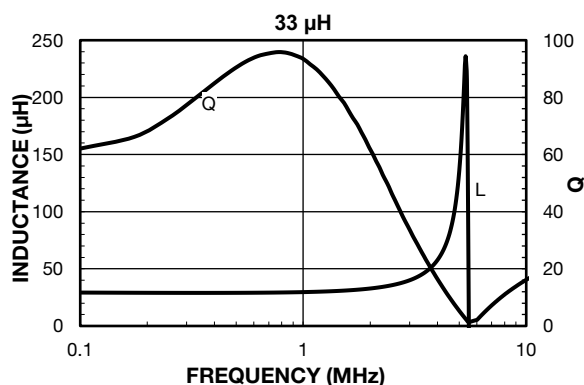
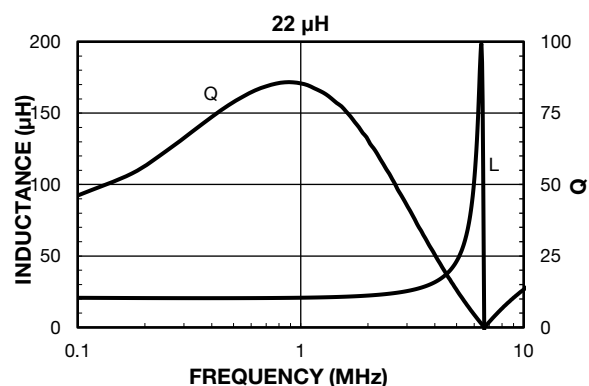
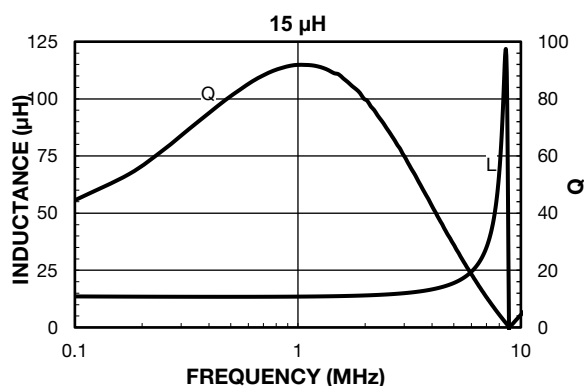
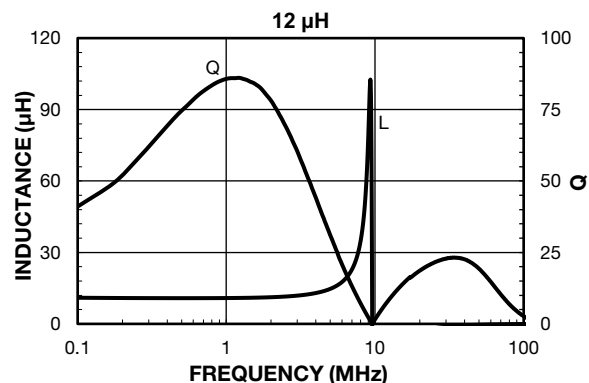
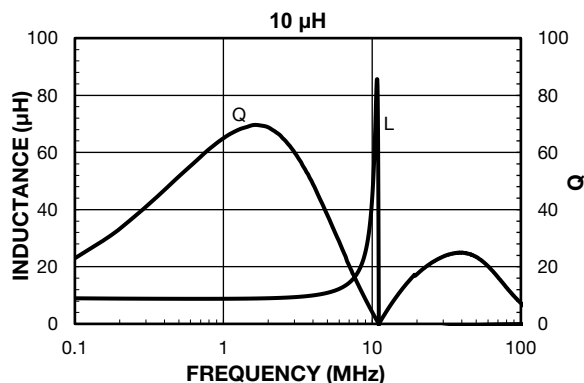
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