

### Description

- Low loss, powdered iron cores with stable electrical operating characteristics maximize inductor efficiency by minimizing copper losses
- Available in vertical and horizontal self leaded and header mounted configurations
- Inductance values range from 10uH to 1000uH
- Current values range from 1.5 to 29.5 Amps
- Meets UL 94V-0 flammability standard
- RoHS compliant (-R option)

### Applications

- Filters
- Buck and boost switches
- Chokes

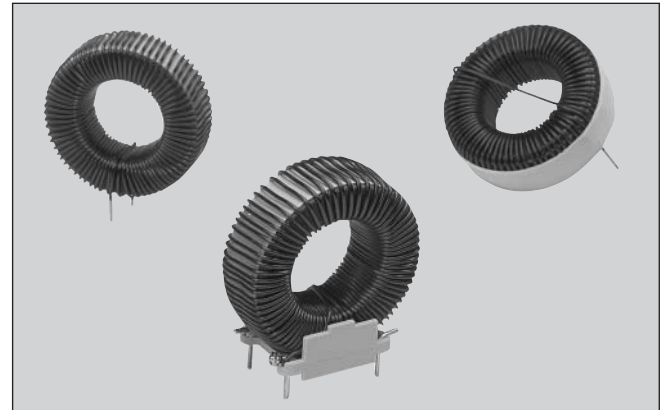
### Environmental Data

- Storage temperature range: -40C to 105C
- Operating ambient temperature range: -40C to +75C (range is application specific)

### Family Table

| Vertical Part Number | Horizontal Part Number | Header Mounted Part Number | Inductance $\mu\text{H}$ (rated) | OCL <sup>(1)</sup> $\mu\text{H}$ +/- 20% | I <sub>DC</sub> <sup>(2)</sup> Amperes | I <sub>SAT</sub> <sup>(3)</sup> Amperes | Volt- $\mu\text{Sec}$ <sup>(4)</sup> $\mu\text{V}\mu\text{S}$ | Energy <sup>(5)</sup> $\mu\text{J}$ | DCR ( $\Omega$ ) <sup>(6)</sup> max |
|----------------------|------------------------|----------------------------|----------------------------------|--|--|---|---|-------------------------------------|-------------------------------------|
| CTX10-1-52           | CTX10-1-52LP           | CTX10-1-52M                | 10                               | 10.14                                    | 2.4                                    | 2.1                                     | 5.4   | 15                                  | 0.0481                              |
| CTX20-1-52           | CTX20-1-52LP           | CTX20-1-52M                | 20                               | 20.22                                    | 1.8                                    | 2.2                                     | 7.8   | 36                                  | 0.0829                              |
| CTX50-1-52           | CTX50-1-52LP           | CTX50-1-52M                | 50                               | 50.29                                    | 2.6                                    | 2.7                                     | 16.3  | 130                                 | 0.0715                              |
| CTX100-1-52          | CTX100-1-52LP          | CTX100-1-52M               | 100                              | 100.40                                   | 2.5                                    | 2.4                                     | 27.5  | 197                                 | 0.1060                              |
| CTX150-1-52          | CTX150-1-52LP          | CTX150-1-52M               | 150                              | 151.70                                   | 2.1                                    | 2.3                                     | 35.7  | 283                                 | 0.1620                              |
| CTX250-1-52          | CTX250-1-52LP          | CTX250-1-52M               | 250                              | 250.90                                   | 1.9                                    | 2.2                                     | 47.8  | 421                                 | 0.2210                              |
| CTX500-1-52          | CTX500-1-52LP          | CTX500-1-52M               | 500                              | 505.00                                   | 1.7                                    | 1.9                                     | 77.9  | 645                                 | 0.3610                              |
| CTX750-1-52          | CTX750-1-52LP          | CTX750-1-52M               | 750                              | 754.40                                   | 1.8                                    | 2.4                                     | 114.3   | 1530                                | 0.4340                              |
| CTX1000-1-52         | CTX1000-1-52LP         | CTX1000-1-52M              | 1000                             | 1004.00                                  | 1.5                                    | 2.1                                     | 131.9   | 1530                                | 0.6380                              |
| CTX10-2-52           | CTX10-2-52LP           | CTX10-2-52M                | 10                               | 9.60                                     | 4.7                                    | 4.5                                     | 6.6   | 68                                  | 0.0183                              |
| CTX20-2-52           | CTX20-2-52LP           | CTX20-2-52M                | 20                               | 19.60                                    | 3.2                                    | 3.2                                     | 9.4   | 69                                  | 0.0392                              |
| CTX50-2-52           | CTX50-2-52LP           | CTX50-2-52M                | 50                               | 50.00                                    | 4.9                                    | 4.9                                     | 21.3  | 420                                 | 0.0326                              |
| CTX100-2-52          | CTX100-2-52LP          | CTX100-2-52M               | 100                              | 101.70                                   | 4.4                                    | 4.3                                     | 35.0  | 643                                 | 0.0534                              |
| CTX150-2-52          | CTX150-2-52LP          | CTX150-2-52M               | 150                              | 148.00                                   | 4.3                                    | 4.0                                     | 47.6  | 829                                 | 0.0719                              |
| CTX250-2-52          | CTX250-2-52LP          | CTX250-2-52M               | 250                              | 251.10                                   | 4.2                                    | 4.2                                     | 66.0  | 1540                                | 0.0833                              |
| CTX500-2-52          | CTX500-2-52LP          | CTX500-2-52M               | 500                              | 499.40                                   | 3.1                                    | 3.3                                     | 104.0   | 1890                                | 0.1830                              |
| CTX750-2-52          | CTX750-2-52LP          | CTX750-2-52M               | 750                              | 749.30                                   | 3.4                                    | 3.4                                     | 147.3   | 2960                                | 0.2080                              |
| CTX10-5-52           | CTX10-5-52LP           | CTX10-5-52M                | 10                               | 9.68                                     | 8.7                                    | 11.1                                    | 9.4   | 417                                 | 0.0104                              |
| CTX20-5-52           | CTX20-5-52LP           | CTX20-5-52M                | 20                               | 21.25                                    | 7.8                                    | 9.3                                     | 16.0  | 643                                 | 0.0260                              |
| CTX50-5-52           | CTX50-5-52LP           | CTX50-5-52M                | 50                               | 49.60                                    | 7.6                                    | 9.4                                     | 29.3  | 1530                                | 0.0248                              |
| CTX100-5-52          | CTX100-5-52LP          | CTX100-5-52M               | 100                              | 97.20                                    | 8.2                                    | 7.5                                     | 45.7  | 1890                                | 0.0267                              |
| CTX150-5-52          | CTX150-5-52LP          | CTX150-5-52M               | 150                              | 150.60                                   | 7.7                                    | 7.5                                     | 66.0  | 2960                                | 0.0401                              |
| CTX250-5-52          | CTX250-5-52LP          |                            | 250                              | 254.40                                   | 9.2                                    | 8.1                                     | 102.4   | 5860                                | 0.0400                              |
| CTX10-7-52           | CTX10-7-52LP           | CTX10-7-52M                | 10                               | 10.04                                    | 11.4                                   | 13.5                                    | 11.0  | 640                                 | 0.0080                              |
| CTX20-7-52           | CTX20-7-52LP           | CTX20-7-52M                | 20                               | 20.96                                    | 11.4                                   | 14.5                                    | 19.1  | 1540                                | 0.0110                              |
| CTX50-7-52           | CTX50-7-52LP           | CTX50-7-52M                | 50                               | 52.27                                    | 10.5                                   | 10.2                                    | 33.5  | 1900                                | 0.0163                              |
| CTX100-7-52          | CTX100-7-52LP          |                            | 100                              | 101.40                                   | 12.0                                   | 9.1                                     | 54.2  | 2960                                | 0.0167                              |
| CTX150-7-52          | CTX150-7-52LP          |                            | 150                              | 152.80                                   | 12.8                                   | 10.5                                    | 79.3  | 5900                                | 0.0204                              |
| CTX10-10-52          | CTX10-10-52LP          |                            | 10                               | 10.04                                    | 16.9                                   | 20.9                                    | 13.2  | 1530                                | 0.0051                              |
| CTX20-10-52          | CTX20-10-52LP          |                            | 20                               | 21.17                                    | 16.0                                   | 16.0                                    | 21.3  | 1900                                | 0.0070                              |
| CTX50-10-52          | CTX50-10-52LP          |                            | 50                               | 52.37                                    | 13.9                                   | 12.7                                    | 38.9  | 2960                                | 0.0124                              |
| CTX100-10-52         | CTX100-10-52LP         |                            | 100                              | 99.38                                    | 17.6                                   | 13.0                                    | 64.0  | 5880                                | 0.0109                              |
| CTX10-16-52          | CTX10-16-52LP          |                            | 10                               | 9.90                                     | 27.3                                   | 29.3                                    | 16.9  | 2970                                | 0.0032                              |
| CTX20-16-52          | CTX20-16-52LP          |                            | 20                               | 19.24                                    | 31.5                                   | 29.5                                    | 28.1  | 5860                                | 0.0034                              |

Notes: (1) Open circuit inductance test parameters: 100kHz, 0.250Vrms, 0 Adc.  
(2) DC current for an approximate  $\Delta T$  of 30°C at 75°C Ambient with no core loss. See Chart 2 for derating of I<sub>DC</sub> with core loss.  
(3) Peak current for an approximate 30% roll-off in OCL. For other current levels see Chart 1.  
(4) Applied Volt-Time product (V $\mu\text{S}$ ) across the inductor. This value represents the V $\mu\text{S}$  at 100kHz necessary to generate a core loss equal to 10% of the total losses for 30°C rise. For other frequencies and operating levels see Chart 2. (Note: skin effect losses not included.)  
(5) Energy storage ( $\mu\text{J}$ ) at I<sub>SAT</sub>. For other current levels see Chart 1.  
(6) Maximum D.C. resistance at 20°C.



### Packaging

- Supplied in bulk packaging

| OPTION CODE |                        |
|-------------|------------------------|
| Option Code | Description            |
| -R          | RoHS compliant version |

**Mechanical Diagrams**

| <b>Vertical and Horizontal Self Leaded Mounting Options</b> |                                |             |             |             |            |            |            |            |
|---|--------------------------------|-------------|-------------|-------------|------------|------------|------------|------------|
| Vertical P/N<br>See Figure 1                                | Horizontal P/N<br>See Figure 2 | OD<br>(max) | ID<br>(typ) | Ht<br>(max) | X<br>(typ) | Y<br>(typ) | T<br>(typ) | H<br>(typ) |
| CTX10-1-52  | CTX10-1-52LP                   | 8.6         | 0.0         | 4.7         | 3.8        | 7.3        | 0.42       | 0.67       |
| CTX20-1-52  | CTX20-1-52LP                   | 9.1         | 0.0         | 6.7         | 5.6        | 7.4        | 0.37       | 0.62       |
| CTX50-1-52  | CTX50-1-52LP                   | 16.2        | 4.2         | 9.0         | 7.5        | 13.7       | 0.58       | 0.83       |
| CTX100-1-52   | CTX100-1-52LP                  | 15.5        | 4.2         | 12.4        | 10.7       | 13.7       | 0.58       | 0.83       |
| CTX150-1-52   | CTX150-1-52LP                  | 20.7        | 6.6         | 9.4         | 7.8        | 18.8       | 0.52       | 0.77       |
| CTX250-1-52   | CTX250-1-52LP                  | 20.9        | 6.0         | 13.0        | 11.0       | 18.8       | 0.52       | 0.77       |
| CTX500-1-52   | CTX500-1-52LP                  | 24.0        | 9.0         | 15.3        | 14.0       | 21.2       | 0.52       | 0.77       |
| CTX750-1-52   | CTX750-1-52LP                  | 29.8        | 11.7        | 17.4        | 15.6       | 28.2       | 0.52       | 0.77       |
| CTX1000-1-52  | CTX1000-1-52LP                 | 29.8        | 11.7        | 17.1        | 15.5       | 28.0       | 0.46       | 0.71       |
| CTX10-2-52  | CTX10-2-52LP                   | 12.7        | 0.0         | 7.8         | 6.3        | 11.0       | 0.71       | 0.96       |
| CTX20-2-52  | CTX20-2-52LP                   | 12.5        | 0.0         | 7.5         | 6.3        | 11.0       | 0.58       | 0.83       |
| CTX50-2-52  | CTX50-2-52LP                   | 21.6        | 6.1         | 13.6        | 11.0       | 19.5       | 0.89       | 1.14       |
| CTX100-2-52   | CTX100-2-52LP                  | 24.0        | 8.8         | 16.6        | 13.9       | 21.8       | 0.89       | 1.14       |
| CTX150-2-52   | CTX150-2-52LP                  | 30.6        | 11.2        | 11.4        | 9.3        | 28.5       | 0.80       | 1.05       |
| CTX250-2-52   | CTX250-2-52LP                  | 31.2        | 9.1         | 19.0        | 15.7       | 28.5       | 0.89       | 1.14       |
| CTX500-2-52   | CTX500-2-52LP                  | 36.7        | 11.7        | 14.8        | 12.5       | 34.5       | 0.71       | 0.96       |
| CTX750-2-52   | CTX750-2-52LP                  | 43.3        | 19.9        | 18.2        | 15.8       | 41.5       | 0.80       | 1.05       |
| CTX10-5-52  | CTX10-5-52LP                   | 22.2        | 5.4         | 13.9        | 11.5       | 19.9       | 1.11       | 1.36       |
| CTX20-5-52  | CTX20-5-52LP                   | 24.5        | 8.8         | 16.6        | 14.5       | 22.0       | 0.89       | 1.14       |
| CTX50-5-52  | CTX50-5-52LP                   | 32.3        | 10.1        | 18.9        | 16.5       | 28.8       | 1.11       | 1.36       |
| CTX100-5-52   | CTX100-5-52LP                  | 37.8        | 11.2        | 16.8        | 13.6       | 35.5       | 1.24       | 1.49       |
| CTX150-5-52   | CTX150-5-52LP                  | 46.4        | 18.8        | 19.8        | 16.8       | 43.4       | 1.24       | 1.49       |
| CTX250-5-52   | CTX250-5-52LP                  | 53.7        | 18.8        | 24.3        | 20.1       | 49.4       | 1.38       | 1.63       |
| CTX10-7-52  | CTX10-7-52LP                   | 25.7        | 6.5         | 18.0        | 16.0       | 22.4       | 1.38       | 1.63       |
| CTX20-7-52  | CTX20-7-52LP                   | 32.4        | 8.5         | 19.8        | 16.8       | 29.2       | 1.38       | 1.63       |
| CTX50-7-52  | CTX50-7-52LP                   | 39.0        | 10.8        | 16.8        | 13.9       | 35.7       | 1.38       | 1.63       |
| CTX100-7-52   | CTX100-7-52LP                  | 48.5        | 17.1        | 21.8        | 17.2       | 43.4       | 1.73       | 1.98       |
| CTX150-7-52   | CTX150-7-52LP                  | 54.5        | 17.1        | 25.4        | 21.2       | 50.9       | 1.73       | 1.98       |
| CTX10-10-52   | CTX10-10-52LP                  | 34.0        | 7.0         | 21.4        | 17.0       | 29.6       | 1.73       | 1.98       |
| CTX20-10-52   | CTX20-10-52LP                  | 40.5        | 9.0         | 18.0        | 14.3       | 35.2       | 1.73       | 1.98       |
| CTX50-10-52   | CTX50-10-52LP                  | 47.5        | 17.1        | 21.3        | 17.5       | 42.8       | 1.73       | 1.98       |
| CTX100-10-52  | CTX100-10-52LP                 | 57.0        | 15.0        | 27.5        | 21.3       | 50.6       | 2.15       | 2.45       |
| CTX10-16-52   | CTX10-16-52LP                  | 50.3        | 13.0        | 24.0        | 18.6       | 43.0       | 2.41       | 2.70       |
| CTX20-16-52   | CTX20-16-52LP                  | 59.0        | 13.0        | 28.0        | 23.0       | 50.7       | 2.69       | 2.99       |

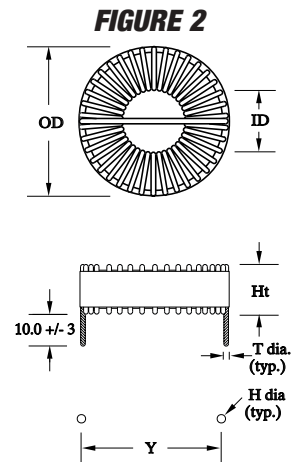
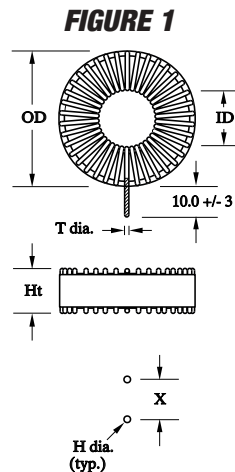
Note: All dimensions are in millimeters.



**VERTICAL  
SELF LEADED  
MOUNT**



**HORIZONTAL  
SELF LEADED  
MOUNT**



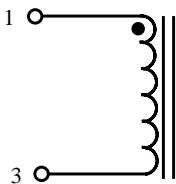
Drawings are not to scale.

**Header Mounted Option**

| Header Mounted Part Number | See Figure # | OD (max) | A (max) | B (max) | C (max) | X (typ) | Y (typ) | T (typ) | H (typ) |
|----------------------------|--------------|----------|---------|---------|---------|---------|---------|---------|---------|
| CTX10-1-52M                | 3            | 8.6      | 9.4     | 9.4     | 6.9     | 6.5     | 6.5     | —       | —       |
| CTX20-1-52M                | 3            | 9.1      | 9.4     | 9.4     | 9.0     | 6.5     | 6.5     | —       | —       |
| CTX50-1-52M                | 4            | 16.2     | 19.6    | 16.1    | 20.0    | 15.3    | 6.4     | —       | —       |
| CTX100-1-52M               | 4            | 15.5     | 19.6    | 16.1    | 19.7    | 15.3    | 6.4     | —       | —       |
| CTX150-1-52M               | 4            | 20.7     | 19.6    | 16.1    | 24.2    | 15.3    | 6.4     | —       | —       |
| CTX250-1-52M               | 5            | 20.9     | 31.0    | 16.0    | 22.5    | 20.3    | 10.2    | 1.20    | 1.45    |
| CTX500-1-52M               | 5            | 24.0     | 35.4    | 21.7    | 25.0    | 23.0    | 15.4    | 1.20    | 1.45    |
| CTX750-1-52M               | 5            | 29.8     | 35.4    | 21.7    | 31.6    | 23.0    | 15.4    | 1.20    | 1.45    |
| CTX1000-1-52M              | 5            | 29.8     | 35.4    | 21.7    | 31.2    | 23.0    | 15.4    | 1.20    | 1.45    |
| CTX10-2-52M                | 3            | 12.7     | 13.6    | 11.4    | 11.7    | 10.8    | 7.5     | —       | —       |
| CTX20-2-52M                | 3            | 12.5     | 13.6    | 11.4    | 11.4    | 10.8    | 7.5     | —       | —       |
| CTX50-2-52M                | 5            | 21.6     | 31.0    | 16.0    | 23.5    | 20.3    | 10.2    | 1.20    | 1.45    |
| CTX100-2-52M               | 5            | 24.0     | 35.4    | 21.7    | 26.0    | 23.0    | 15.4    | 1.20    | 1.45    |
| CTX150-2-52M               | 5            | 30.6     | 31.0    | 16.0    | 32.5    | 20.3    | 10.2    | 1.20    | 1.45    |
| CTX250-2-52M               | 5            | 31.2     | 35.4    | 21.7    | 33.4    | 23.0    | 15.4    | 1.20    | 1.45    |
| CTX500-2-52M               | 5            | 36.7     | 31.0    | 16.0    | 38.4    | 20.3    | 10.2    | 1.20    | 1.45    |
| CTX750-2-52M               | 5            | 43.3     | 35.4    | 21.7    | 45.4    | 23.0    | 15.4    | 1.20    | 1.45    |
| CTX10-5-52M                | 5            | 22.2     | 31.0    | 16.0    | 22.7    | 20.3    | 10.2    | 1.20    | 1.45    |
| CTX20-5-52M                | 5            | 24.5     | 35.4    | 21.7    | 25.5    | 23.0    | 15.4    | 1.20    | 1.45    |
| CTX50-5-52M                | 5            | 32.3     | 35.4    | 21.7    | 33.7    | 23.0    | 15.4    | 1.11    | 1.36    |
| CTX100-5-52M               | 5            | 37.8     | 35.4    | 21.7    | 40.2    | 23.0    | 15.4    | 1.24    | 1.49    |
| CTX150-5-52M               | 5            | 46.4     | 35.4    | 21.7    | 47.0    | 23.0    | 15.4    | 1.24    | 1.49    |
| CTX10-7-52M                | 5            | 25.7     | 35.4    | 21.7    | 26.7    | 23.0    | 15.4    | 1.38    | 1.63    |
| CTX20-7-52M                | 5            | 32.4     | 35.4    | 21.7    | 34.2    | 23.0    | 15.4    | 1.38    | 1.63    |
| CTX50-7-52M                | 5            | 39.0     | 35.4    | 21.7    | 40.3    | 23.0    | 15.4    | 1.38    | 1.63    |

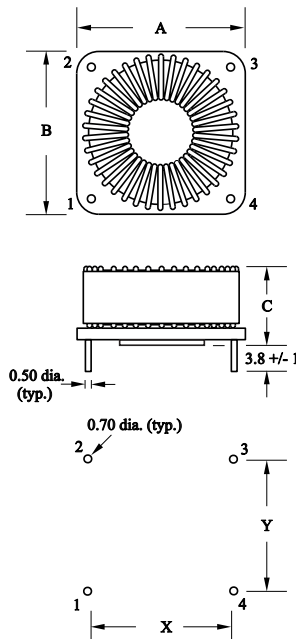
Note: All dimensions are in millimeters.

**CONNECTION DIAGRAM**

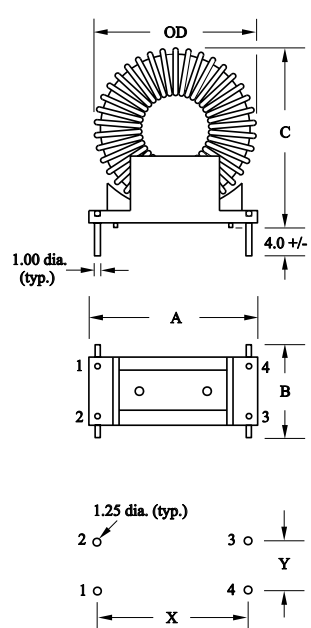


**HEADER MOUNT**

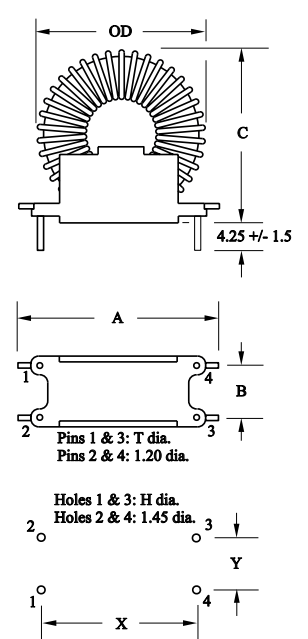
**FIGURE 3**



**FIGURE 4**

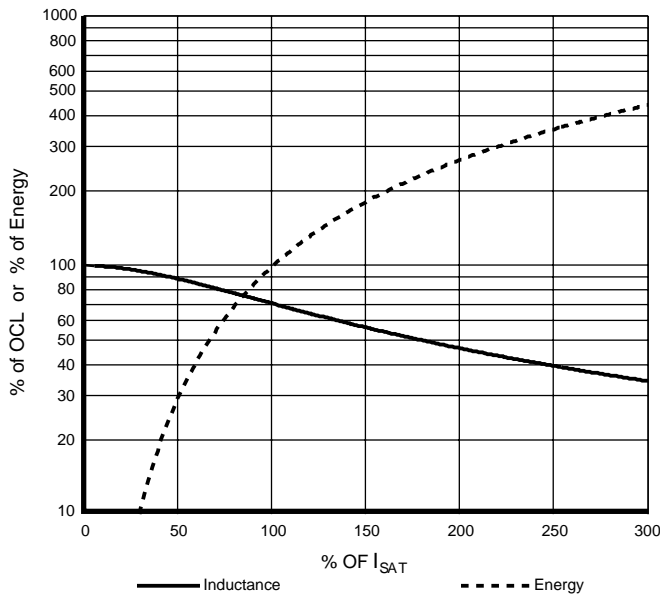


**FIGURE 5**



Drawings are not to scale.

Typical Inductance and Energy vs DC Current



Winding Loss Derating with Core Loss

