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## T300-52

### Features

Low core loss and good results of general power conversion and line filter administration. Applicable (at  $\geq 50\text{kHz}$ ) for Power Factor Correction Chokes, DC Chokes and higher Et/N. Also applies for 60 Hz differential-mode EMI Line Chokes.

| Electrical Specifications   |                               |   |          |            |
|-----------------------------|-------------------------------|---|----------|------------|
| Item                        | Unit/Symbol                   | Condition                                   | Value    | Tol.       |
| $A_L$                       | nH/N <sup>2</sup>             | AC flux density of 10 gauss (1 mT) @ 10 kHz | 80.0     | $\pm 10\%$ |
| $L_e$                       | cm                            | N/A   | 19.80    | Typ.       |
| $A_e$                       | cm <sup>2</sup>               | N/A   | 1.680    | Typ.       |
| $V_e$                       | cm <sup>3</sup>               | N/A   | 33.400   | Typ.       |
| Density                     | g/cm <sup>3</sup>             | N/A   | 7.0      | Typ.       |
| Permeability                | $\mu_0$                       | N/A   | 75       | $\pm 10\%$ |
| Permeability with DC BIAS   | % $\mu_0$ , $\mu_0$ effective | HDC = 50 Oersted                            | 59, 44.3 | Typ.       |
| Temp. Coef. of Permeability | +ppm/°C                       | N/A   | 650      | Typ.       |
| Coef. of Lin. Expansion     | +ppm/°C                       | N/A   | 12       | Typ.       |
| Thermal Conductivity        | mW/cm <sup>2</sup> ·°C        | N/A   | 34       | Typ.       |

$$\text{Temperature Rise } \Delta T(^{\circ}\text{C}) = \left[ \frac{\text{Total Power Dissipation (milliwatts)}}{\text{Surface Area (cm}^2\text{)}} \right]^{0.833}$$

$$\text{Required turns} = \left[ \frac{\text{desired } L \text{ (nH)}}{A_L \left( \frac{\text{nH}}{\text{N}^2} \right)} \right]^{\frac{1}{2}}$$

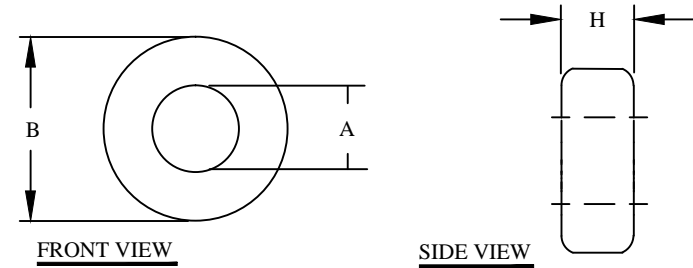
$$\text{Peak AC Flux Density: } B_{pk} = \frac{E_{avg} \cdot 10^8}{4ANf}$$

$$\text{Magnetizing Force: } H = \frac{0.4\pi NI}{\ell}$$

L = inductance  
nH = nanohenries  
H = oersteds (Oe)  
N = Number of turns  
I = Current (amperes)  
 $\ell$  = Mean Magnetic Path (cm)  
A = Cross-sectional area (cm<sup>2</sup>)  
f = frequency (hertz)  
 $B_{pk}$  = Gauss (G)

| Core Loss in mW/cm <sup>3</sup> (extrapolated data from high frequency testing) |         |         |        |        |        |        |
|---|---------|---------|--------|--------|--------|--------|
| Frequency   | 60 Hz   | 1kHz    | 10kHz  | 50kHz  | 100kHz | 500kHz |
| Condition   | @ 5000G | @ 1500G | @ 500G | @ 225G | @ 140G | @ 50G  |
| Value   | 30      | 56      | 68     | 72     | 58     | 63     |

| REVISION HISTORY |     |                    |             |        |     |        |
|------------------|-----|--------------------|-------------|--------|-----|--------|
| REV              | ECN | DESCRIPTION        | SIGN & DATE |        |     |        |
|                  |     |                    | BY          | DATE   | AP. | DATE   |
| A                |     | Production release | EO          | 3/7/13 | JL  | 3/7/13 |



| Case Dimensional Tolerances |          |       |       |      |
|-----------------------------|----------|-------|-------|------|
|                             | in       | tol.  | mm    | tol. |
| B (Outer Diameter)          | 3.040    | 0.030 | 77.20 | 0.76 |
| A (Inner Diameter)          | 1.930    | 0.030 | 49.00 | 0.76 |
| H (Height)                  | 0.500    | 0.030 | 12.70 | 0.76 |
| Weight                      | 233.80 g |       |       |      |

**For additional detail, specifications and charts see:**

[http://www.bytemark.com/products/IPCores\\_index.html](http://www.bytemark.com/products/IPCores_index.html)

| CODE IDENT                 | MFG. P/N  | DESCRIPTION   | ITEM NO.  |
|----------------------------|-----------|---|---|
| <b>PARTS LIST</b>          |           |   |   |
| AUTOCAD                    | X         | www.coilws.com<br>www.cwsbytemark.com   | CWSBYTEMARK<br>353 West Grove Ave. Orange, CA.<br>92865 |
| SOLIDWORKS                 |           |   |   |
| DRAWN                      | EO 3/7/13 | <b>TITLE:</b> Iron Powder Core Material Mix 52,<br>Green/Blue<br><br><b>SIZE DWG. NO.</b> B T300-52<br><b>SCALE</b> N/A |   |
| CHECKED                    | JL 3/7/13 |   |   |
| ENGR.                      | JL 3/7/13 |   |   |
| APPR.                      | JL 3/7/13 |   |   |
| UNLESS OTHERWISE SPECIFIED |           | DO NOT SCALE DRAWING  |   |

DIMENSIONING AND TOLERANCE PER ANSI Y14.5M  
ALL DIMENSIONS ARE IN INCHES AND [MILLIMETERS].  
TOLERANCE INCHES:  
.XXX=±.005 .XX=±.015 <math>\angle=±0°30'</math>  
TOLERANCE METRICS:  
.XXX=±.127 .XX=±.38 <math>\angle=±0°30'</math>  
ANGLE PROJECTION