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T50-52

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 ²	AC flux density of 10 gauss (1 mT) @ 10 kHz	33.0	$\pm 10\%$
L_e	cm	N/A	3.19	Typ.
A_e	cm ²	N/A	0.112	Typ.
V_e	cm ³	N/A	0.358	Typ.
Density	g/cm ³	N/A	7.0	Typ.
Permeability	μ_0	N/A	75	$\pm 10\%$
Permeability with DC BIAS	$\% \mu_0, \mu_{0\text{effective}}$	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 ² ·°C	N/A	34	Typ.

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

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

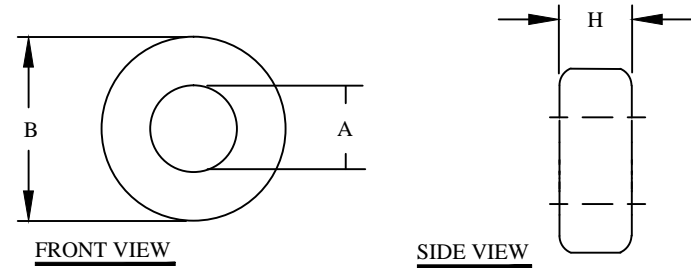
$$\text{Peak AC Flux Density: } B_{pk} = \frac{E_{avg} 10^8}{4ANf}$$

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

L = inductance
nH = nanohenries
H = oersteds (Oe)
N = Number of turns
I = Current (amperes)
 ℓ = Mean Magnetic Path (cm)
A = Cross-sectional area (cm²)
f = frequency (hertz)
 B_{pk} = Gauss (G)

Core Loss in mW/cm ³ (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)	0.500	0.020	12.70	0.51
A (Inner Diameter)	0.303	0.020	7.70	0.51
H (Height)	0.190	0.020	4.83	0.51
Weight 2.51 g				

For additional detail, specifications and charts see:

http://www.bytemark.com/products/IPCores_index.html

CODE IDENT	MFG. P/N	DESCRIPTION	ITEM NO.
PARTS LIST			
AUTOCAD	X	www.coilws.com www.cwsbytemark.com	CWSBYTEMARK 353 West Grove Ave. Orange, CA. 92865
SOLIDWORKS			
DRAWN	EO 3/7/13	TITLE: Iron Powder Core Material Mix 52, Green/Blue SIZE DWG. NO. T50-52 REV A	
CHECKED	JL 3/7/13		
ENGR.	JL 3/7/13		
APPR.	JL 3/7/13		
SCALE		N/A	SHEET 1 OF 1

UNLESS OTHERWISE SPECIFIED
 DIMENSIONING AND TOLERANCE PER ANSI Y14.5M
 ALL DIMENSIONS ARE IN INCHES AND [MILLIMETERS].
 TOLERANCE INCHES:
 .XXX \pm .005 .XX \pm .015 \angle \pm 0°30'
 TOLERANCE METRICS:
 .XXX \pm .127 .XX \pm .38 \angle \pm 0°30'
 ANGLE PROJECTION
 DO NOT SCALE DRAWING