Part Number: T90-52

Micrometals Iron Powder Cores, A Division of Micrometals, Inc. - 5615 E. La Palma Ave., Anaheim, California 92807 USA
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OD (nom. - bare core) 22.86 mm 0.900 in
(max. - after coating) 23.37 mm 0.920 in

ID (nom. - bare core) 13.97 mm 0.550 in
(min. - after coating) 13.46 mm 0.530 in

Ht (nom. - bare core) 9.53 mm 0.375 in
(max. - after coating) 10.16 mm 0.400 in

Mass (approximate) 16 grams

Magnetic Dimensions
Aeff = Eff. Mag. Cross Section 0.395 cm²
L = Eff. Mag. Path Length 5.78 cm
Vol = Eff. Core Volume 2.28 cm³
W = Min. Eff. Window Area 1.42 cm²
sa = Surface Area 21.0 cm²
mlt = mean length per turn 3.70 cm

μi (reference) 75
Aeff value (nominal) 64 nH/N²
Test Winding N=100, #28 AWG
Frequency 10 kHz
Voltage on Agilent 4284A 0.18 V
Aeff tolerance ±10%

Inductance
Core Loss (mW/cm³) = \( \frac{f}{B_{pk}^2 + c \cdot B_{pk}^{1.5} + d \cdot B_{pk}^2} \)
where \( B_{pk} \) expressed in gauss, \( f \) expressed in hertz, and:
\( a=1.00E+09, \ b=1.10E+08, \ c=2.10E+06, \ d=6.90E-14 \)

Bpk 140 G
frequency 100 kHz
Core Loss (nominal) 58 mW/cm³
Core Loss (maximum) 67 mW/cm³

\( \%\mu_i = \frac{1}{a + b \cdot H^c + d} \)
where \( H \) expressed in oersteds, and:
\( a=1.00E-02, \ b=4.66E-06, \ c=1.84, \ d=0.00 \)

HDC 50 Oe
Percent Initial Perm(nom.) 61.6%
Percent Initial Perm(min.) 53.4%

Coating/Pkg
Coating Type: Green/Blue Epoxy Paint
Voltage Breakdown (min.) 500 Vrms, 60Hz
Limit 3 mA, 5 s
Package Quantity 968 Pcs/Box

Winding Table
AWG 10 12 14 16 18 20 22 24 26 28 30
Wire Size 2.500 2.000 1.600 1.250 1.000 0.800 0.630 0.500 0.400 0.315 0.250

Single Layer
Turns 11 15 19 25 31 39 50 63 79 99 123
Rdc(Ω) 1.3 m 2.9 m 5.8 m 12.2 m 24.0 m 48.0 m 97.8 m 195.9 m 390.7 m 778.8 m 1.5

Full Winding
Turns 12 18 28 43 66 102 159 245 380 588 910
Rdc(Ω) 1.5 m 3.5 m 8.6 m 20.9 m 51.0 m 125.4 m 310.9 m 762.0 m 1.9 4.6 11.4

Initial Permeability (%µi) vs. Peak AC Flux Density (gauss)

Initial Permeability (%µi) vs. DC Bias - Mix-52 (75µ)

Core Loss vs. Bpk - Mix-52 (75µ)

Inductance
Core Loss (nominal) 58 mW/cm³
Core Loss (maximum) 67 mW/cm³

\( H = 0.4 \cdot \pi \cdot N \cdot I \)
where \( H \) - DC Magnetizing Force (Oe)
\( N \) - Number of Turns
\( I \) - DC Current (A)
\( L_e \) = Effective Path Length (cm)

Initial Permeability vs. Peak AC Flux Density - Mix-52 (75µ)

Core Loss vs. Bpk - Mix-52 (75µ)

Initial Permeability vs. Frequency - Mix-52 (75µ)

Core Loss vs. Frequency - Mix-52 (75µ)