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### T30-1

#### Features

Highest carbonyl permeability.  
Applies to high Q below 1 MHz, for utilization of band transformer range within 50-500 MHz

Electrical Specifications				
Item	Unit/Symbol	Condition	Value	Tol.
A <sub>L</sub>	nH/N <sup>2</sup>	Typ.	8.5	± 10%
L <sub>e</sub>	cm	N/A	1.84	Typ.
A <sub>e</sub>	cm <sup>2</sup>	N/A	0.061	Typ.
V <sub>e</sub>	cm <sup>3</sup>	N/A	0.110	Typ.
Approx. Material Density	g/cm <sup>3</sup>	N/A	6.4	Typ.
Permeability	μ <sub>0</sub>	N/A	20	± 10%
Temperature Stability	+ppm/°C	N/A	280	Typ.

Resonant Circuit (---) and Broadband Frequency Range (+++)											
Mix	Range (MHz)	2-50 KHz	50-250 KHz	250-500 KHz	500KHz-2MHz	2-10 MHz	10-40 MHz	40-150 MHz	150-250 MHz	250-500 MHz	500 MHz to 1GHz
42	0.3-80	-----									
3	0.02-1	-----									
8	0.02-1	-----				+++++					
1	0.15-3		-----						+++++		
15	0.15-3		-----								
2	0.25-10		-----								
7	1-25			-----							
4	3-40				-----						
6	3-40					-----			+++++		
10	15-100						-----			+++++	
17	20-200							-----			
12	30-250										
0	50-350									+++++	++++

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)	0.307	0.015	7.80	0.38
A (Inner Diameter)	0.151	0.015	3.84	0.38
H (Height)	0.128	0.020	3.25	0.51
Weight 0.70 g				

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

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

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

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

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

UNLESS OTHERWISE SPECIFIED  
DIMENSIONING AND TOLERANCE PER ANSI Y14.5M  
ALL DIMENSIONS ARE IN INCHES AND [MILLIMETERS].  
TOLERANCE INCHES:  
.XXX=±.005 .XX=±.015 <math>\angle=±0^{\circ}30'</math>  
TOLERANCE METRICS:  
.XXX=±.127 .XX=±.38 <math>\angle=±0^{\circ}30'</math>  
ANGLE PROJECTION   
DO NOT SCALE DRAWING

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.
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 1 (Carbonyl C), Blue/Clear	
CHECKED	JL 3/7/13		
ENGR.	JL 3/7/13		
APPR.	JL 3/7/13		
SIZE DWG. NO.		T30-1	REV A
SCALE		N/A	SHEET 1 OF 1