

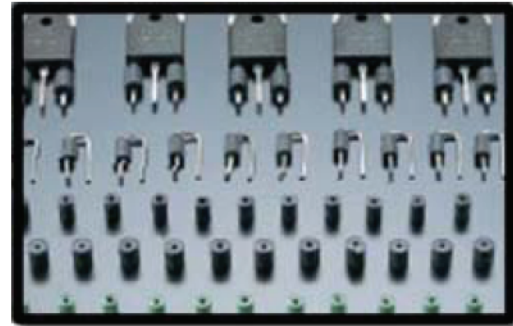
Features

FT-3AM bead cores made of FT-3AM nanocrystalline material are cores for surge absorbers which have high pulse permeability. These cores have excellent performance in suppression of reverse recovery current from the diode and ringing or surge current from switching circuit.

Comparison of FT-3AM nanocrystalline material to other materials:

1) The saturation magnetic flux density is twice as high as that of Co-based amorphous metal and three times higher than that of Ni-Zn ferrite. The pulse permeability and the core loss are comparable to Co-based amorphous metal. As a result, a small core made of FT-3AM nanocrystalline material offers higher performance in suppression of surge current and voltage.

2) The temperature characteristics of FT-3AM nanocrystalline material are very stable due to its high curie temperature, 570°C, and is much superior to Co-based amorphous metal and Ni-Zn ferrite which have curie temperatures around 200°C.



3) FT-3AM nanocrystalline material cores have a lower cost than comparable Co-based amorphous metal cores.

Table 1. Comparison of magnetic and physical properties among FT-3AM, FT-3AH, and conventional materials

		FT-3AM	FT-3AH	Co-based amorphous	Ni-Zn ferrite
Saturation flux density B_s *(T)	20° C	1.23	1.23	0.60	0.38
	100° C	1.20	1.20	0.53	0.29
Squareness ratio B_r/B_s	20° C	0.50	0.90	0.80	0.71
	100° C	0.48	0.91	0.78	0.60
Coercive force H_c *(A/m)	20° C	2.5	0.62	0.30	30
	100° C	2.7	0.63	0.29	20
Pulse permeability μ_{rp} **		3500	4000	4500	500
Core loss P_{cv} **(J/m^3)		7.5	6.5	6.0	7.0
Curie temperature T_c (°C)		570	570	210	200
Saturation magnetostriction λ_s ($\times 10^{-6}$)		~ 0	~ 0	~ 0	-7.8
Electrical resistivity ρ ($\mu\Omega \cdot m$)		1.2	1.2	1.3	1×10^{12}
Density d (kg/m^3)		7.3×10^3	7.3×10^3	7.6×10^3	5.2×10^3

* DC magnetic properties at 800A/m

** Pulse width 0.1 μs , operating magnetic flux density $\Delta B=0.2T$

Major Applications

1. Suppression of reverse recovery current and surge current from the diode in switch mode power supplies or inverters
2. Suppression of the surge current at the moment of activation of current in the diode, such as power MOS-FET.
3. Suppression of spike or ringing current generated in the switching circuit.

FINEMET® Beads - Toroidal Type

FINEMET® Beads made of FT-3AM nanocrystalline material are small size bead cores which show excellent performance in suppression of various kinds of current or voltage surge, such as the surge from a switching diode.

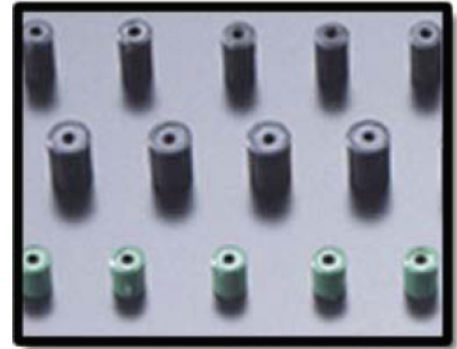


Table 2. Product code, part number and specifications (toroidal type)

Product Code	P/N	Finished Dimensions (mm)			A_c (mm ²) TYP.	L_m (mm) TYP.	Weight (g) TYP.	$2\theta_s$ (μ Wb)MIN.		AL Value (μ H/N ²) 100kHz
		A	B	C				20°C	100°C	
F1AH0432	FT-3AMB3X*	4.0 MAX	5.0 MAX	1.6 TYP.	1.13	7.85	0.10	2.2	2.0	2.0 MIN
F1AH0433	FT-3AM B3AR*	4.0 MAX	7.0 MAX	1.6 TYP.	1.88	7.85	0.16	3.6	3.4	3.3 MIN
F1AH0434	FT-3AM B4R*	5.0 MAX	7.0 MAX	1.6 TYP.	3.75	9.42	0.34	7.3	6.9	5.5 MIN

- UL94V-0 certified resin is used for the core case.
- *The resin with 130°C of heat resistance
- **The resin with 200°C of heat resistance
- No Ozone Layer Depleting Chemicals are used in these products or in their manufacturing process.
- A_c : effective cross-section area L_m : mean magnetic path length.

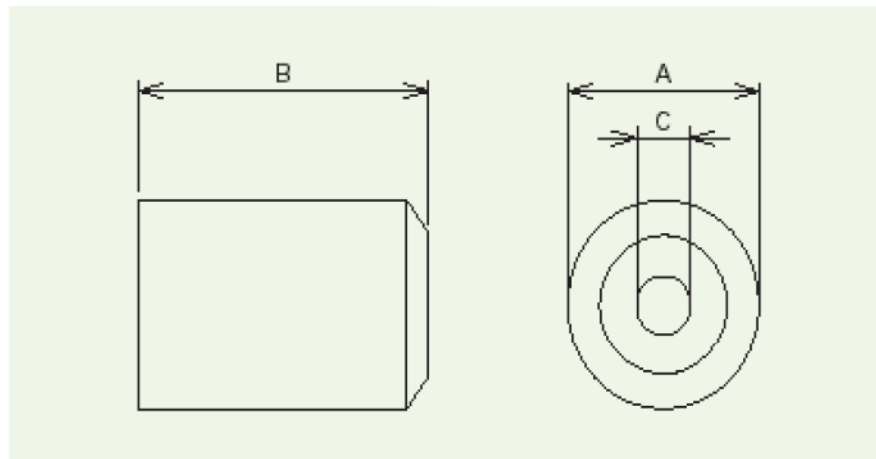


Fig 1. Toroidal type

FINEMET® Beads - Lead Wire Type

FINEMET® Beads made of FT-3AM nanocrystalline material are small size bead cores which show excellent performance in suppression of various kinds of current or voltage surge, such as the surge from a switching diode.



Table 3. Product code, part number and specifications (lead wire type)

Product Code	P/N	Finished Dimensions(mm)								Weight (g) TYP.
		A	B	C	D	E	F	G	H	
F1AH0435	FT-3AMB4ARL	5.0 MAX	7.0 REF	15.0 REF	3.0 MIN	7.0 MAX	5.0 ±1	1.0 Ø	2.0 MAX	0.52
F1AH0436	FT-3AMB4ARLY	5.0 MAX	7.0 REF	3.0 MIN	4.0 ±1	-	15.0 ±1	1.0 Ø	2.8 MAX	0.56

- A_c, L_m, 2φs, AL value and core case are the same as FT-3AM B4AR
- No ozone layer depleting chemicals are used in these products or in their manufacturing process.

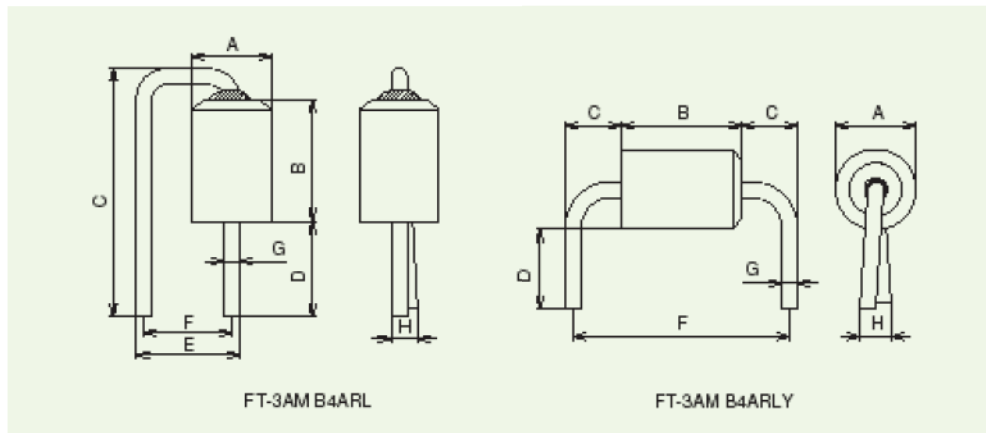


Fig 2. Lead wire type

FINEMET® Surge Absorber Cores

Surge absorber cores made of FT-3AH nanocrystalline material are toroidal cores which show excellent performance for the suppression of various kinds of current or voltage surge, such as surge from a switching diode.



Table 4. Part number and specifications (toroidal type)

P/N	Finished Dimensions (± 0.3mm)						2Øs(μWb)min	
	OD(mm)	ID(mm)	HT(mm)	Ac, cm ²	Lm, cm	Mass, g	25°C	120°C
MP1005LF3T	10.9	5.6	5.7	0.060	2.59	1.2	11.8	11.1
MP1205LF3T	13.8	6.8	6.6	0.057	3.14	1.4	11.2	10.6
MP1303LF3T	14.7	7.9	5.1	0.041	3.5	1.1	8.1	7.6
MP1305LF3T	14.4	7.9	6.7	0.057	3.46	1.5	11.2	10.6
MP1405LF3T	15.8	7.9	6.7	0.083	3.67	2.3	16.3	15.3
MP1506VF3T	17.1	7.8	8.3	0.140	3.86	4.1	27.6	25.9
MP1603VF3T	17.8	11.0	5.1	0.041	4.5	1.4	8.1	7.6
MP1805VF3T	20.8	10.8	6.8	0.108	4.88	4.0	21.3	20.1
MP1903VF3T	21.2	11.0	5.1	0.082	5.00	3.1	16.1	15.2
MP1906VF3T	21.2	11.0	8.3	0.161	4.99	6.1	31.7	29.9
MP2303VF3T	24.9	14.9	5.1	0.081	6.19	3.8	15.9	15.0
MP2705VF3T	29.5	14.8	6.7	0.207	6.89	10.8	40.7	38.3
MP3210VF3T	35.0	19.9	11.5	0.388	8.58	25.3	76.4	71.9

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