FERROXCUBE SCREENING BEADS

4mm
FX1115
FX1242

QUICK REFERENCE DATA

For use on conductors to suppress parasitic oscillations and unwanted feedback.

	FX1115	FX1242
One hole	Ø 2mm	Ø 1.5mm
Outside diameter	Ø 4mm	Ø 4 mm
Length	5mm	5.5mm

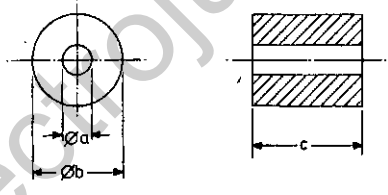
GENERAL

The low losses associated with Ferroxcube, when used as a core material for high quality coils, apply over a specified frequency range. At frequencies above this range the residual losses increase very rapidly and this property is very useful when the suppression of unwanted high frequencies is desired.

No supports are required for these beads due to their small size and weight and no soldered joints are involved. Furthermore, there is no low frequency or d.c. voltage drop in the wire.

An increased impedance can be obtained by using more than one bead, in which case the properties are increased arithmetically, so long as the total length of the beads does not approach the wavelength of the signal. A considerable increase in impedance can also be achieved by threading more than one turn of wire through the bead.

DIMENSIONS (millimetres)

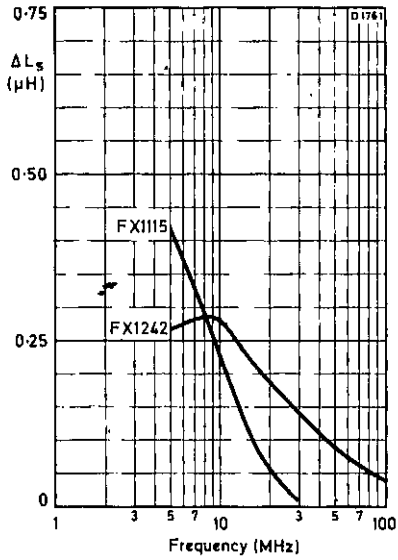


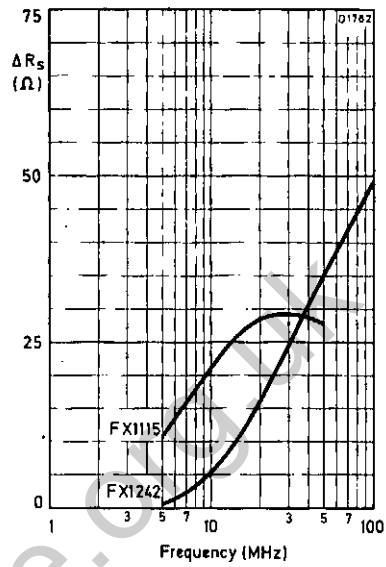
01774

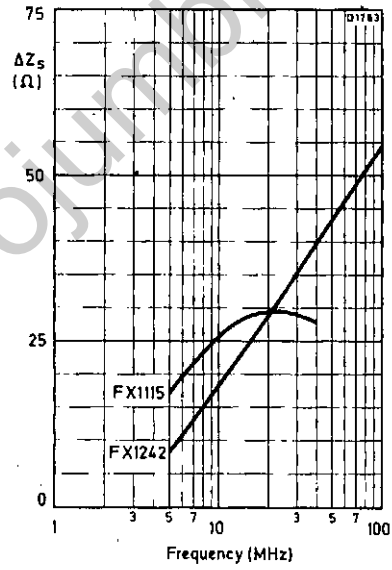
a min.	b max.	c max.	Ferroxcube grade	Type No.
1.8	4.2	5.5	A1	FX1115
1.3	4.1	5.7	B2	FX1242

ORDERING PROCEDURE

The cores should be ordered under their type number FX1115 or FX1242 as appropriate.







CURVES SHOWING TYPICAL VARIATION OF INDUCTANCE, RESISTANCE AND IMPEDANCE WITH FREQUENCY FOR A 0.710mm DIAMETER WIRE THREADED THROUGH ONE BEAD

FERROXCUBE SCREENING BEAD

5·5mm
FX1516

QUICK REFERENCE DATA	
For use on conductors to suppress parasitic oscillations and unwanted feedback.	
Two holes	∅ 0.9mm
Outside diameter	∅ 5.5mm
Length	12 mm

GENERAL

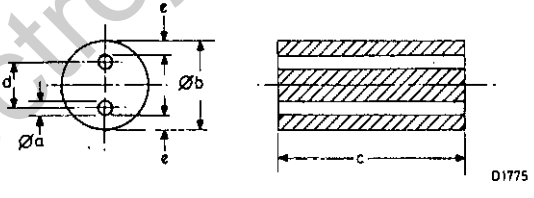
The low losses associated with Ferroxcube, when used as a core material for high quality coils, apply over a specified frequency range. At frequencies above this range the residual losses increase very rapidly and this property is very useful when the suppression of unwanted high frequencies is desired.

No supports are required for these beads due to their small size and weight and no soldered joints are involved. Furthermore, there is no low frequency or d.c. voltage drop in the wire.

An increased impedance can be obtained by using more than one bead, in which case the properties are increased arithmetically, so long as the total length of the beads does not approach the wavelength of the signal. A considerable increase in impedance can also be achieved by threading more than one turn of wire through the bead.

For double leads (i.e., twin heater supply) somewhat larger beads with two holes may be used to advantage. These are made in B2 Ferroxcube and the high resistivity of this material permits their use on bare wire.

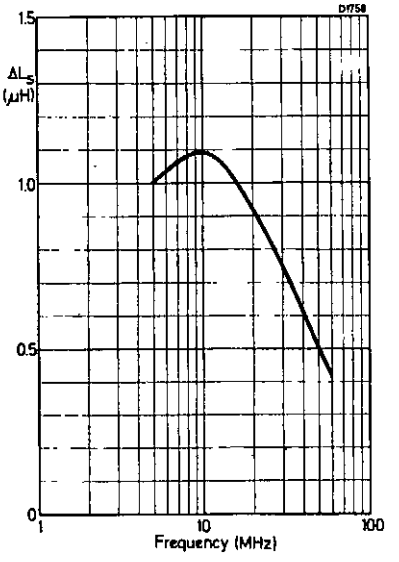
DIMENSIONS (millimetres)

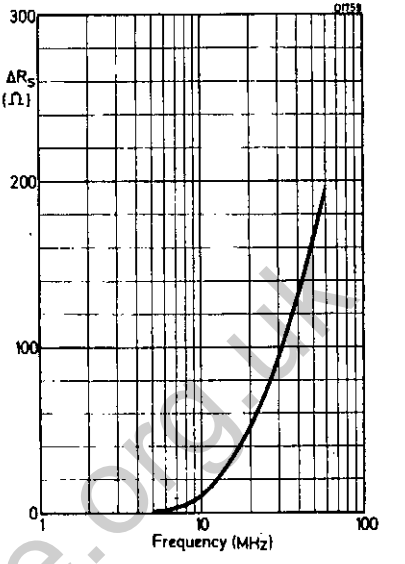


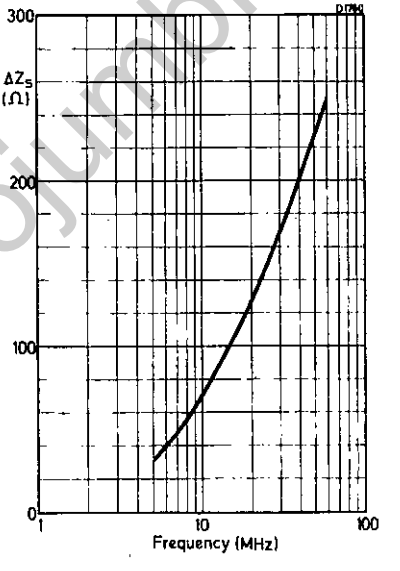
a min.	b max.	c max.	d	e min.	Ferroxcube grade	Type No.
0.7	5.9	12.4	2.6	0.8	B2	FX1516

ORDERING PROCEDURE

The core should be ordered under the type number FX1516.







CURVES SHOWING TYPICAL VARIATION OF INDUCTANCE, RESISTANCE AND IMPEDANCE WITH FREQUENCY FOR A 0.710mm DIAMETER WIRE THREADED THROUGH BOTH HOLES OF ONE BEAD

FERROXCUBE SCREENING BEAD

6mm
FX1898

QUICK REFERENCE DATA	
For use on conductors to suppress parasitic oscillations and unwanted feedback.	
Six holes	Ø 0.8mm
Outside diameter	Ø 6 mm
Length	10 mm

GENERAL

The low losses associated with Ferroxcube, when used as a core material for high quality coils, apply over a specified frequency range. At frequencies above this range the residual losses increase very rapidly and this property is very useful when the suppression of unwanted high frequencies is desired.

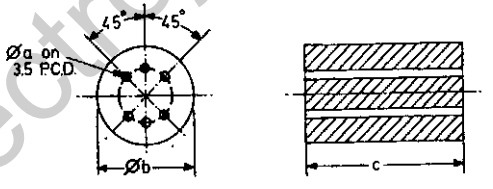
No supports are required for these beads due to their small size and weight and no soldered joints are involved. Furthermore, there is no low frequency or d.c. voltage drop in the wire.

An increased impedance can be obtained by using more than one bead, in which case the properties are increased arithmetically, so long as the total length of the beads does not approach the wavelength of the signal. A considerable increase in impedance can also be achieved by threading more than one turn of wire through the bead.

Six-hole beads give advantage for two conductor suppression, since more than one turn of wire can easily be employed.

These are made only in B2 Ferroxcube and the high resistivity of this material permits their use on bare wire.

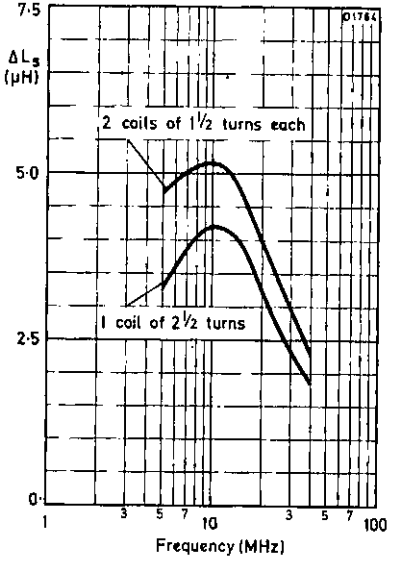
DIMENSIONS (millimetres)

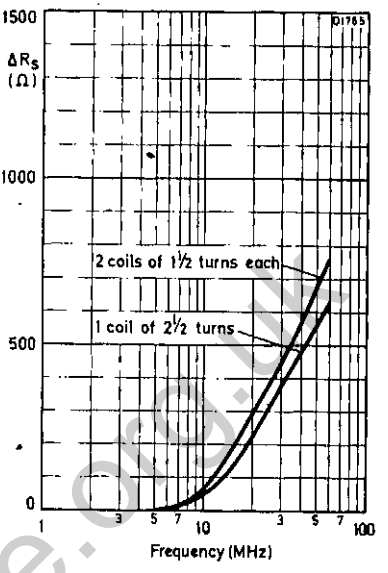


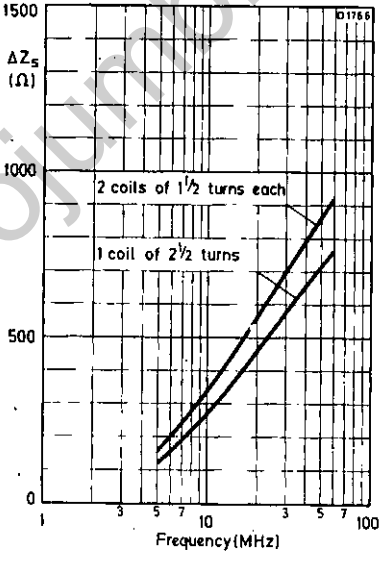
a min.	b max.	c max.	Ferroxcube grade	Type No.
0.6	6.3	10.5	B2	FX1898

ORDERING PROCEDURE

The core should be ordered under the type number FX1898.







CURVES SHOWING TYPICAL VARIATION OF INDUCTANCE, RESISTANCE AND IMPEDANCE WITH FREQUENCY FOR A 0.315mm DIAMETER WIRE THREADED THROUGH ONE BEAD

FERROXCUBE SINGLE AND DOUBLE APERTURE CORES

GENERAL

Mullard Ferroxcube single and double aperture cores are available in a number of materials, shapes and sizes.

For convenience of the designer, a survey of the available shapes, together with a type number cross-reference, is provided overleaf.

APPLICATIONS

These cores are particularly suitable for use in high frequency wideband and pulse transformers, where the lowest passband frequency is usually above 1MHz.

MATERIALS

Four grades of Ferroxcube are employed, these are:-

Manganese-zinc Ferroxcube, grades A8 and A13.

Nickel-zinc Ferroxcube, grades B1 and B2.

The choice of a particular grade of Ferroxcube will depend on individual requirements. For a guide to the selection of the right material, see data sheet LINEAR FERRITE MATERIALS.

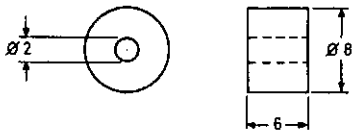
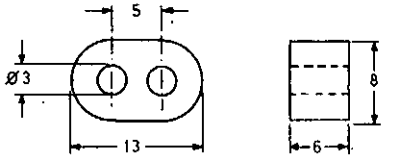
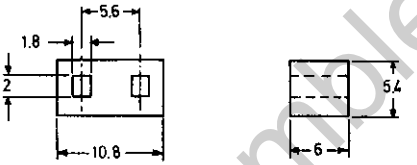
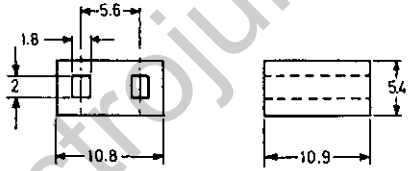
MARKING

Primary and secondary packs are marked with the FX type number. For individual core marking, see the appropriate data sheet.

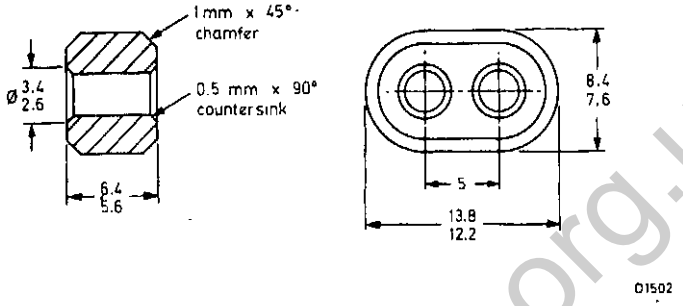
ORDERING PROCEDURE

The FX number denotes a single piece of Ferroxcube and it fully describes the component; additional information should therefore not be given when ordering.

For example, FX2634 is correct but FX2634/A13 is not correct.

Basic shape and size of cores (millimetres)	Ferroxcube grade	Type number
	A13	FX 2633
	B1	FX2431
	A13	FX2754
	B2	FX2049
	A8	FX3316
	A13	FX3391
	A8	FX2837
	A13	FX2634
	B1	FX2249

DIMENSIONS (millimetres)



MATERIAL — Ferroxcube grade B2 - FX2049
Ferroxcube grade A13 - FX2754

COLOUR MARK — White FX2049
Red FX2754

EFFECTIVE PARAMETERS

For calculating the magnetic properties, the following parameters should be used:

Description	Symbol	Value
Effective magnetic path length	ℓ_e	15.5 mm
Effective area of magnetic path	A_e	22.4 mm^2
Effective magnetic volume	V_e	347 mm^3
$\sum \frac{\ell}{A}$	C_1	0.689mm^{-1}

Parameter	Symbol	Frequency (kHz)	Temperature (°C)	Value	
				FX2049 (B2)	FX2754 (A13)
Effective permeability	μ_e	<10	+25 to +70	200 to 490	1400 to 2950
			-10 to +70	180 to 490	1250 to 2950
Turns factor (turns for 1mH)	α	<10	+25 to +70	52.36 to 33.45	19.79 to 13.63
			-10 to +70	55.19 to 33.45	20.94 to 13.63
Inductance factor (L nH for turn)	A_L	<10	+25 to +70	364.8 to 893.7	2553 to 5380
			-10 to +70	328.3 to 893.7	2280 to 5380
Residual plus eddy current loss factor	$\frac{\tan \delta_{r+F}}{\mu_e}$	100	25	-	$<10 \times 10^{-6}$
		2000		$<180 \times 10^{-6}$	-
Parallel resistance factor (ohms for 1 turn)	$\frac{R_p}{N^2}$	100		-	>114
		2000		>127	-

NOTES

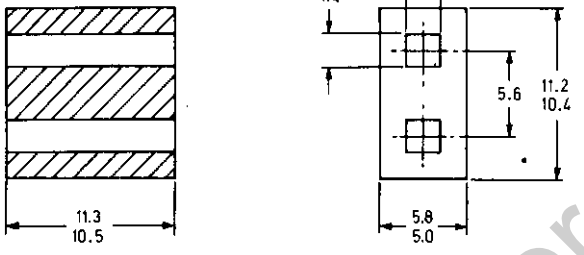
(i) Except for parallel resistance factor, the above parameters are measured at an effective flux density of $\hat{B}_e$ <0.1mT

(ii) For symbols and definitions see IEC publication 125.

FERROXCUBE SINGLE AND DOUBLE APERTURE CORES

FX2249 FX2634 FX2837

DIMENSIONS (millimetres)



D1503

MATERIAL

Ferroxcube grade B1 - FX2249

Ferroxcube grade A13 - FX2634

Ferroxcube grade A8 - FX2837

COLOUR MARK

White FX2249

Red FX2634

Yellow FX2837

EFFECTIVE PARAMETERS

For calculating the magnetic properties, the following parameters should be used:

Description	Symbol	Value
Effective magnetic path length	l_e	13.1 mm
Effective area of magnetic path	A_e	38.1 mm^2
Effective magnetic volume	V_e	498 mm^3
$\sum \frac{l}{A}$	C_1	0.344mm^{-1}

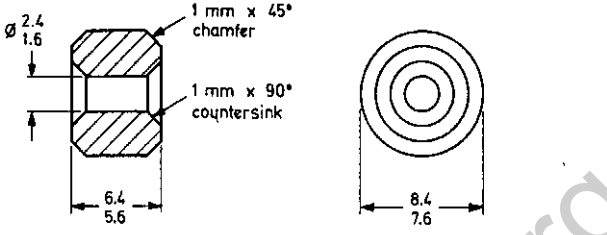
Parameter	Symbol	Frequency (kHz)	Temperature (°C)	Value		
				FX2249 (B1)	FX2634 (A13)	FX2837 (A8)
Effective permeability	μ_e	<10	+25 to +70	500 to 980	1500 to 2950	-
		<500		-	-	3000 to 7250
		<10	-10 to +70	440 to 980	1300 to 2950	-
		<500		-	-	2050 to 7250
Turns factor (turns for 1mH)	α	<10	+25 to +70	23.40 to 16.71	13.51 to 9.633	-
		<500		-	-	9.552 to 6.145
		<10	-10 to +70	24.94 to 16.71	14.51 to 9.633	-
		<500		-	-	11.56 to 6.145
Inductance factor (L nH for 1 turn)	A_L	<10	+25 to +70	1827 to 3580	5480 to 10 780	-
		<500		-	-	10 960 to 26 480
		<10	-10 to +70	1607 to 3580	4749 to 10 780	-
		<500		-	-	7489 to 26 480
Residual plus eddy current loss factor	$\frac{\tan \delta_{r+F}}{\mu_e}$	100	25	-	$<10 \times 10^{-6}$	$<30 \times 10^{-6}$
		500		$<100 \times 10^{-6}$	-	$<200 \times 10^{-6}$
Parallel resistance factor (ohms for 1 turn)	$\frac{R_p}{N^2}$	100		-	>229	>76
		500		>114	-	>57

NOTES

(i) Except for parallel resistance factor, the above parameters are measured at an effective flux density of $\hat{B}_e$ <0.1mT.

(ii) For symbols and definitions see IEC publication 125

DIMENSIONS (millimetres)



01505

MATERIAL

Ferroxcube grade B1 - FX2431

Ferroxcube grade A13 - FX2633

COLOUR MARK

White FX2431

Red FX2633

EFFECTIVE PARAMETERS

For calculating the magnetic properties, the following parameters should be used:

Description	Symbol	Value
Effective magnetic path length	l_e	15.7 mm
Effective area of magnetic path	A_e	16.0 mm^2
Effective magnetic volume	V_e	251 mm^3
$\sum \frac{l}{A}$	C_1	0.982mm^{-1}

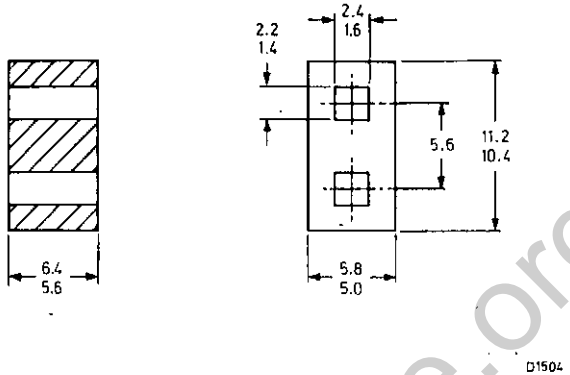
Parameter	Symbol	Frequency (kHz)	Temperature (°C)	Value	
				FX2431 (B1)	FX2633 (A13)
Effective permeability	μ_e	<10	+25 to +70	500 to 980	1500 to 2950
			-10 to +70	440 to 980	1300 to 2950
Turns factor (turns for 1mH)	$-\alpha$	<10	+25 to +70	39.53 to 28.24	22.82 to 16.28
			-10 to +70	42.14 to 28.24	24.52 to 16.28
Inductance factor (L nH for 1 turn)	A_L	<10	+25 to +70	639.8 to 1254	1920 to 3775
			-10 to +70	563.1 to 1254	1664 to 3775
Residual plus eddy current loss factor	$\frac{\tan\delta_{r+F}}{\mu_e}$	100	25	-	$<10\times10^{-6}$
		500		$<100\times10^{-6}$	-
Parallel resistance factor (ohms for 1 turn)	$\frac{R_p}{N^2}$	100		-	>80
		500		>40	-

NOTES

(i) Except for parallel resistance factor, the above parameters are measured at an effective flux density of $\hat{B}_e$ <0.1mT.

(ii) For symbols and definitions see IEC publication 125.

DIMENSIONS (millimetres)



MATERIAL

Ferroxcube grade A8 - FX3316

Ferroxcube grade A13 - FX3391

COLOUR MARK

Yellow FX3316

Red FX3391

EFFECTIVE PARAMETERS

For calculating the magnetic properties, the following parameters should be used:

Description	Symbol	Value
Effective magnetic path length	ℓ_e	13.1 mm
Effective area of magnetic path	A_e	21.0 mm^2
Effective magnetic volume	V_e	275 mm^3
$\sum \frac{\ell}{A}$	C_1	0.625mm^{-1}

Parameter	Symbol	Frequency (kHz)	Temperature (°C)	Value	
				FX3316 (A8)	FX3391 (A13)
Effective permeability	μ_e	<10	+25 to +70	3000 to 7250	1400 to 2950
			-10 to +70	2050 to 7250	1250 to 2950
Turns factor (turns for 1mH)	α	<10	+25 to +70	12.88 to 8.283	18.85 to 12.98
			-10 to +70	15.58 to 8.283	19.95 to 12.98
Inductance factor (L nH for 1 turn)	A_L	<10	+25 to +70	6032 to 14-580	2815 to 5931
			-10 to +70	4122 to 14 580	2513 to 5931
Residual plus eddy current loss factor	$\frac{\tan \delta_{r+F}}{\mu_e}$	100	25	$<30 \times 10^{-6}$	$<10 \times 10^{-6}$
Parallel resistance factor (ohms for 1 turn)	$\frac{R_p}{N^2}$	100		>42	>126

NOTES

(i) Except for parallel resistance factor, the above parameters are measured at an effective flux density of $\hat{B}_e$ <0.1mT.

(ii) For symbols and definitions see IEC publication 125