

FERROXCUBE TRANSFORMER POT CORES

25mm
FX2240

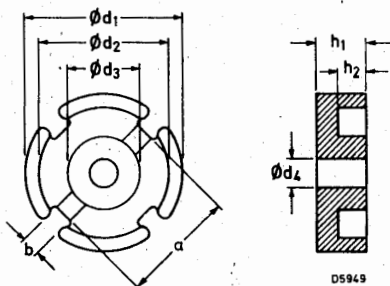
AVAILABLE FOR CURRENT PRODUCTION;
FOR NEW DESIGNS REFER TO RM TRANSFORMER CORES

QUICK REFERENCE DATA

Ferroxcube grade	A5
Minimum effective permeability (μ_e)	1200
Type number	FX2240

DIMENSIONS (millimetres)

CORES



Tol.	a	b	d_1	d_2	d_3	d_4	h_1	h_2
Max.	19.2	3.3	25.93	21.94	11.59	—	8.05	5.3
Min.	17.8	2.7	24.87	21.06	11.05	5	7.95	5.1

EFFECTIVE PARAMETERS

For calculating the magnetic properties of a pair of cores, the following parameters should be used:

Parameter	Symbol	Value
Effective magnetic path length	ℓ_e	36.6mm
Effective area of magnetic path	A_e	101mm ²
Effective magnetic volume	V_e	3690mm ³
$\sum \frac{\ell}{A}$	C_1	0.362mm ⁻¹

G53

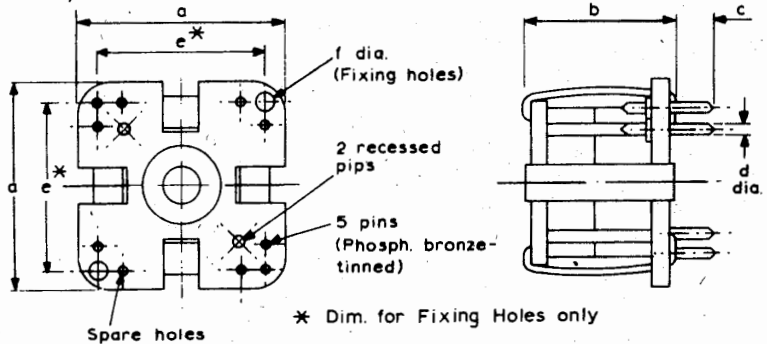
Mullard

CLIP AND BOARD ASSEMBLY

This is an inexpensive assembly, obtainable in three parts as follows:

- (1) Clip (4 required) DT2367
- (2) Ring DT2366
- (3) Tag board with 5 pins DT2369.

Additional pins obtainable as Type No. DT2207 (see Introductory Notes for details).



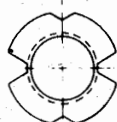
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Pin position gauge

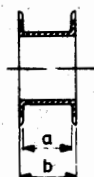
Tol.	Dimensions (millimetres)										
	a	b	c	d	e	f	v	w	x	y	z
Max.	30.15	19.9	—	1.1	24.3	—	25.413	20.333	5.093	2.7	1.25
Min.	—	—	3	—	23.7	2.85	25.387	20.307	5.067	—	1.20

COIL FORMERS

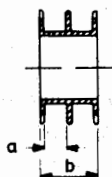
Single and multi-section coil formers are available for 25mm transformer cores.



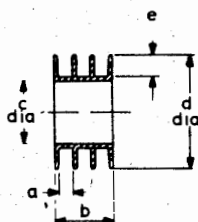
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One section



Two sections



Three sections

Sections	Type No.	Tol.	Dimensions (millimetres)					Material
			a	b	c	d	e	
One	DT2179	Max.	—	10.2	—	21.05	—	Delrin (max. working temp. 140°C)
		Min.	9	—	11.6	—	3.97	
Two	DT2283	Max.	—	10.2	—	21.05	—	Propathene (max. working temp. 130°C)
		Min.	3.7	—	11.6	—	3.37	
Three	DT2298	Max.	—	10.2	—	21.05	—	
		Min.	2.08	—	11.6	—	3.37	

WINDING DATA

Winding data for single-section coil formers are shown on the following pages.

Winding data for two-section coil formers may be obtained by multiplying the single-section figures by 0.69.

Winding data for three-section coil formers may be obtained by multiplying the single-section figures by 0.62.

WINDING DATA FOR FULLY WOUND DELRIN COIL FORMER **DT2179**

Enamelled copper wire to metric units in accordance with BS 4520 Part 1 (grade 1 covering)

d conductor diameter (mm)	d ⁴ (mm ⁴)	overall diameter		number of turns		resistance	
		nominal (mm)	maximum (mm)	typical (N _t)	minimum (N _m)	of N _t (Ω)	of N _m (Ω)
0.025	3.91 × 10 ⁻⁷	0.0285	0.0310	38900	27800	71400	51000
0.032	1.05 × 10 ⁻⁶	0.0355	0.0380	25100	18500	32000	23600
0.040	2.56 × 10 ⁻⁶	0.0460	0.0500	15100	10800	10800	7750
0.050	6.25 × 10 ⁻⁶	0.0575	0.0620	9650	7020	4430	3220
0.063	1.58 × 10 ⁻⁵	0.0730	0.0780	6060	4490	1750	1300
0.071	2.54 × 10 ⁻⁵	0.0820	0.0880	4850	3570	1110	812
0.080	4.10 × 10 ⁻⁵	0.0920	0.0980	3900	2910	699	522
0.090	6.56 × 10 ⁻⁵	0.104	0.110	3080	2310	437	327
0.100	1.00 × 10 ⁻⁴	0.115	0.121	2550	1930	292	221
0.112	1.57 × 10 ⁻⁴	0.128	0.134	2050	1570	188	144
0.125	2.44 × 10 ⁻⁴	0.142	0.149	1670	1290	123	94.5
0.140	3.84 × 10 ⁻⁴	0.159	0.166	1350	1050	79.0	61.3
0.160	6.55 × 10 ⁻⁴	0.180	0.187	1060	834	47.7	37.4
0.180	1.05 × 10 ⁻³	0.202	0.209	849	668	30.1	23.7
0.200	1.60 × 10 ⁻³	0.223	0.230	704	557	20.2	16.0
0.224	2.52 × 10 ⁻³	0.248	0.256	566	450	13.0	10.3
0.250	3.91 × 10 ⁻³	0.275	0.284	465	369	8.54	6.78
0.280	6.15 × 10 ⁻³	0.306	0.315	376	300	5.51	4.39
0.315	9.85 × 10 ⁻³	0.343	0.352	297	238	3.44	2.75
0.355	1.59 × 10 ⁻²	0.385	0.395	232	187	2.11	1.70

Enamelled copper wire to metric units in accordance with BS 4520 Part 1 (grade 1 covering)

d conductor diameter (mm)	d ⁴ (mm ⁴)	overall diameter		number of turns		resistance	
		nominal (mm)	maximum (mm)	typical (N _t)	minimum (N _m)	of N _t (Ω)	of N _m (Ω)
0.400	2.56 × 10 ⁻²	0.431	0.442	185	149	1.33	1.07
0.450	4.10 × 10 ⁻²	0.484	0.495	145	117	0.822	0.663
0.500	6.25 × 10 ⁻²	0.536	0.548	118	96	0.542	0.441
0.560	9.83 × 10 ⁻²	0.598	0.611	95	77	0.348	0.282
0.630	1.58 × 10 ⁻¹	0.670	0.684	75	61	0.217	0.176
0.710	2.54 × 10 ⁻¹	0.752	0.767	59	48	0.134	0.109
0.750	3.16 × 10 ⁻¹	0.793	0.809	53	43	0.108	0.0878
0.800	4.10 × 10 ⁻¹	0.845	0.861	47	38	0.0843	0.0682
0.850	5.22 × 10 ⁻¹	0.896	0.913	42	34	0.0667	0.0540
0.900	6.56 × 10 ⁻¹	0.947	0.965	37	30	0.0524	0.0425
0.950	8.15 × 10 ⁻¹	0.998	1.02	33	27	0.0420	0.0343
1.00	1.00	1.05	1.07	30	24	0.0344	0.0276
1.06	1.26	1.11	1.13	27	22	0.0276	0.0225
1.12	1.57	1.17	1.19	24	21	0.0220	0.0192
1.18	1.94	1.23	1.25	21	21	0.0173	0.0173
1.25	2.44	1.30	1.33	21	12	0.0154	0.00882
1.32	3.04	1.37	1.40	12	12	0.00791	0.00791
1.40	3.84	1.45	1.48	12	12	0.00703	0.00703
1.50	5.06	1.56	1.58	10	10	0.00510	0.00510
1.60	6.55	1.66	1.68	10	10	0.00448	0.00448

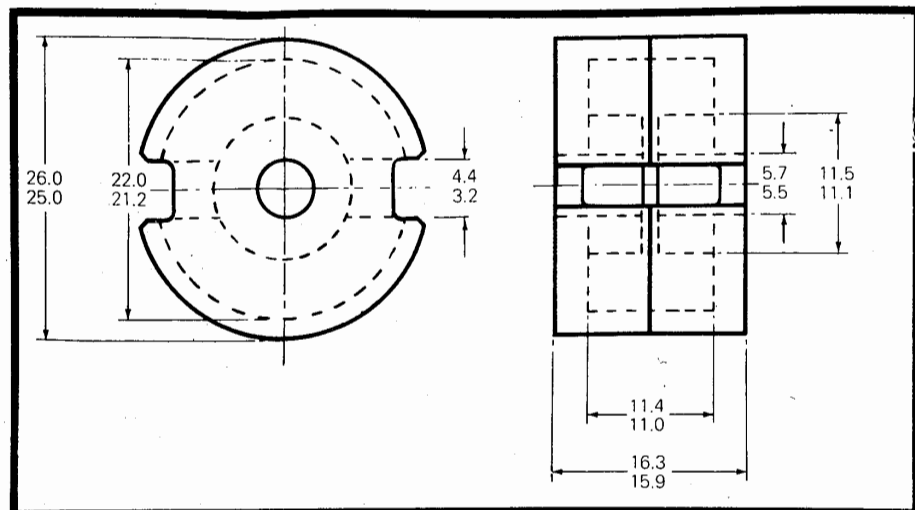
ELECTRICAL AND MAGNETIC DESIGN DATA FOR A PAIR OF CORES

Parameter	Symbol	Freq. (kHz)	Temperature (°C)	Value FX2240(A5)
Effective permeability	μ_e	< 10	+25 to +70	1200 to 2370
			-10 to +70	990 to 2370
Turns factor (Turns for 1mH)	α	< 10	+25 to +70	15.49 to 11.02
			-10 to +70	17.06 to 11.02
Inductance factor (L nH for 1 turn)	A_L	< 10	+25 to +70	4166 to 8227
			-10 to +70	3437 to 8227
Residual plus eddy current core loss factor	$\frac{\tan \delta_{r+F}}{\mu_e}$	100	25	$< 22 \times 10^{-6}$
Hysteresis loss factor at $\hat{B}_e = 1\text{mT}$	$\frac{\tan \delta_h}{\mu_e}$	4		$< 1.7 \times 10^{-6}$
Parallel resistance factor (Ω for 1 turn)	R_p/N^2	100		> 99

Notes:

- Except for hysteresis loss factor, the above parameters are measured at an effective flux density of $\hat{B}_e < 0.1\text{mT}$.
- Hysteresis factor, $F_h = \frac{2\pi \tan \delta_h}{I\sqrt{L}}$
where I = r.m.s. current in amperes and L = inductance in henrys.
- For symbols and definitions see data sheet LINEAR FERRITE MATERIALS.
- Measured with a clamping force of 44 newtons.

Transformer Pot Cores IEC 26 × 16



General Description

These transformer pot cores comply with IEC Publication 133 and also satisfy the requirements of British Standard BS 4061 Range 2 and German Standard DIN 41293. Cores are normally supplied un-gapped but they can also be supplied gapped to a specified A_L value. Typical examples are given in the Electrical Specification.

All information below is given for a pair of pot cores.

Effective Geometric Parameters

Parameter	Symbol	Value
Effective magnetic path length	l_e	37.5 mm
Effective area of magnetic path	A_e	94 mm ²
Effective volume	V_e	3520 mm ³
$\sum \frac{l}{A}$	C_1	0.400 mm ⁻¹

Electrical Specification Grade P10

Part Number	Total approximate air gap (mm)	A_L value (nH)	Nominal effective permeability μ_e
29-601-40	zero	4900 -20% + 30%	1560
29-602-40	0.1	1000 $\pm 10\%$	318
29-603-40	0.15	630 $\pm 5\%$	200
29-604-40	0.25	400 $\pm 5\%$	127

Transformer Pot Cores IEC 26 × 16

Electrical Specification Grade F4

Part Number	Total approximate air gap (mm)	A_L value (nH)	Nominal effective permeability μ_e
29-601-45	Zero	6000 -20% +30%	1910

Cores are always supplied in pairs. The A_L values are measured with a pair of pot cores subjected to a clamping force of 100 newtons. μ_e is calculated by the formula,

$$\mu_e = 0.318 A_L \text{ (nH)}$$

Number of Turns –

The number of turns required for an inductance L can be calculated from the formula,

$$n = 1000 \sqrt{\frac{L}{A_L}}$$

where L is in mH
 A_L is in nH.

Part Numbers

As specified in Electrical Data.

Material

Ferrite P10 (see page 28)
F4 (see page 27)

Ordering Information

Pot core pairs –

State the part number. If not tabulated, state the A_L value; a seven-digit number will be advised on the order acknowledgement.

Coil formers –

(see page 164 for details)

Single section –

Part number **60-601-72**

Double section –

Part number **60-602-72**