DATA SHEET

E22/6/16
Planar E cores and accessories

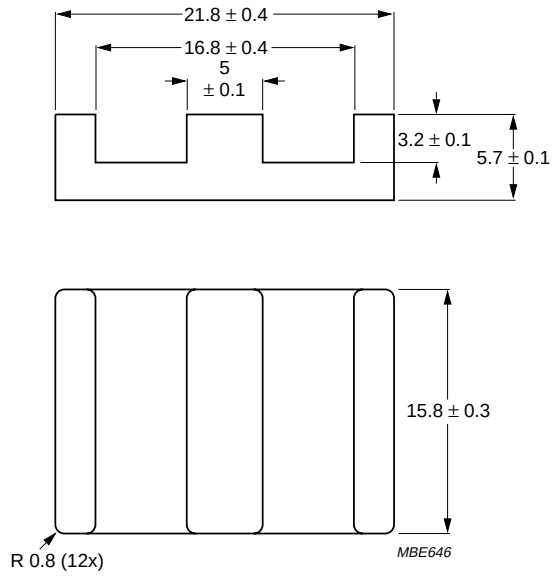
Supersedes data of February 2002 2004 Sep 01

FERROXCUBE
A YAGEO COMPANY

CORES

Effective core parameters of a set of E cores

SYMBOL	PARAMETER	VALUE	UNIT
Σ(l/A)	core factor (C1)	0.414	mm^{-1}
V_e	effective volume	2550	mm^3
l_e	effective length	32.5	mm
A_e	effective area	78.3	mm^2
A_{min}	minimum area	78.3	mm^2
m	mass of core half	≈ 6.5	g



Dimensions in mm.

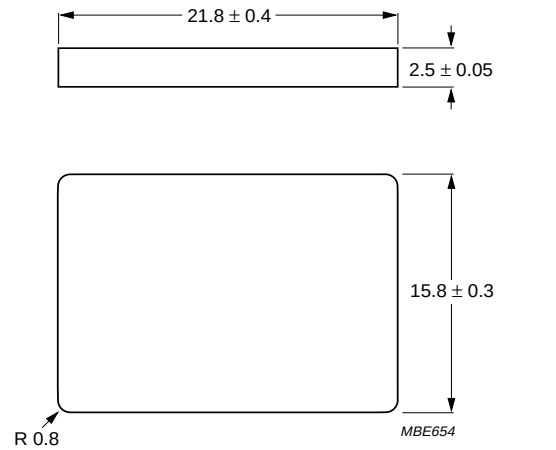
Fig.1 E22/6/16.

Effective core parameters of an E/PLT combination

SYMBOL	PARAMETER	VALUE	UNIT
Σ(l/A)	core factor (C1)	0.332	mm^{-1}
V_e	effective volume	2040	mm^3
l_e	effective length	26.1	mm
A_e	effective area	78.5	mm^2
A_{min}	minimum area	78.5	mm^2
m	mass of plate	≈ 4	g

Ordering information for plates

GRADE	TYPE NUMBER
3C90	PLT22/16/2.5-3C90
3C92 des	PLT22/16/2.5-3C92
3C93 des	PLT22/16/2.5-3C93
3C94	PLT22/16/2.5-3C94
3C96 des	PLT22/16/2.5-3C96
3F3	PLT22/16/2.5-3F3
3F35 prot	PLT22/16/2.5-3F35
3F4 des	PLT22/16/2.5-3F4
3F45 prot	PLT22/16/2.5-3F45
3E6	PLT22/16/2.5-3E6



Dimensions in mm.

Fig.2 PLT22/16/2.5.

Core halves for use in combination with an non-gapped E core

A_L measured in combination with a non-gapped core half, clamping force for A_L measurements, 20 ±10 N, using a PCB coil containing 5 layers of 20 tracks each, total height 2.5 mm.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C90	160 ±3%	≈ 53	≈ 900	E22/6/16-3C90-A160-E
	250 ±3%	≈ 82	≈ 490	E22/6/16-3C90-A250-E
	315 ±3%	≈ 104	≈ 360	E22/6/16-3C90-A315-E
	400 ±5%	≈ 132	≈ 280	E22/6/16-3C90-A400-E
	630 ±8%	≈ 208	≈ 160	E22/6/16-3C90-A630-E
	5150 ±25%	≈ 1700	≈ 0	E22/6/16-3C90
3C92 des	3700 ±25%	≈ 1220	≈ 0	E22/6/16-3C92
3C93 des	4300 ±25%	≈ 1420	≈ 0	E22/6/16-3C93
3C94	160 ±3%	≈ 53	≈ 900	E22/6/16-3C94-A160-E
	250 ±3%	≈ 82	≈ 490	E22/6/16-3C94-A250-E
	315 ±3%	≈ 104	≈ 360	E22/6/16-3C94-A315-E
	400 ±5%	≈ 132	≈ 280	E22/6/16-3C94-A400-E
	630 ±8%	≈ 208	≈ 160	E22/6/16-3C94-A630-E
	5150 ±25%	≈ 1700	≈ 0	E22/6/16-3C94
3C96 des	4600 ±25%	≈ 1520	≈ 0	E22/6/16-3C96
3F3	160 ±3%	≈ 53	≈ 900	E22/6/16-3F3-A160-E
	250 ±3%	≈ 82	≈ 490	E22/6/16-3F3-A250-E
	315 ±3%	≈ 104	≈ 360	E22/6/16-3F3-A315-E
	400 ±5%	≈ 132	≈ 280	E22/6/16-3F3-A400-E
	630 ±8%	≈ 208	≈ 160	E22/6/16-3F3-A630-E
	4300 ±25%	≈ 1420	≈ 0	E22/6/16-3F3
3F35 prot	3500 ±25%	≈ 1160	≈ 0	E22/6/16-3F35
3F4 des	160 ±3%	≈ 53	≈ 900	E22/6/16-3F4-A160-E
	250 ±3%	≈ 82	≈ 490	E22/6/16-3F4-A250-E
	315 ±3%	≈ 104	≈ 360	E22/6/16-3F4-A315-E
	400 ±5%	≈ 132	≈ 280	E22/6/16-3F4-A400-E
	630 ±8%	≈ 208	≈ 160	E22/6/16-3F4-A630-E
	2400 ±25%	≈ 790	≈ 0	E22/6/16-3F4
3F45 prot	2400 ±25%	≈ 790	≈ 0	E22/6/16-3F45
3E6	22000 +40/–30%	≈ 7250	≈ 0	E22/6/16-3E6

Core halves for use in combination with a plate (PLT)

A_L measured in combination with a plate (PLT), clamping force for A_L measurements, 20 ±10 N, using a PCB coil containing 5 layers of 20 tracks each, total height 2.5 mm.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C90	160 ±3%	≈ 42	≈ 950	E22/6/16-A160-P
	250 ±3%	≈ 66	≈ 550	E22/6/16-3C90-A250-P
	315 ±3%	≈ 83	≈ 400	E22/6/16-3C90-A315-P
	400 ±5%	≈ 106	≈ 280	E22/6/16-3C90-A400-P
	630 ±8%	≈ 166	≈ 160	E22/6/16-3C90-A630-P
	6150 ±25%	≈ 1620	≈ 0	E22/6/16-3C90
3C92 des	4410 ±25%	≈ 1170	≈ 0	E22/6/16-3C92
3C93 des	5000 ±25%	≈ 1320	≈ 0	E22/6/16-3C93
3C94	160 ±3%	≈ 42	≈ 950	E22/6/16-3C94-A160-P
	250 ±3%	≈ 66	≈ 550	E22/6/16-3C94-A250-P
	315 ±3%	≈ 83	≈ 400	E22/6/16-3C94-A315-P
	400 ±5%	≈ 106	≈ 280	E22/6/16-3C94-A400-P
	630 ±8%	≈ 166	≈ 160	E22/6/16-3C94-A630-P
	6150 ±25%	≈ 1620	≈ 0	E22/6/16-3C94
3C96 des	5450 ±25%	≈ 1440	≈ 0	E22/6/16-3C96
3F3	160 ±3%	≈ 42	≈ 950	E22/6/16-3F3-A160-P
	250 ±3%	≈ 66	≈ 550	E22/6/16-3F3-A250-P
	315 ±3%	≈ 83	≈ 400	E22/6/16-3F3-A315-P
	400 ±5%	≈ 106	≈ 280	E22/6/16-3F3-A400-P
	630 ±8%	≈ 166	≈ 160	E22/6/16-3F3-A630-P
	5000 ±25%	≈ 1320	≈ 0	E22/6/16-3F3
3F35 prot	4100 ±25%	≈ 1080	≈ 0	E22/6/16-3F35
3F4 des	160 ±3%	≈ 42	≈ 950	E22/6/16-3F4-A160-P
	250 ±3%	≈ 66	≈ 550	E22/6/16-3F4-A250-P
	315 ±3%	≈ 83	≈ 400	E22/6/16-3F4-A315-P
	400 ±5%	≈ 106	≈ 280	E22/6/16-3F4-A400-P
	630 ±8%	≈ 166	≈ 160	E22/6/16-3F4-A630-P
	2900 ±25%	≈ 770	≈ 0	E22/6/16-3F4
3F45 prot	2900 ±25%	≈ 770	≈ 0	E22/6/16-3F45
3E6	26000 +40/–30%	≈ 6900	≈ 0	E22/6/16-3E6

Properties of core sets under power conditions

GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 10 kHz; T = 100 °C	f = 100 kHz; $\hat{B}$ = 100 mT; T = 100 °C	f = 100 kHz; $\hat{B}$ = 200 mT; T = 100 °C	f = 400 kHz; $\hat{B}$ = 50 mT; T = 100 °C	f = 500 kHz; $\hat{B}$ = 50 mT; T = 100 °C
E+E22-3C90	≥320	≤ 0.28	–	–	–
E+PLT22-3C90	≥320	≤ 0.23	–	–	–
E+E22-3C92	≥370	≤ 0.22	≤ 1.5	–	–
E+PLT22-3C92	≥370	≤ 0.18	≤ 1.25	–	–
E+E22-3C93	≥320	≤ 0.22[1]	≤ 1.5[1]	–	–
E+PLT22-3C93	≥320	≤ 0.18[1]	≤ 1.25[1]	–	–
E+E22-3C94	≥320	≤ 0.22	≤ 1.5	–	–
E+PLT22-3C94	≥320	≤ 0.18	≤ 1.25	–	–
E+E22-3C96	≥320	≤ 0.17	≤ 1.1	≤ 0.45	≤ 1.0
E+PLT22-3C96	≥320	≤ 0.14	≤ 1.0	≤ 0.38	≤ 0.75
E+E22-3F3	≥300	≤ 0.28	–	≤ 0.5	–
E+PLT22-3F3	≥300	≤ 0.23	–	≤ 0.40	–
E+E22-3F35	≥300	–	–	≤ 0.25	≤ 0.4
E+PLT22-3F35	≥300	–	–	≤ 0.2	≤ 0.3

1. Measured at 140 °C.

Properties of core sets under power conditions (continued)

GRADE	B (mT) at				
	H = 250 A/m; f = 10 kHz; T = 100 °C	f = 500 kHz; $\hat{B}$ = 100 mT; T = 100 °C	f = 1 MHz; $\hat{B}$ = 30 mT; T = 100 °C	f = 1 MHz; $\hat{B}$ = 50 mT; T = 100 °C	f = 3 MHz; $\hat{B}$ = 10 mT; T = 100 °C
E+E22-3F35	≥300	≤ 3.0	–	–	–
E+PLT22-3F35	≥300	≤ 2.2	–	–	–
E+E22-3F4	≥250	–	≤ 0.8	–	≤ 1.2
E+PLT22-3F4	≥250	–	≤ 0.6	–	≤ 1.0
E+E22-3F45	≥250	–	≤ 0.51	≤ 1.3	≤ 0.9
E+PLT22-3F45	≥250	–	≤ 0.41	≤ 1.1	≤ 0.72

MOUNTING INFORMATION

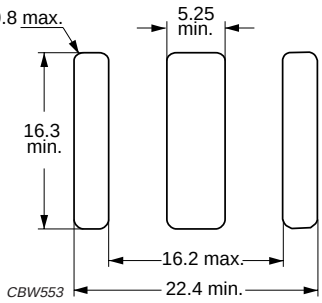


Fig.3 Recommended PCB cut-out for glued cores.

DATA SHEET STATUS DEFINITIONS

DATA SHEET STATUS	PRODUCT STATUS	DEFINITIONS
Preliminary specification	Development	This data sheet contains preliminary data. Ferroxcube reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Product specification	Production	This data sheet contains final specifications. Ferroxcube reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.

DISCLAIMER

Life support applications — These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Ferroxcube customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Ferroxcube for any damages resulting from such application.

PRODUCT STATUS DEFINITIONS

STATUS	INDICATION	DEFINITION
Prototype	prot	These are products that have been made as development samples for the purposes of technical evaluation only. The data for these types is provisional and is subject to change.
Design-in	des	These products are recommended for new designs.
Preferred		These products are recommended for use in current designs and are available via our sales channels.
Support	sup	These products are **not** recommended for new designs and may not be available through all of our sales channels. Customers are advised to check for availability.