DATA SHEET

E14/3.5/5
Planar E cores and accessories

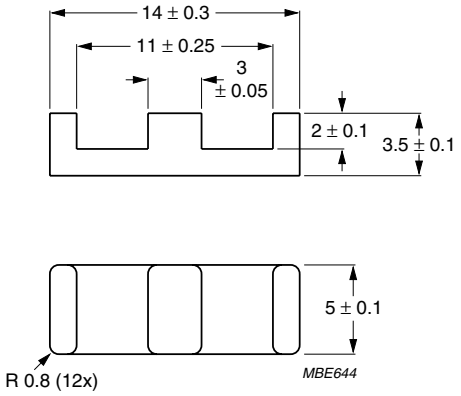
Supersedes data of September 2004 2008 Sep 01

FERROXCUBE
A YAGEO COMPANY

CORES

Effective core parameters of a set of E cores

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	1.43	mm^{-1}
V_e	effective volume	300	mm^3
l_e	effective length	20.7	mm
A_e	effective area	14.3	mm^2
A_{min}	minimum area	14.3	mm^2
m	mass of core half	≈ 0.6	g



Dimensions in mm.

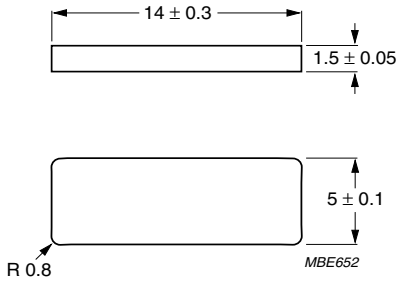
Fig.1 E14/3.5/5 core.

Effective core parameters of an E/PLT combination

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	1.16	mm^{-1}
V_e	effective volume	240	mm^3
l_e	effective length	16.7	mm
A_e	effective area	14.5	mm^2
A_{min}	minimum area	14.5	mm^2
m	mass of plate	≈ 0.5	g

Ordering information for plates

GRADE	TYPE NUMBER
3C90	PLT14/5/1.5-3C90
3C92 des	PLT14/5/1.5-3C92
3C93 des	PLT14/5/1.5-3C93
3C94	PLT14/5/1.5-3C94
3C95 des	PLT14/5/1.5-3C95
3C96 des	PLT14/5/1.5-3C96
3F3	PLT14/5/1.5-3F3
3F35 des	PLT14/5/1.5-3F35
3F4 des	PLT14/5/1.5-3F4
3F45 prot	PLT14/5/1.5-3F45
3E6	PLT14/5/1.5-3E6



Dimensions in mm.

Fig.2 PLT14/5/1.5.

Core halves for use in combination with an ungapped E core

A_L measured in combination with a non-gapped core half, clamping force for A_L measurements, 10 ±5 N, using a PCB coil containing 4 layers of 8 tracks each, total height 1.6 mm.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C90	63 ±3%	≈ 72	≈ 530	E14/3.5/5-3C90-A63-E
	100 ±5%	≈ 114	≈ 270	E14/3.5/5-3C90-A100-E
	160 ±8%	≈ 182	≈ 130	E14/3.5/5-3C90-A160-E
	1280 ±25%	≈ 1450	≈ 0	E14/3.5/5-3C90
3C92 des	960 ±25%	≈ 1090	≈ 0	E14/3.5/5-3C92
3C93 des	1100 ±25%	≈ 1250	≈ 0	E14/3.5/5-3C93
3C94	63 ±3%	≈ 72	≈ 530	E14/3.5/5-3C94-A63-E
	100 ±5%	≈ 114	≈ 270	E14/3.5/5-3C94-A100-E
	160 ±8%	≈ 182	≈ 130	E14/3.5/5-3C94-A160-E
	1280 ±25%	≈ 1450	≈ 0	E14/3.5/5-3C94
3C95 des	1500 ±25%	≈ 1730	≈ 0	E14/3.5/5-3C95
3C96 des	1200 ±25%	≈ 1360	≈ 0	E14/3.5/5-3C96
3F3	63 ±3%	≈ 72	≈ 530	E14/3.5/5-3F3-A63-E
	100 ±5%	≈ 114	≈ 270	E14/3.5/5-3F3-A100-E
	160 ±8%	≈ 182	≈ 130	E14/3.5/5-3F3-A160-E
	1100 ±25%	≈ 1250	≈ 0	E14/3.5/5-3F3
3F35 des	900 ±25%	≈ 1020	≈ 0	E14/3.5/5-3F35
3F4 des	63 ±3%	≈ 72	≈ 530	E14/3.5/5-3F4-A63-E
	100 ±5%	≈ 114	≈ 270	E14/3.5/5-3F4-A100-E
	160 ±8%	≈ 182	≈ 130	E14/3.5/5-3F4-A160-E
	650 ±25%	≈ 740	≈ 0	E14/3.5/5-3F4
3F45 prot	650 ±25%	≈ 740	≈ 0	E14/3.5/5-3F45
3E6	5600 +40/−30%	≈ 6360	≈ 0	E14/3.5/5-3E6

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, 10 ±5 N, using a PCB coil containing 4 layers of 8 tracks each, total height 1.6 mm.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C90	63 ±3%	≈ 58	≈ 600	E14/3.5/5-3C90-A63-P
	100 ±5%	≈ 92	≈ 300	E14/3.5/5-3C90-A100-P
	160 ±8%	≈ 148	≈ 150	E14/3.5/5-3C90-A160-P
	1500 ±25%	≈ 1400	≈ 0	E14/3.5/5-3C90
3C92 des	1130 ±25%	≈ 1040	≈ 0	E14/3.5/5-3C92
3C93 des	1300 ±25%	≈ 1200	≈ 0	E14/3.5/5-3C93
3C94	63 ±3%	≈ 58	≈ 600	E14/3.5/5-3C94-A63-P
	100 ±5%	≈ 92	≈ 300	E14/3.5/5-3C94-A100-P
	160 ±8%	≈ 148	≈ 150	E14/3.5/5-3C94-A160-P
	1500 ±25%	≈1400	≈ 0	E14/3.5/5-3C94
3C95 des	1740 ±25%	≈ 1600	≈ 0	E14/3.5/5-3C95
3C96 des	1350 ±25%	≈ 1260	≈ 0	E14/3.5/5-3C96
3F3	63 ±3%	≈ 58	≈ 600	E14/3.5/5-3F3-A63-P
	100 ±5%	≈ 92	≈ 300	E14/3.5/5-3F3-A100-P
	160 ±8%	≈ 148	≈ 150	E14/3.5/5-3F3-A160-P
	1300 ±25%	≈ 1200	≈ 0	E14/3.5/5-3F3
3F35 des	1050 ±25%	≈ 980	≈ 0	E14/3.5/5-3F35
3F4 des	63 ±3%	≈ 58	≈ 600	E14/3.5/5-3F4-A63-P
	100 ±5%	≈ 92	≈ 300	E14/3.5/5-3F4-A100-P
	160 ±8%	≈ 148	≈ 150	E14/3.5/5-3F4-A160-P
	780 ±25%	≈ 720	≈ 0	E14/3.5/5-3F4
3F45 prot	780 ±25%	≈ 720	≈ 0	E14/3.5/5-3F45
3E6	6400 +40/–30%	≈ 5900	≈ 0	E14/3.5/5-3E6

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 = 25 °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+E14-3C90	≥320	≤ 0.030	–	–	–	–
E+PLT14-3C90	≥320	≤ 0.026	–	–	–	–
E+E14-3C92	≥370	≤ 0.024	–	≤ 0.16	–	–
E+PLT14-3C92	≥370	≤ 0.021	–	≤ 0.15	–	–
E+E14-3C93	≥320	≤ 0.024[1]	–	≤ 0.16[1]	–	–
E+PLT14-3C93	≥320	≤ 0.021[1]	–	≤ 0.15[1]	–	–
E+E14-3C94	≥320	≤ 0.024	–	≤ 0.16	–	–
E+PLT14-3C94	≥320	≤ 0.021	–	≤ 0.15	–	–
E+E14-3C95	≥320	–	≤ 0.17	≤ 0.16	–	–
E+PLT14-3C95	≥320	–	≤ 0.13	≤ 0.12	–	–
E+E14-3C96	≥340	≤ 0.019	–	≤ 0.13	≤ 0.05	≤ 0.11
E+PLT14-3C96	≥340	≤ 0.016	–	≤ 0.12	≤ 0.045	≤ 0.09
E+E14-3F3	≥300	≤ 0.033	–	–	≤ 0.06	–
E+PLT14-3F3	≥300	≤ 0.027	–	–	≤ 0.047	–
E+E14-3F35	≥300	–	–	–	≤ 0.03	≤ 0.05
E+PLT14-3F35	≥300	–	–	–	≤ 0.024	≤ 0.035

1. Measured at 140 °C.

Properties of core sets under power conditions (continued)

GRADE	B (mT) at	CORE LOSS (W) 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+E14-3F35	≥300	≤ 0.35	–	–	–
E+PLT14-3F35	≥300	≤ 0.27	–	–	–
E+E14-3F4	≥250	–	≤ 0.09	–	≤ 0.15
E+PLT14-3F4	≥250	–	≤ 0.07	–	≤ 0.12
E+E14-3F45	≥250	–	≤ 0.07	≤ 0.26	≤ 0.12
E+PLT14-3F45	≥250	–	≤ 0.055	≤ 0.2	≤ 0.095

MOUNTING INFORMATION

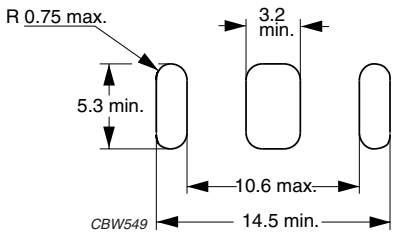
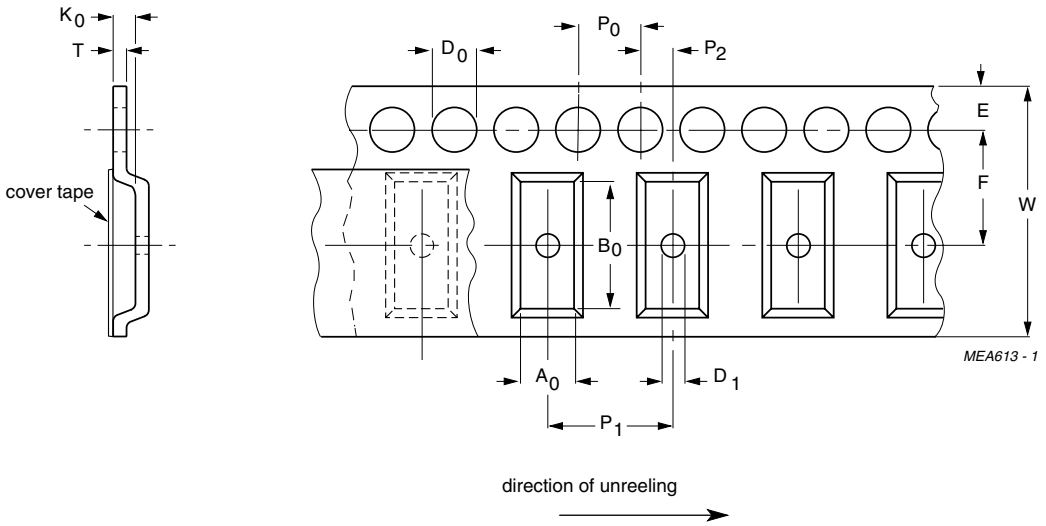


Fig.3 Recommended PCB cut-out for glued planar E14/3.5/5 cores.

BLISTER TAPE AND REEL DIMENSIONS prot



For dimensions see Table 1.

Fig.4 Blister tape.

Table 1 Physical dimensions of blister tape; see Fig.4

SIZE	DIMENSIONS (mm)
A_0	5.4 ±0.2
B_0	14.6 ±0.2
K_0	4.0 ±0.2
T	0.3 ±0.05
W	24.0 ±0.3
E	1.75 ±0.1
F	11.5 ±0.1
D_0	1.5 +0.1
D_1	≥1.5
P_0	4.0 ±0.1
P_1	8.0 ±0.1
P_2	2.0 ±0.1

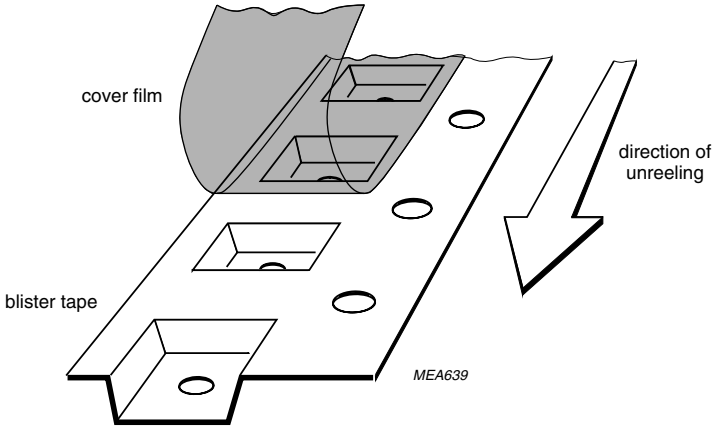
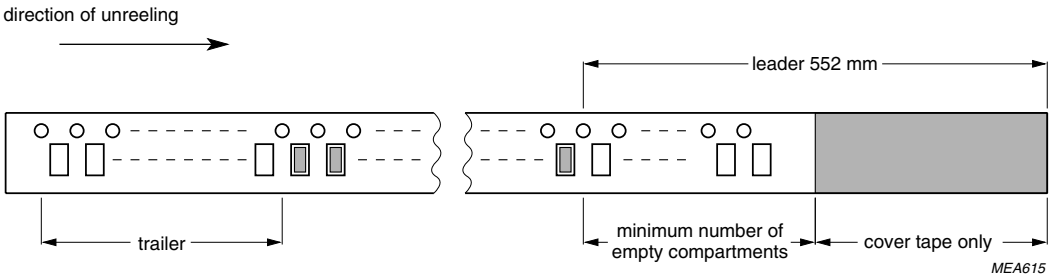
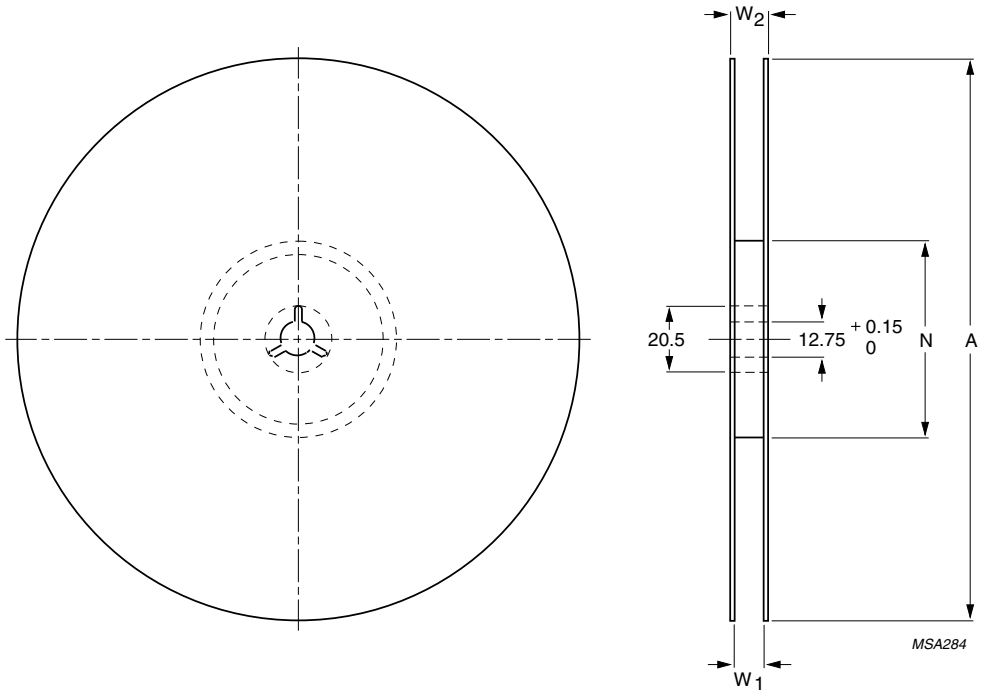


Fig.5 Construction of blister tape.



Leader: length of leader tape is 552 mm minimum covered with cover tape.
Trailer: 160 mm minimum (secured with tape).
Storage temperature range for tape: −25 to +45 °C.

Fig.6 Leader/trailer tape.



Dimensions in mm.
For dimensions see Table 2.

Fig.7 Reel.

Table 2 Reel dimensions; see Fig.7

SIZE	DIMENSIONS (mm)			
	A	**N**	**W_1**	**W_2**
24	330	100 ±5	24.4	≤28.4

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.