DATA SHEET

EQ30
EQ cores and accessories

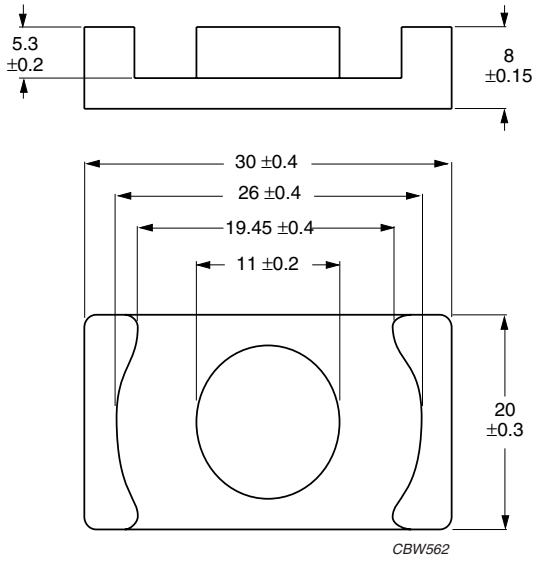
Supersedes data of September 2004 2008 Sep 01

FERROXCUBE
A YAGEO COMPANY

CORES

Effective core parameters of a set of EQ cores

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.426	mm^{-1}
V_e	effective volume	4970	mm^3
l_e	effective length	46.0	mm
A_e	effective area	108	mm^2
A_{min}	minimum area	95.0	mm^2
m	mass of core half	≈ 13.2	g



Dimensions in mm.

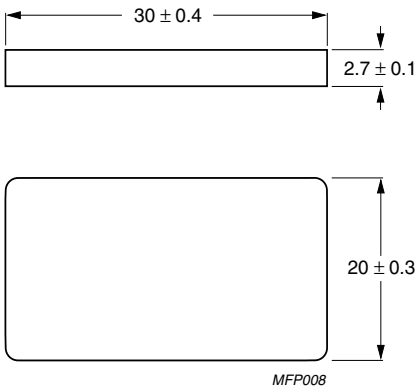
Fig.1 EQ30 core.

Effective core parameters of an EQ/PLT combination

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.335	mm^{-1}
V_e	effective volume	3910	mm^3
l_e	effective length	36.2	mm
A_e	effective area	108	mm^2
A_{min}	minimum area	95.0	mm^2
m	mass of plate	≈ 7.6	g

Ordering information for plates

GRADE	TYPE NUMBER
3C94	PLT30/20/3-3C94
3C95 des	PLT30/20/3-3C95
3C96 des	PLT30/20/3-3C96
3F35 des	PLT30/20/3-3F35
3F4 des	PLT30/20/3-3F4
3F45 prot	PLT30/20/3-3F45



Dimensions in mm.

Fig.2 PLT30/20/3.

Core halves for use in combination with an EQ core

A_L measured in combination with a non-gapped core half, clamping force for A_L measurements, 40 ± 20 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C94	5400 ± 25 %	≈ 1830	≈ 0	EQ30-3C94
3C95 des	6630 ± 25 %	≈ 2250	≈ 0	EQ30-3C95
3C96 des	4900 ± 25 %	≈ 1660	≈ 0	EQ30-3C96
3F35 des	3600 ± 25 %	≈ 1220	≈ 0	EQ30-3F35
3F4 des	2400 ± 25 %	≈ 814	≈ 0	EQ30-3F4
3F45 prot	2400 ± 25 %	≈ 814	≈ 0	EQ30-3F45

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, 40 ± 20 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C94	6550 ± 25 %	≈ 1750	≈ 0	EQ30-3C94
3C95 des	7960 ± 25 %	≈ 2120	≈ 0	EQ30-3C95
3C96 des	6000 ± 25 %	≈ 1600	≈ 0	EQ30-3C96
3F35 des	4600 ± 25 %	≈ 1225	≈ 0	EQ30-3F35
3F4 des	3200 ± 25 %	≈ 853	≈ 0	EQ30-3F4
3F45 prot	3200 ± 25 %	≈ 853	≈ 0	EQ30-3F45

Properties of core sets under power conditions

CORE COMBINATION	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 = 500 kHz; $\hat{B}$ = 50 mT; T = 100 °C
EQ+EQ30-3C94	≥ 320	≤ 0.45	–	≤ 3.0	–
EQ+PLT30-3C94	≥ 320	≤ 0.35	–	≤ 2.3	–
EQ+EQ30-3C95	≥ 320	–	≤ 2.93	≤ 2.78	–
EQ+PLT30-3C95	≥ 320	–	≤ 2.3	≤ 2.2	–
EQ+EQ30-3C96	≥ 340	≤ 0.34	–	≤ 2.3	≤ 1.9
EQ+PLT30-3C96	≥ 340	≤ 0.23	–	≤ 1.7	≤ 1.4
EQ+EQ30-3F35	≥ 300	–	–	–	≤ 0.67
EQ+PLT30-3F35	≥ 300	–	–	–	≤ 0.52

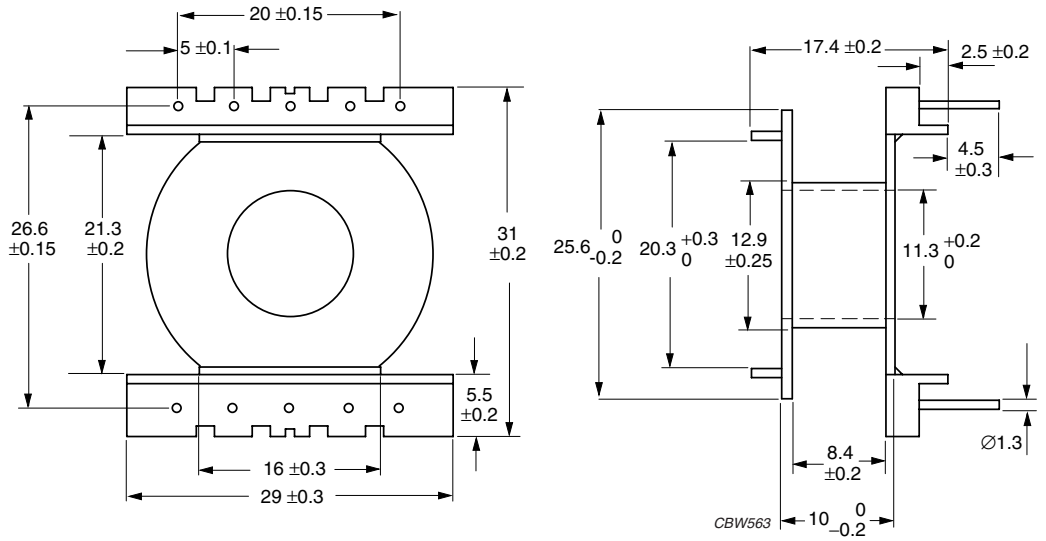
Properties of core sets under power conditions (continued)

CORE COMBINATION	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
EQ+EQ30-3F35	≥ 300	≤ 5.2	–	–	–
EQ+PLT30-3F35	≥ 300	≤ 4.1	–	–	–
EQ+EQ30-3F4	≥ 300	–	≤ 1.5	–	≤ 2.4
EQ+PLT30-3F4	≥ 300	–	≤ 1.17	–	≤ 1.9
EQ+EQ30-3F45	≥ 300	–	≤ 1.15	≤ 4.3	≤ 2.0
EQ+PLT30-3F45	≥ 300	–	≤ 0.9	≤ 3.4	≤ 1.55

COIL FORMERS

General data

PARAMETER	SPECIFICATION
Coil former material	phenolformaldehyde (PF), glass reinforced, flame retardant in accordance with *"UL 94V-0"*; UL file number E41429 (M)
Pin material	copper-clad steel, tin (Sn) plated
Maximum operating temperature	180 °C, *"IEC 60085"*, class H
Resistance to soldering heat	*"IEC 60068-2-20"*, Part 2, Test Tb, method 1B: 350 °C, 3.5 s
Solderability	*"IEC 60068-2-20"*, Part 2, Test Ta, method 1: 235 °C, 2 s



Dimensions in mm.

Fig. 3 EQ30 coil former; 10-pins.

Winding data and area product for EQ30 coil former with 10 pins

NUMBER OF SECTIONS	WINDING AREA (mm^2)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm^4)	TYPE NUMBER
1	52.0	8.2	60	5620	CSV-EQ30-1S-10P

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.

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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.