

# DATA SHEET

**ER9.5/2.5/5**

**Planar ER cores and accessories**

Supersedes data of September 2004

2008 Sep 01

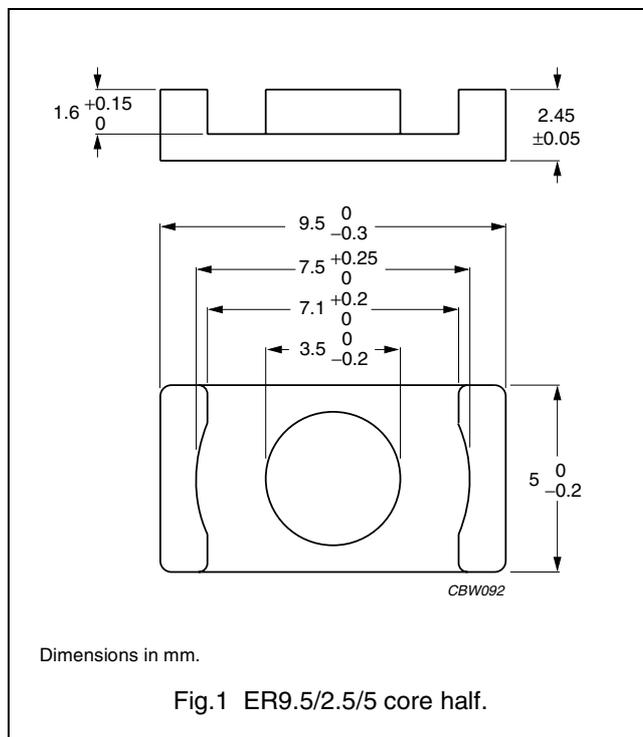


**FERROXCUBE**  
A YAGEO COMPANY

**CORE SETS**

**Effective core parameters**

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	1.67	mm <sup>-1</sup>
$V_e$	effective volume	120	mm <sup>3</sup>
$l_e$	effective length	14.2	mm
$A_e$	effective area	8.47	mm <sup>2</sup>
$A_{min}$	minimum area	7.60	mm <sup>2</sup>
m	mass of core half	≈ 0.35	g



**Core sets for general purpose transformers and power applications**

Clamping force for  $A_L$  measurements, 10 ± 5 N.

GRADE	$A_L$ (nH)	$\mu_e$	AIR GAP (μm)	TYPE NUMBER
3C92 <span style="background-color: black; color: white; padding: 0 2px;">des</span>	750 ±25%	≈ 1000	≈ 0	ER9.5/2.5/5-3C92-S
3C93 <span style="background-color: black; color: white; padding: 0 2px;">des</span>	850 ±25%	≈ 1130	≈ 0	ER9.5/2.5/5-3C93-S
3C94	63 ±3%	≈ 84	≈ 200	ER9.5/2.5/5-3C94-A63-S
	100 ±5%	≈ 133	≈ 120	ER9.5/2.5/5-3C94-A100-S
	160 ±8%	≈ 213	≈ 70	ER9.5/2.5/5-3C94-A160-S
	1000 ±25%	≈ 1330	≈ 0	ER9.5/2.5/5-3C94-S
3C95 <span style="background-color: black; color: white; padding: 0 2px;">des</span>	1150 ±25%	≈ 1540	≈ 0	ER9.5/2.5/5-3C95-S
3C96 <span style="background-color: black; color: white; padding: 0 2px;">des</span>	900 ±25%	≈ 1200	≈ 0	ER9.5/2.5/5-3C96-S
3F3	63 ±3%	≈ 84	≈ 200	ER9.5/2.5/5-3F3-A63-S
	100 ±5%	≈ 133	≈ 120	ER9.5/2.5/5-3F3-A100-S
	160 ±8%	≈ 213	≈ 70	ER9.5/2.5/5-3F3-A160-S
	850 ±25%	≈ 1130	≈ 0	ER9.5/2.5/5-3F3-S
3F35 <span style="background-color: black; color: white; padding: 0 2px;">des</span>	700 ±25%	≈ 930	≈ 0	ER9.5/2.5/5-3F35-S
3F4 <span style="background-color: black; color: white; padding: 0 2px;">des</span>	40 ±3%	≈ 53	≈ 340	ER9.5/2.5/5-3F4-A40-S
	63 ±5%	≈ 84	≈ 190	ER9.5/2.5/5-3F4-A63-S
	100 ±5%	≈ 133	≈ 100	ER9.5/2.5/5-3F4-A100-S
	525 ±25%	≈ 700	≈ 0	ER9.5/2.5/5-3F4-S
3F45 <span style="background-color: black; color: white; padding: 0 2px;">prot</span>	525 ±25%	≈ 700	≈ 0	ER9.5/2.5/5-3F45-S

## Planar ER cores and accessories

ER9.5/2.5/5

**Core sets of high permeability grades**Clamping force for  $A_L$  measurements,  $10 \pm 5$  N.

GRADE	$A_L$ (nH)	$\mu_e$	AIR GAP ( $\mu\text{m}$ )	TYPE NUMBER
3E5	3600 +40/-30%	$\approx 4800$	$\approx 0$	ER9.5/2.5/5-3E5-S
3E6	4800 +40/-30%	$\approx 6400$	$\approx 0$	ER9.5/2.5/5-3E6-S

**Properties of core sets under power conditions**

GRADE	B (mT) at	CORE LOSS (W) at				
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 100 kHz; B = 100 mT; T = 100 °C	f = 100 kHz; B = 200 mT; T = 25 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C	f = 500 kHz; B = 50 mT; T = 100 °C
3C92	$\geq 370$	$\leq 0.011$	–	$\leq 0.072$	–	–
3C93	$\geq 320$	$\leq 0.011^{(1)}$	–	$\leq 0.072^{(1)}$	–	–
3C94	$\geq 320$	$\leq 0.011$	–	$\leq 0.072$	–	–
3C95	$\geq 320$	–	$\leq 0.07$	$\leq 0.07$	–	–
3C96	$\geq 340$	$\leq 0.0085$	–	$\leq 0.058$	$\leq 0.018$	$\leq 0.045$
3F3	$\geq 300$	$\leq 0.015$	–	–	$\leq 0.025$	–
3F35	$\geq 300$	–	–	–	$\leq 0.011$	$\leq 0.016$
3F4	$\geq 250$	–	–	–	–	–

1. Measured at 140 °C.

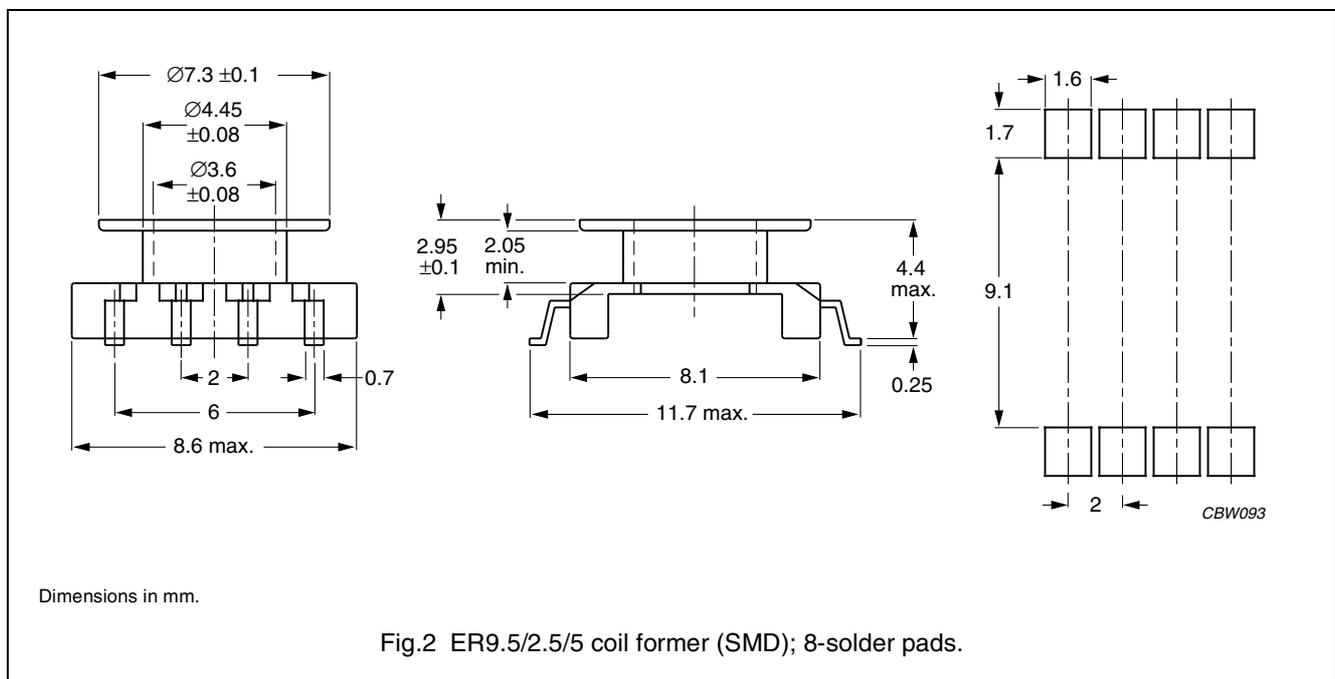
**Properties of core sets under power conditions (continued)**

GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 500 kHz; B = 100 mT; T = 100 °C	f = 1 MHz; B = 30 mT; T = 100 °C	f = 1 MHz; B = 50 mT; T = 100 °C	f = 3 MHz; B = 10 mT; T = 100 °C
3F35	$\geq 300$	$\leq 0.13$	–	–	–
3F4	$\geq 250$	–	$\leq 0.036$	–	$\leq 0.056$
3F45	$\geq 250$	–	$\leq 0.027$	$\leq 0.1$	$\leq 0.048$

**COIL FORMERS**

**General data**

PARAMETER	SPECIFICATION
Coil former material	liquid crystal polymer (LCP), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E54705(M)
Pin material	copper-tin alloy (CuSn), tin (Sn) plated
Maximum operating temperature	155 °C, "IEC 60085", class F
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



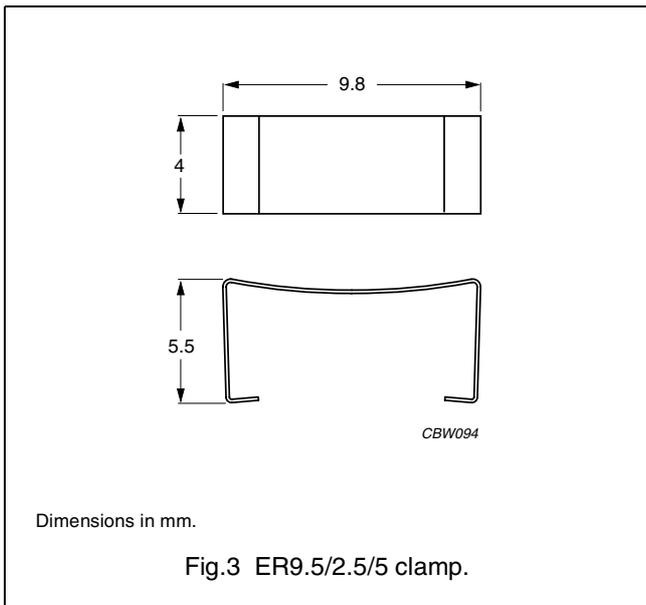
**Winding data and area product for ER9.5/2.5/5 coil former (SMD) with 8 solder pads**

NUMBER OF SECTIONS	WINDING AREA (mm <sup>2</sup> )	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm <sup>4</sup> )	TYPE NUMBER
1	2.8	2.05	18.4	23.7	CPVS-ER9.5-1S-8P-Z

**MOUNTING PARTS**

**General data and ordering information**

ITEM	REMARKS	FIGURE	TYPE NUMBER
Clamp	stainless steel (CrNi); clamping force $\approx$ 20 N	3	CLM-ER9.5



**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
<b>Prototype</b>		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.
<b>Design-in</b>		These products are recommended for new designs.
<b>Preferred</b>		These products are recommended for use in current designs and are available via our sales channels.
<b>Support</b>		These products are <b>not</b> recommended for new designs and may not be available through all of our sales channels. Customers are advised to check for availability.