



Ferrites and accessories

E 16/8/5 (EF 16)
Core and accessories

Series/Type: B66307, B66308
Date: September 2006

E 16/8/5 (EF 16)

Core

B66307

- To IEC 61246
- E cores with high permeability for common-mode chokes and broadband applications
- Delivery mode: single units

Magnetic characteristics (per set)

$$\Sigma l/A = 1.87 \text{ mm}^{-1}$$

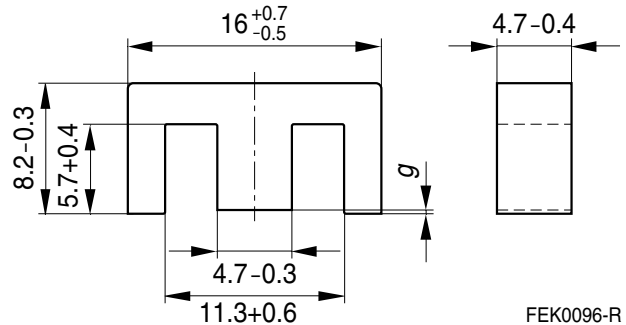
$$l_e = 37.6 \text{ mm}$$

$$A_e = 20.1 \text{ mm}^2$$

$$A_{\min} = 19.4 \text{ mm}^2$$

$$V_e = 756 \text{ mm}^3$$

Approx. weight 3.6 g/set



Ungapped

Material	A_L -Wert nH	μ_e	P_V W/set	Ordering code
N30	1400 +30/-20%	2080		B66307G0000X130
T46	5100 ±30%	7590		B66307F0000X146
N27	950 +30/-20%	1410	< 0.14 (200 mT, 25 kHz, 100 °C)	B66307G0000X127
N87	1000 +30/-20%	1490	< 0.36 (200 mT, 100 kHz, 100 °C)	B66307G0000X187

Gapped

Material	g mm	A_L value approx. nH	μ_e	Ordering code ** = 27 (N27) = 87 (N87)
N27,	0.06 ±0.01	303	450	B66307G0060X1**
N87	0.10 ±0.02	212	315	B66307G0100X1**
	0.50 ±0.05	69	102	B66307G0500X1**

The A_L value in the table applies to a core set comprising one ungapped core (dimension $g = 0$) and one gapped core (dimension $g > 0$).

Calculation factors (for formulas, see “*E cores: general information*”)

Material	Relationship between air gap – A_L value		Calculation of saturation current			
	K1 (25 °C)	K2 (25 °C)	K3 (25 °C)	K4 (25 °C)	K3 (100 °C)	K4 (100 °C)
N27	42.2	–0.701	57.0	–0.847	52.1	–0.865
N87	42.2	–0.701	57.8	–0.796	50.4	–0.873

Validity range: K1, K2: 0.05 mm < s < 1.50 mm
 K3, K4: 30 nH < A_L < 330 nH

Coil former (magnetic axis horizontal or vertical)

Material: GFR polyterephthalate (UL 94 V-0, insulation class to IEC 60085:

F $\triangleq$ max. operating temperature 155 °C), color code black

Valox 420-SE0® [E45329 (M)], GE PLASTICS B V

Solderability: to IEC 60068-2-20, test Ta, method 1 (aging 3): 235 °C, 2 s

Resistance to soldering heat: to IEC 60068-2-20, test Tb, method 1B: 350 °C, 3.5 s

Winding: see Data Book 2007, chapter "Processing notes, 2.1"

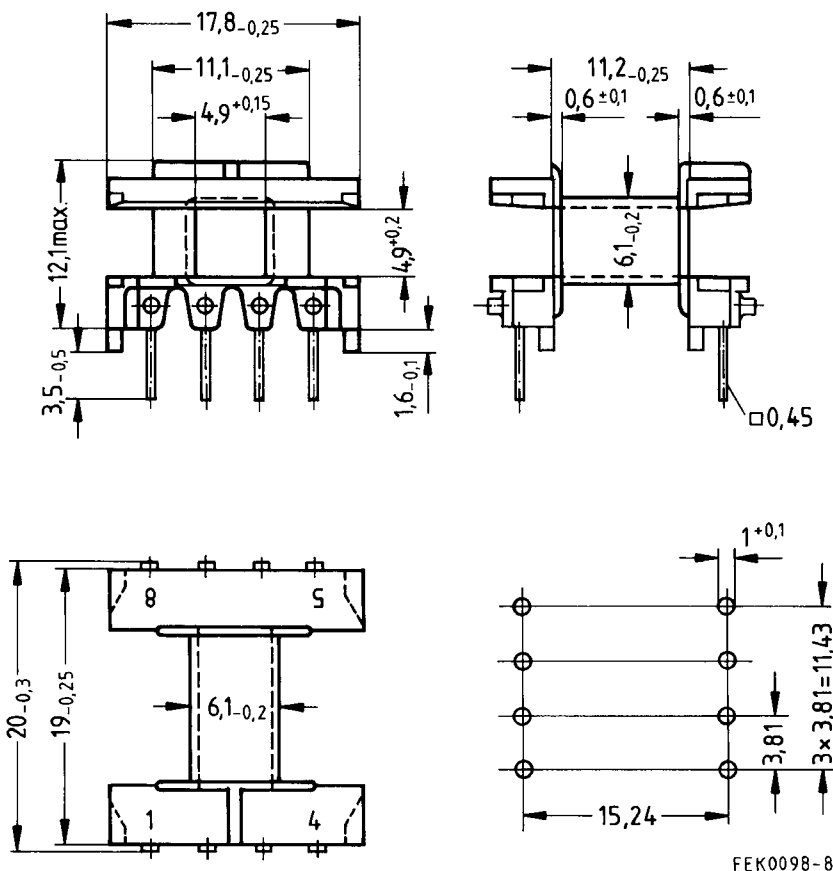
Squared pins.

Yoke

Material: Stainless spring steel (0.2 mm)

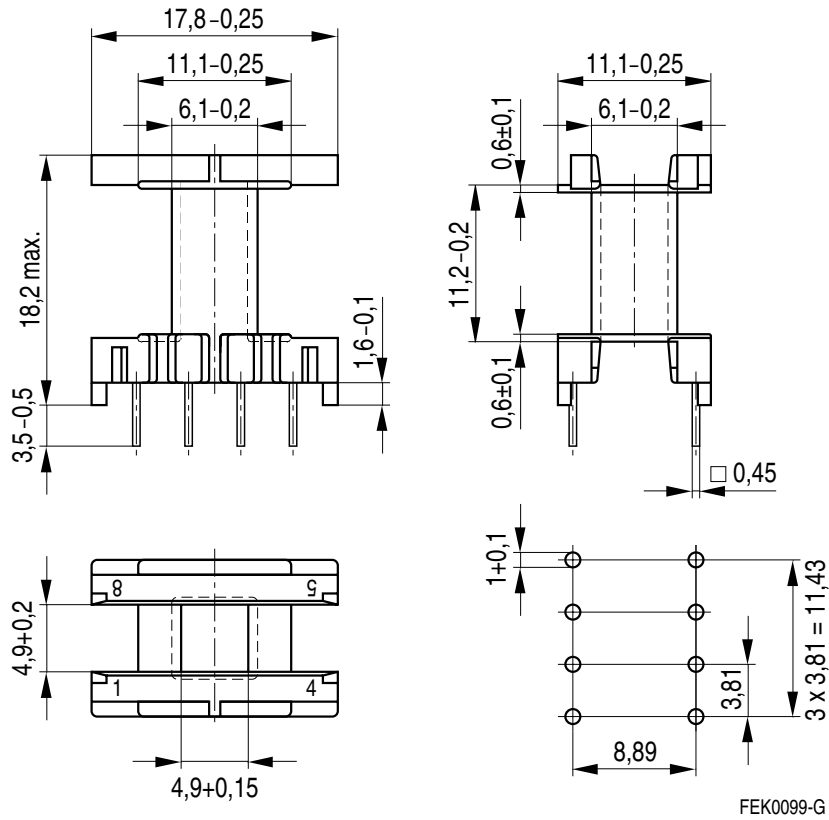
Coil former						Ordering code
Version	Sections	A _N mm ²	l _N mm	A _R value μΩ	Pins	
Horizontal	1	22.3	34	52.4	8	B66308A1108T001
Vertical	1	22.3	34	52.4	8	B66308J1108T001
Yoke (ordering code per piece, 2 are required)						B66308A2010X000

Horizontal version



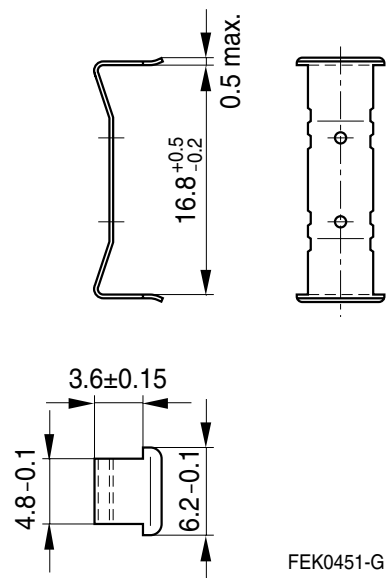
Hole arrangement
View in mounting direction

Vertical version



Hole arrangement
View in mounting direction

Yoke



Ferrites and accessories

Cautions and warnings

Mechanical stress and mounting

Ferrite cores have to meet mechanical requirements during assembling and for a growing number of applications. Since ferrites are ceramic materials one has to be aware of the special behavior under mechanical load.

As valid for any ceramic material, ferrite cores are brittle and sensitive to any shock, fast changing or tensile load. Especially high cooling rates under ultrasonic cleaning and high static or cyclic loads can cause cracks or failure of the ferrite cores.

For detailed information see Data Book 2007, chapter "General – Definitions, 8.1".

Effects of core combination on A_L value

Stresses in the core affect not only the mechanical but also the magnetic properties. It is apparent that the initial permeability is dependent on the stress state of the core. The higher the stresses are in the core, the lower is the value for the initial permeability. Thus the embedding medium should have the greatest possible elasticity.

For detailed information see Data Book 2007, chapter "General – Definitions, 8.2".

Heating up

Ferrites can run hot during operation at higher flux densities and higher frequencies.

NiZn-materials

The magnetic properties of NiZn-materials can change irreversible in high magnetic fields.

Processing notes

- The start of the winding process should be soft. Else the flanges may be destroyed.
- Too strong winding forces may blast the flanges or squeeze the tube that the cores can no more be mounted.
- Too long soldering time at high temperature (>300 °C) may affect coplanarity or pin arrangement.
- Not following the processing notes for soldering of the J-leg terminals may cause solderability problems at the transformer because of pollution with Sn oxide of the tin bath or burned insulation of the wire. For detailed information see Data Book 2007, chapter "Processing notes, 2.2".
- The dimensions of the hole arrangement have fixed values and should be understood as a recommendation for drilling the printed circuit board. For dimensioning the pins, the group of holes can only be seen under certain conditions, as they fit into the given hole arrangement. To avoid problems when mounting the transformer, the manufacturing tolerances for positioning the customers' drilling process must be considered by increasing the hole diameter.

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