Ferrites and accessories

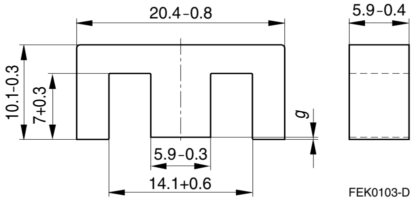
E 20/10/6 (EF 20)
Core and accessories

Series/Type: **B66311, B66206**
Date: November 2009

E 20/10/6 (EF 20)

Core B66311

- To IEC 61246
- Delivery mode: single units



Magnetic characteristics (per set)

$\Sigma l/A$ = 1.44 mm^{-1}
l_e = 46.3 mm
A_e = 32.1 mm^2
A_{min} = 31.9 mm^2
V_e = 1490 mm^3

Approx. weight 7.3 g/set

Ungapped

Material	A_L value nH	μ_e	P_V W/set	Ordering code
N30	2150 +30/–20%	2460		B66311G0000X130
N27	1300 +30/–20%	1490	< 0.27 (200 mT, 25 kHz, 100 °C)	B66311G0000X127
N87	1470 +30/–20%	1680	< 0.75 (200 mT, 100 kHz, 100 °C)	B66311G0000X187

Gapped

Material	g mm	A_L value approx. nH	μ_e	Ordering code ** = 27 (N27) = 87 (N87)
N27, N87	0.09 ±0.01	363	415	B66311G0090X1**
	0.17 ±0.02	227	259	B66311G0170X1**
	0.25 ±0.02	171	195	B66311G0250X1**
	0.50 ±0.05	103	118	B66311G0500X1**

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	61.6	–0.737	88.1	–0.847	80.9	–0.865
N87	61.6	–0.737	88.5	–0.796	78.4	–0.873

Validity range: K1, K2: 0.05 mm < s < 1.50 mm
K3, K4: 50 nH < A_L < 430 nH

Coil former (magnetic axis horizontal or vertical)

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

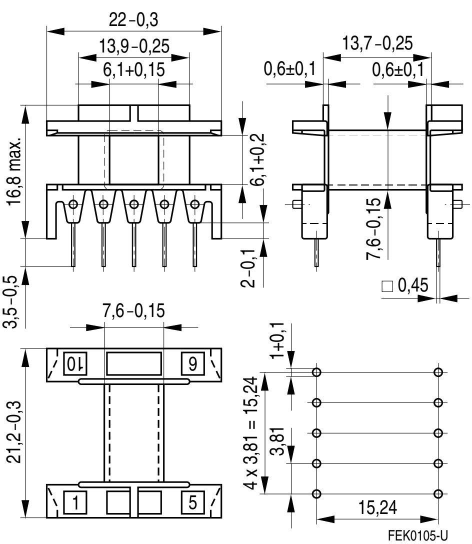
Resistance to soldering heat: to IEC 60068-2-20, test Tb, method 1B: 350 °C, 3.5 s

Winding: see Data Book 2007, chapter “Processing notes, 2.1”

Squared pins. For matching yoke see next page.

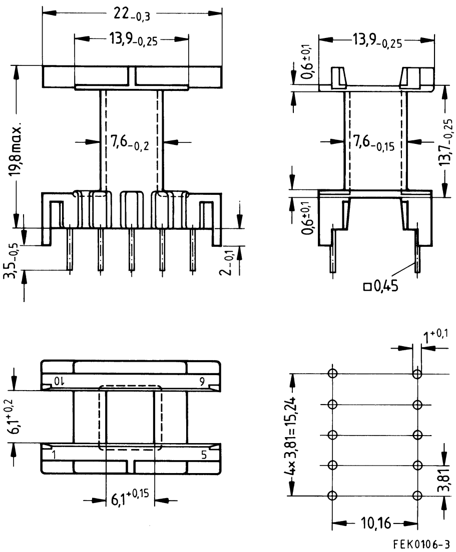
Version	Sections	A_N mm²	l_N mm	A_R value µΩ	Pins	Ordering code
Horizontal	1	34	41.2	42	10	B66206A1110T001
Vertical	1	34	41.2	42	10	B66206J1110T001

Horizontal version



Hole arrangement
View in mounting direction

Vertical version



Hole arrangement
View in mounting direction

Coil former (with right-angle pins)

Material: GFR polyterephthalate (UL 94 V-0, insulation class to IEC 60085:
F ≙ max. operating temperature 155 °C), color code black
Pocan B4235® [E245249 (M)], LANXESS AG

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
Figure	Sections	A_N mm²	l_N mm	A_R value µΩ	Pins	
1	1	34	41.2	42	12	B66206C1012T001
2	1	34	41.2	42	14	B66206C1014T001
3	Yoke (ordering code per piece, 2 are required)					B66206A2010X000

Figure 1, coil former (12 pins)

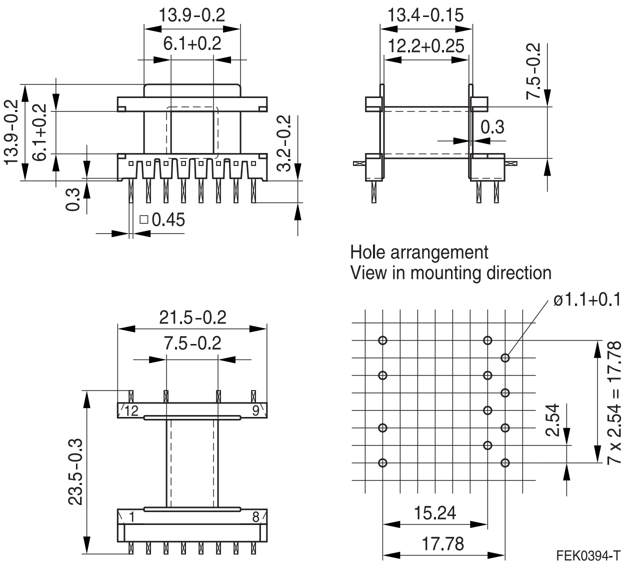


Figure 2, coil former (14 pins)

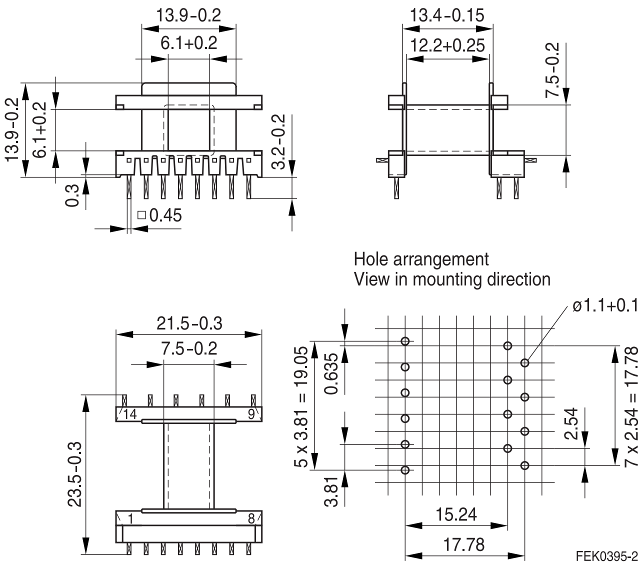
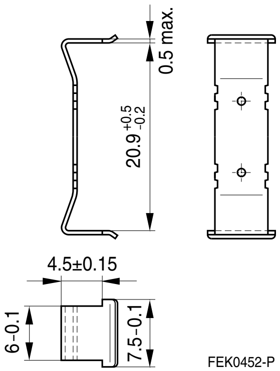


Figure 3, Yoke



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 their special behavior under mechanical load.

Just like any ceramic material, ferrite cores are brittle and sensitive to any shock, fast changing or tensile load. Especially fast cooling rates under ultrasonic cleaning, high static and 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 the value for the initial permeability. Thus, the embedding medium should offer 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 irreversibly when exposed to strong magnetic fields.

Processing notes

– The start of the winding process should be soft. Otherwise, the flanges may be destroyed.

– Excessive winding forces may damage the flanges or squeeze the tube so that the cores can no longer be mounted.

– Excessive 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 contamination with tin oxide (SnO) from the tin bath or burned insulation from the wire. For detailed information see Data Book 2007, chapter "Processing notes, 2.2".

– The dimensions of the pin hole arrangement are fixed and should be understood as an ideal recommendation for drilling the printed circuit board. In order to avoid problems when mounting the transformer, customers should make allowances for manufacturing tolerances in the drilling and pick-and-place processes by increasing the diameter of the pin holes.

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