



## **Ferrites and accessories**

EELP 22, EILP 22  
Core set (with and without clamp recess)

**Series/Type:** B66285G, B66285P, B66455G, B66455P, B65804  
**Date:** September 2006

**Core set EELP 22**
**Combination: ELP 22/6/16 with ELP 22/6/16**

- To IEC 62317-9
- Delivery mode: single units

**Magnetic characteristics (per set)**

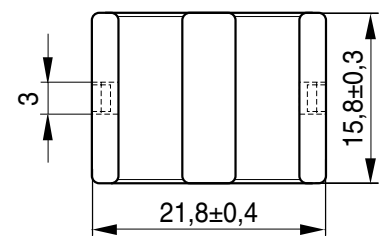
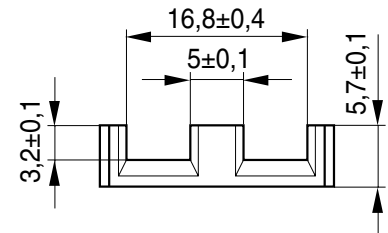
$$\Sigma l/A = 0.41 \text{ mm}^{-1}$$

$$l_e = 32.5 \text{ mm}$$

$$A_e = 78.3 \text{ mm}^2$$

$$A_{\min} = 77.9 \text{ mm}^2$$

$$V_e = 2540 \text{ mm}^3$$

**Approx. weight 13 g/set**
**ELP 22/6/16**


FEK0339-R

**Ungapped**

Material	$A_L$ value nH	$\mu_e$	$P_V$ W/set	Ordering code (per piece)
N49	3100 $\pm$ 25%	1010	< 0.65 ( 50 mT, 500 kHz, 100 °C)	B66285G0000X149
N92	3400 $\pm$ 25%	1110	< 1.65 (200 mT, 100 kHz, 100 °C)	B66285G0000X192
N87	4500 $\pm$ 25%	1470	< 1.50 (200 mT, 100 kHz, 100 °C)	B66285G0000X187
N97	4600 $\pm$ 25%	1520	< 1.20 (200 mT, 100 kHz, 100 °C)	B66285G0000X197

**Calculation factors (for formulas, see “E cores: general information”)**
**EELP 22:**

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)
N87	126	-0.814	232	-0.796	200	-0.873

Validity range: K1, K2: 0.10 mm < s < 1.50 mm  
K3, K4: 100 nH <  $A_L$  < 700 nH

**Core set EILP 22**
**Combination:**
**ELP 22/6/16 with I 22/2.5/16**

- To IEC 62317-9
- Delivery mode: single units

**Magnetic characteristics (per set)**

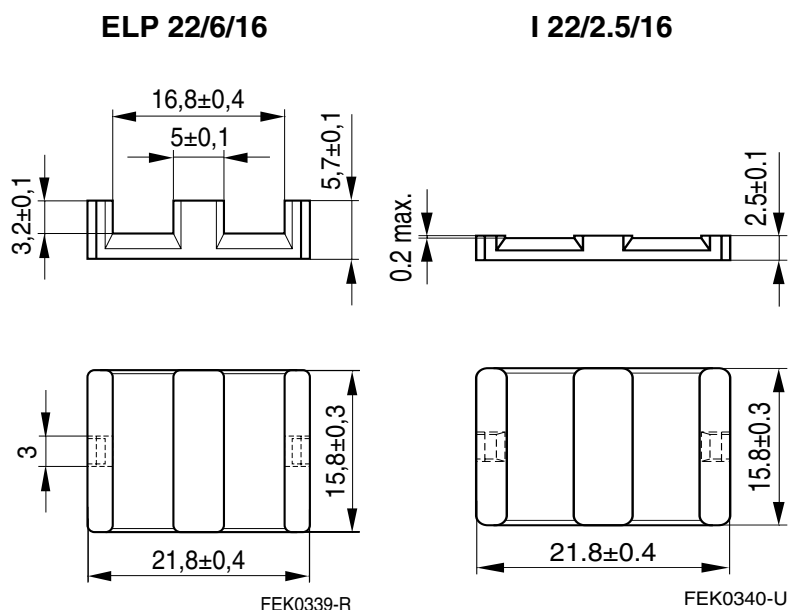
$$\Sigma l/A = 0.33 \text{ mm}^{-1}$$

$$l_e = 26.1 \text{ mm}$$

$$A_e = 78.5 \text{ mm}^2$$

$$A_{\min} = 77.9 \text{ mm}^2$$

$$V_e = 2050 \text{ mm}^3$$

**Approx. weight 10.5 g/set**

**Ungapped**

Material	$A_L$ value nH	$\mu_e$	$P_V$ W/set	Ordering code (per piece)
N49	3700 ±25%	960	< 0.50 ( 50 mT, 500 kHz, 100 °C)	B66285G0000X149 (ELP core) B66285P0000X149 (I core)
N92	4000 ±25%	1050	< 1.38 (200 mT, 100 kHz, 100 °C)	B66285G0000X192 (ELP core) B66285P0000X192 (I core)
N87	5200 ±25%	1360	< 1.25 (200 mT, 100 kHz, 100 °C)	B66285G0000X187 (ELP core) B66285P0000X187 (I core)
N97	5250 ±25%	1390	< 1.00 (200 mT, 100 kHz, 100 °C)	B66285G0000X197 (ELP core) B66285P0000X197 (I core)

**Calculation factors (for formulas, see "E cores: general information")**
**EILP 22:**

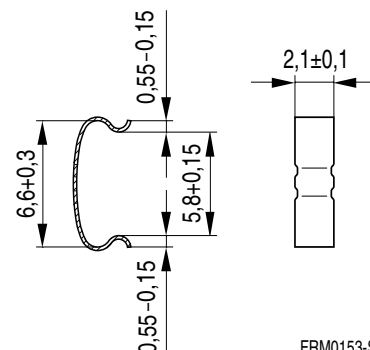
Material	Relationship between air gap – $A_L$ value		Calculation of saturation current			
	K1 (25 °C)	K2 (25 °C)	K3 (25 °C)	K4 (25 °C)	K3 (100 °C)	K4 (100 °C)
N87	134	-0.806	243	-0.796	206	-0.873

Validity range: K1, K2: 0.10 mm < s < 1.50 mm  
K3, K4: 100 nH <  $A_L$  < 700 nH

**Clamp**

Ordering code per piece, 2 pieces required

Ordering code: B65804P2204X000



**Core set EELP 22**
**Combination: ELP 22/6/16 with ELP 22/6/16**

- To IEC 62317-9
- Delivery mode: single units

**Magnetic characteristics (per set)**

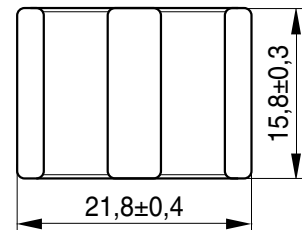
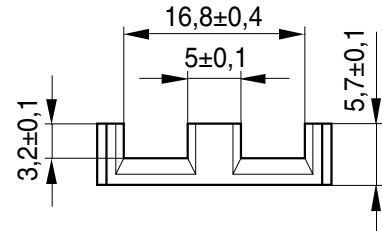
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$$l_e = 32.5 \text{ mm}$$

$$A_e = 78.3 \text{ mm}^2$$

$$A_{\min} = 77.9 \text{ mm}^2$$

$$V_e = 2540 \text{ mm}^3$$

**Approx. weight 13 g/set**
**ELP 22/6/16**


FEK0402-N

**Ungapped**

Material	$A_L$ value nH	$\mu_e$	$P_V$ W/set	Ordering code (per piece)
N49	3100 $\pm$ 25%	1010	< 0.65 ( 50 mT, 500 kHz, 100 °C)	B66455G0000X149
N92	3400 $\pm$ 25%	1110	< 1.65 (200 mT, 100 kHz, 100 °C)	B66455G0000X192
N87	4500 $\pm$ 25%	1470	< 1.50 (200 mT, 100 kHz, 100 °C)	B66455G0000X187
N97	4600 $\pm$ 25%	1520	< 1.20 (200 mT, 100 kHz, 100 °C)	B66455G0000X197

**Calculation factors (for formulas, see “E cores: general information”)**
**EELP 22:**

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)
N87	126	-0.814	232	-0.796	200	-0.873

Validity range:     K1, K2: 0.10 mm < s < 1.50 mm  
                           K3, K4: 100 nH <  $A_L$  < 700 nH

**Core set EILP 22**
**Combination:**
**ELP 22/6/16 with I 22/2.5/16**

- To IEC 62317-9
- Delivery mode: single units

**Magnetic characteristics (per set)**

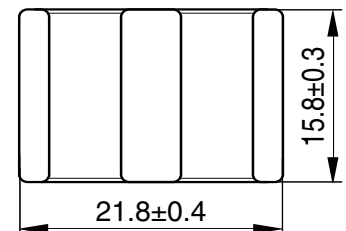
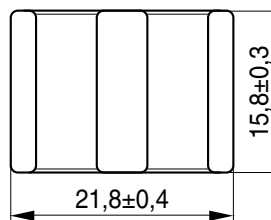
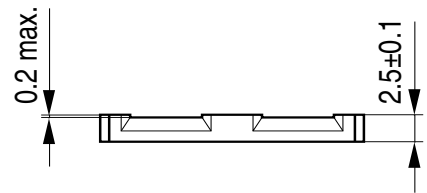
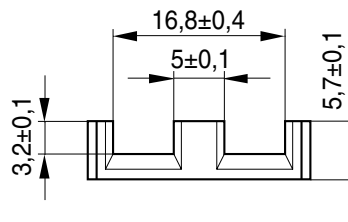
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$$V_e = 2050 \text{ mm}^3$$

**Approx. weight 10.5 g/set**
**ELP 22/6/16**
**I 22/2.5/16**


FEK0402-N

FEK0404-5

**Ungapped**

Material	$A_L$ value nH	$\mu_e$	$P_V$ W/set	Ordering code (per piece)
N49	3700 ±25%	960	< 0.50 ( 50 mT, 500 kHz, 100 °C)	B66455G0000X149 (ELP core) B66455P0000X149 (I core)
N92	4000 ±25%	1050	< 1.38 (200 mT, 100 kHz, 100 °C)	B66455G0000X192 (ELP core) B66455P0000X192 (I core)
N87	5200 ±25%	1360	< 1.25 (200 mT, 100 kHz, 100 °C)	B66455G0000X187 (ELP core) B66455P0000X187 (I core)
N97	5250 ±25%	1390	< 1.00 (200 mT, 100 kHz, 100 °C)	B66455G0000X197 (ELP core) B66455P0000X197 (I core)

**Calculation factors (for formulas, see "E cores: general information")**
**EILP 22:**

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)
N87	134	-0.806	243	-0.796	206	-0.873

Validity range: K1, K2: 0.10 mm < s < 1.50 mm  
K3, K4: 100 nH <  $A_L$  < 700 nH

### **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.
- To strong winding forces may blast the flanges or squeeze the tube that the cores can no more be mount.
- To long soldering time at high temperature (>300 °C) may effect 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 oxyd 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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The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**. As a rule, EPCOS is either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether an EPCOS product with the properties described in the product specification is suitable for use in a particular customer application.
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