



## **Ferrites and accessories**

EP 7  
Core and accessories

**Series/Type:**            **B65839, B65840**  
**Date:**                    September 2006

- To IEC 61596
- For transformers featuring high inductance and low overall height
- For power applications
- Delivery mode: sets

**Magnetic characteristics (per set)**

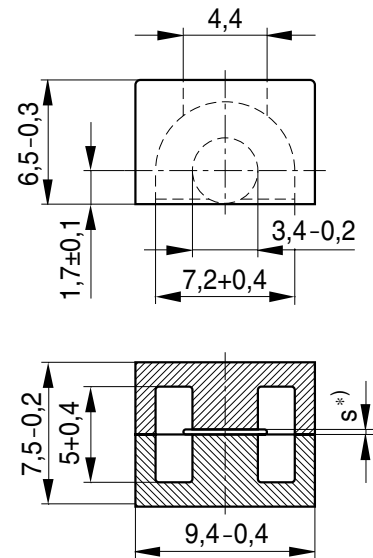
$$\Sigma l/A = 1.52 \text{ mm}^{-1}$$

$$l_e = 15.7 \text{ mm}$$

$$A_e = 10.3 \text{ mm}^2$$

$$A_{\min} = 8.5 \text{ mm}^2$$

$$V_e = 162 \text{ mm}^3$$

**Approx. weight 1.4 g/set**


\*) gapped (one-sided)

FEP0004-T

**Gapped**

Material	$A_L$ value nH	s approx. mm	$\mu_e$	Ordering code
T38	63 ±3%	0.20	76	B65839A0063A038
	100 ±3%	0.13	121	B65839A0100A038
	160 ±5%	0.08	194	B65839A0160J038
	200 ±6%	0.06	243	B65839A0200C038
	250 ±7%	0.05	303	B65839A0250E038
T57	63 ±3%	0.20	76	B65839A0063A057
	100 ±3%	0.13	121	B65839A0100A057
	160 ±5%	0.08	194	B65839A0160J057
	200 ±6%	0.06	243	B65839A0200C057
	250 ±7%	0.05	303	B65839A0250E057
N45	63 ±3%	0.20	76	B65839A0063A045
	100 ±3%	0.13	121	B65839A0100A045
	160 ±5%	0.08	194	B65839A0160J045
	200 ±6%	0.06	243	B65839A0200C045
	250 ±7%	0.05	303	B65839A0250E045
N87	63 ±3%	0.20	76	B65839A0063A087
	100 ±3%	0.12	121	B65839A0100A087
	160 ±5%	0.07	194	B65839A0160J087
	200 ±6%	0.06	243	B65839A0200C087
	250 ±7%	0.05	303	B65839A0250E087

**Ungapped**

Material	A <sub>L</sub> value nH	μ <sub>e</sub>	P <sub>V</sub> W/set	Ordering code
T57	1500 +30/-20%	1820		B65839A0000R057
N45	1500 +30/-20%	1820		B65839A0000R045
N30	2000 +30/-20%	2430		B65839A0000R030
T65	3000 +30/-20%	3640		B65839A0000R065
T38	5200 +40/-30%	6310		B65839A0000Y038
T66	5800 +40/-30%	7040		B65839A0000Y066
N87	1100 +30/-20%	1330	< 0.08 (200 mT, 100 kHz, 100 °C)	B65839A0000R087

**Coil former**

Material: GFR thermosetting plastic (UL 94 V-0, insulation class to IEC 60085: F  $\triangleq$  max. operating temperature 155 °C), color code green  
 Vyncolit/X611® [E167521 (M)], VYNCOLIT NV  
 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"

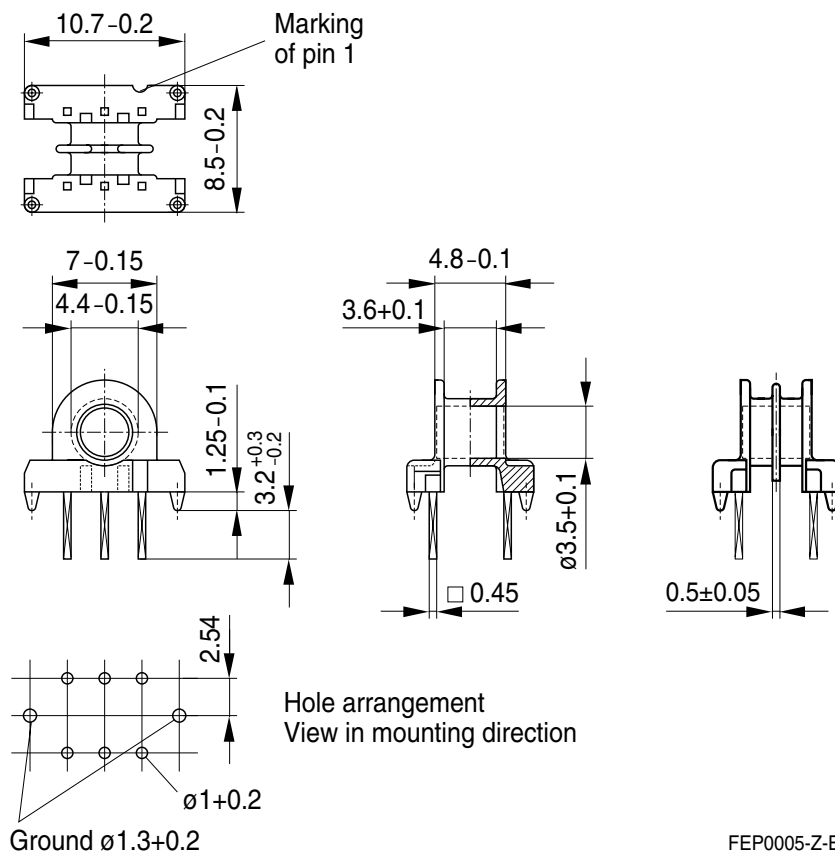
Squared pins.

**Cap yoke**

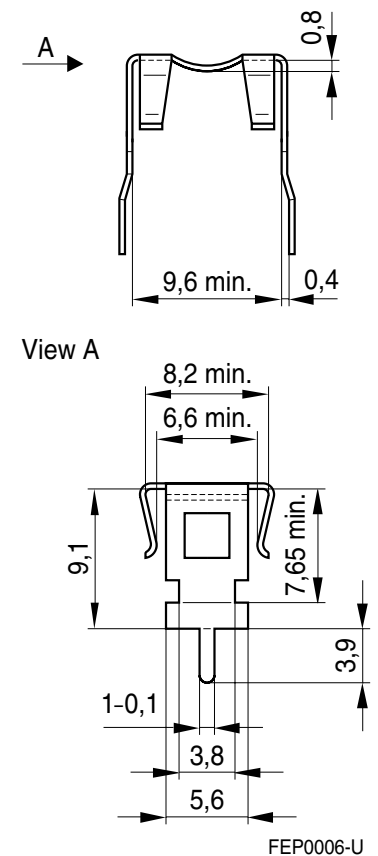
With ground terminal, made of stainless spring steel (tinned), 0.25 mm thick

Coil former					Ordering code
Sections	A <sub>N</sub> mm <sup>2</sup>	l <sub>N</sub> mm	A <sub>R</sub> value μΩ	Terminals	
1	4.7	17.7	128.7	6	B65840B1006D001
2	4.2	17.7	143.8	6	B65840B1006D002
Cap yoke					B65840D2000X000

**Coil former**



**Cap yoke**



Preliminary data



**SMD coil former with gullwing terminals**

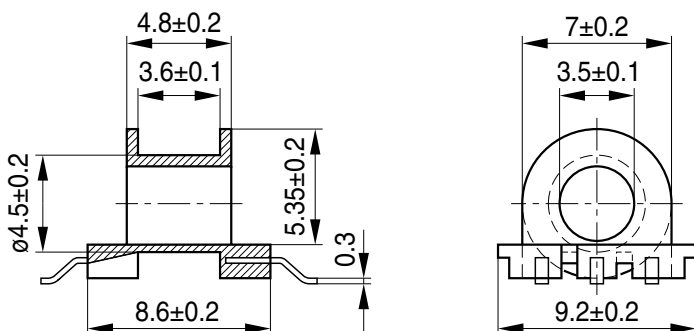
Material: GFR liquid crystal polymer (UL 94 V-0), color code black

Sumika Super E4008® [E54705 (M)], SUMITOMO CHEMICAL CO LTD

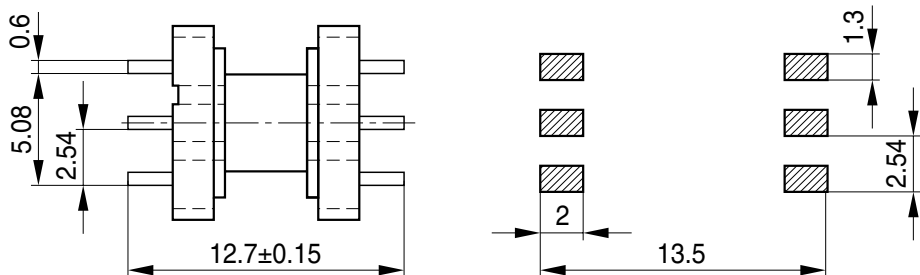
Solderability: to IEC 60068-2-58, test Td, method 6 (Group 3): 245 °C, 3 s

Resistance to soldering heat: to IEC 60068-2-58, test Td, method 6 (Group 3): 255 °C, 10 s  
 permissible soldering temperature for wire-wrap connection on coil former: 400 °C, 1 s

Sections	A <sub>N</sub> mm <sup>2</sup>	l <sub>N</sub> mm	A <sub>R</sub> value μΩ	Terminals	Ordering code
1	4.5	18.1	138.1	6	B65840N1106T001



Recommended PCB layout



FEK0475-T-E

### **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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