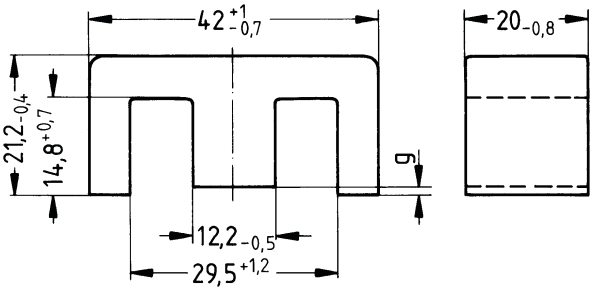
Ferrites and accessories

E 42/21/20
Core and accessories

Series/Type: **B66329, B66243**
Date: September 2006, September 2008, August 2010

- To IEC 61246
- Delivery mode: single units



Magnetic characteristics (per set)

$\Sigma l/A$ = 0.41 mm^{-1}
l_e = 97 mm
A_e = 234 mm^2
A_{min} = 229 mm^2
V_e = 22700 mm^3

Approx. weight 116 g/set

Ungapped

Material	A_L value nH	μ_e	P_V W/set	Ordering code
N27	4750 +30/–20%	1560	< 4.4 (200 mT, 25 kHz, 100 °C)	B66329G0000X127
N87	5200 +30/–20%	1690	< 12.0 (200 mT, 100 kHz, 100 °C)	B66329G0000X187

Gapped

Material	g mm	A_L value approx. nH	μ_e	Ordering code
N27	0.25 ±0.02	1029	338	B66329G0250X127
	0.50 ±0.05	603	198	B66329G0500X127
	1.00 ±0.05	354	116	B66329G1000X127
	1.50 ±0.05	259	85	B66329G1500X127

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"*)

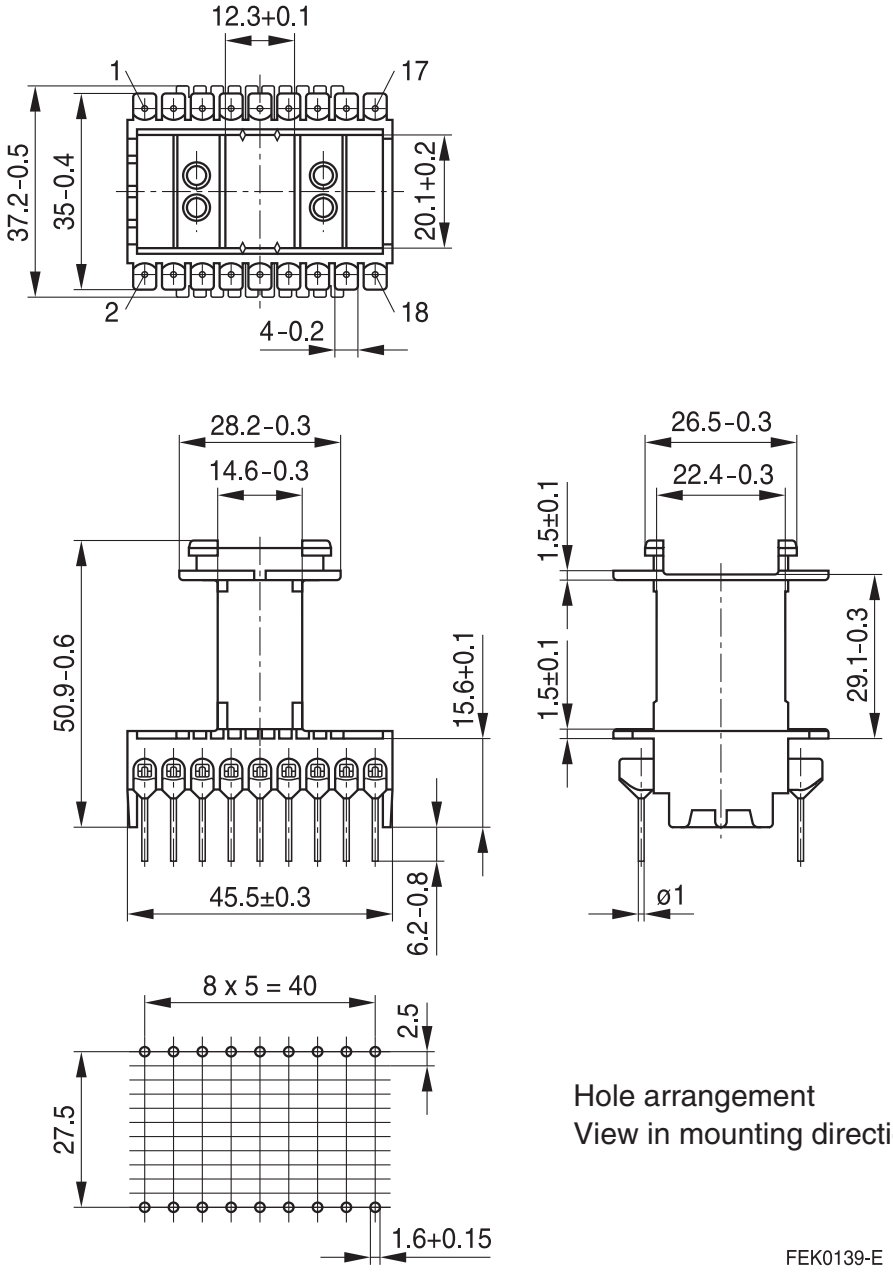
Material	Relationship between air gap – A_L value		Calculation of saturation current			
	K1 (25 °C)	K2 (25 °C)	K3 (25 °C)	K4 (25 °C)	K3 (100 °C)	K4 (100 °C)
N27	354	–0.770	574	–0.847	534	–0.865
N87	354	–0.770	555	–0.796	521	–0.873

Validity range: K1, K2: 0.10 mm < s < 3.00 mm
K3, K4: 160 nH < A_L < 1500 nH

Coil former

Material: GFR polyterephthalate (UL 94 V-0, insulation class to IEC 60085:
F ≙ max. operating temperature 155 °C), color code black
Valox 420-SE0® [E121562 (M)], SABIC Innovative Plastics
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”

Sections	A_N mm²	l_N mm	A_R value μΩ	Pins	Ordering code
1	172	100	20	18	B66243B1018T001



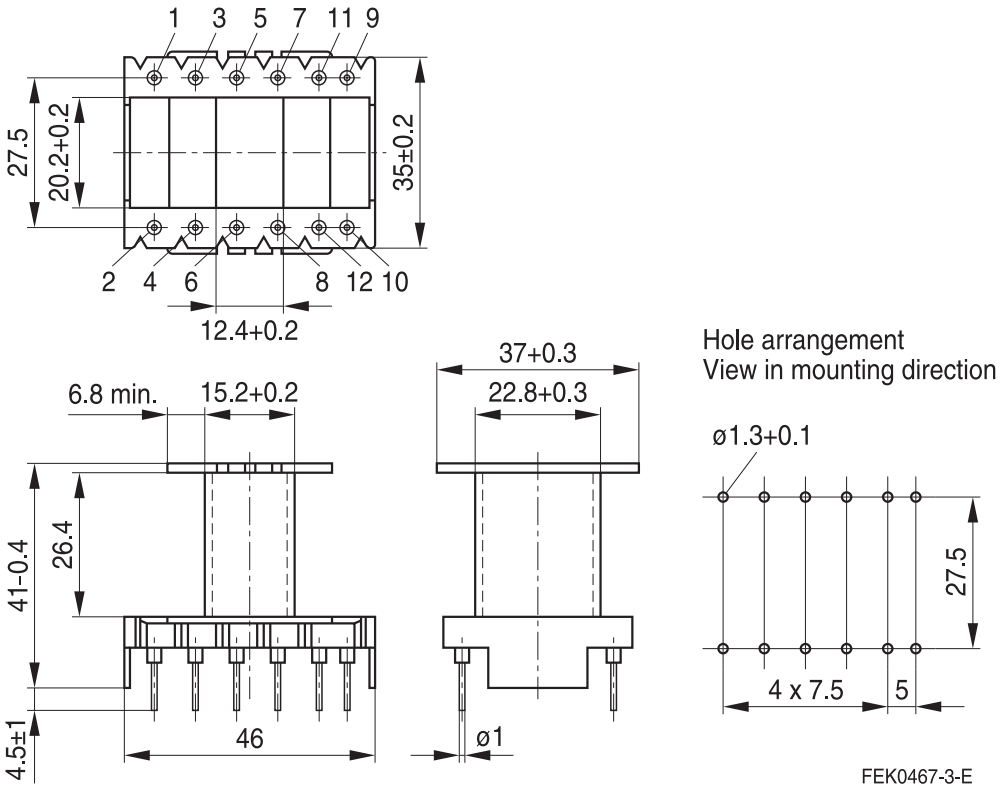
Hole arrangement
View in mounting direction

FEK0139-E

Coil former

Material: Polyterephthalate GV (UL 94 V-0, insulation class to IEC 60085:
H ≙ max. operating temperature 180 °C), color code black
Rynite FR 530® [E41938 (M)], E I DUPONT DE NEMOURS & CO INC
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”

Sections	A_N mm²	l_N mm	A_R value μΩ	Pins	Ordering code
1	187	133	24.4	12	B66243S1012T001



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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