



Ferrites and accessories

E 19/8/5
Core

Series/Type: **B66379**
Date: September 2006

- Size based on US lam. size E cores
- US designation E 187
- E cores with high permeability for common-mode chokes and broadband applications
- Delivery mode: single units

Magnetic characteristics (per set)

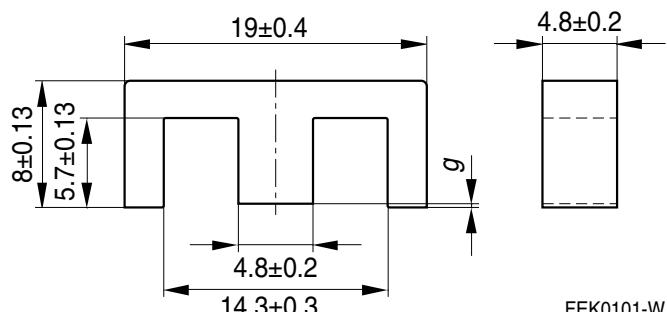
$$\Sigma I/A = 1.76 \text{ mm}^{-1}$$

$$l_e = 39.6 \text{ mm}$$

$$A_e = 22.5 \text{ mm}^2$$

$$A_{\min} = 22.1 \text{ mm}^2$$

$$V_e = 891 \text{ mm}^3$$

Approx. weight 4.4 g/set

Ungapped

Material	A_L value nH	μ_e	P_V W/set	Ordering code
N30	1700 +30/-20%	2380		B66379G0000X130
T46	5800 ±30%	8120		B66379F0000X146
N27	1050 +30/-20%	1470	< 0.18 (200 mT, 25 kHz, 100 °C)	B66379G0000X127
N87	1150 +30/-20%	1610	< 0.50 (200 mT, 100 kHz, 100 °C)	B66379G0000X187

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	46.4	-0.697	63.3	-0.847	57.9	-0.865	
N87	46.4	-0.697	64.1	-0.796	56.1	-0.873	

Validity range: K1, K2: $0.10 \text{ mm} < s < 2.00 \text{ mm}$
K3, K4: $40 \text{ nH} < A_L < 350 \text{ nH}$

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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 longer be mounted.
- Too long soldering time at high temperature ($>300\text{ }^{\circ}\text{C}$) 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 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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