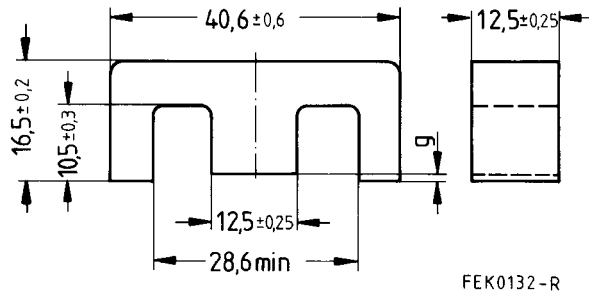
Ferrites and accessories

E 40/16/12
Core

Series/Type: **B66381**
Date: September 2006

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- Size based on US lam. size E cores
  US designation E 21
- Delivery mode: single units



Magnetic characteristics (per set)

$\Sigma l/A$ = 0.52 mm^{-1}
l_e = 77 mm
A_e = 149 mm^2
A_{min} = 143 mm^2
V_e = 11500 mm^3

Approx. weight 58 g/set

Ungapped

Material	A_L value nH	μ_e	P_V W/set	Ordering code
N27	3800 +30/–20%	1560	< 2.15 (200 mT, 25 kHz, 100 °C)	B66381G0000X127
N87	4150 +30/–20%	1710	< 5.80 (200 mT, 100 kHz, 100 °C)	B66381G0000X187
N72	4600 +30/–20%	1900	< 1.12 (200 mT, 25 kHz, 100 °C)	B66381G0000X172

Gapped

Material	g mm	A_L value approx. nH	μ_e	Ordering code
N27	0.50 ±0.05	411	166	B66381G0500X127

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	239	–0.782	378	–0.847	351	–0.865

Validity range: K1, K2: 0.10 mm < s < 2.50 mm
K3, K4: 130 nH < A_L < 1200 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 destroid.
– 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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