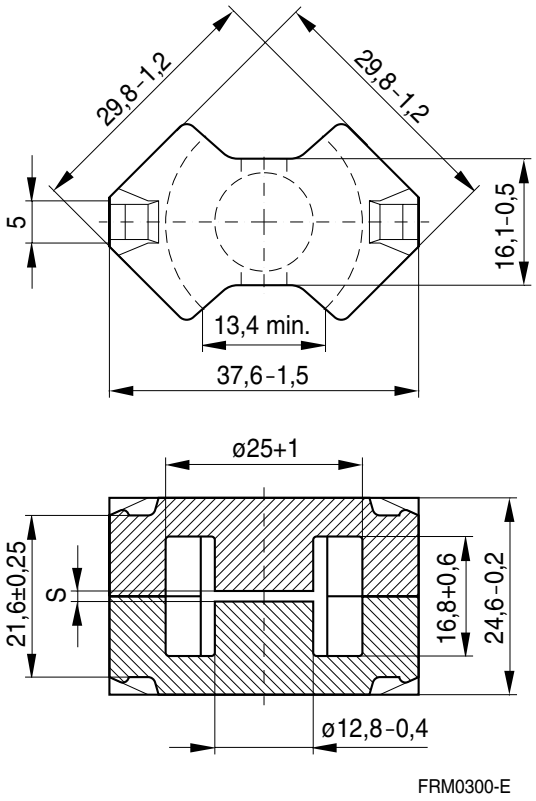
Ferrites and accessories

RM 12, RM 12 LP
Cores and accessories

Series/Type: **B65815, B65816**
Date: September 2006

- To IEC 62317-4
- Optimized core cross section and increased thickness of base for power applications
- Without center hole
- Delivery mode: sets



Magnetic characteristics (per set)

$\Sigma l/A$ = 0.39 mm^{-1}
l_e = 57 mm
A_e = 146 mm^2
A_{min} = 125 mm^2
V_e = 8320 mm^3

Approx. weight 45 g/set

Gapped

Material	A_L value nH	s approx. mm	μ_e	Ordering code -E without center hole
N41	160 ±3%	1.30	50	B65815E0160A041
	250 ±3%	0.70	78	B65815E0250A041
	400 ±5%	0.35	124	B65815E0400J041
	1000 ±5%	0.12	311	B65815E1000J041

Ungapped

Material	A_L value nH	μ_e	P_V W/set	Ordering code -E without center hole
N30	8700 +30/–20%	2700		B65815E0000R030
N49	3700 +30/–20%	1150	< 1.41 (50 mT, 500 kHz, 100 °C)	B65815E0000R049
N87	5300 +30/–20%	1640	< 4.50 (200 mT, 100 kHz, 100 °C)	B65815E0000R087
N97	5300 +30/–20%	1640	< 3.60 (200 mT, 100 kHz, 100 °C)	B65815E0000R097
N41	6000 +30/–20%	1860	< 1.50 (200 mT, 25 kHz, 100 °C)	B65815E0000R041

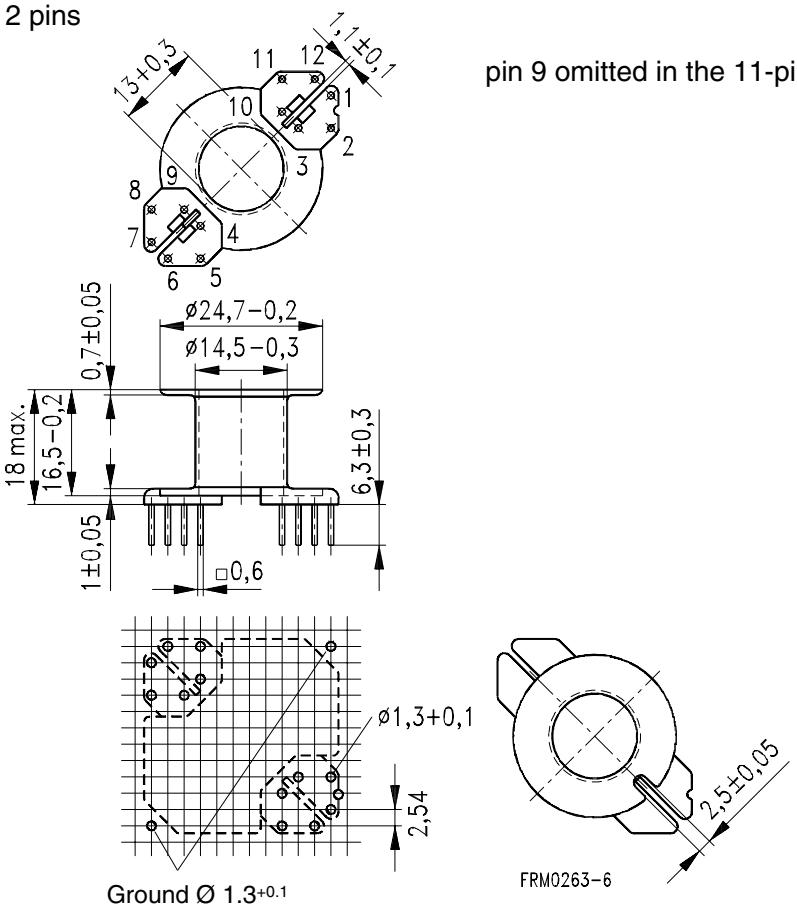
Coil former

Material: GFR thermosetting plastic (UL 94 V-0, insulation class to IEC 60085:
H ≙ max. operating temperature 180 °C), color code black
Sumikon PM 9630® [E41429 (M)], SUMITOMO BAKELITE CO LTD
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.
For matching clamp see page 5.

Sections	A_N mm²	l_N mm	A_R value μΩ	Pins	Ordering code
1	73	61	28.7	12 11	B65816N1012D001 B65816N1011D001

12 pins



pin 9 omitted in the 11-pin version

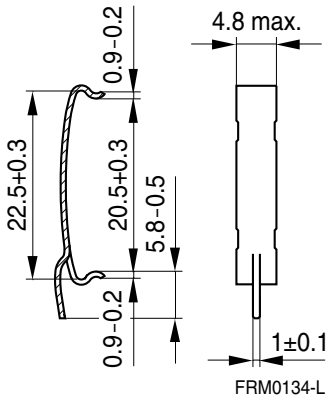
Ground Ø 1.3+0.1

Hole arrangement
View in mounting direction

Clamp

- With ground terminal, made of spring steel (tinned), 0.45 mm thick
- Solderability to IEC 60068-2-20, test Ta, method 1 (aging 3): 235 °C, 2 s

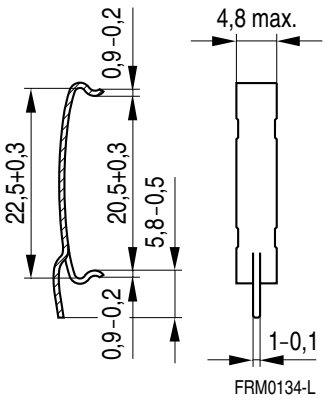
	Ordering code
Clamp (ordering code per piece, 2 are required)	B65816A2002X000



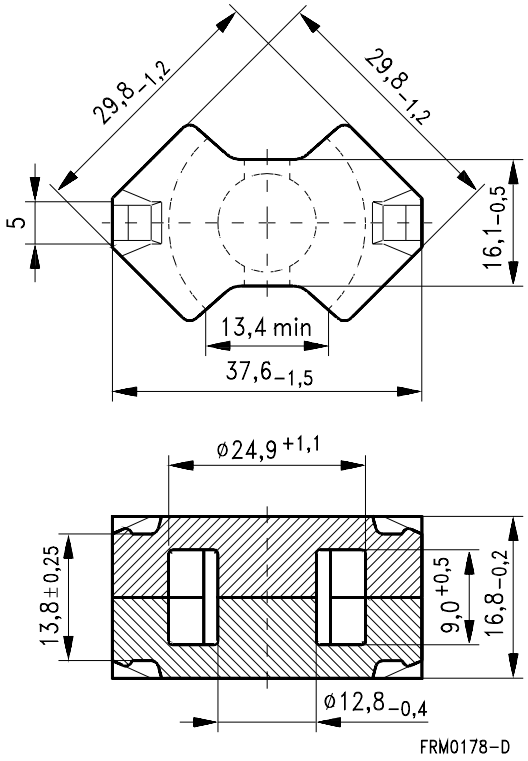
Clamp

- With ground terminal, made of spring steel (tinned), 0.45 mm thick
- Solderability to IEC 60068-2-20, test Ta, method 1 (aging 3): 235 °C, 2 s

	Ordering code
Clamp (ordering code per piece, 2 are required)	B65816A2002X000



- To IEC 62317-4
- For compact transformers
- Without center hole
- Delivery mode: sets



Magnetic characteristics (per set)

$\Sigma l/A$ = 0.29 mm^{-1}
l_e = 42 mm
A_e = 147.5 mm^2
A_{min} = 124.7 mm^2
V_e = 6195 mm^3

Approx. weight 33.6 g/set

Ungapped

Material	A_L value nH	μ_e	P_V W/set	Ordering code
N49	4500 +30/–20%	1020	< 1.21 (50 mT, 500 kHz, 100 °C)	B65815P0000R049
N92	4800 +30/–20%	1090	< 3.70 (200 mT, 100 kHz, 100 °C)	B65815P0000R092
N87	6300 +30/–20%	1430	< 3.36 (200 mT, 100 kHz, 100 °C)	B65815P0000R087

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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