



Ferrites and accessories

RM 7, RM 7 LP
Cores and accessories

Series/Type: B65819, B65820, B65659
Date: September 2006/March 2011

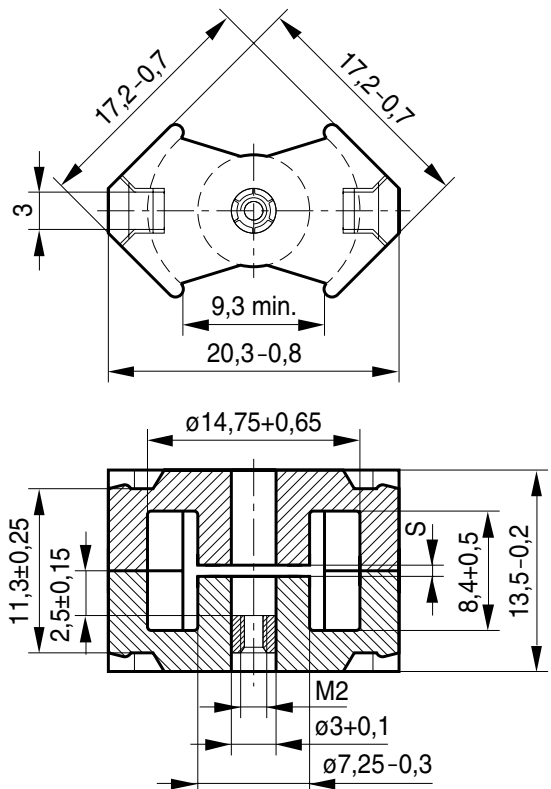
- To IEC 62317-4
- Core without center hole for transformer applications
- Delivery mode: sets

Magnetic characteristics (per set)

	with center hole	without center hole	
$\Sigma l/A$	0.75	0.7	mm ⁻¹
l_e	29.8	30.4	mm
A_e	40	43	mm ²
A_{min}	—	39	mm ²
V_e	1190	1310	mm ³

Approx. weight (per set)

m	6.5	7.2	g



FRM0171-Q

Gapped

Material	A_L value nH	s approx. mm	μ_e	Ordering code ¹⁾ -A with center hole -N with threaded sleeve -J without center hole
N41	160 ± 5% 250 ± 5%	0.30 0.18	90 141	B65819J0160J041 B65819J0250J041
N48	250 ± 3% 315 ± 3%	0.16 0.12	148 187	B65819+0250A048 B65819+0315A048

Ungapped

Material	A_L value nH	μ_e	P_V W/set	Ordering code -J without center hole
N30	5000 +30/-20%	2810		B65819J0000R030
T38	10000 +40/-30%	5630		B65819J0000Y038
N49	1900 +30/-20%	1070	< 0.22 (50 mT, 500 kHz, 100 °C)	B65819J0000R049
N87	2700 +30/-20%	1520	< 0.77 (200 mT, 100 kHz, 100 °C)	B65819J0000R087
N97	2700 +30/-20%	1520	< 0.58 (200 mT, 100 kHz, 100 °C)	B65819J0000R097

1) Replace the + by the code letter "A" or "N" for the required version.

Coil former

Material: GFR thermosetting plastic (UL 94 V-0, insulation class to IEC 60085:
 $H \triangleq$ 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

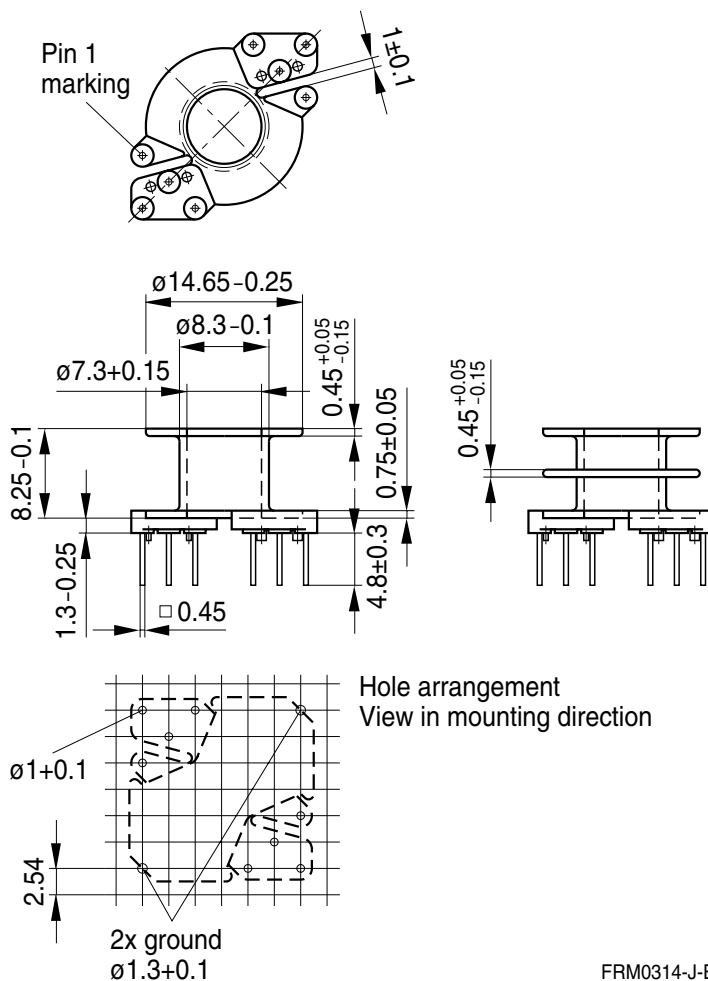
Resistance to soldering heat: to IEC 60068-2-20, test Tb, method 1B: 350 °C, 3.5 s

Winding: see Data Book 2007, chapter "Processing notes, 2.1"

Squared pins.

For matching clamp and insulating washers see page 4.

Sections	A_N mm ²	l_N mm	A_R value $\mu\Omega$	Pins	Ordering code
1	22.4	36.0	55.4	8	B65820W1008D001
2	21.9	36.0	56.5	8	B65820W1008D002



Clamp

- With ground terminal, made of spring steel (tinned), 0.4 mm thick
- Solderability to IEC 60068-2-20, test Ta, method 1 (aging 3): 235 °C, 2 s

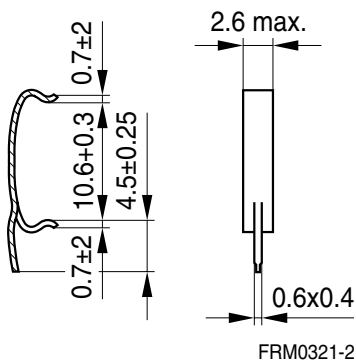
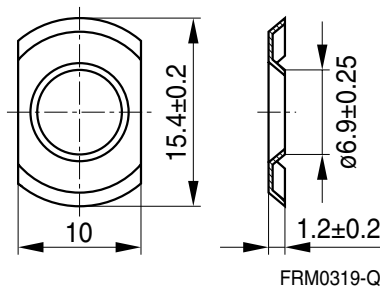
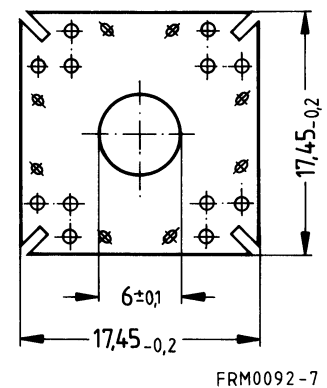
Insulating washer 1 between core and coil former

- For tolerance compensation and for insulation
- Made of polyarylate film (UL 94 V-0, insulation class to IEC 60085: E \triangleq 120 °C), 0.08 mm thick Aryphan F685, [E167358 (M)], natural color, LOFO HIGH TECH FILM GMBH

Insulating washer 2 for double-clad PCBs

- Made of polycarbonate (UL 94 V-0, insulation class to IEC 60085: E \triangleq 120 °C), 0.25 mm thick Makrofol FR, [E118859 (M)], natural color, BAYER MATERIALSCIENCE AG

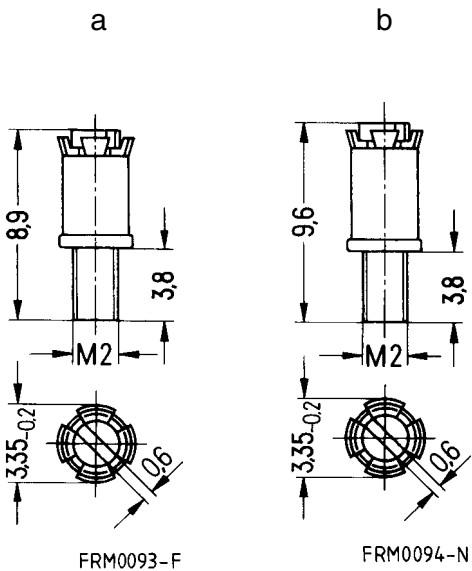
	Ordering code
Clamp (ordering code per piece, 2 are required)	B65820B2001X000
Insulating washer 1 (reel packing, PU = 1 reel)	B65820A5000X000
Insulating washer 2 (bulk)	B65820D2005X000

Clamp

Insulating washer 1

Insulating washer 2


Adjusting screw

- Tube core with thread and core brake made of GFR polyterephthalate
Pocan B3235® [E245249 (M)], LANXESS AG

Figure	Tube core Ø × length (mm)	Material	Color code	Ordering code
a	2.62 × 3.6	N22	red	B65659F0001X023
b	2.75 × 4.4	N22	black	B65659F0003X023



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

Magnetic characteristics (per set)

$$\Sigma l/A = 0.52 \text{ mm}^{-1}$$

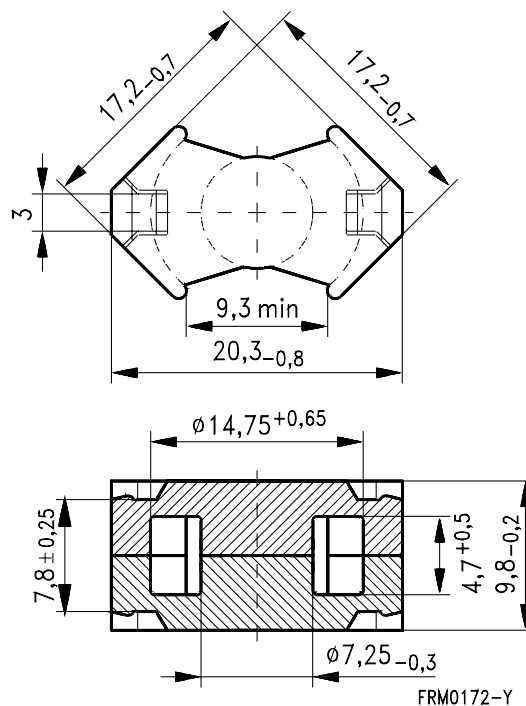
$$l_e = 23.5 \text{ mm}$$

$$A_e = 45.3 \text{ mm}^2$$

$$A_{\text{min}} = 39.6 \text{ mm}^2$$

$$V_e = 1060 \text{ mm}^3$$

Approx. weight 5.7 g/set


Ungapped

Material	A_L value	μ_e	P_V	Ordering code
	nH		W/set	
T38	11500 +40/-30%	4750		B65819P0000Y038
N49	2400 +30/-20%	990	< 0.21 (50 mT, 500 kHz, 100 °C)	B65819P0000R049
N92	2600 +30/-20%	1070	< 0.63 (200 mT, 100 kHz, 100 °C)	B65819P0000R092
N87	3300 +30/-20%	1360	< 0.57 (200 mT, 100 kHz, 100 °C)	B65819P0000R087

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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