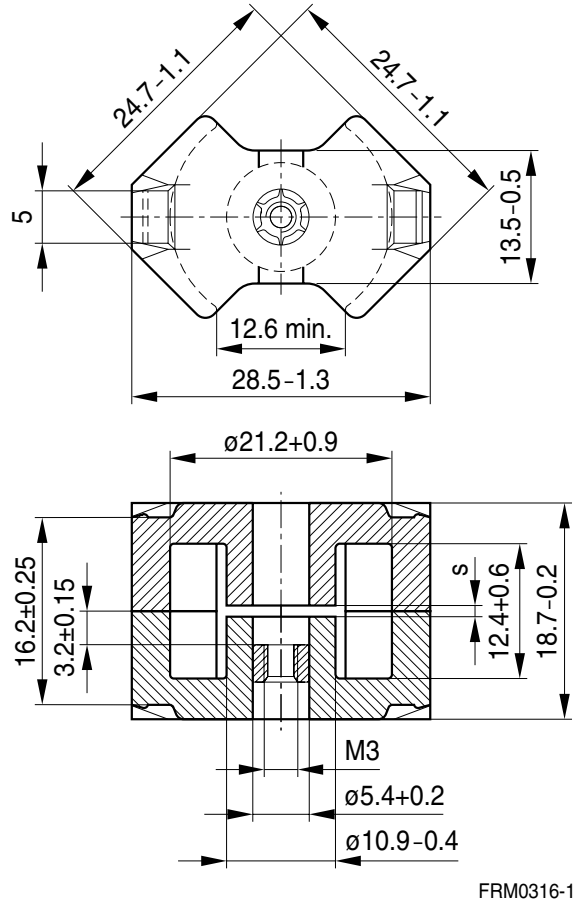
Ferrites and accessories

RM 10, RM 10 LP
Cores and accessories

Series/Type: **B65813, B65814, B65679**
Date: September 2006/January 2010/March 2010

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



Magnetic characteristics (per set)

	with center hole	without center hole	
$\Sigma l/A$	0.5	0.45	mm^{-1}
l_e	42	44	mm
A_e	83	98	mm^2
A_{min}	—	90	mm^2
V_e	3490	4310	mm^3

Approx. weight (per set)

m	20.7	22	g

Gapped

Material	A_L value nH	s approx. mm	μ_e	Ordering code[1)] -D with center hole -N with threaded sleeve -J without center hole
N48	400 ± 3% 630 ± 3%	0.21 0.13	161 254	B65813+0400A048 B65813+0630A048
N41	250 ± 3% 630 ± 5% 1600 ±10%	0.44 0.13 0.04	89 225 572	B65813J0250A041 B65813J0630J041 B65813J1600K041

1) Replace the + by the code letter “D” or “N” for the required version.

Ungapped

Material	A_L value nH	μ_e	P_V W/set	Ordering code -J without center hole
N30	7600 +30/–20%	2720		B65813J0000R030
T38	16000 +40/–30%	5720		B65813J0000Y038
N49	2900 +30/–20%	1040	< 0.75 (50 mT, 500 kHz,100 °C)	B65813J0000R049
N87	4200 +30/–20%	1500	< 2.30 (200 mT, 100 kHz, 100 °C)	B65813J0000R087
N97	4200 +30/–20%	1500	< 2.00 (200 mT, 100 kHz, 100 °C)	B65813J0000R097
N41	5500 +30/–20%	1960	< 0.80 (200 mT, 25 kHz, 100 °C)	B65813J0000R041

Coil former

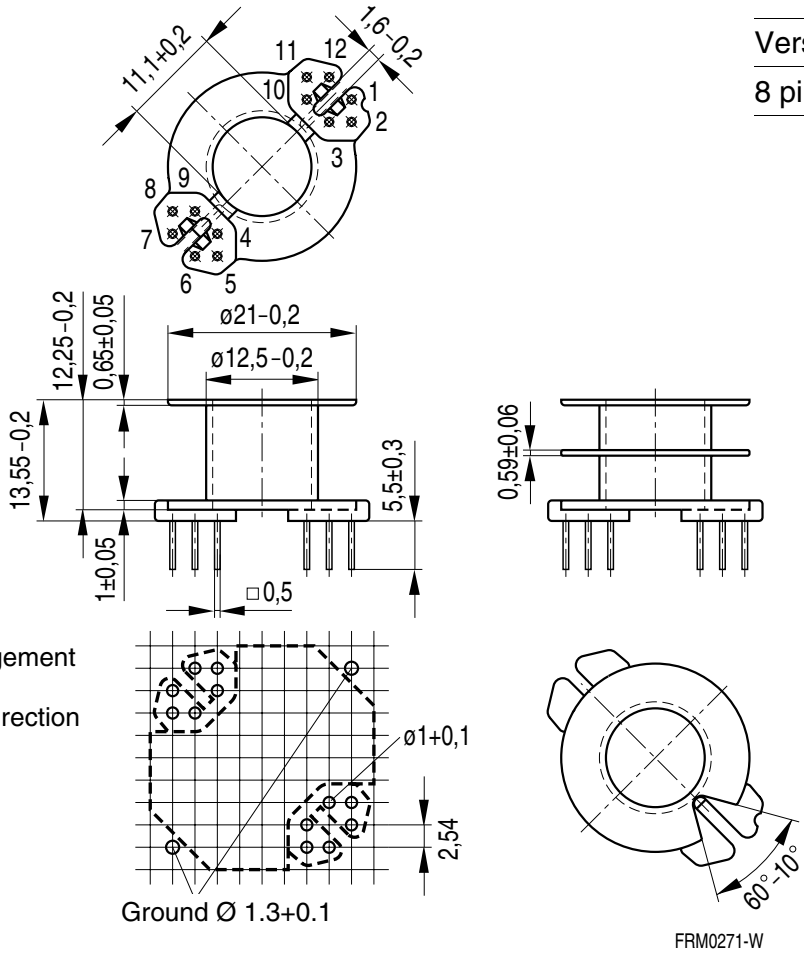
Material: GFR thermosetting plastic (UL 94 V-0, insulation class to IEC 60085: H ≙ max. operating temperature 180 °C), color code black
Sumikon PM 9630® [E41429 (M)], SUMITOMO BAKELITE CO LTD
Solderability: to IEC 60068-2-20, test Ta, method 1 (aging 3): 235 °C, 2 s
Resistance to soldering heat: to IEC 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 and insulating washers see page 6.

Sections	A_N mm²	l_N mm	A_R value μΩ	Pins	Ordering code
1	41.5	52	43	8 12	B65814N1008D001 B65814N1012D001
2	39	52	46	8	B65814N1008D002

12 pins

Version	Pins omitted
8 pins	2, 5, 8, 11



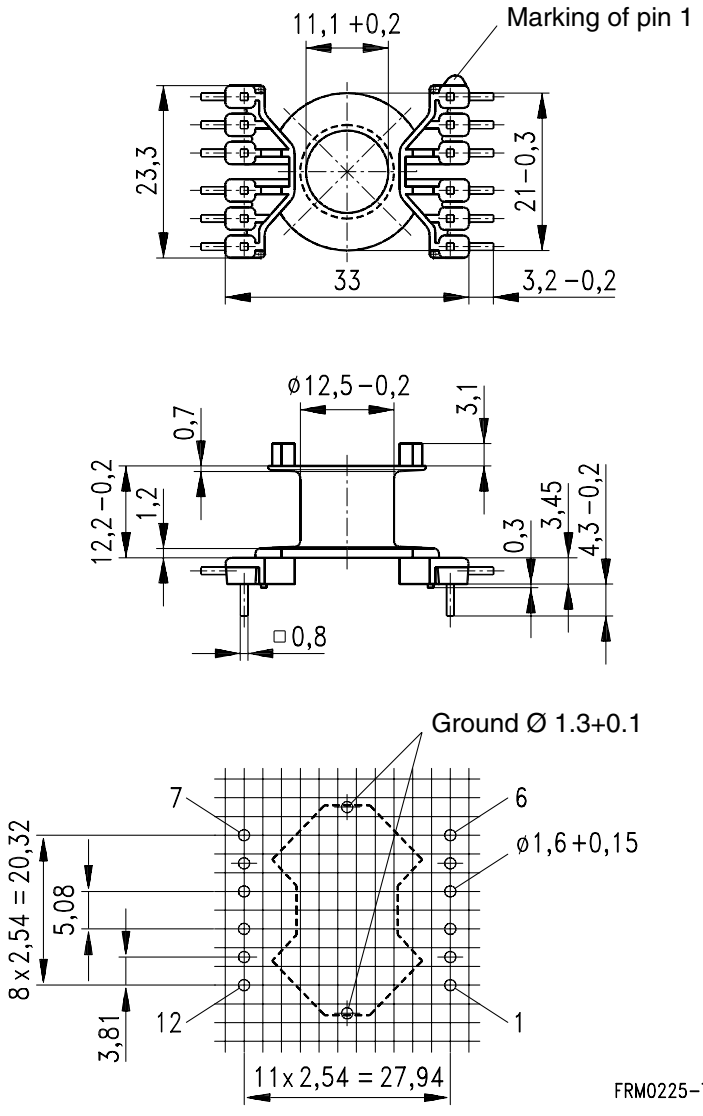
Hole arrangement
View in mounting direction

Coil former for power applications

Optimized for automatic winding
Material: GFR polyterephthalate (UL 94 V-0, insulation class to IEC 60085:
F ≙ max. operating temperature 155 °C), color code black
Valox 420-SE0® [E45329 (M)], GE PLASTICS B V
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”

For matching clamp and insulating washer 1 see page 6.

Sections	A_N mm²	l_N mm	A_R value μΩ	Pins	Ordering code
1	41.5	52	43	12	B65814C1512T001



Hole arrangement
View in mounting direction
(Note half pitch!)

Clamp

- With ground terminal, made of stainless spring steel (tinned), 0.4 mm thick
- Solderability to IEC 60068-2-20, test Ta, method 1 (aging 3): 235 °C, 2 s
- Also available as strip clamp on reels on request

Insulating washer 1 between core and coil former

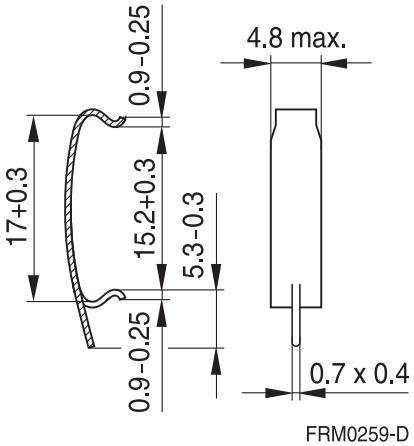
- For tolerance compensation and for insulation
- Made of polyarylate film (UL 94 V-0, insulation class to IEC 60085: E≙ 120 °C), 0.08 mm thick Aryphan F685, [E167358 (M)], natural color, LOFO HIGH TECH FILM GMBH

Insulating washer 2 for double-clad PCBs

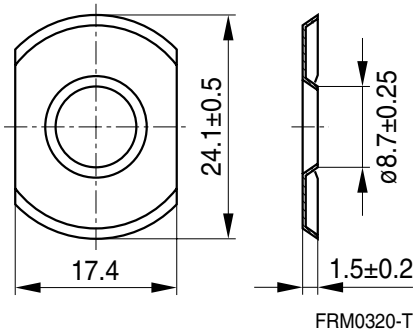
- Made of polycarbonate (UL 94 V-0, insulation class to IEC 60085: E ≙ 120 °C), 0.25 mm thick Makrofol FR, [E118859 (M)], natural color, BAYER MATERIALSCIENCE L L C

	Ordering code
Clamp (ordering code per piece, 2 are required)	B65814B2203X000
Insulating washer 1 (reel packing, PU = 1 reel)	B65814B5000X000
Insulating washer 2 (bulk)	B65814B2005X000

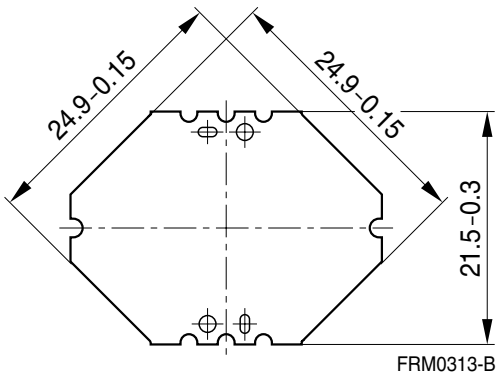
Clamp



Insulating washer 1



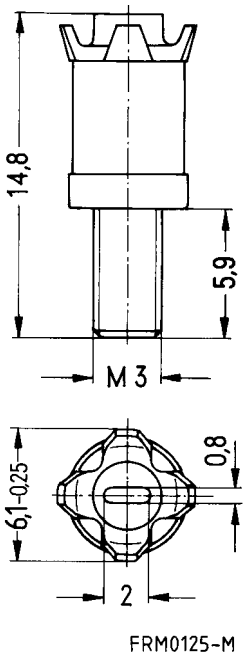
Insulating washer 2



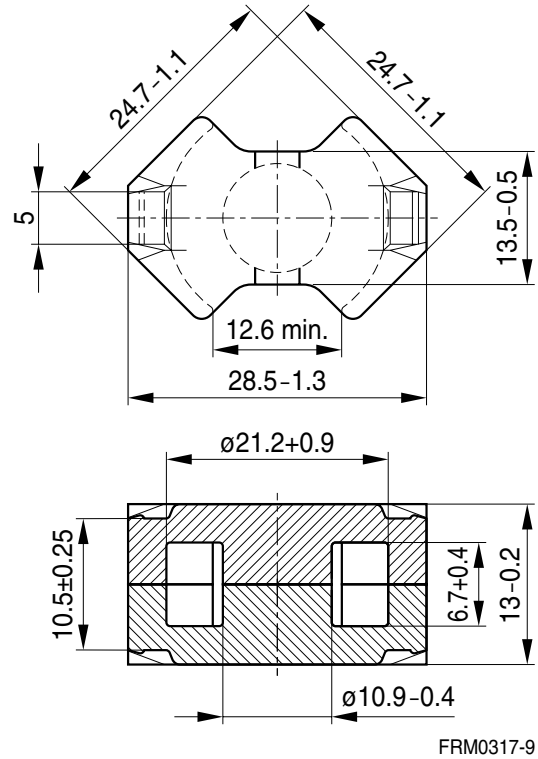
Adjusting screw

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

Tube core ∅ × length (mm)	Material	Color code	Ordering code
4.55 × 6.3	N22	red	B65679E0003X022
4.98 × 6.3	N22	black	B65679E0002X022



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



Magnetic characteristics (per set)

$\Sigma l/A$ = 0.34 mm^{-1}
l_e = 33.9 mm
A_e = 99.1 mm^2
A_{min} = 90.0 mm^2
V_e = 3360 mm^3

Approx. weight 17.2 g/set

Ungapped

Material	A_L value nH	μ_e	P_V W/set	Ordering code
N49	3700 +30/–20%	1000	< 0.62 (50 mT, 500 kHz, 100 °C)	B65813P0000R049
N92	4000 +30/–20%	1090	< 1.90 (200 mT, 100 kHz, 100 °C)	B65813P0000R092
N87	5200 +30/–20%	1410	< 1.72 (200 mT, 100 kHz, 100 °C)	B65813P0000R087

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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