

# **Ferrites and accessories**

RM 14, RM 14 LP Cores and accessories

Series/Type:B65887, B65888Date:September 2006/January 2010

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## RM 14

### Core

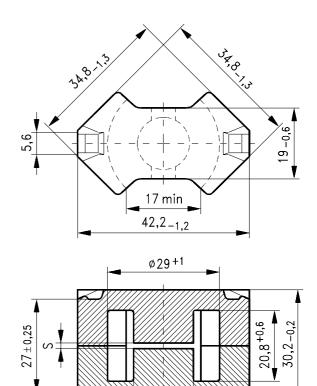
#### B65887

- 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)

 $\begin{array}{ll} \Sigma I/A &= 0.35 \mbox{ mm}^{-1} \\ I_e &= 70 \mbox{ mm} \\ A_e &= 200 \mbox{ mm}^2 \\ A_{min} &= 170 \mbox{ mm}^2 \\ V_e &= 14000 \mbox{ mm}^3 \end{array}$ 

Approx. weight 74 g/set



Ø15<sub>-0,5</sub> FRM0179-L

#### Gapped

Material	A <sub>L</sub> value	S	μ <sub>e</sub>	Ordering code
		approx.		
	nH	mm		-E without center hole
N41	160 ±3%	1.90	45	B65887E0160A041
	250 ±3%	1.00	70	B65887E0250A041
	400 ±3%	0.50	111	B65887E0400A041
	1000 ±5%	0.15	279	B65887E1000J041

#### Ungapped

Material	A <sub>L</sub> value	μ <sub>e</sub>	P <sub>V</sub>	Ordering code -E without center
	nH		W/set	hole
N49	3900 +30/–20%	1090	< 2.37( 50 mT, 500 kHz, 100 °C)	B65887E0000R049
N87	6000 +30/-20%	1670	< 7.40 (200 mT, 100 kHz, 100 °C)	B65887E0000R087
N97	6000 +30/-20%	1670	< 5.60 (200 mT, 100 kHz, 100 °C)	B65887E0000R097
N41	6800 +30/-20%	1890	< 2.52 (200 mT, 25 kHz, 100 °C)	B65887E0000R041

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#### **RM 14**

Accessories

B65888

#### **Coil former**

Material: GFR thermosetting plastic (UL 94 V-0, insulation class to IEC 60085:  $H \cong max.$  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 washer see page 5.

Sections	A <sub>N</sub> mm <sup>2</sup>	l <sub>N</sub> mm	$A_R$ value $\mu\Omega$	Pins	Ordering code
1	107	71.5	23	10 12	B65888N1010D001 B65888N1012D001

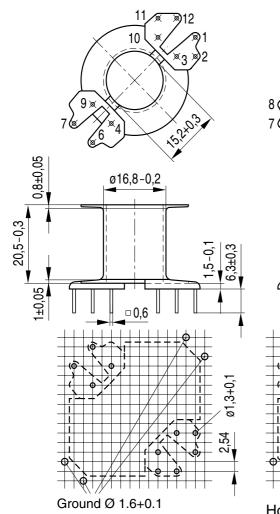


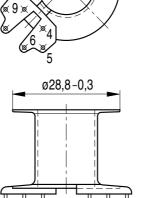
12 pins

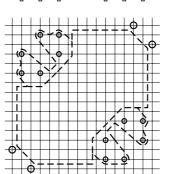
11

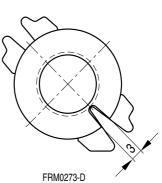
10

12









Hole arrangement View in mounting direction



#### RM 14

#### Accessories

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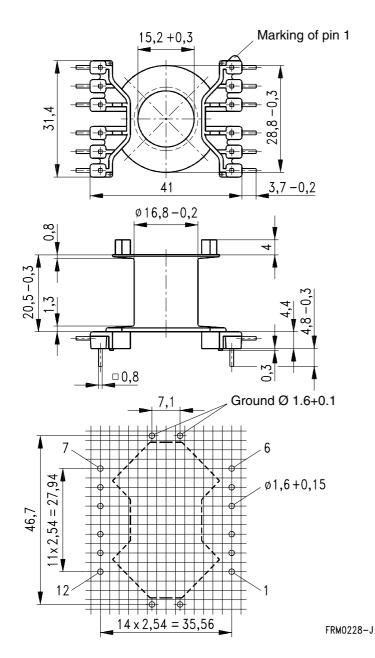
#### **Coil former for power applications**

Material: GFR polyterephthalate (UL 94 V-0, insulation class to IEC 60085:  $F \triangleq max.$  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 see page 5.

Sections	A <sub>N</sub> mm <sup>2</sup>	l <sub>N</sub> mm	$A_R$ value $\mu\Omega$	Pins	Ordering code
1	106	71.5	23	12	B65888C1512T001



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

Please read *Cautions and warnings* and *Important notes* at the end of this document.

09/06

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# EPCOS

#### RM 14

#### Accessories

B65888

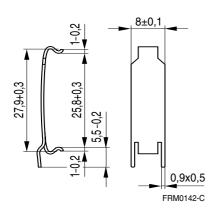
#### Clamp

- With ground terminal, made of stainless spring steel (tinned), 0.5 mm thick
- Solderability to IEC 60068-2-20, test Ta, method 1 (aging 3): 235 °C, 2 s

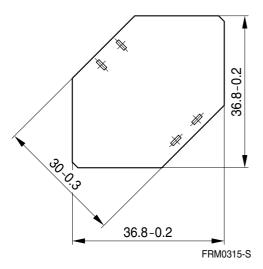
#### Insulating washer for double-clad PCBs

	Ordering code
Clamp (ordering code per piece, 2 are required)	B65888A2002X000
Insulating washer (bulk)	B65888B2005X000

#### Clamp



#### Insulating washer





RM 14 »Low Profile«

#### Core

#### B65887P

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

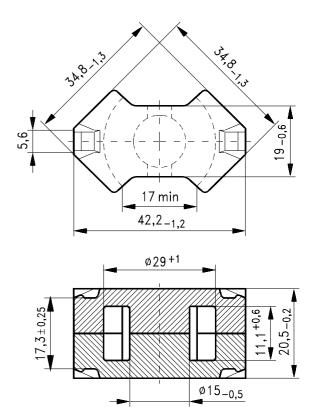
#### Magnetic characteristics (per set)

 $\Sigma I/A = 0.25 \text{ mm}^{-1}$ I<sub>e</sub> = 50.9 mm

- $A_{e} = 201 \text{ mm}^2$
- $A_{\rm min} = 170 \text{ mm}^2$

 $V_{e} = 10230 \text{ mm}^{3}$ 

Approx. weight 55 g/set



FRM0180-P

#### Ungapped

Material	A <sub>L</sub> value	μ <sub>e</sub>	P <sub>V</sub>	Ordering code
	nH		W/set	
N49	5100 +30/-20%	1030	< 2.0( 50 mT, 500 kHz, 100 °C)	B65887P0000R049
N92	5400 +30/-20%	1090	< 6.1 (200 mT, 100 kHz, 100 °C)	B65887P0000R092
N87	7100 +30/–20%	1430	< 5.5 (200 mT, 100 kHz, 100 °C)	B65887P0000R087



#### Ferrites and accessories

#### 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<sub>L</sub> 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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