



Ferrites and accessories

General information and overview

Date: September 2006

Toroids (ring cores)

General information

Our product line includes a wide range of toroids with finely graded diameters ranging from 2.5 to 202 mm.

Other core heights can be supplied on request. All cores are available in the usual materials.

Applications

- Toroids are primarily used as EMC chokes for suppressing RF interference in the MHz region and in signal transformers.

Typical applications for toroids of NiZn ferrites are LAN chokes. One of the materials available for this purpose is K10; other materials on request.

The following high-permeability MnZn materials are available for interference suppression:

- R 2.5 through R 12.5 for telecommunications, e.g. ISDN (N30, T38, T46)
- R 13.3 through R 26 for power line chokes (N30, T65, T35, T37, T38)
- >R 34 for chokes and filters in industrial use (T65)

- Toroids are also increasingly used for power applications. Here, the typical values for amplitude permeability and power loss, as summarized in the section on “*SIFERRIT Materials*” (page 1), are applicable to the special power materials.

Coating

Toroids are available in different coating versions, thus offering the appropriate solution for every application. The coating not only offers protection for the edges but also provides an insulation function.

For small ring cores, we have introduced a parylene coating which features a low coating thickness and high dielectric strength.

Coatings of ring cores

Version	Epoxy (blue)	Parylene (transparent)
Main application	Medium/big sizes ($\geq R 9.53$)	Small sizes ($< R 9.53$)
Layer thickness	< 0.4 mm	0.012 or 0.025 mm
Breakdown voltage (minimum values)	> 1.0 kV (for R 9.53; R 10) > 1.5 kV (for R 12.5 thru R 20) > 2.0 kV (for $> R 20$)	> 1 kV (standard value)
Mechanical quality	High firmness	Smooth surface
Maximum temperature (short-time)	approx. 180 °C	approx. 130 °C
Advantage	Low influence on A_L value	Very low thickness
UL rating	UL 94 V-0	UL 94 V-0
Ordering code	B64290 L ...	B64290 P ...

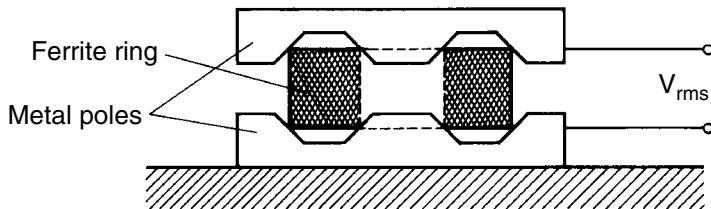
Toroids (ring cores)

General information

Dielectric strength test

The following test setup is used to test the dielectric strength of the insulating coating: A copper ring is pressed to the top edge of the ring. It touches the ferrite ring at the edges (see diagram).

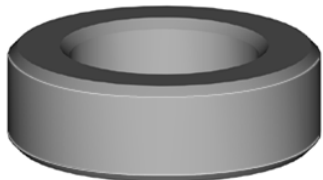
The test duration is 2 seconds.



FUS0021-H

Chamfer

Large toroidal cores use thick wires that are partially subjected to high mechanical stress during winding. This can damage the wire insulation as well as the coating of the cores, thus reducing the breakdown voltage. To avoid this, EPCOS toroids have a chamfer. This prevents any insulation damage, and produces uniform coating thickness at the same time.



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Core size	Design
Small	Edges rounded by tumbling
Medium	Chamfer on edges and/or radius on the surface
Medium/big	Chamfer on edges

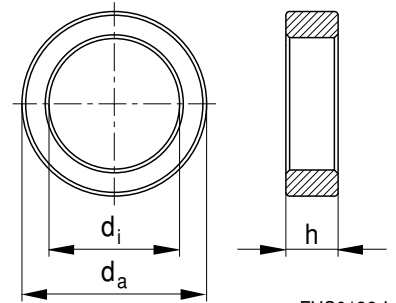
Compilation of the ordering code

Block 1	Block 2	Block 3
B64290	L0668	X038
Ferrite toroid	Type (size) coded	Code number for material (exception: material N30 = 830)
	Coating material	X = Dummy character
	Parylene P	
	Epoxy L	
	Uncoated A	

Toroids (ring cores)

Overview

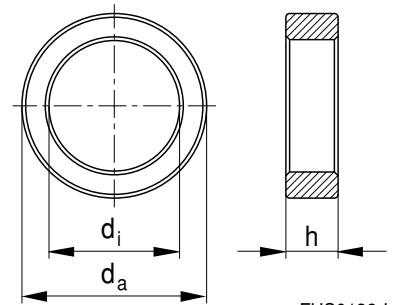
B64290



FUS0138-I

Overview of available sizes

Type	Type code	Page
Toroid size ($d_a \times d_i \times h$)	(ordering code, block 2)	
mm		
inch		
R 2.50 × 1.50 × 1.00	P0035	1
R 2.54 × 1.27 × 1.27	P0734	1
R 3.05 × 1.27 × 1.27	P0683	2
R 3.05 × 1.27 × 2.54	P0739	2
R 3.05 × 1.78 × 2.03	P0733	3
R 3.43 × 1.78 × 1.78	P0731	3
R 3.43 × 1.78 × 2.03	P0745	4
R 3.43 × 1.78 × 2.11	P0709	4
R 3.94 × 1.78 × 1.78	P0732	5
R 3.94 × 2.24 × 1.30	P0061	5
R 4.00 × 2.40 × 1.60	P0036	6
R 5.84 × 3.05 × 3.00	P0687	6
R 6.30 × 3.80 × 2.50	P0037	7
R 8.00 × 4.00 × 4.00	P0751	7
R 9.53 × 4.75 × 3.17	L0062	8
R 10.0 × 6.00 × 4.00	L0038	8
R 12.5 × 7.50 × 5.00	L0044	9
R 12.7 × 7.90 × 6.35	L0742	9
R 13.3 × 8.30 × 5.00	L0644	10
R 14.0 × 9.00 × 5.00	L0658	10
R 15.0 × 10.4 × 5.30	L0623	11
R 15.8 × 8.90 × 4.70	L0743	11
R 16.0 × 9.60 × 6.30	L0045	12
R 17.0 × 10.7 × 6.80	L0652	12
R 18.4 × 5.90 × 5.90	L0697	13
R 20.0 × 10.0 × 7.00	L0632	13

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Overview of available sizes (continued)

Type Toroid size ($d_a \times d_i \times h$) mm	inch	Type code (ordering code, block 2)	Page
R 22.1 × 13.7 × 6.35	R 0.870 × 0.539 × 0.250	L0638	14
R 22.1 × 13.7 × 7.90	R 0.870 × 0.539 × 0.311	L0719	14
R 22.1 × 13.7 × 12.5	R 0.870 × 0.539 × 0.492	L0651	15
R 22.6 × 14.7 × 9.20	R 0.890 × 0.579 × 0.362	L0626	15
R 25.3 × 14.8 × 10.0	R 0.996 × 0.583 × 0.394	L0618	16
R 25.3 × 14.8 × 15.0	R 0.996 × 0.583 × 0.590	L0615	16
R 25.3 × 14.8 × 20.0	R 0.996 × 0.583 × 0.787	L0616	17
R 29.5 × 19.0 × 14.9	R 1.142 × 0.748 × 0.587	L0647	17
R 30.5 × 20.0 × 12.5	R 1.201 × 0.787 × 0.492	L0657	18
R 34.0 × 20.5 × 10.0	R 1.339 × 0.807 × 0.394	L0058	18
R 34.0 × 20.5 × 12.5	R 1.339 × 0.807 × 0.492	L0048	19
R 36.0 × 23.0 × 15.0	R 1.417 × 0.906 × 0.591	L0674	19
R 38.1 × 19.05 × 12.7	R 1.500 × 0.750 × 0.500	L0668	20
R 40.0 × 24.0 × 16.0	R 1.575 × 0.945 × 0.630	L0659	20
R 41.8 × 26.2 × 12.5	R 1.646 × 1.031 × 0.492	L0022	21
R 50.0 × 30.0 × 20.0	R 1.969 × 1.181 × 0.787	L0082	21
R 58.3 × 32.0 × 18.0	R 2.295 × 1.260 × 0.709	L0043	22
R 58.3 × 40.8 × 17.6	R 2.295 × 1.606 × 0.693	L0040	22
R 58.3 × 40.8 × 20.2	R 2.295 × 1.606 × 0.795	L0042	23
R 63.0 × 38.0 × 25.0	R 2.480 × 1.496 × 0.984	L0699	23
R 68.0 × 48.0 × 13.0	R 2.677 × 1.890 × 0.512	L0696	24
R 87.0 × 54.3 × 13.5	R 3.425 × 2.138 × 0.531	L0730	24
R 102 × 65.8 × 15.0	R 4.016 × 2.591 × 0.591	L0084	25
R 140 × 103 × 25.0	R 5.512 × 4.055 × 0.984	A0705	25
R 202 × 153 × 25.0	R 7.953 × 6.024 × 0.984	A0711	26