

## Introduction of the new High Current Inductor Series WE-HCC from Würth Electronics Midcom



### **WE-HCC [Ferrite]**

- **High Current & High Performance Power Chokes**
- **Low Core Losses**

### **WE-HCC [Iron]**

- **High Current Filter Chokes**
- **Excellent Filter Characteristics**

Würth Elektronik released a new High Performance Inductor series, WE-HCC. The WE-HCC series is available in 2 different core materials, Iron Alloy and Ferrite. Based on the application and requirements of the design it is always possible to find the right inductor for the application.

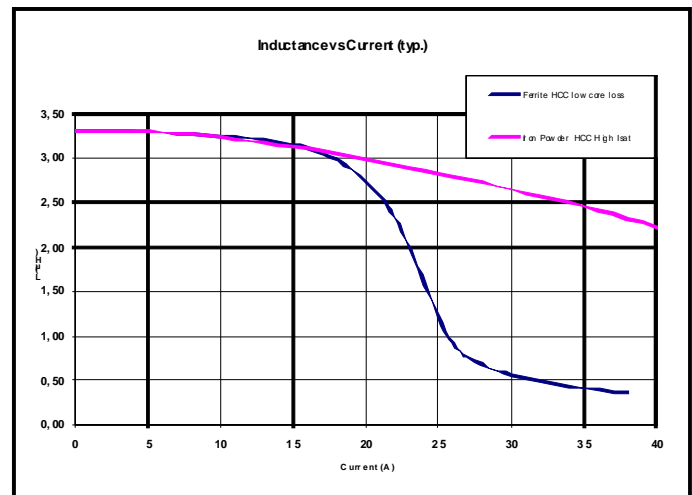
The WE-HCC [Ferrite] is optimized for Power Supply circuits running at high switching frequencies with high ripple current. Due of the ferrite material the core losses are significant lower compare to Iron Powder material which are mainly used in High Current Inductors Designs.

On the other hand, if it is required to have an excellent saturation behavior over temperature for filter circuits or for Power Supplies the WE-HCC [Iron] is a good choice as well.

## Electrical Characteristics WE-HCC [Ferrite]



- **Frequency Range: up to 5MHz**
- **Current rating up to 27A without external cooling**
- **High saturation current up to 60A**
- **Excellent saturation Characteristic**
- **Low core loss due of ferrite material**
- **Tight RDC tolerance +/-10%**
- **Low RDC**



2

The WE-HCC [Ferrite] is suitable for frequencies up to 5MHz and therefore in line with the new generation of high switching frequency regulators.

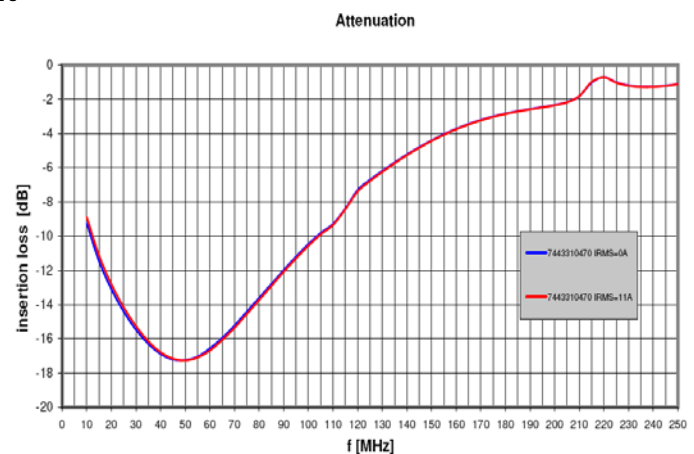
The maximum operating temperature of the WE-HCC series is 125°C and able to handle 27A continuous DC current without heat sink. Due to the design and used material on the WE-HCC series saturation current of 60A and more has been achieved which is more than enough for most power supply designs.

It is getting more and more important for certain switching topologies (current sense) to have tight DCR tolerances especially for multiphase designs.

## Electrical Characteristics WE-HCC [Iron Powder]



- **Filter range from 5MHz-100MHz**
- **Current rating up to 27A without external cooling**
- **High saturation current up to 85A**
- **Excellent saturation characteristic over temperature**
- **Excellent filter behavior over DC current**
- **Low RDC**



3

The WE-HCC [Iron] is designed for extreme High Current Application where it is important to have an excellent saturation behavior. Applications which are used/ designed for high temperature environment will benefit of this characteristic due of the core material which is very stable of temperature. Especially for high current filter application like e.g. motor drives, frequency converters and inverters, Class D amplifiers etc.

The frequency response of the WE-HCC [iron] is stable over current as shown in graph. Blue curve shows the attenuation over frequency (4.7uH value) with no DC current, the red curve shows the attenuation with 11A DC load without any performance decrease. This series is perfect for high current filter application which needs a high attenuation in the frequency range from 5MHz-100MHz even without any impact over DC current.



## Typical Applications for WE- HCC Series

### **WE-HCC [*Ferrite*]**

- **Multiphase Converters**
- **High Frequency Converters**
- **High Current Converters**
- **Motherboards**
- **Industrial Computers**
- **Set Top Boxes**
- **FPGA Power Supplies**
- **Point of Load Converters**

### **WE-HCC [*Iron Powder*]**

- **Filter Choke for DC/DC Converters**
- **Filter Choke for Motor Electronics**
- **Low Frequency DC/DC Converters**
- **High Current Filter Applications**

Self explaining.....list applications for both series'

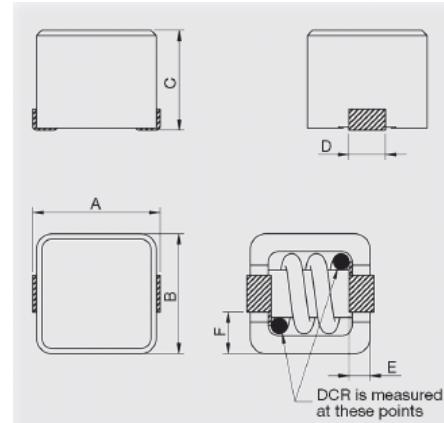
## Overview of package sizes and technical parameters WE HCC [Ferrite]



Order Code	Size (mm)	Inductance ±20% (µH)	DCR ±10% (mΩ)	I <sub>SAT</sub> (A)	I <sub>rms</sub> (A)	SRF (MHz)
7443340030	8 x 8 x 7	0.30	1.40	36.0	20.5	272
7443340047	8 x 8 x 7	0.47	1.70	32.0	19.0	232
7443340068	8 x 8 x 7	0.68	1.70	23.5	19.0	181
7443340100	8 x 8 x 7	1.00	2.95	24.0	17.0	147
7443340150	8 x 8 x 7	1.50	4.35	18.5	16.5	120
7443340220	8 x 8 x 7	2.20	4.35	16.5	16.5	97
7443340330	8 x 8 x 7	3.30	6.65	11.0	14.0	81

Order Code	Size (mm)	Inductance ±20% (µH)	DCR ±10% (mΩ)	I <sub>SAT</sub> (A)	I <sub>rms</sub> (A)	SRF (MHz)
7443330022	10x10x 9	0.22	0.60	60.0	21.5	300
7443330033	10x10x 9	0.33	0.60	55.0	21.5	250
7443330047	10x10x 9	0.47	0.80	47.0	20.5	160
7443330068	10x10x 9	0.68	0.80	38.0	20.5	140
7443330082	10x10x 9	0.82	1.35	36.0	20.0	120
7443330100	10x10x 9	1.00	1.35	27.5	20.0	100
7443330150	10x10x 9	1.50	2.50	27.0	18.0	78
7443330220	10x10x 9	2.20	3.70	22.0	16.5	80
7443330330	10x10x 9	3.30	5.40	15.5	14.0	51
7443330470	10x10x 9	4.70	8.20	15.0	13.0	49
7443330680	10x10x 9	6.80	13.20	11.0	11.5	40
7443330820	10x10x 9	8.20	13.20	8.0	11.5	36
7443331000	10x10x 9	10.00	20.70	8.0	9.0	35

Order Code	Size (mm)	Inductance ±20% (µH)	DCR ±10% (mΩ)	I <sub>SAT</sub> (A)	I <sub>rms</sub> (A)	SRF (MHz)
7443320022	12x12x 10	0.22	0.53	60.0	27.0	280
7443320033	12x12x 10	0.33	0.53	55.0	27.0	214
7443320047	12x12x 10	0.47	0.72	48.0	26.0	138
7443320068	12x12x 10	0.68	0.72	38.0	26.0	108
7443320082	12x12x 10	0.82	1.17	36.0	24.0	99
7443320100	12x12x 10	1.00	1.17	32.0	24.0	98
7443320150	12x12x 10	1.50	2.10	27.0	19.5	92
7443320220	12x12x 10	2.20	3.05	23.0	18.0	64
7443320330	12x12x 10	3.30	4.40	17.0	17.0	44
7443320470	12x12x 10	4.70	6.35	17.0	15.5	43
7443320680	12x12x 10	6.80	8.98	13.0	13.0	42
7443320820	12x12x 10	8.20	9.90	12.0	13.0	34
7443321000	12x12x 10	10.00	14.40	10.0	9.0	29



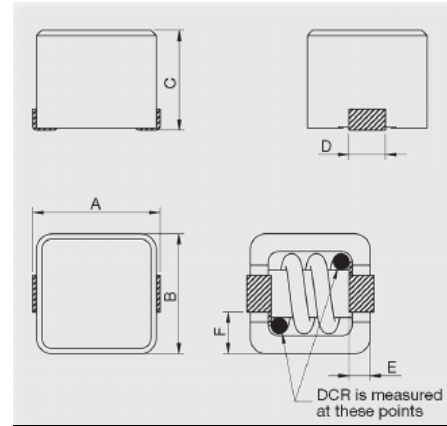
Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
744 334 x	8,4 <sup>+0.4</sup>	7,9 <sup>+0.3</sup>	7,2 <sup>+0.3</sup>	2,3 <sup>+0.2</sup>	1,5 <sup>+0.2</sup>	2,75 <sup>+0.5</sup>
744 333 x	10,9 <sup>+0.4</sup>	10,0 <sup>+0.4</sup>	9,3 <sup>+0.4</sup>	3,0 <sup>+0.2</sup>	1,6 <sup>+0.2</sup>	3,5 <sup>+0.5</sup>
744 332 x	12,1 <sup>+0.3</sup>	11,4 <sup>+0.3</sup>	9,5 <sup>+0.5</sup>	3,5 <sup>+0.2</sup>	2,0 <sup>+0.2</sup>	3,9 <sup>+1.0</sup>

The WE-HCC [Iron] is available in the package sizes of 8x8x7, 10x10x9 & 12x12x10. Each package size carries a broad of range different inductance values to serve you and your application with the right product.

## Overview of package sizes and technical parameters WE HCC [Iron Powder]



Order Code	Size (mm)	Inductance $\pm 20\%$ ( $\mu\text{H}$ )	DCR $\pm 10\%$ (m $\Omega$ )	$I_{SAT}$ (A)	Rated Current (A)	SRF (MHz)
7443310022	12x12 x 10	0.22	0.51	85	27.0	210
7443310033	12x12 x 10	0.33	0.51	80	27.0	190
7443310047	12x12 x 10	0.47	0.72	76	23.0	140
7443310068	12x12 x 10	0.68	0.72	74	23.0	120
7443310082	12x12 x 10	0.82	1.15	66	21.0	100
7443310100	12x12 x 10	1.0	1.15	52	21.0	100
7443310150	12x12 x 10	1.5	2.0	50	18.5	120
7443310220	12x12 x 10	2.2	3.0	48	16.0	70
7443310330	12x12 x 10	3.3	6.0	39	13.0	50
7443310390	12x12 x 10	3.9	8.9	34	11.5	50
7443310470	12x12 x 10	4.7	8.9	33	11.5	32



Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
744 332 x	12,1 $\pm$ 0.3	11,4 $\pm$ 0.3	9,5 $\pm$ 0.5	3,5 $\pm$ 0.2	2,0 $\pm$ 0.2	3,9 $\pm$ 1.0

The WE-HCC [Iron] is available in a 12x12x10 package size with a broad range of inductance values, 0.22uH up to 4.7uH.

# WE-HCC [Ferrite] Sample Kit now available



more than you expect

**SIZE:** (a x b x c in mm)  
 8.0 x 8.0 x 7.0  
 10.0 x 10.0 x 9.0  
 12.0 x 11.0 x 10.0

**TECHNICAL DATA:**  
 L: 0.22 - 10.00 µH  
 I: 9.00 - 27.0A  
 I<sub>sat</sub>: 8.00 - 60.0A  
 DCR<sub>max</sub>: 0.53 - 20.70 mΩ

**Design Kit SMD-High Current Inductor WE-HCC**

Order Code 744 328  
Version 1.0

more than you expect

**Design Kit SMD-High Current Inductor WE-HCC**

<b>744 322 0022</b> L: 2.20 µH I: 27.00 A I <sub>sat</sub> : 60.00 A DCR <sub>max</sub> : 0.53mΩ	<b>744 322 0023</b> L: 2.33 µH I: 27.00 A I <sub>sat</sub> : 60.00 A DCR <sub>max</sub> : 0.53mΩ	<b>744 322 0047</b> L: 3.97 µH I: 20.00 A I <sub>sat</sub> : 40.00 A DCR <sub>max</sub> : 0.77mΩ	<b>744 322 0088</b> L: 5.90 µH I: 20.00 A I <sub>sat</sub> : 38.00 A DCR <sub>max</sub> : 0.77mΩ	<b>744 322 0082</b> L: 6.30 µH I: 27.00 A I <sub>sat</sub> : 50.00 A DCR <sub>max</sub> : 1.17mΩ	<b>744 322 0100</b> L: 7.50 µH I: 24.00 A I <sub>sat</sub> : 57.00 A DCR <sub>max</sub> : 1.57mΩ	<b>744 322 0100</b> L: 7.50 µH I: 24.00 A I <sub>sat</sub> : 57.00 A DCR <sub>max</sub> : 1.57mΩ
<b>744 322 0200</b> L: 2.00 µH I: 18.00 A I <sub>sat</sub> : 20.00 A DCR <sub>max</sub> : 3.95mΩ	<b>744 322 0200</b> L: 2.00 µH I: 17.00 A I <sub>sat</sub> : 17.00 A DCR <sub>max</sub> : 4.45mΩ	<b>744 322 0470</b> L: 4.10 µH I: 15.00 A I <sub>sat</sub> : 17.00 A DCR <sub>max</sub> : 6.31mΩ	<b>744 322 0680</b> L: 6.30 µH I: 13.00 A I <sub>sat</sub> : 13.00 A DCR <sub>max</sub> : 8.84mΩ	<b>744 322 0020</b> L: 2.20 µH I: 18.00 A I <sub>sat</sub> : 20.00 A DCR <sub>max</sub> : 3.95mΩ	<b>744 322 1000</b> L: 10.00 µH I: 9.00 A I <sub>sat</sub> : 10.00 A DCR <sub>max</sub> : 14.40mΩ	
<b>744 323 0022</b> L: 0.22 µH I: 21.50 A I <sub>sat</sub> : 60.00 A DCR <sub>max</sub> : 0.53mΩ	<b>744 323 0023</b> L: 0.23 µH I: 21.50 A I <sub>sat</sub> : 60.00 A DCR <sub>max</sub> : 0.53mΩ	<b>744 323 0047</b> L: 0.47 µH I: 20.00 A I <sub>sat</sub> : 47.00 A DCR <sub>max</sub> : 0.80mΩ	<b>744 323 0088</b> L: 0.88 µH I: 20.00 A I <sub>sat</sub> : 38.00 A DCR <sub>max</sub> : 1.35mΩ	<b>744 323 0082</b> L: 0.82 µH I: 20.00 A I <sub>sat</sub> : 38.00 A DCR <sub>max</sub> : 1.35mΩ	<b>744 323 0100</b> L: 1.00 µH I: 20.00 A I <sub>sat</sub> : 27.00 A DCR <sub>max</sub> : 1.35mΩ	<b>744 323 0150</b> L: 1.50 µH I: 20.00 A I <sub>sat</sub> : 27.00 A DCR <sub>max</sub> : 2.00mΩ
<b>744 323 0200</b> L: 2.00 µH I: 16.00 A I <sub>sat</sub> : 22.00 A DCR <sub>max</sub> : 3.75mΩ	<b>744 323 0200</b> L: 2.00 µH I: 15.00 A I <sub>sat</sub> : 15.00 A DCR <sub>max</sub> : 4.45mΩ	<b>744 323 0470</b> L: 4.10 µH I: 14.00 A I <sub>sat</sub> : 15.00 A DCR <sub>max</sub> : 6.30mΩ	<b>744 323 0680</b> L: 6.30 µH I: 11.00 A I <sub>sat</sub> : 11.00 A DCR <sub>max</sub> : 13.37mΩ	<b>744 323 0020</b> L: 2.20 µH I: 11.00 A I <sub>sat</sub> : 9.00 A DCR <sub>max</sub> : 13.37mΩ	<b>744 323 1000</b> L: 10.00 µH I: 5.00 A I <sub>sat</sub> : 5.00 A DCR <sub>max</sub> : 20.70mΩ	
<b>744 324 0020</b> L: 0.20 µH I: 30.00 A I <sub>sat</sub> : 36.00 A DCR <sub>max</sub> : 1.45mΩ	<b>744 324 0047</b> L: 0.47 µH I: 19.00 A I <sub>sat</sub> : 32.00 A DCR <sub>max</sub> : 1.72mΩ	<b>744 324 0068</b> L: 0.68 µH I: 19.00 A I <sub>sat</sub> : 23.00 A DCR <sub>max</sub> : 1.72mΩ	<b>744 324 0100</b> L: 1.00 µH I: 17.00 A I <sub>sat</sub> : 24.00 A DCR <sub>max</sub> : 2.86mΩ	<b>744 324 0150</b> L: 1.50 µH I: 16.00 A I <sub>sat</sub> : 19.00 A DCR <sub>max</sub> : 4.45mΩ	<b>744 324 0200</b> L: 2.00 µH I: 16.00 A I <sub>sat</sub> : 12.50 A DCR <sub>max</sub> : 4.45mΩ	<b>744 324 0200</b> L: 2.00 µH I: 14.00 A I <sub>sat</sub> : 8.50 A DCR <sub>max</sub> : 8.90mΩ

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Please check datasheets in [www.we-online.com](http://www.we-online.com) for specifications.  
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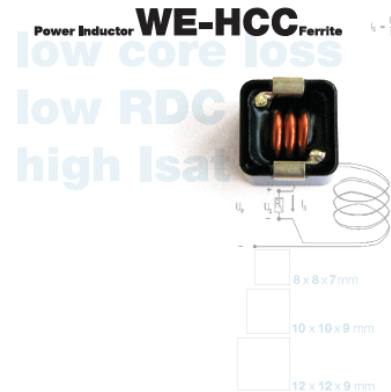
www.we-online.com

In addition Würth Elektronik released a design kit for the complete WE-HCC Series. It is available under the order code 744332.

## WE-HCC Summary



- Increase the efficiency of your application with a cost effective part
- 3 different sizes with a broad inductance range
- Sample Kit available (Order Code 744332)
- Fits on many standard footprints of common manufacturers



In summary the Würth Elektronik WE-HCC series will improve your performance in power supply and high current filter designs. The WE-HCC is a very cost effective part based on the package size and performance. Due of the package size and layout this series will fit on many standard footprint of common manufacturer.

There are 2 versions available. Depending on your applications you can choose between Iron Alloy or Ferrite material to achieve the best result in your application. There are 3 different sizes available 8x8x7, 10x10x9 and 12x12x10. Values from 0.22uH up to 10uH