

BDHE00201610R47MQ1 Datasheet

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DiGi Electronics Part Number	BDHE00201610R47MQ1-DG
Manufacturer	Pulse Electronics
Manufacturer Product Number	BDHE00201610R47MQ1
Description	FIXED IND 470NH 4.2A 42 MOHM SMD
Detailed Description	470 nH Unshielded Molded Inductor 4.2 A 42mOhm Max 0806 (2016 Metric)



Tel: +00 852-30501935

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DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:

BDHE00201610R47MQ1

Series:

BDHE

Type:

Molded

Inductance:

470 nH

Current Rating (Amps):

4.2 A

Shielding:

Unshielded

Q @ Freq:

-

Ratings:

-

Inductance Frequency - Test:

2 MHz

Mounting Type:

Surface Mount

Supplier Device Package:

0806

Height - Seated (Max):

0.039" (1.00mm)

Manufacturer:

Pulse Electronics

Product Status:

Active

Material - Core:

-

Tolerance:

±20%

Current - Saturation (Isat):

4.8A

DC Resistance (DCR):

42mOhm Max

Frequency - Self Resonant:

-

Operating Temperature:

-40°C ~ 125°C

Features:

-

Package / Case:

0806 (2016 Metric)

Size / Dimension:

0.079" L x 0.063" W (2.00mm x 1.60mm)

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8504.50.8000

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

Molding Power Inductors – BDHE Series

BDHE Series



The BDHE Series is designed specifically to enhance both PFM and PWM application performance. Q(Rac) value at light load and the RDC value at heavy load are both exceptional. Furthermore, the saturated current performance is also optimal, helping to reduce the ripple current and enhance the efficiency.

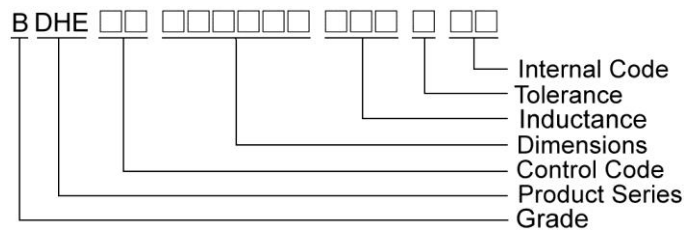
Features

- RoHS, Halogen Free and REACH Compliance
- High Efficiency
- Excellent Q, RDC and saturation current
- Low profile and miniature size down to 1.6*0.8*0.8mm

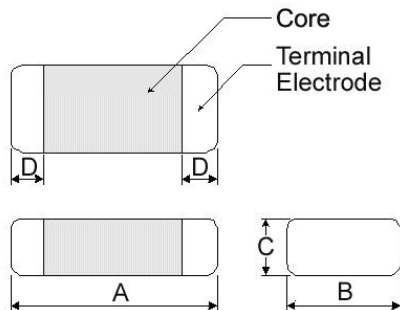
Applications

- Smartphones, tablets and wearable devices
- HDD, SSD and PC peripheral devices
- DSC, camcorders
- PND
- DC/DC converters

Product Identification



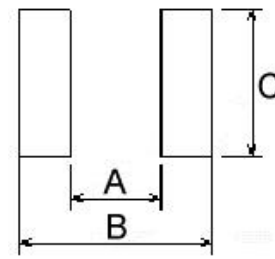
Shape and Dimensions



Dimensions in mm

TYPE	A	B	C	D
BDHE00160808	1.6±0.2	0.80±0.2	0.8Max	0.3±0.2
BDHE00201208	2.0±0.2	1.25±0.2	0.8Max	0.5±0.3
BDHE00201210	2.0±0.2	1.25±0.2	1.0Max	0.5±0.3
BDHE00201608	2.0±0.2	1.60±0.2	0.8Max	0.5±0.3
BDHE00201610	2.0±0.2	1.60±0.2	1.0Max	0.5±0.3
BDHE00201612	2.0±0.2	1.60±0.2	1.2Max	0.5±0.3
BDHE00252010	2.5±0.3	2.00±0.3	1.0Max	0.6±0.3
BDHE00252012	2.5±0.3	2.00±0.3	1.2Max	0.6±0.3
BDHE00322510	3.2±0.3	2.50±0.3	1.0Max	0.5±0.3
BDHE00322512	3.2±0.3	2.50±0.3	1.2Max	0.5±0.3
BDHE00322525	3.2±0.3	2.50±0.3	2.50±0.3	0.5±0.3

Recommended Pattern



Dimensions in mm

TYPE	A	B	C
BDHE00160808	0.7	1.8	1
BDHE00201208	0.8	2.4	1.45
BDHE00201210	0.8	2.4	1.45
BDHE00201608	0.7	2.3	1.8
BDHE00201610	0.7	2.3	1.8
BDHE00201612	0.7	2.3	1.8
BDHE00252010	1.2	2.8	2.3
BDHE00252012	1.2	2.8	2.3
BDHE00322510	1.7	3.5	2.8
BDHE00322512	1.7	3.5	2.8
BDHE00322525	1.7	3.5	2.8

Molding Power Inductors – BDHE Series

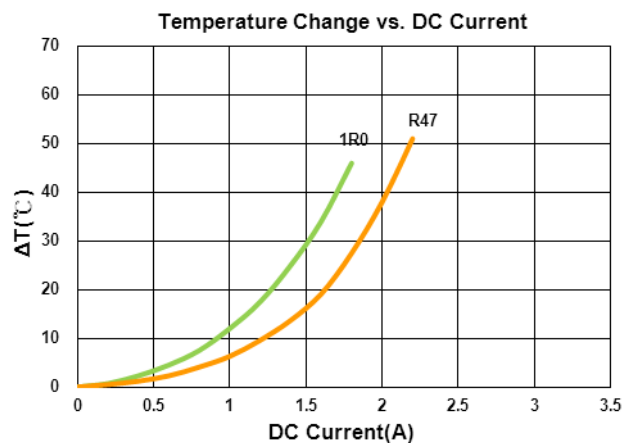
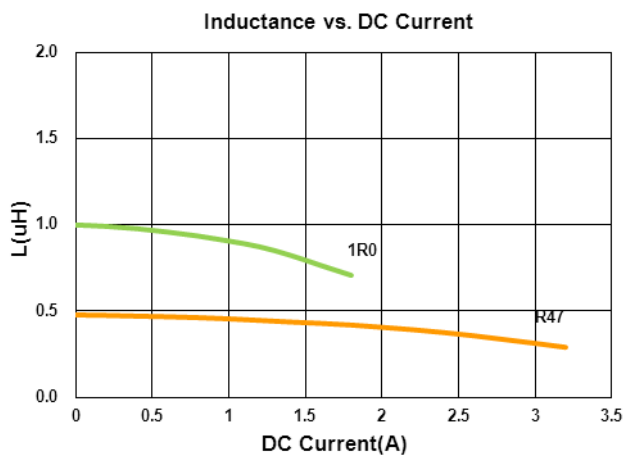
Electrical Characteristics

Part Number	Inductance (uH)	Tolerance (±%)	Test Frequency (MHz)	RDC(mΩ) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
BDHE00160808R47MQ1	0.47	20	2	100(87)	2.2(2.6)	1.6(2.0)
BDHE001608081R0MQ1	1.0	20	2	195(170)	1.6(1.8)	1.5(1.7)

Note: When ordering, please specify tolerance code. Tolerance: M=±20%

- Operating temperature range - 40°C ~ 125°C(Including self - temperature rise)
- Isat for Inductance drop 30% from its value without current
- Irms for a 40°C temperature rise from 25°C ambient with current
- Rated current : Isat or Irms, whichever is smaller
- Absolute maximum voltage 15VDC
- Measure Equipment :
 - L : Agilent E4991/HP4286A+16197A (or equivalent), 2MHz 0.2V
 - RDC : CHEN HWA502BC/HP4338B (or equivalent)
 - Isat : Agilent E4980A+HP42841A (or equivalent)
 - Irms : Agilent 6641 SYSTEM DC POWER SUPPLY (or equivalent)

Test Instruments : E4991A Impedance / Material Analyzer



Molding Power Inductors – BDHE Series

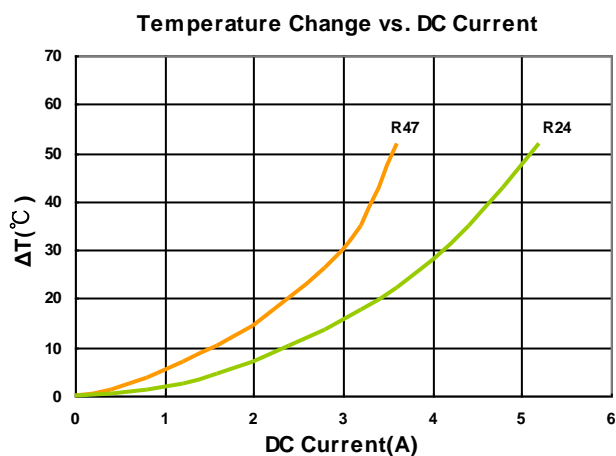
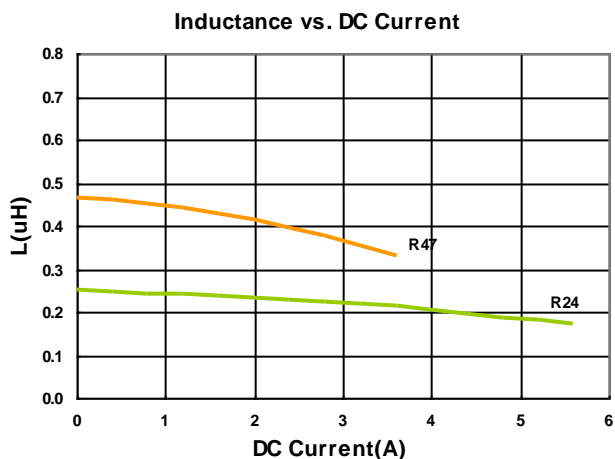
Electrical Characteristics

Part Number	Inductance (μH)	Tolerance ($\pm\%$)	Test Frequency (MHz)	RDC($\text{m}\Omega$) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
BDHE00201208R24MQ1	0.24	20	2	25(19)	4.8(5.4)	4.2(4.8)
BDHE00201208R47MQ1	0.47	20	2	48(40)	3.2(3.6)	3.0(3.4)

Note: When ordering, please specify tolerance code. Tolerance: M= $\pm 20\%$

- Operating temperature range - $40^{\circ}\text{C} \sim 125^{\circ}\text{C}$ (Including self - temperature rise)
- Isat for Inductance drop 30% from its value without current
- Irms for a 40°C temperature rise from 25°C ambient with current
- Rated current : Isat or Irms, whichever is smaller
- Absolute maximum voltage 20VDC
- Measure Equipment :
 - L : Agilent E4991/HP4286A+16197A (or equivalent), 2MHz 0.2V
 - RDC : CHEN HWA502BC/HP4338B (or equivalent)
 - Isat : Agilent E4980A+HP42841A (or equivalent)
 - Irms : Agilent 6641 SYSTEM DC POWER SUPPLY (or equivalent)

Test Instruments : E4991A Impedance / Material Analyzer



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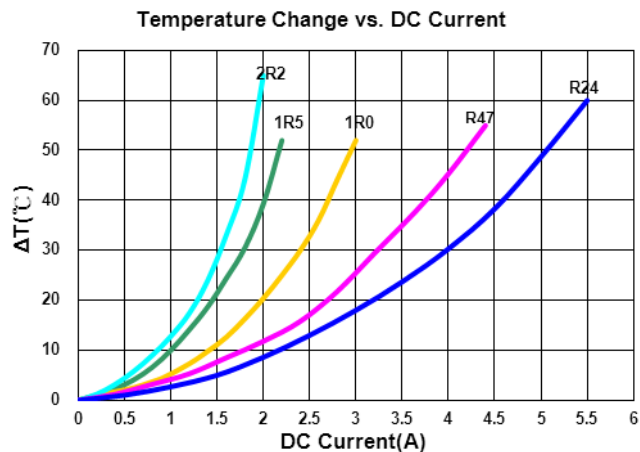
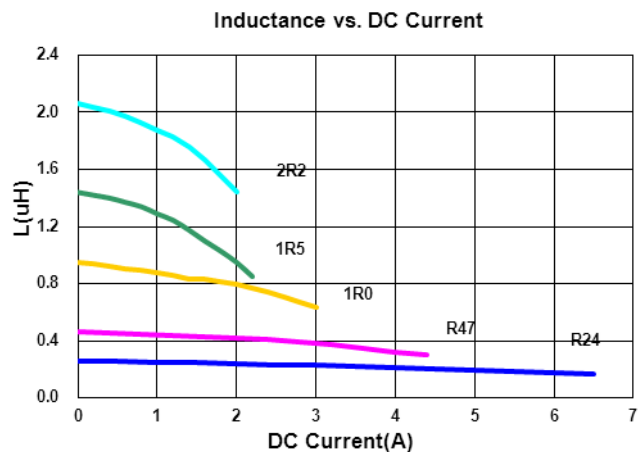
Electrical Characteristics

Part Number	Inductance (uH)	Tolerance (±%)	Test Frequency (MHz)	RDC(mΩ) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
BDHE00201210R24MQ1	0.24	20	2	28(22)	4.5(5.7)	3.7(4.6)
BDHE00201210R47MQ1	0.47	20	2	42(33)	3.3(4.2)	3.0(3.7)
BDHE002012101R0MQ1	1.0	20	2	78(69)	2.3(2.8)	2.2(2.7)
BDHE002012101R5MQ1	1.5	20	2	126(108)	1.7(2.2)	1.6(2.1)
BDHE002012102R2MQ1	2.2	20	2	176(166)	1.6(1.7)	1.4(1.5)

Note: When ordering, please specify tolerance code. Tolerance: M=±20%

- Operating temperature range - 40°C ~ 125°C(Including self - temperature rise)
- Isat for Inductance drop 30% from its value without current
- Irms for a 40°C temperature rise from 25°C ambient with current
- Rated current : Isat or Irms, whichever is smaller
- Absolute maximum voltage 20VDC
- Measure Equipment :
 - L : Agilent E4991/HP4286A+16197A (or equivalent), 2MHz 0.2V
 - RDC : CHEN HWA502BC/HP4338B (or equivalent)
 - Isat : Agilent E4980A+HP42841A (or equivalent)
 - Irms : Agilent 6641 SYSTEM DC POWER SUPPLY (or equivalent)

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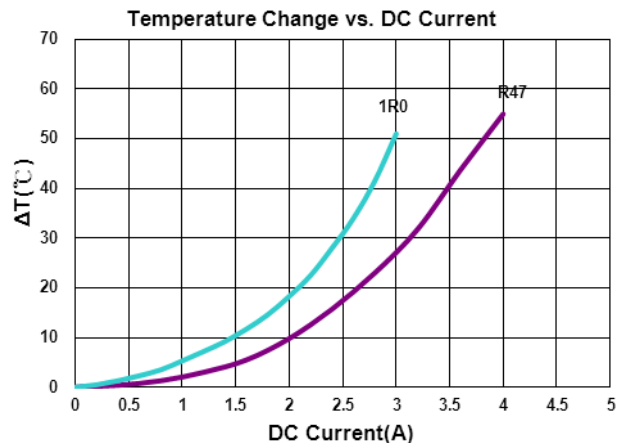
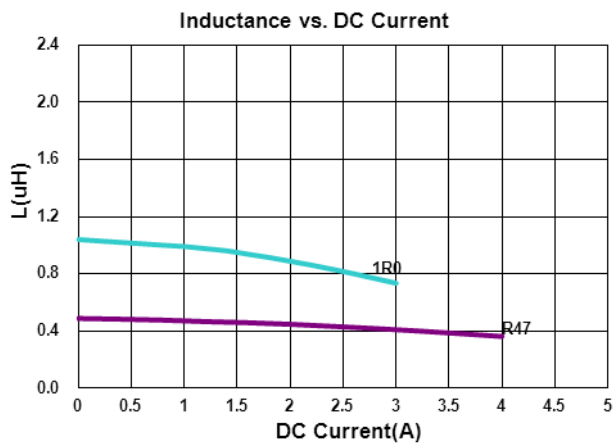
Electrical Characteristics

Part Number	Inductance (μH)	Tolerance ($\pm\%$)	Test Frequency (MHz)	RDC($\text{m}\Omega$) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
BDHE00201608R47MQ1	0.47	20	2	51(42)	3.3(3.6)	3.1(3.4)
BDHE002016081R0MQ1	1.0	20	2	87(76)	2.5(2.8)	2.3(2.7)

Note: When ordering, please specify tolerance code. Tolerance: M= $\pm 20\%$

- Operating temperature range - $40^{\circ}\text{C} \sim 125^{\circ}\text{C}$ (Including self - temperature rise)
- Isat for Inductance drop 30% from its value without current
- Irms for a 40°C temperature rise from 25°C ambient with current
- Rated current : Isat or Irms, whichever is smaller
- Absolute maximum voltage 20VDC
- Measure Equipment :
 - L : Agilent E4991/HP4286A+16197A (or equivalent), 2MHz 0.2V
 - RDC : CHEN HWA502BC/HP4338B (or equivalent)
 - Isat : Agilent E4980A+HP42841A (or equivalent)
 - Irms : Agilent 6641 SYSTEM DC POWER SUPPLY (or equivalent)

Test Instruments : E4991A Impedance / Material Analyzer



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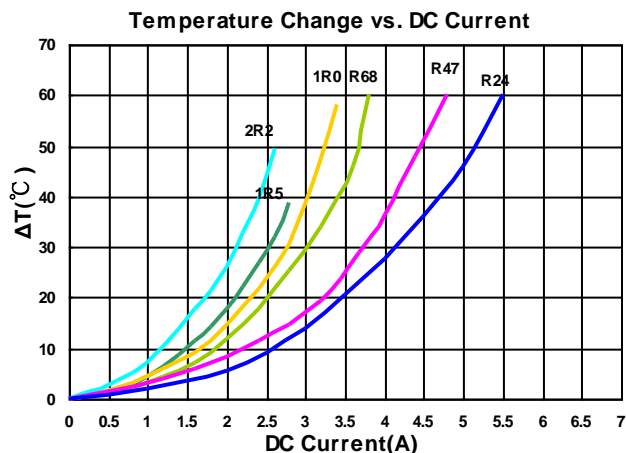
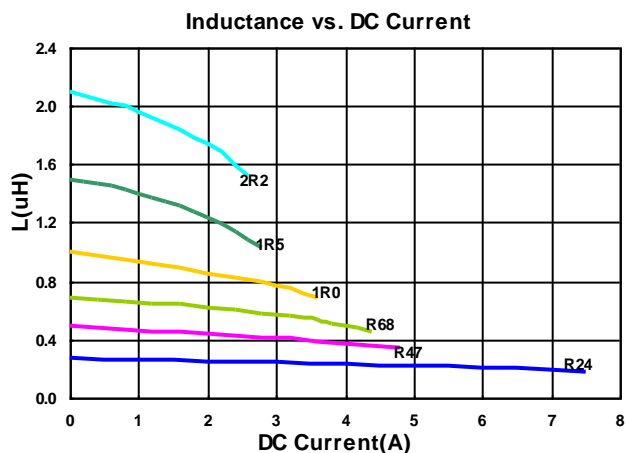
Electrical Characteristics

Part Number	Inductance (uH)	Tolerance (±%)	Test Frequency (MHz)	RDC(mΩ) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
BDHE00201610R24MQ1	0.24	20	2	27(21)	5.6(7.0)	3.9(4.8)
BDHE00201610R47MQ1	0.47	20	2	42(33)	3.9(4.8)	3.5(4.2)
BDHE00201610R68MQ1	0.68	20	2	56(43)	3.2(4.0)	2.7(3.4)
BDHE002016101R0MQ1	1.0	20	2	65(53)	2.9(3.6)	2.5(3.1)
BDHE002016101R5MQ1	1.5	20	2	85(75)	2.5(2.8)	2.3(2.7)
BDHE002016102R2MQ1	2.2	20	2	135(112)	2.4(2.7)	1.8(2.2)

Note: When ordering, please specify tolerance code. Tolerance: M=±20%

- Operating temperature range - 40°C ~ 125°C(Including self - temperature rise)
- Isat for Inductance drop 30% from its value without current
- I rms for a 40°C temperature rise from 25°C ambient with current
- Rated current : Isat or I rms, whichever is smaller
- Absolute maximum voltage 20VDC
- Measure Equipment :
 - L : Agilent E4991/HP4286A+16197A (or equivalent), 2MHz 0.2V
 - RDC : CHEN HWA502BC/HP4338B (or equivalent)
 - Isat : Agilent E4980A+HP42841A (or equivalent)
 - I rms : Agilent 6641 SYSTEM DC POWER SUPPLY (or equivalent)

Test Instruments : E4991A Impedance / Material Analyzer



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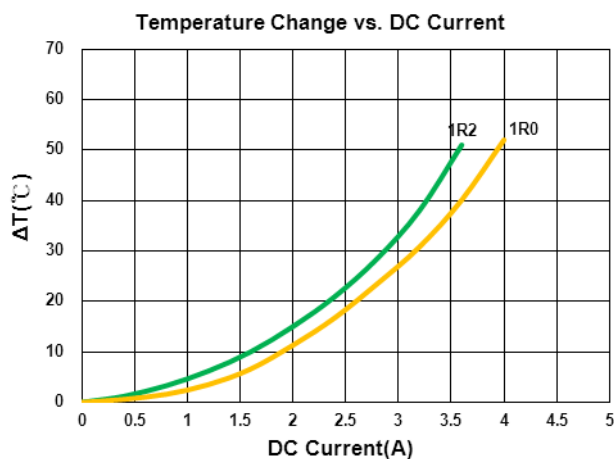
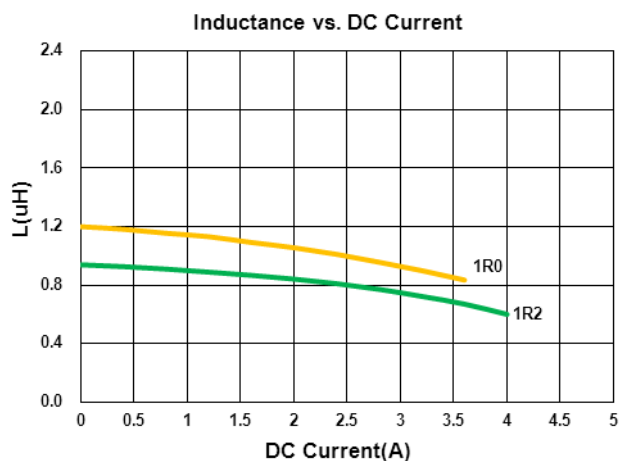
Electrical Characteristics

Part Number	Inductance (uH)	Tolerance (±%)	Test Frequency (MHz)	RDC(mΩ) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
BDHE002016121R0MQ1	1.0	20	2	52(43)	3.2(3.8)	3.0(3.5)
BDHE002016121R2MQ1	1.2	20	2	78(69)	3.0(3.4)	2.7(3.1)

Note: When ordering, please specify tolerance code. Tolerance: M=±20%

- Operating temperature range - 40°C ~ 125°C(Including self - temperature rise)
- Isat for Inductance drop 30% from its value without current
- Irms for a 40°C temperature rise from 25°C ambient with current
- Rated current : Isat or Irms, whichever is smaller
- Absolute maximum voltage 20VDC
- Measure Equipment :
 - L : Agilent E4991/HP4286A+16197A (or equivalent), 2MHz 0.2V
 - RDC : CHEN HWA502BC/HP4338B (or equivalent)
 - Isat : Agilent E4980A+HP42841A (or equivalent)
 - Irms : Agilent 6641 SYSTEM DC POWER SUPPLY (or equivalent)

Test Instruments : E4991A Impedance / Material Analyzer



Molding Power Inductors – BDHE Series

Electrical Characteristics

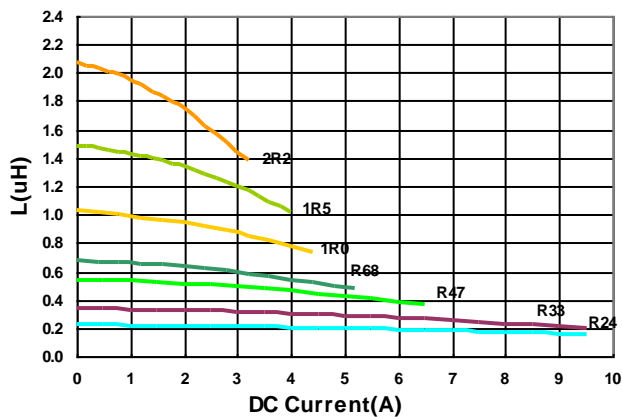
Part Number	Inductance (uH)	Tolerance (±%)	Test Frequency (MHz)	RDC(mΩ) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
BDHE00252010R24MQ1	0.24	20	2	18(13)	8.0(9.5)	5.5(6.5)
BDHE00252010R33MQ1	0.33	20	2	24(18)	6.5(8.0)	4.8(5.5)
BDHE00252010R47MQ1	0.47	20	2	35(27)	5.0(6.2)	3.9(4.5)
BDHE00252010R68MQ1	0.68	20	2	40(32)	4.5(5.6)	3.7(4.2)
BDHE002520101R0MQ1	1.0	20	2	53(45)	3.7(4.6)	3.0(3.5)
BDHE002520101R5MQ1	1.5	20	2	75(68)	3.1(3.8)	2.4(2.8)
BDHE002520102R2MQ1	2.2	20	2	97(87)	2.5(3.0)	2.2(2.5)

Note: When ordering, please specify tolerance code. Tolerance: M=±20%

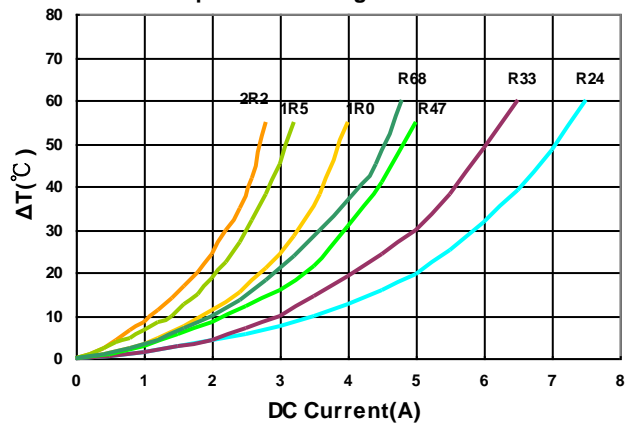
- Operating temperature range - 40°C ~ 125°C(Including self - temperature rise)
- Isat for Inductance drop 30% from its value without current
- I rms for a 40°C temperature rise from 25°C ambient with current
- Rated current : Isat or I rms, whichever is smaller
- Absolute maximum voltage 20VDC
- Measure Equipment :
 - L : Agilent E4991/HP4286A+16197A (or equivalent), 2MHz 0.2V
 - RDC : CHEN HWA502BC/HP4338B (or equivalent)
 - Isat : Agilent E4980A+HP42841A (or equivalent)
 - I rms : Agilent 6641 SYSTEM DC POWER SUPPLY (or equivalent)

Test Instruments : E4991A Impedance / Material Analyzer

Inductance vs. DC Current



Temperature Change vs. DC Current



Molding Power Inductors – BDHE Series

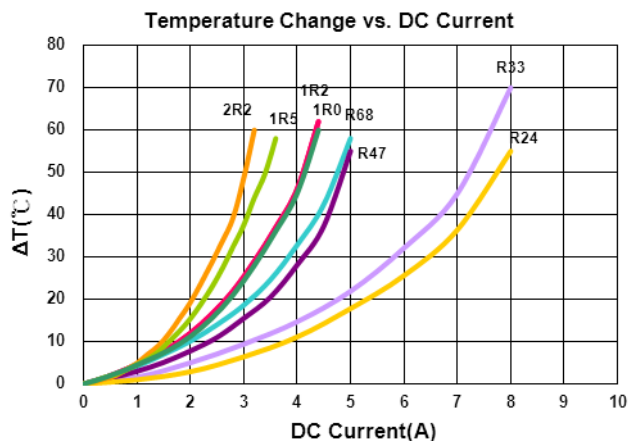
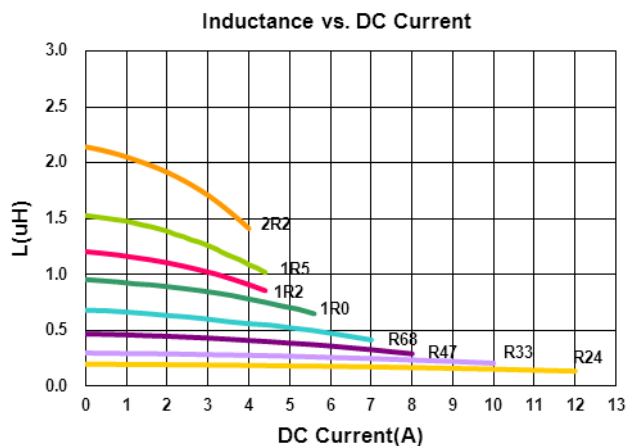
Electrical Characteristics

Part Number	Inductance (uH)	Tolerance (±%)	Test Frequency (MHz)	RDC(mΩ) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
BDHE00252012R24MQ1	0.24	20	2	15(11.5)	9.0(10.5)	6.2(7.3)
BDHE00252012R33MQ1	0.33	20	2	18(14.5)	8.5(10)	5.8(6.4)
BDHE00252012R47MQ1	0.47	20	2	33(28)	5.6(7.0)	3.8(4.5)
BDHE00252012R68MQ1	0.68	20	2	36(30)	5.0(6.2)	3.8(4.4)
BDHE002520121R0MQ1	1.0	20	2	42(35)	4.4(5.5)	3.6(4.1)
BDHE002520121R2MQ1	1.2	20	2	54(45)	3.9(4.4)	3.2(3.8)
BDHE002520121R5MQ1	1.5	20	2	65(57)	3.4(4.2)	2.7(3.1)
BDHE002520122R2MQ1	2.2	20	2	83(74)	3.0(3.7)	2.5(2.9)

Note: When ordering, please specify tolerance code. Tolerance: M=±20%

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- Isat for Inductance drop 30% from its value without current
- Irms for a 40°C temperature rise from 25°C ambient with current
- Rated current : Isat or Irms, whichever is smaller
- Absolute maximum voltage 20VDC
- Measure Equipment :
 L : Agilent E4991/HP4286A+16197A (or equivalent), 2MHz 0.2V
 RDC : CHEN HWA502BC/HP4338B (or equivalent)
 Isat : Agilent E4980A+HP42841A (or equivalent)
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Test Instruments : E4991A Impedance / Material Analyzer



Molding Power Inductors – BDHE Series

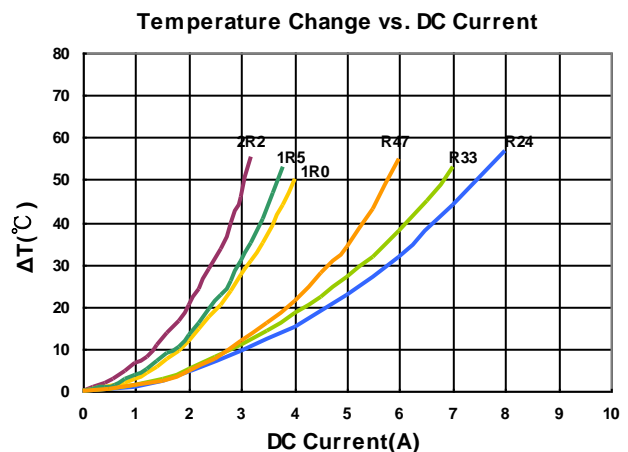
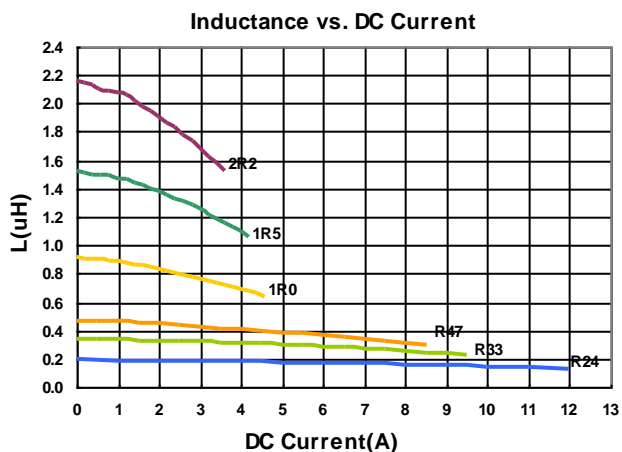
Electrical Characteristics

Part Number	Inductance (uH)	Tolerance (±%)	Test Frequency (MHz)	RDC(mΩ) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
BDHE00322510R24MQ1	0.24	20	2	16(12)	9.0(11.5)	6.0(6.8)
BDHE00322510R33MQ1	0.33	20	2	17(12.5)	8.0(9.5)	5.8(6.5)
BDHE00322510R47MQ1	0.47	20	2	24(19)	6.0(7.3)	4.5(5.4)
BDHE003225101R0MQ1	1.0	20	2	46(39)	4.1(4.7)	3.3(3.7)
BDHE003225101R5MQ1	1.5	20	2	58(50)	3.5(4.0)	3.2(3.5)
BDHE003225102R2MQ1	2.2	20	2	85(73)	3.0(3.5)	2.5(2.8)

Note: When ordering, please specify tolerance code. Tolerance: M=±20%

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- I rms for a 40°C temperature rise from 25°C ambient with current
- Rated current : Isat or I rms, whichever is smaller
- Absolute maximum voltage 20VDC
- Measure Equipment :
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 - RDC : CHEN HWA502BC/HP4338B (or equivalent)
 - Isat : Agilent E4980A+HP42841A (or equivalent)
 - I rms : Agilent 6641 SYSTEM DC POWER SUPPLY (or equivalent)

Test Instruments : E4991A Impedance / Material Analyzer



Molding Power Inductors – BDHE Series

Electrical Characteristics

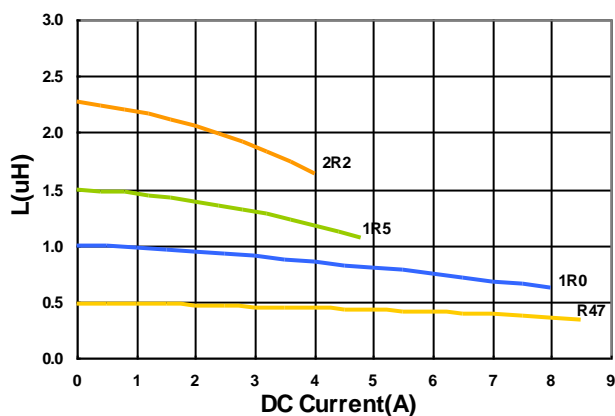
Part Number	Inductance (uH)	Tolerance (±%)	Test Frequency (MHz)	RDC(mΩ) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
BDHE00322512R47MQ1	0.47	20	2	25(19)	7.0(8.2)	4.6(5.2)
BDHE003225121R0MQ1	1.0	20	2	34(27.5)	5.7(6.5)	3.7(4.2)
BDHE003225121R5MQ1	1.5	20	2	59(51)	4.0(4.6)	2.8(3.2)
BDHE003225122R2MQ1	2.2	20	2	73(64)	3.5(4.0)	2.7(3.0)

Note: When ordering, please specify tolerance code. Tolerance: M=±20%

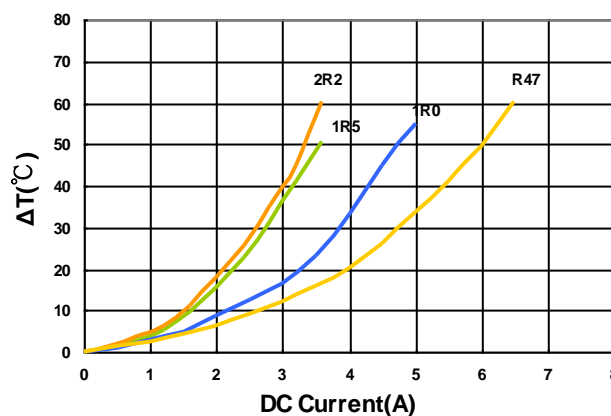
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Inductance vs. DC Current



Temperature Change vs. DC Current



Molding Power Inductors – BDHE Series

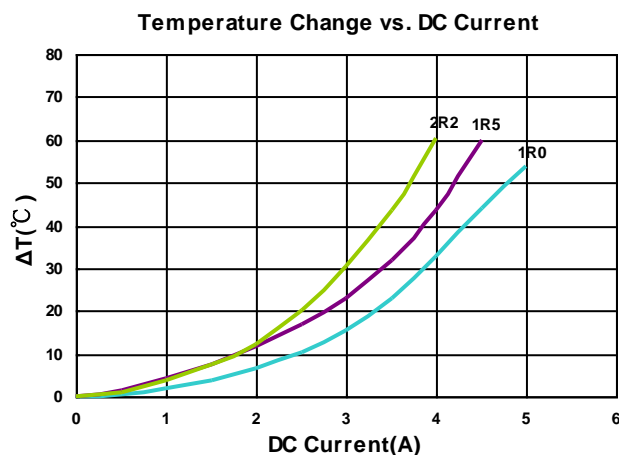
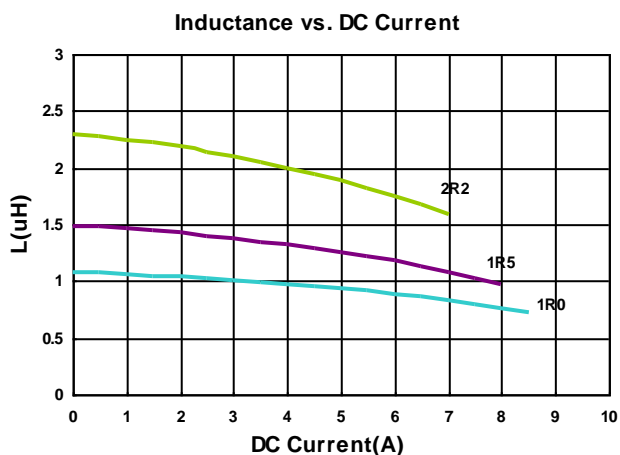
Electrical Characteristics

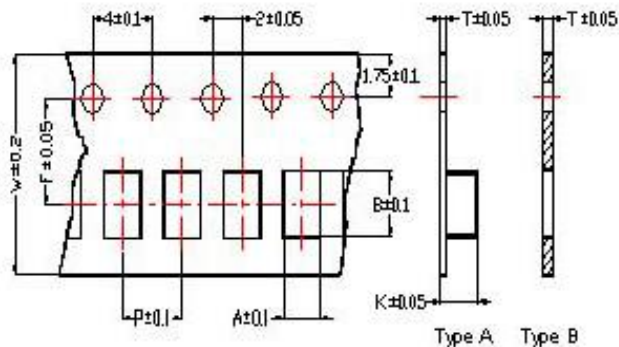
Part Number	Inductance (uH)	Tolerance (±%)	Test Frequency (MHz)	RDC(mΩ) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
BDHE003225251R0MQ1	1.0	20	2	34(28)	6.0(8.0)	3.5(4.3)
BDHE003225251R5MQ1	1.5	20	2	45(35)	5.5(7.5)	3.2(3.9)
BDHE003225252R2MQ1	2.2	20	2	60(49)	4.8(6.5)	3.0(3.3)

Note: When ordering, please specify tolerance code. Tolerance: M=±20%

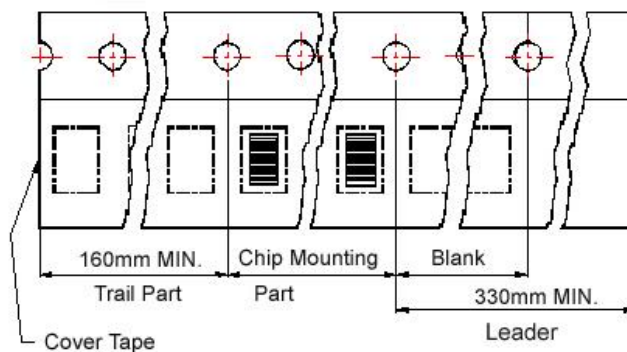
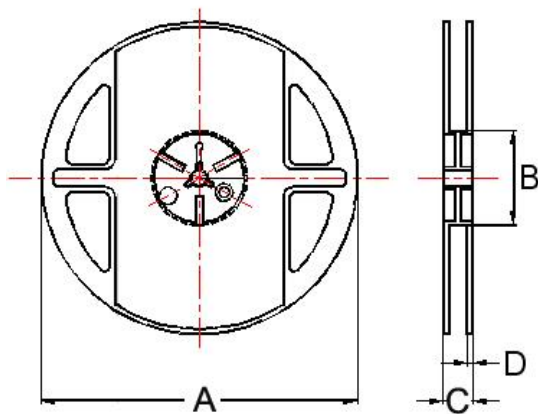
- Operating temperature range - 40°C ~ 125°C(Including self - temperature rise)
- Isat for Inductance drop 30% from its value without current
- I rms for a 40°C temperature rise from 25°C ambient with current
- Rated current : Isat or I rms, whichever is smaller
- Absolute maximum voltage 20VDC
- Measure Equipment :
 L : Agilent E4991/HP4286A+16197A (or equivalent), 2MHz 0.2V
 RDC : CHEN HWA502BC/HP4338B (or equivalent)
 Isat : Agilent E4980A+HP42841A (or equivalent)
 I rms : Agilent 6641 SYSTEM DC POWER SUPPLY (or equivalent)

Test Instruments : E4991A Impedance / Material Analyzer



Molding Power Inductors – BDHE Series**Packaging Specifications****Tape Dimensions****Tape Material**

Carrier Tape: Polycarbonate (Tape A)
Carrier Tape: Paper (Tape B)
Cover Tape: Polystyrene

**Reel Dimensions****Dimensions in mm**

TYPE	Tape Dimensions								Reel Dimensions				Quantity PCS / REEL
	Tape	A	B	T	W	P	F	K	A	B	C	D	
BDHE00160808	B	1.20	1.88	0.95	8	4	3.5	-	178	60	12	1.5	4000
BDHE00201208	A	1.45	2.25	0.22	8	4	3.5	1.04	178	60	12	1.5	3000
BDHE00201210	A	1.50	2.25	0.22	8	4	3.5	1.15	178	60	12	1.5	3000
BDHE00201608	A	1.80	2.35	0.23	8	4	3.5	0.85	178	60	12	1.5	3000
BDHE00201610	A	1.90	2.30	0.22	8	4	3.5	1.15	178	60	12	1.5	3000
BDHE00201612	A	1.90	2.30	0.22	8	4	3.5	1.15	178	60	12	1.5	3000
BDHE00252010	A	2.25	2.80	0.22	8	4	3.5	1.15	178	60	12	1.5	3000
BDHE00252012	A	2.30	2.80	0.22	8	4	3.5	1.35	178	60	12	1.5	3000
BDHE00322510	A	2.80	3.55	0.23	8	4	3.5	1.20	178	60	12	1.5	3000
BDHE00322512	A	2.80	3.50	0.23	8	4	3.5	1.34	178	60	12	1.5	3000
BDHE00322525	A	2.90	3.50	0.23	8	4	3.5	2.90	178	60	12	1.5	1500

Please be sure to request approval specifications that provide further details of the products. Kindly note that the content of these specifications are subject to change or may be discontinued without prior notice. This product may not be designed/used in medical or high risk applications without Chilisin approval. Please contact our sales department before ordering.

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