

DATA SHEET

INDUCTOR

Power inductors

BDHE Series

RoHS compliant & Halogen Free



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.

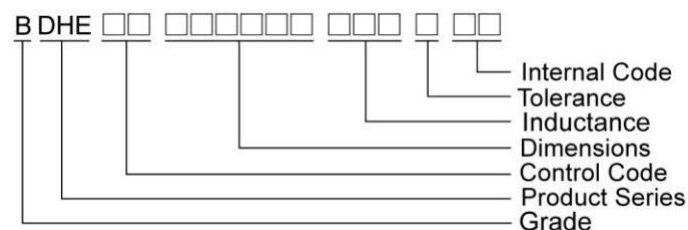
Features

- 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

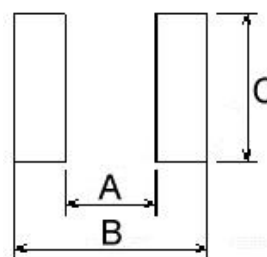
Applications

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

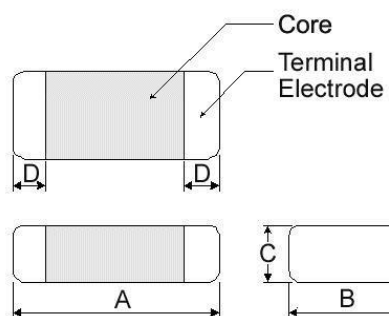
Product Identification



Recommended Pattern



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

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

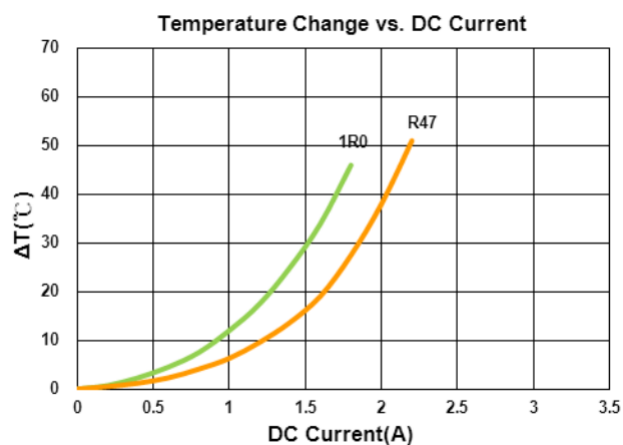
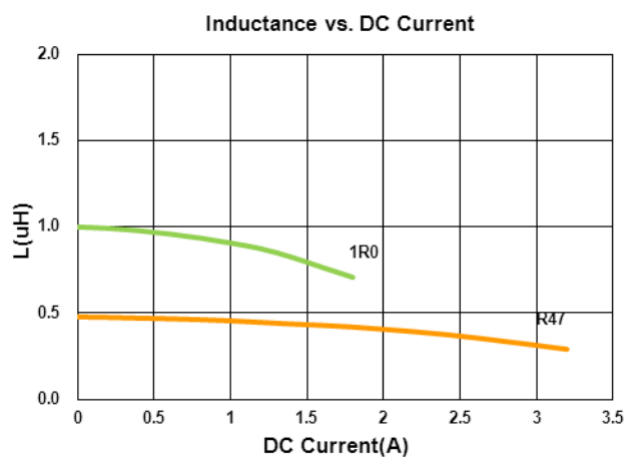
Electrical Characteristics

Part Number	Inductance (μH)	Tolerance ($\pm\%$)	Test Frequency (MHz)	RDC(m Ω) 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



Electrical Characteristics

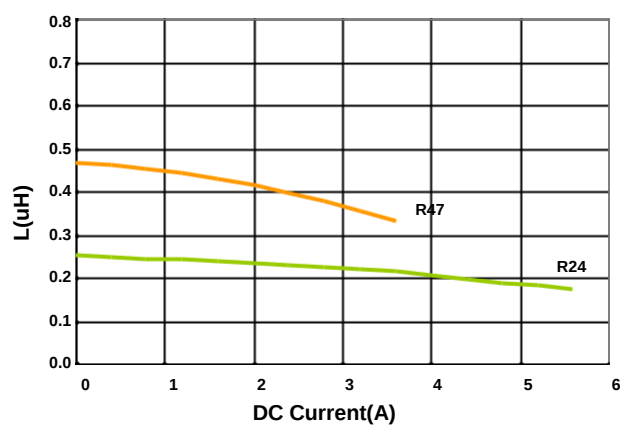
Part Number	Inductance (μH)	Tolerance ($\pm\%$)	Test Frequency (MHz)	RDC(m Ω) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
BDHE00201208R24MQ1	0.24	20	2	25(19)	4.8(5.4)	4.2(4.8)
BDHE00201208R47MQ1	0.47	20	2	48(40)	3.2(3.6)	3.0(3.4)

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

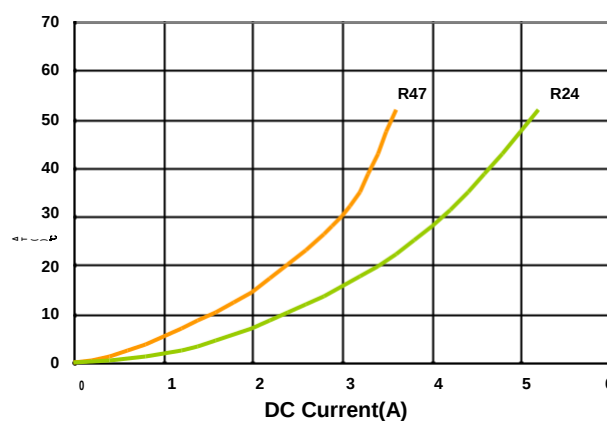
- Operating temperature range - $40^{\circ}\text{C} \sim 125^{\circ}\text{C}$ (Including self - temperature rise)
- Isat for Inductance drop 30% from its value without current
- Irms for a 40°C temperature rise from 25°C ambient with current
- Rated current : Isat or Irms, whichever is smaller
- Absolute 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)

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Inductance vs. DC Current



Temperature Change vs. DC Current



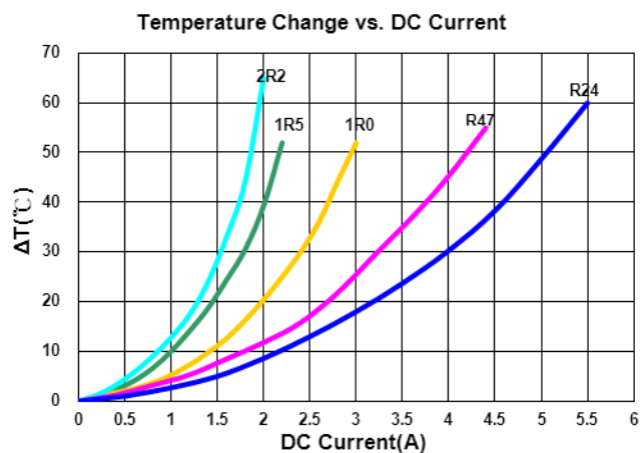
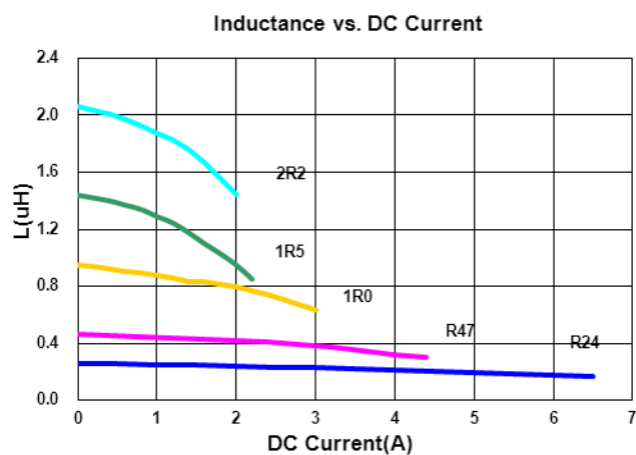
Electrical Characteristics

Part Number	Inductance (μH)	Tolerance ($\pm\%$)	Test Frequency (MHz)	RDC(m Ω) 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)

Test Instruments : E4991A Impedance / Material Analyzer



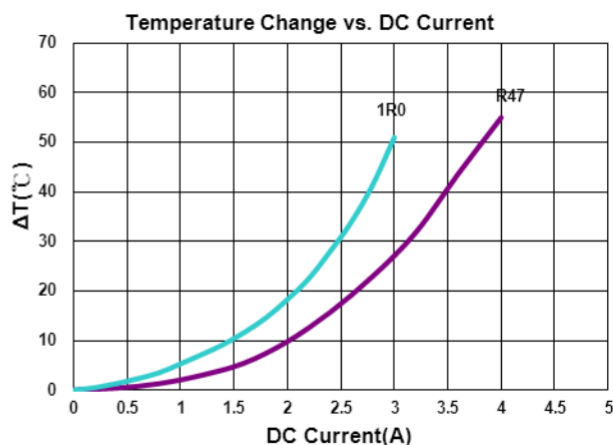
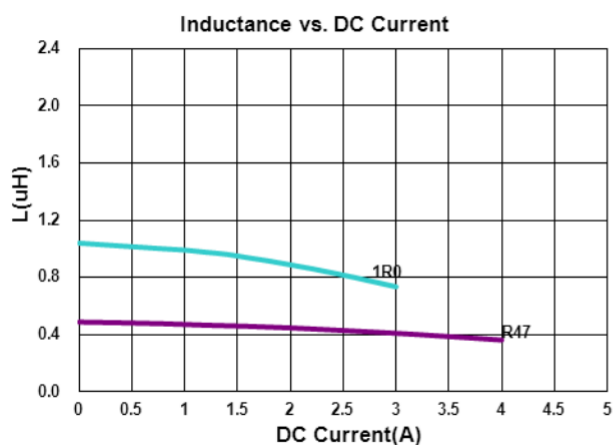
Electrical Characteristics

Part Number	Inductance (μH)	Tolerance ($\pm\%$)	Test Frequency (MHz)	RDC(m Ω) 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=±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



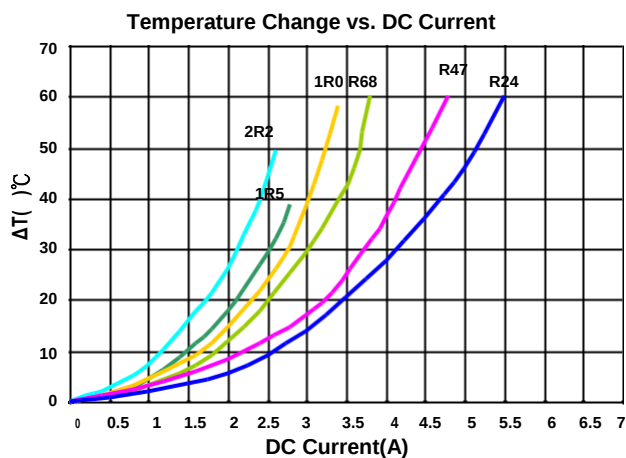
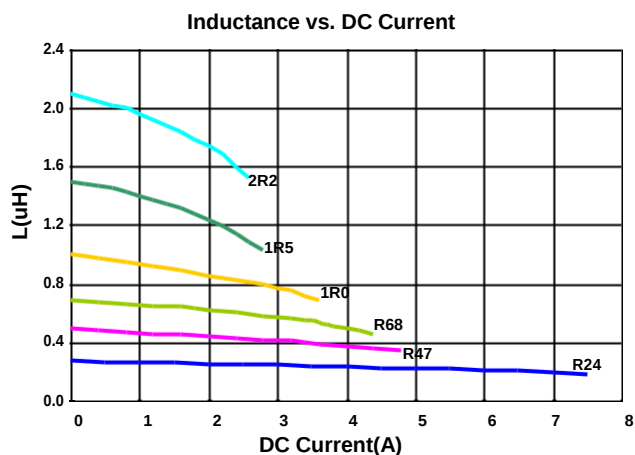
Electrical Characteristics

Part Number	Inductance (μH)	Tolerance ($\pm\%$)	Test Frequency (MHz)	RDC(m Ω) 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= $\pm 20\%$

- 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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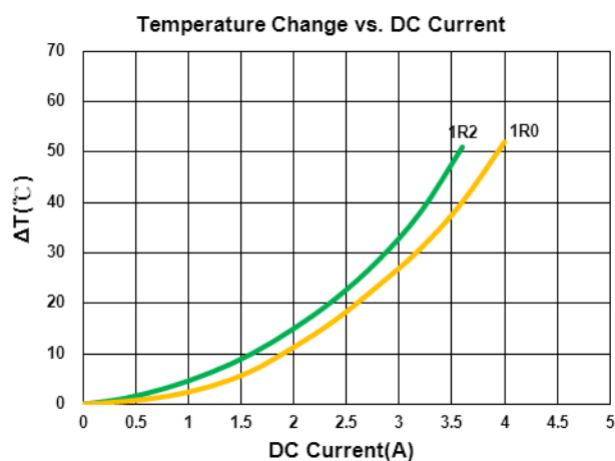
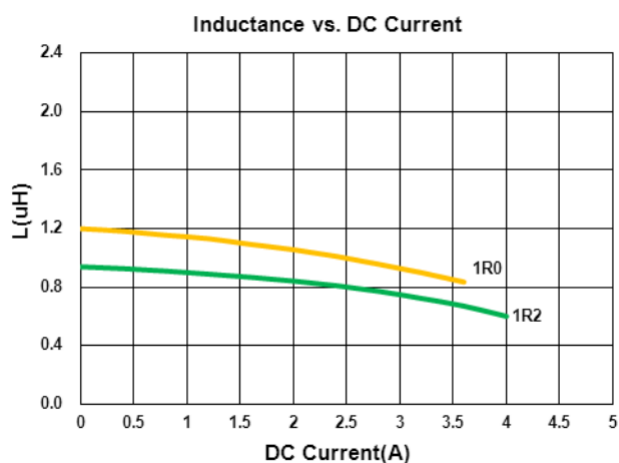
Electrical Characteristics

Part Number	Inductance (μH)	Tolerance ($\pm\%$)	Test Frequency (MHz)	RDC($\text{m}\Omega$) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
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 - $40^{\circ}\text{C} \sim 125^{\circ}\text{C}$ (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



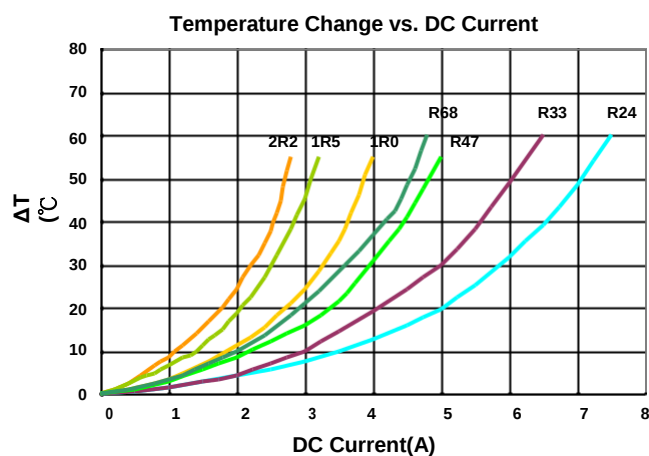
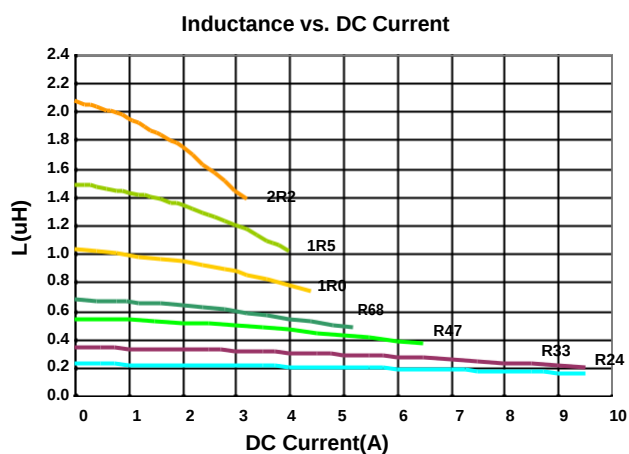
Electrical Characteristics

Part Number	Inductance (μH)	Tolerance ($\pm\%$)	Test Frequency (MHz)	RDC($\text{m}\Omega$) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
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
- 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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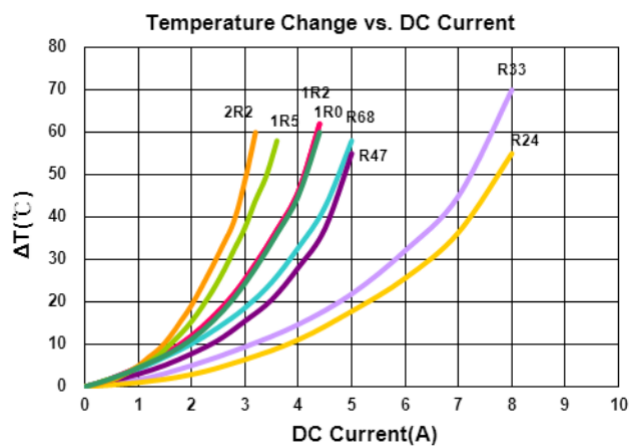
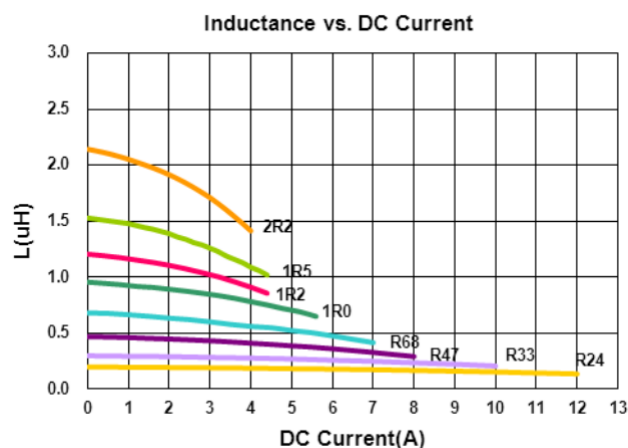
Electrical Characteristics

Part Number	Inductance (μH)	Tolerance ($\pm\%$)	Test Frequency (MHz)	RDC(m Ω) 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 $\pm$ 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)
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Test Instruments : E4991A Impedance / Material Analyzer



Electrical Characteristics

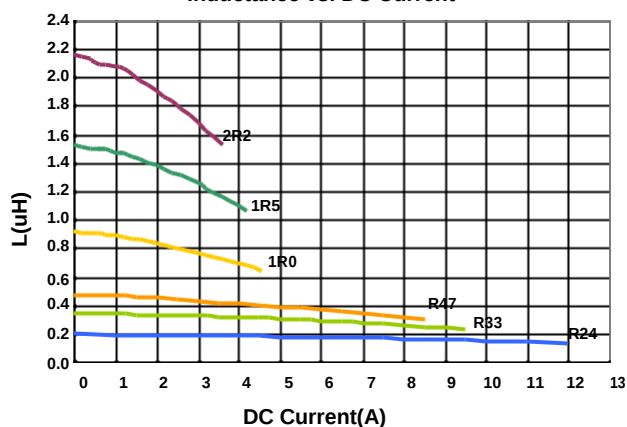
Part Number	Inductance (uH)	Tolerance (±%)	Test Frequency (MHz)	RDC(mΩ) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
BDHE00322510R24MQ1	0.24	20	2	16(12)	9.0(11.5)	6.0(6.8)
BDHE00322510R33MQ1	0.33	20	2	17(12.5)	8.0(9.5)	5.8(6.5)
BDHE00322510R47MQ1	0.47	20	2	24(19)	6.0(7.3)	4.5(5.4)
BDHE00322510R1R0MQ1	1.0	20	2	46(39)	4.1(4.7)	3.3(3.7)
BDHE00322510R5MQ1	1.5	20	2	58(50)	3.5(4.0)	3.2(3.5)
BDHE00322510R2R2MQ1	2.2	20	2	85(73)	3.0(3.5)	2.5(2.8)

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

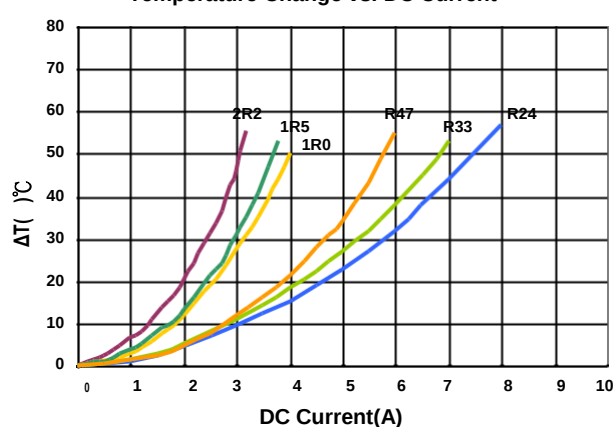
- Operating temperature range - 40°C ~ 125°C(Including self - temperature rise)
- Isat for Inductance drop 30% from its value without current
- Irms for a 40°C temperature rise from 25°C ambient with current
- Rated current : Isat or Irms, whichever is smaller
- Absolute maximum voltage 20VDC
- Measure 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

Inductance vs. DC Current



Temperature Change vs. DC Current



Electrical Characteristics

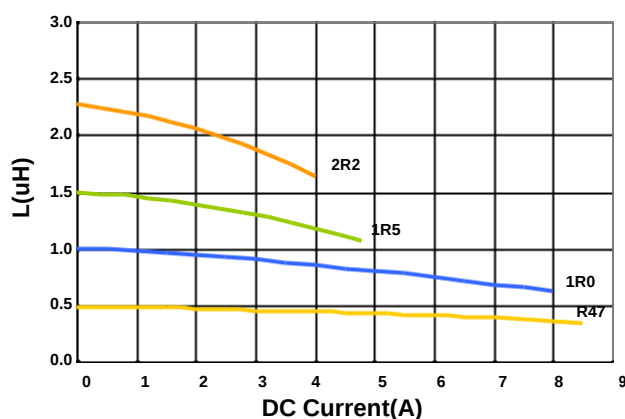
Part Number	Inductance (μ H)	Tolerance ($\pm\%$)	Test Frequency (MHz)	RDC(m Ω) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
BDHE00322512R47MQ1	0.47	20	2	25(19)	7.0(8.2)	4.6(5.2)
BDHE003225121R0MQ1	1.0	20	2	34(27.5)	5.7(6.5)	3.7(4.2)
BDHE003225121R5MQ1	1.5	20	2	59(51)	4.0(4.6)	2.8(3.2)
BDHE003225122R2MQ1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

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

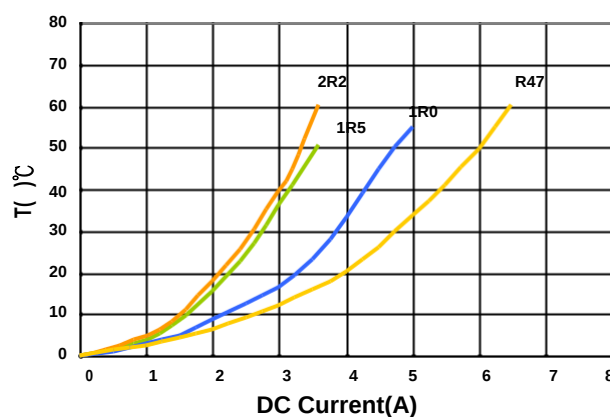
- Operating temperature range - 40°C ~ 125°C(Including self - temperature rise)
- Isat for Inductance drop 30% from its value without current
- Irms for a 40°C temperature rise from 25°C ambient with current
- Rated current : Isat or Irms, whichever is smaller
- Absolute maximum voltage 20VDC
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 RDC : CHEN HWA502BC/HP4338B (or equivalent)
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Test Instruments : E4991A Impedance / Material Analyzer

Inductance vs. DC Current



Temperature Change vs. DC Current



Electrical Characteristics

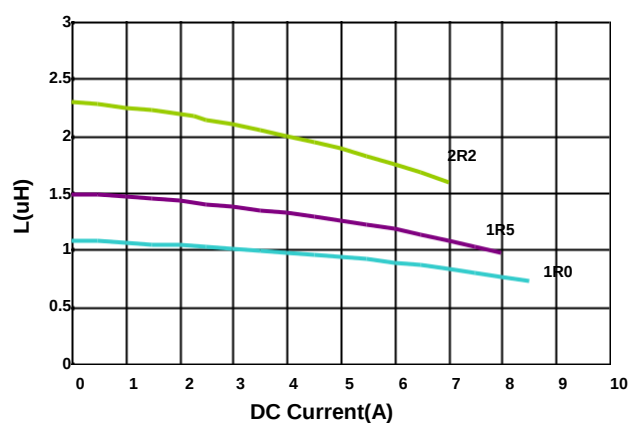
Part Number	Inductance (μH)	Tolerance ($\pm\%$)	Test Frequency (MHz)	RDC(m Ω) Max(Typ.)	Isat(A) Max(Typ.)	Irms(A) Max(Typ.)
BDHE003225251R0MQ1	1.0	20	2	34(28)	6.0(8.0)	3.5(4.3)
BDHE003225251R5MQ1	1.5	20	2	45(35)	5.5(7.5)	3.2(3.9)
BDHE003225252R2MQ1	2.2	20	2	60(49)	4.8(6.5)	3.0(3.3)

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

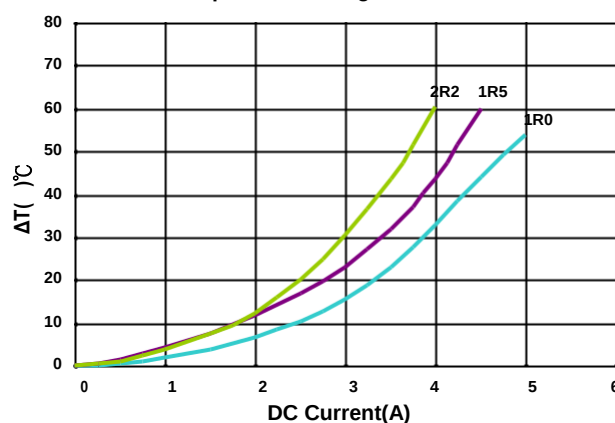
- Operating temperature range - 40°C ~ 125°C(Including self - temperature rise)
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 - Isat : Agilent E4980A+HP42841A (or equivalent)
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Inductance vs. DC Current

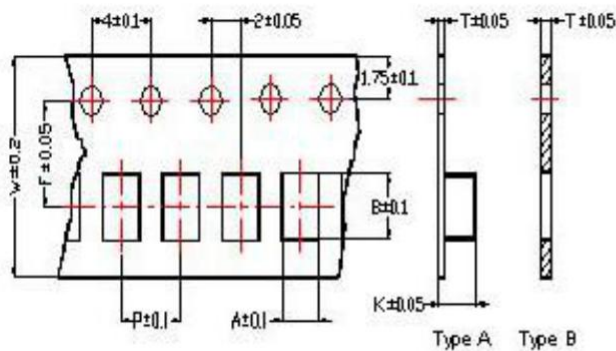


Temperature Change vs. DC Current



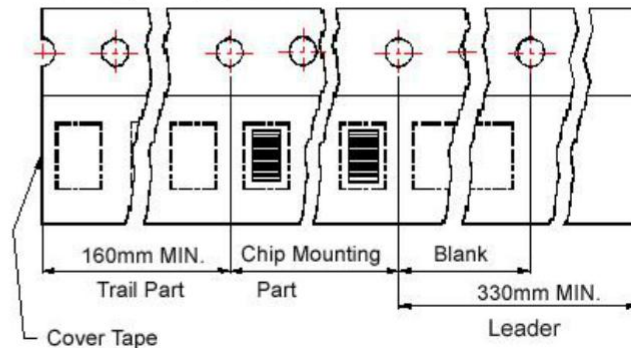
Packaging Specifications

Tape Dimensions

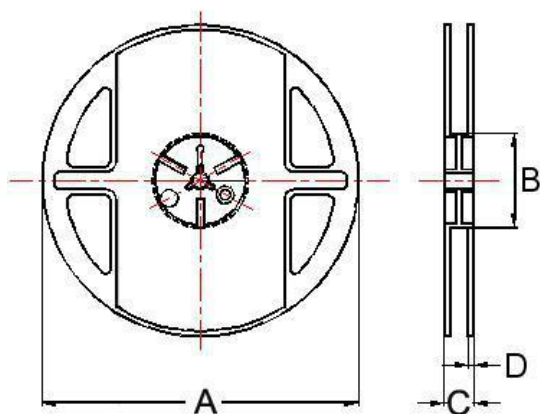


Tape Material

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



Reel Dimensions



Dimensions in mm

TYPE	Tape	Tape Dimensions							Reel Dimensions				Quantity PCS / REEL
		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	1.80	2.20	0.22	8	4	3.5	1.15	178	60	12	1.5	3000
BDHE00201612	A	1.80	2.20	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	2.25	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