

# Notice for TAIYO YUDEN products

Please read this notice before using the TAIYO YUDEN products.

## REMINDERS

- Product information in this catalog is as of October 2011. All of the contents specified herein are subject to change without notice due to technical improvements, etc. Therefore, please check for the latest information carefully before practical application or usage of the Products.

Please note that Taiyo Yuden Co., Ltd. shall not be responsible for any defects in products or equipment incorporating such products, which are caused under the conditions other than those specified in this catalog or individual specification.

- Please contact Taiyo Yuden Co., Ltd. for further details of product specifications as the individual specification is available.
- Please conduct validation and verification of products in actual condition of mounting and operating environment before commercial shipment of the equipment.
- All electronic components or functional modules listed in this catalog are developed, designed and intended for use in general electronics equipment.(for AV, office automation, household, office supply, information service, telecommunications, (such as mobile phone or PC) etc.). Before incorporating the components or devices into any equipment in the field such as transportation,( automotive control, train control, ship control), transportation signal, disaster prevention, medical, public information network (telephone exchange, base station) etc. which may have direct influence to harm or injure a human body, please contact Taiyo Yuden Co., Ltd. for more detail in advance. Do not incorporate the products into any equipment in fields such as aerospace, aviation, nuclear control, submarine system, military, etc. where higher safety and reliability are especially required.

In addition, even electronic components or functional modules that are used for the general electronic equipment, if the equipment or the electric circuit require high safety or reliability function or performances, a sufficient reliability evaluation check for safety shall be performed before commercial shipment and moreover, due consideration to install a protective circuit is strongly recommended at customer's design stage.

- The contents of this catalog are applicable to the products which are purchased from our sales offices or distributors (so called "TAIYO YUDEN' s official sales channel").  
It is only applicable to the products purchased from any of TAIYO YUDEN' s official sales channel.
- Please note that Taiyo Yuden Co., Ltd. shall have no responsibility for any controversies or disputes that may occur in connection with a third party's intellectual property rights and other related rights arising from your usage of products in this catalog. Taiyo Yuden Co., Ltd. grants no license for such rights.

- Caution for export  
Certain items in this catalog may require specific procedures for export according to "Foreign Exchange and Foreign Trade Control Law" of Japan, "U.S. Export Administration Regulations", and other applicable regulations. Should you have any question or inquiry on this matter, please contact our sales staff.

# WIRE-WOUND CHIP POWER INDUCTORS(BR SERIES)



REFLOW

## FEATURES

- Suitable for the use as a choke coil in smaller DC/DC converters.

## APPLICATIONS

- BR-series are suitable for an anti-noise measure on the power supply circuit of DSC, DVC, eBook, LCD-TV, mobile phones, PC, game equipments, various communication equipments and etc..

## OPERATING TEMP.

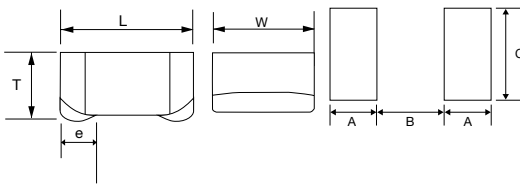
- -40 ~ 105°C (Including-self-generated heat)

## ORDERING CODE

**B** **R** **△** **2** **5** **1** **8** **T** **2** **R** **2** **M** **△** **△** **△**

<b>1</b> Type	<b>2</b> Characteristic Spec	<b>3</b> External Dimensions (W×L) : mm (inch)	<b>4</b> Packaging	<b>5</b> Nominal Inductance [μH]	<b>6</b> Inductance tolerance	<b>7</b> Internal code
BR Wound Chip Power Inductors	FL, L, HL C Low profile High Current	1608 (0603) 1.6×0.8mm 2012 (0805) 2.0×1.2mm 2016 (0806) 2.0×1.6mm 2515 (1006) 2.5×1.5mm 2518 (1007) 2.5×1.8mm 3225 (1210) 3.2×2.5mm	T Tape & Reel	example R20 0.2 1R0 1.0 100 10 101 100 ※R=decimal point	M ±20% K ±10%	

## EXTERNAL DIMENSIONS/STANDARD QUANTITY



Type	A	B	C
1608	0.55	0.70	1.00
2012	0.60	1.00	1.45
2016	0.60	1.00	1.80
2515	0.60	1.50	1.70
2518	0.60	1.50	2.00
3225	0.85	1.70	2.70

Unit : mm

Recommended Land Patterns  
Surface Mounting  
• Mounting and soldering conditions should be checked beforehand.  
• Applicable soldering process to this products is reflow soldering only.

Type	L	W	T	e	Standard Quantity [pcs]	
					Paper Tape	Embossed Tape
BR L1608	1.6±0.2 (0.063±0.008)	0.8±0.2 (0.031±0.008)	0.7 max (0.028 max)	0.45±0.15 (0.016±0.006)	-	3000
BR C1608	1.6±0.2 (0.063±0.008)	0.8±0.2 (0.031±0.008)	0.8±0.2 (0.031±0.008)	0.45±0.15 (0.016±0.006)	-	3000
BR L2012	2.0±0.2 (0.079±0.008)	1.25±0.2 (0.049±0.008)	1.0 max (0.040 max)	0.5±0.2 (0.020±0.008)	-	3000
BR C2012	2.0±0.2 (0.079±0.008)	1.25±0.2 (0.049±0.008)	1.4 max (0.056 max)	0.5±0.2 (0.020±0.008)	-	2000
BR C2016	2.0±0.2 (0.079±0.008)	1.6±0.2 (0.063±0.008)	1.6±0.2 (0.063±0.008)	0.5±0.2 (0.020±0.008)	-	2000
BR L2515	2.5±0.2 (0.098±0.008)	1.5±0.2 (0.060±0.008)	1.2 max (0.048 max)	0.5±0.2 (0.020±0.008)	-	2000
BRFL2518	2.5±0.2 (0.098±0.008)	1.8±0.2 (0.071±0.008)	1.00 max (0.040 max)	0.5±0.2 (0.020±0.008)	-	3000
BR L2518	2.5±0.2 (0.098±0.008)	1.8±0.2 (0.071±0.008)	1.2 max (0.048 max)	0.5±0.2 (0.020±0.008)	-	3000
BRHL2518	2.5±0.2 (0.098±0.008)	1.8±0.2 (0.071±0.008)	1.5 max (0.060 max)	0.5±0.2 (0.020±0.008)	-	2000
BR C2518	2.5±0.2 (0.098±0.008)	1.8±0.2 (0.071±0.008)	1.8±0.2 (0.071±0.008)	0.5±0.2 (0.020±0.008)	-	2000
BR L3225	3.2±0.2 (0.126±0.008)	2.5±0.2 (0.098±0.008)	1.7 max (0.068 max)	0.75±0.2 (0.03±0.008)	-	2000

Unit : mm

## AVAILABLE INDUCTANCE RANGE

Range	Type	BR L1608		BR C1608		BR C1608 6		BR L2012		BR C2012		BR C2016		BR L2515		BRFL2518		BR L2518		BRHL2518		BR C2518		BR L3225		
		I <sub>max</sub> [mA]	R <sub>dc</sub> ±30% [Ω]	I <sub>max</sub> [mA]	R <sub>dc</sub> ±30% [Ω]	I <sub>max</sub> [mA]	R <sub>dc</sub> ±30% [Ω]	I <sub>max</sub> [mA]	R <sub>dc</sub> ±30% [Ω]	I <sub>max</sub> [mA]	R <sub>dc</sub> ±30% [Ω]	I <sub>max</sub> [mA]	R <sub>dc</sub> ±30% [Ω]	I <sub>max</sub> [mA]	R <sub>dc</sub> ±30% [Ω]	I <sub>max</sub> [mA]	R <sub>dc</sub> ±30% [Ω]	I <sub>max</sub> [mA]	R <sub>dc</sub> ±30% [Ω]	I <sub>max</sub> [mA]	R <sub>dc</sub> ±30% [Ω]	I <sub>max</sub> [mA]	R <sub>dc</sub> ±30% [Ω]	I <sub>max</sub> [mA]	R <sub>dc</sub> ±20% [Ω]	
0.20				980	0.2μH			1100	0.43μH																2850	0.022
0.47		510	1μH	0.23		520	0.180	680	0.188																2200	0.043
1.0				280	2.2μH	0.550		1μH																		
2.2																										
4.7																										
10		170		2.00				270	0.850																	
22		150	15μH	2.56																						
47																										
100								85	100μH	7.70																

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**PART NUMBERS**

●1608(0603)TYPE

Ordering code	EMS	Inductance [μH]	Inductance Tolerance	Self-resonant frequency [MHz](min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [MHz]
						Saturation current Idc1	Temperature rise current Idc2	
BR L1608T1R0M	RoHS	1.0	±20%	700	0.230	510	650	1.0
BR L1608T1R5M	RoHS	1.5		600	0.280	440	590	
BR L1608T2R2M	RoHS	2.2		400	0.400	360	500	
BR L1608T3R3M	RoHS	3.3		300	0.650	290	390	
BR L1608T4R7M	RoHS	4.7		150	1.00	240	310	
BR L1608T6R8M	RoHS	6.8		100	1.64	200	250	
BR L1608T100M	RoHS	10		45	2.00	170	220	
BR L1608T150M	RoHS	15		32	2.56	150	200	

Ordering code	EMS	Inductance [μH]	Inductance Tolerance	Self-resonant frequency [MHz](min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [MHz]
						Saturation current Idc1	Temperature rise current Idc2	
BR C1608TR43M 6	RoHS	0.43	±20%	740	0.082	1,400	1,100	6.0
BR C1608TR50M 6	RoHS	0.50		710	0.090	1,200	1,050	
BR C1608TR60M 6	RoHS	0.60		630	0.099	1,100	940	
BR C1608TR72M 6	RoHS	0.72		600	0.144	1,000	810	
BR C1608TR82M 6	RoHS	0.82		560	0.176	950	730	
BR C1608TR1R0M 6	RoHS	1.0		550	0.188	890	680	

Ordering code	EMS	Inductance [μH]	Inductance Tolerance	Self-resonant frequency [MHz](min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [MHz]
						Saturation current Idc1	Temperature rise current Idc2	
BR C1608TR20M	RoHS	0.20	±20%	400	0.060	1,750	980	7.96
BR C1608TR35M	RoHS	0.35		300	0.080	1,400	810	
BR C1608TR45M	RoHS	0.45		200	0.090	1,250	800	
BR C1608TR56M	RoHS	0.56		170	0.095	1,150	760	
BR C1608TR77M	RoHS	0.77		150	0.110	1,000	660	
BR C1608T1R0M	RoHS	1.0		140	0.180	850	520	
BR C1608T1R5M	RoHS	1.5		120	0.300	700	410	
BR C1608T2R2M	RoHS	2.2		100	0.550	550	280	

●2012(0805)TYPE

Ordering code	EMS	Inductance [μH]	Inductance Tolerance	Self-resonant frequency [MHz](min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [MHz]
						Saturation current Idc1	Temperature rise current Idc2	
BR L2012TR47M	RoHS	0.47	±20%	350	0.090	1,100	1,050	7.96
BR L2012T1R0M	RoHS	1.0		300	0.135	850	850	
BR L2012T1R5M	RoHS	1.5		250	0.180	700	750	
BR L2012T2R2M	RoHS	2.2		200	0.300	600	550	
BR L2012T3R3M	RoHS	3.3		190	0.500	490	440	
BR L2012T4R7M	RoHS	4.7		150	0.550	340	400	
BR L2012T6R8M	RoHS	6.8		60	0.750	290	350	
BR L2012T100M	RoHS	10		30	0.850	270	330	
BR L2012T150M	RoHS	15		15	1.00	220	300	
BR L2012T220M	RoHS	22		13	1.30	190	270	
BR L2012T330M	RoHS	33	8.0	2.00	150	220	2.52	
BR L2012T470M	RoHS	47	7.0	3.50	125	160		
BR L2012T680M	RoHS	68	6.5	5.80	100	110		
BR L2012T101M	RoHS	100	6.0	7.70	85	85		0.796

Ordering code	EMS	Inductance [μH]	Inductance Tolerance	Self-resonant frequency [MHz](min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [MHz]
						Saturation current Idc1	Temperature rise current Idc2	
BR C2012T1R0M	RoHS	1.0	±20%	490	0.060	1,500	1,400	1.0
BR C2012T1R5MD	RoHS	1.5		390	0.090	1,200	1,100	
BR C2012T2R2MD	RoHS	2.2		350	0.110	1,100	1,000	
BR C2012T3R3MD	RoHS	3.3		300	0.170	800	870	
BR C2012T4R7MD	RoHS	4.7		250	0.265	700	600	

●2016(0806)TYPE

Ordering code	EMS	Inductance [μH]	Inductance Tolerance	Self-resonant frequency [MHz](min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [MHz]
						Saturation current Idc1	Temperature rise current Idc2	
BR C2016T1R0M	RoHS	1.0	±20%	450	0.085	1,350	1,100	0.10
BR C2016T1R5M	RoHS	1.5		370	0.150	1,100	820	
BR C2016T2R2M	RoHS	2.2		250	0.180	910	760	
BR C2016T3R3M	RoHS	3.3		140	0.220	740	680	
BR C2016T4R7M	RoHS	4.7		78	0.270	660	610	
BR C2016T6R8M	RoHS	6.8		39	0.330	550	560	
BR C2016T100□	RoHS	10	±10% ±20%	35	0.400	450	520	
BR C2016T150□	RoHS	15		28	0.600	400	410	
BR C2016T220□	RoHS	22		24	1.00	310	310	
BR C2016T330□	RoHS	33		13	1.70	270	240	
BR C2016T470□	RoHS	47		11	2.20	210	210	
BR C2016T680□	RoHS	68		8	2.80	200	190	
BR C2016T101□	RoHS	100		7	3.40	140	170	

•Please specify the inductance tolerance code. (M or K)

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20°C)

※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40°C. (at 20°C)

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**PART NUMBERS**

● 2515(1006)TYPE

Ordering code	EMS	Inductance [ $\mu$ H]	Inductance Tolerance	Self-resonant frequency [MHz](min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current ※) [mA]		Measuring frequency [MHz]
						Saturation current Idc1	Temperture rise current Idc2	
BR L2515T1R0M	RoHS	1.0	$\pm 20\%$	160	0.070	1,500	1,350	1.0
BR L2515T1R5M	RoHS	1.5		130	0.100	1,200	1,150	
BR L2515T2R2M	RoHS	2.2		100	0.135	1,000	1,000	
BR L2515T3R3MD	RoHS	3.3		70	0.215	800	750	
BR L2515T4R7MD	RoHS	4.7		60	0.265	650	700	

● 2518(1007)TYPE

Ordering code	EMS	Inductance [ $\mu$ H]	Inductance Tolerance	Self-resonant frequency [MHz](min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current ※) [mA]		Measuring frequency [MHz]
						Saturation current Idc1	Temperture rise current Idc2	
BRFL2518T1R0M	RoHS	1.0	$\pm 20\%$	130	0.090	1,200	1,200	1.0
BRFL2518T1R5M	RoHS	1.5		100	0.110	1,100	1,000	
BRFL2518T2R2M	RoHS	2.2		80	0.130	850	950	
BRFL2518T3R3M	RoHS	3.3		70	0.220	700	700	
BRFL2518T4R7M	RoHS	4.7		60	0.330	650	650	

Ordering code	EMS	Inductance [ $\mu$ H]	Inductance Tolerance	Self-resonant frequency [MHz](min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current ※) [mA]		Measuring frequency [MHz]
						Saturation current Idc1	Temperture rise current Idc2	
BR L2518T1R0M	RoHS	1.0	$\pm 20\%$	130	0.080	1,600	1,000	7.96
BR L2518T1R5M	RoHS	1.5		100	0.100	1,200	920	
BR L2518T2R2M	RoHS	2.2		80	0.135	1,000	850	
BR L2518T3R3M	RoHS	3.3		70	0.300	800	580	
BR L2518T4R7M	RoHS	4.7		60	0.400	700	470	

Ordering code	EMS	Inductance [ $\mu$ H]	Inductance Tolerance	Self-resonant frequency [MHz](min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current ※) [mA]		Measuring frequency [MHz]
						Saturation current Idc1	Temperture rise current Idc2	
BRHL2518T1R0M	RoHS	1.0	$\pm 20\%$	400	0.055	2,000	1,400	1.0
BRHL2518T1R5M	RoHS	1.5		350	0.085	1,700	1,100	
BRHL2518T2R2M	RoHS	2.2		300	0.115	1,500	1,000	
BRHL2518T3R3MD	RoHS	3.3		200	0.165	1,200	800	
BRHL2518T4R7MD	RoHS	4.7		150	0.245	1,100	750	

Ordering code	EMS	Inductance [ $\mu$ H]	Inductance Tolerance	Self-resonant frequency [MHz](min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current ※) [mA]		Measuring frequency [MHz]
						Saturation current Idc1	Temperture rise current Idc2	
BR C2518T1R0M	RoHS	1.0	$\pm 20\%$	280	0.050	2,550	1,650	1.0
BR C2518T1R5M	RoHS	1.5		230	0.080	2,100	1,300	
BR C2518T2R2M	RoHS	2.2		200	0.120	1,800	1,000	
BR C2518T3R3M	RoHS	3.3		150	0.175	1,450	860	
BR C2518T4R7M	RoHS	4.7		100	0.230	1,250	750	
BR C2518T6R8M	RoHS	6.8	45	0.280	1,050	680		
BR C2518T100□	RoHS	10	$\pm 10\%$ $\pm 20\%$	20	0.350	890	610	
BR C2518T150□	RoHS	15		13	0.430	760	550	
BR C2518T220□	RoHS	22		10	0.560	640	490	
BR C2518T330□	RoHS	33		8.0	0.850	560	390	
BR C2518T470□	RoHS	47		6.5	1.45	410	300	
BR C2518T680□	RoHS	68		5.5	2.40	340	230	
BR C2518T101□	RoHS	100	4.5	3.60	300	190		

● 3225(1210)TYPE

Ordering code	EMS	Inductance [ $\mu$ H]	Inductance Tolerance	Self-resonant frequency [MHz](min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current ※) [mA]		Measuring frequency [MHz]
						Saturation current Idc1	Temperture rise current Idc2	
BR L3225TR27M	RoHS	0.27	$\pm 20\%$	390	0.022	4,500	2,850	7.96
BR L3225TR36M	RoHS	0.36		350	0.025	4,300	2,750	
BR L3225TR51M	RoHS	0.51		270	0.029	3,600	2,550	

Ordering code	EMS	Inductance [ $\mu$ H]	Inductance Tolerance	Self-resonant frequency [MHz](min.)	DC Resistance [ $\Omega$ ] ( $\pm 20\%$ )	Rated current ※) [mA]		Measuring frequency [MHz]
						Saturation current Idc1	Temperture rise current Idc2	
BR L3225T1R0M	RoHS	1.0	$\pm 20\%$	220	0.043	2,400	2,200	0.1
BR L3225T1R5M	RoHS	1.5		170	0.045	2,200	1,750	
BR L3225T2R2M	RoHS	2.2		150	0.065	1,850	1,600	
BR L3225T3R3M	RoHS	3.3		140	0.120	1,450	1,200	
BR L3225T4R7M	RoHS	4.7		120	0.180	1,300	1,000	
BR L3225T6R8M	RoHS	6.8	90	0.270	1,050	770		
BR L3225T100□	RoHS	10	$\pm 10\%$ $\pm 20\%$	70	0.350	900	700	
BR L3225T150□	RoHS	15		20	0.570	700	530	
BR L3225T220□	RoHS	22		13	0.690	550	470	
BR L3225T330□	RoHS	33		9	0.840	470	420	
BR L3225T470□	RoHS	47		7	1.00	420	390	
BR L3225T680□	RoHS	68		6	1.40	330	300	
BR L3225T101□	RoHS	100	5	2.50	270	250		

\*Please specify the inductance tolerance code. (M or K)

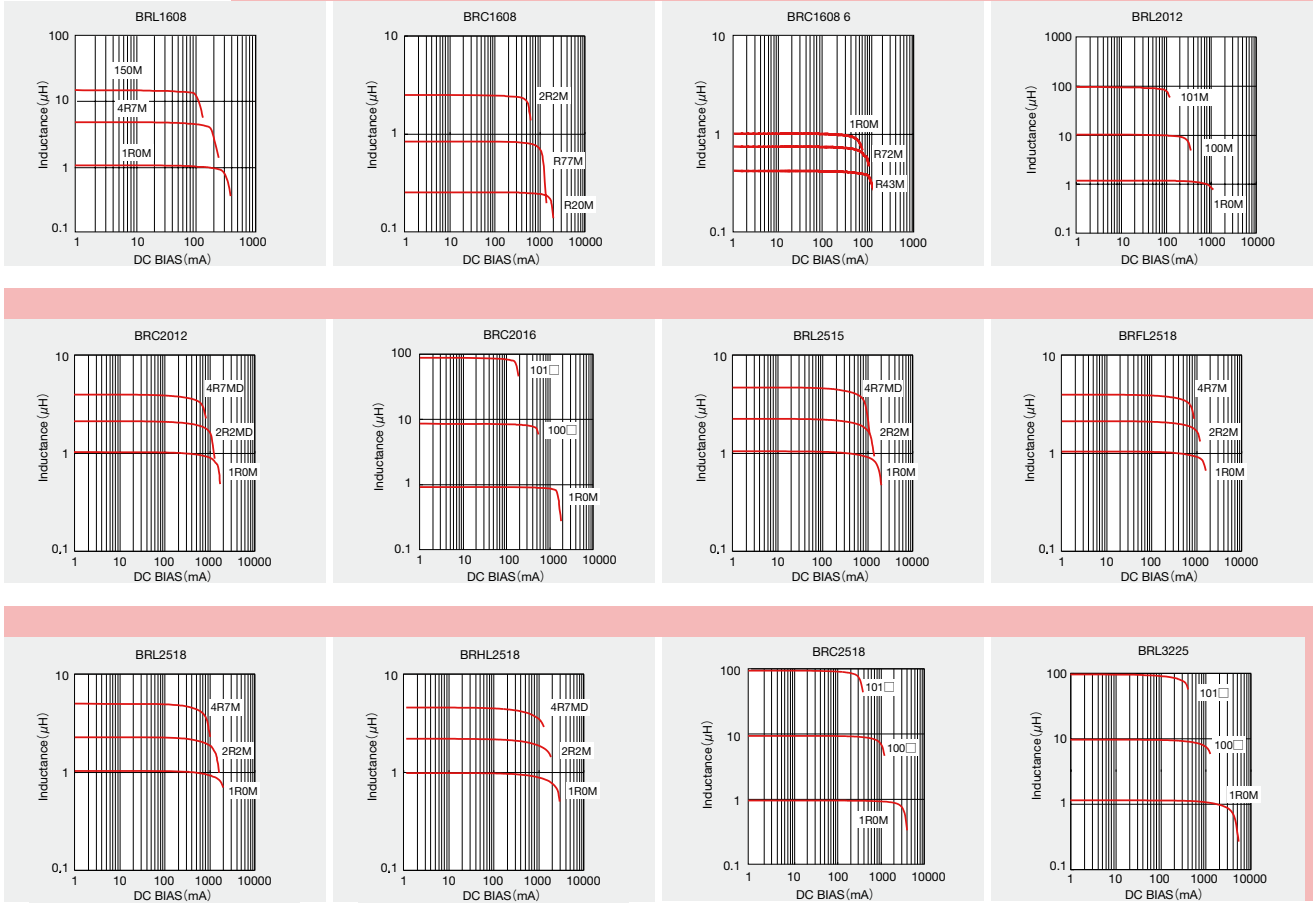
※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20°C)

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DC Bias characteristics

Measured by HP4285A

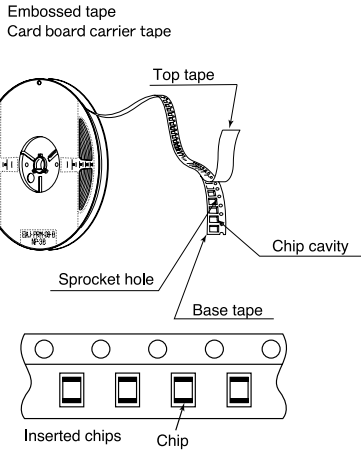


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① Minimum Quantity

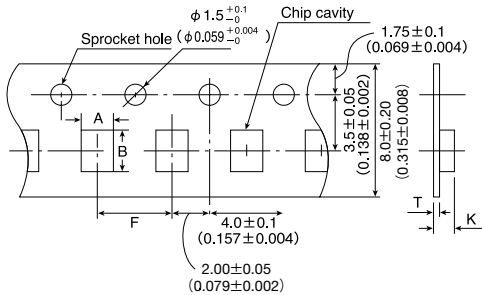
Type	Standard Quantity [pcs]	
	Paper Tape	Embossed Tape
BR C1608	—	3,000
BR L1608	—	3,000
BR L2012	—	3,000
BR C2012	—	2,000
BR C2016	—	2,000
BR L2515	—	2,000
BR C2518	—	2,000
BRHL2518	—	2,000
BR L2518	—	3,000
BRFL2518	—	3,000
BR L3225	—	2,000

② Tape Material



③ Taping dimensions

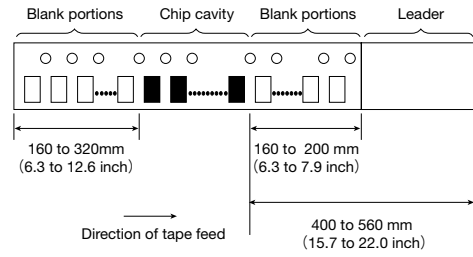
- Embossed Tape 8mm wide (0.315 inches wide)
- Card board carrier tape 8mm wide (0.315 inches wide)



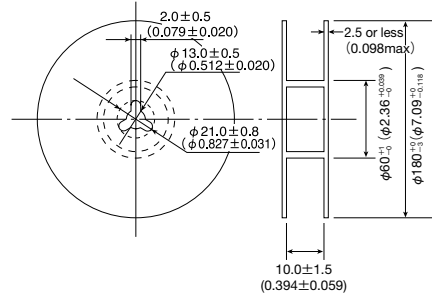
Type	Chip cavity		Insertion pitch F	Tape thickness	
	A	B		T	K
BR L1608	1.1±0.1 (0.043±0.004)	1.9±0.1 (0.075±0.004)	4.0±0.1 (0.157±0.004)	0.2±0.05 (0.008±0.002)	0.9MAX (0.035MAX)
BR C1608	1.1±0.1 (0.043±0.004)	1.9±0.1 (0.075±0.004)	4.0±0.1 (0.157±0.004)	0.25±0.05 (0.010±0.002)	1.2MAX (0.047MAX)
BR L2012	1.45±0.1 (0.057±0.004)	2.2±0.1 (0.087±0.004)	4.0±0.1 (0.157±0.004)	0.25±0.05 (0.010±0.002)	1.2MAX (0.047MAX)
BR C2012	1.45±0.1 (0.057±0.004)	2.37±0.1 (0.093±0.004)	4.0±0.1 (0.157±0.004)	0.25±0.05 (0.010±0.002)	1.59MAX (0.063MAX)
BR C2016	1.75±0.1 (0.069±0.004)	2.1±0.1 (0.083±0.004)	4.0±0.1 (0.157±0.004)	0.3±0.05 (0.012±0.002)	1.9MAX (0.075MAX)
BR L2515	1.8±0.1 (0.071±0.004)	2.8±0.1 (0.110±0.004)	4.0±0.1 (0.157±0.004)	0.25±0.05 (0.010±0.002)	1.45MAX (0.057MAX)
BRFL2518	2.3±0.1 (0.091±0.004)	2.8±0.1 (0.110±0.004)	4.0±0.1 (0.157±0.004)	0.25±0.05 (0.010±0.002)	1.3MAX (0.051MAX)
BR L2518	2.3±0.1 (0.091±0.004)	2.8±0.1 (0.110±0.004)	4.0±0.1 (0.157±0.004)	0.3±0.05 (0.012±0.002)	1.45MAX (0.057MAX)
BRHL2518	2.1±0.1 (0.083±0.04)	2.8±0.1 (0.110±0.004)	4.0±0.1 (0.157±0.004)	0.3±0.05 (0.012±0.002)	1.7MAX (0.067MAX)
BR C2518	2.15±0.1 (0.085±0.004)	2.7±0.1 (0.106±0.004)	4.0±0.1 (0.157±0.004)	0.3±0.05 (0.012±0.002)	2.2MAX (0.087MAX)
BR L3225	2.8±0.1 (0.110±0.004)	3.5±0.1 (0.138±0.004)	4.0±0.1 (0.157±0.004)	0.25±0.05 (0.010±0.002)	1.9MAX (0.075MAX)

Unit : mm (inch)

④ Leader and Blank portion

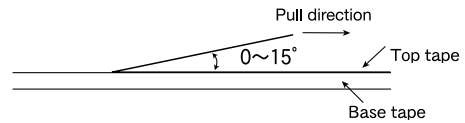


⑤ Reel size



⑥ Top Tape Strength

The top tape requires a peel-off force of 0.2 to 0.7N in the direction of the arrow as illustrated below.



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## RELIABILITY DATA

### Wound Chip power inductor (BR-series)

<b>1. Operating Temperature Range</b>															
All of BR-series	-40~+105°C														
[Test Method and Remarks] Including self-generated heat															
<b>2. Storage Temperature Range (after soldering)</b>															
All of BR-series	-40~+85°C														
[Test Method and Remarks] Please refer the term of "7.Storage conditions" in Precautions.															
<b>3. Rated current</b>															
All of BR-series	Within the specified tolerance														
<b>4. Inductance</b>															
All of BR-series	Within the specified tolerance														
[Test Method and Remarks] LCR Meter : HP 4285A or equivalent, Measuring frequency : Specified frequency															
<b>5. DC Resistance</b>															
All of BR-series	Within the specified tolerance														
[Test Method and Remarks] DC ohmmeter : HIOKI 3227 or equivalent															
<b>6. Self resonance frequency</b>															
All of BR-series	Within the specified tolerance														
[Test Method and Remarks] Impedance analyzer/material analyzer : HP4291A or equivalent HP4191A, 4192A or equivalent															
<b>7. Temperature characteristic</b>															
All of BR-series	Inductance change : Within $\pm 15\%$														
[Test Method and Remarks] Based on the inductance at 20°C and Measured at the ambient of -40°C~+85°C.															
<b>8. Resistance to the bendability</b>															
All of BR-series	No damage.														
[Test Method and Remarks] The given sample is soldered on the board and then the back side of the board is pushed until it bends 2mm like the figure. Dimension of the board : 100×40×1.0mm (0.8mm thickness for 1608(0603) inductors) Material of the board : Glass-epoxy Thickness of soldering paste : 0.12mm															
<b>9. Temperature characteristic</b>															
All of BR-series	No damage.														
[Test Method and Remarks] 2012~      Applied force : 10N Duration     : 10sec. 1608size   Applied force : 5N Duration     : 10sec.															
<b>10. Adhesion of terminal electrodes</b>															
All of BR-series	Not to removed from the board.														
[Test Method and Remarks] The given sample is soldered to the board and then it is kept for 5sec with 10N stress (5N for 1608(0603) inductors) like the figure.															
<b>11. Resistance to vibration</b>															
All of BR-series	Inductance change : Within $\pm 10\%$ No significant abnormality in appearance.														
[Test Method and Remarks] The given sample is soldered to the board and then it is tested depending on the conditions of the following table.															
<table border="1"> <tr> <td>Vibration Frequency</td> <td colspan="2">10~55Hz</td> </tr> <tr> <td>Total Amplitude</td> <td colspan="2">1.5mm (May not exceed acceleration 196m/s<sup>2</sup>)</td> </tr> <tr> <td>Sweeping Method</td> <td colspan="2">10Hz to 55Hz to 10Hz for 1min.</td> </tr> <tr> <td rowspan="3">Time</td> <td>X</td> <td rowspan="3">For 2 hours on each X, Y, and Z axis.</td> </tr> <tr> <td>Y</td> </tr> <tr> <td>Z</td> </tr> </table>		Vibration Frequency	10~55Hz		Total Amplitude	1.5mm (May not exceed acceleration 196m/s <sup>2</sup> )		Sweeping Method	10Hz to 55Hz to 10Hz for 1min.		Time	X	For 2 hours on each X, Y, and Z axis.	Y	Z
Vibration Frequency	10~55Hz														
Total Amplitude	1.5mm (May not exceed acceleration 196m/s <sup>2</sup> )														
Sweeping Method	10Hz to 55Hz to 10Hz for 1min.														
Time	X	For 2 hours on each X, Y, and Z axis.													
	Y														
	Z														
Recovery : At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48hrs.															

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## RELIABILITY DATA

### Wound Chip power inductor (BR-series)

12. Solderability		
All of BR-series	At least 90% area of the electrodes is covered by new solder.	
【Test Method and Remarks】 The given sample is dipped into the flux and then it is tested depending on the conditions of the following table. Flux : Methanol solution containing rosin 25%.		
Solder Temperature	245±5°C	
Time	5±0.5 sec.	
13. Resistance to soldering heat		
All of BR-series	Inductance change : Within ±10% No significant abnormality in appearance.	
【Test Method and Remarks】 3 times reflow having the temperature profile of 5sec of 260 <sup>+0</sup> <sub>-5</sub> °C and 40sec of more than 230°C.		
Test board thickness : 1.0mm Test board material : glass epoxy-resin		
14. Thermal shock		
All of BR-series	Inductance change : Within ±10% No significant abnormality in appearance.	
【Test Method and Remarks】 The given sample is soldered to the board and then its Inductance is measured after 100cycles of the following conditions.		
Conditions of 1 cycle		
Step	Temperature (°C)	Duration (min)
1	-40±3	30±3
2	Room temperature	Within 3
3	+85±2	30±3
4	Room temperature	Within 3
15. Damp heat		
All of BR-series	Inductance change : Within ±10% No significant abnormality in appearance.	
【Test Method and Remarks】 The given sample is soldered to the board and then it is kept at the following conditions.		
Temperature	60±2°C	
Humidity	90~95%RH	
Time	1000 hours.	
Recovery : At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.		
16. Loading under damp heat		
All of BR-series	Inductance change : Within ±10% No significant abnormality in appearance.	
【Test Method and Remarks】 The given sample is soldered to the board and then it is kept at the following conditions.		
Temperature	60±2°C	
Humidity	90~95%RH	
Applied current	Rated current	
Time	1000hours.	
Recovery : At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.		
17. Low temperature life test		
All of BR-series	Inductance change : Within ±10% No significant abnormality in appearance.	
【Test Method and Remarks】 The given sample is soldered to the board and then it is kept at the following conditions.		
Temperature	-40±2°C	
Duration	1000hours	
Recovery : At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.		
18. High temperature life test		
All of BR-series	Inductance change : Within ±10% No significant abnormality in appearance.	
【Test Method and Remarks】 The given sample is soldered to the board and then it is kept at the following conditions.		
Temperature	85±2°C	
Duration	1000hours	
Recovery : At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.		
19. Standard conditions		
All of BR-series	Standard test condition : Unless otherwise specified, temperature is 20±15°C and 65±20% of relative humidity. When there is any question concerning measurement result: In order to provide correlation data, the test shall be condition of 20±2°C of temperature, 65±5% relative humidity. Inductance is in accordance with our measured value.	

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## PRECAUTIONS

### Wound Chip power inductor (BR-series)

1. Circuit Design	
Precautions	<ul style="list-style-type: none"> <li>◆Operating Ambient The products are premised on the usage for the general equipments like the office supply equipment, the telecommunications systems, the measuring equipment, the household equipment and so on. Please ask to TAIYO YUDEN's sales person in advance, if you need to apply them to the equipments or the systems which might have any influences for the human body, the property, like the traffic systems, the safety equipment, the aerospace systems, the nuclear control systems, the medical equipment and so on.</li> </ul>
2. PCB Design	
Precautions	<ul style="list-style-type: none"> <li>◆Land pattern design 1. Please refer to a recommended land pattern.</li> </ul>
Technical considerations	<ul style="list-style-type: none"> <li>◆Land pattern design Surface Mounting 1. The conditions of the picking and placing should be checked in advance. 2. The products are only for reflow soldering.</li> </ul>
3. Considerations for automatic placement	
Precautions	<ul style="list-style-type: none"> <li>◆Adjustment of mounting machine 1. Excessive physical impact should not be imposed on the products for picking and placing onto the PC boards. 2. Mounting and soldering conditions should be checked in advance.</li> </ul>
Technical considerations	<ul style="list-style-type: none"> <li>◆Adjustment of mounting machine The products might be broken if too much stress is given for the picking and placing.</li> </ul>
4. Soldering	
Precautions	<ul style="list-style-type: none"> <li>◆Reflow soldering 1. Please apply our recommended soldering conditions on the specification as much as possible. 2. The products are only for reflow soldering. 3. Please do not give any stress to a product until it returns in room temperature after reflow soldering.</li> <li>◆Lead free soldering 1. Please check the adhesion, the solder temperature, the solderability and the shape of solder file if the solder that is not in the specification is used.</li> <li>◆Recommended conditions for using a soldering iron (NR10050 Type) Touch a soldering iron to the land pattern not to the product directly. The temperature of a soldering iron is less than 350degC. The soldering is for 3 seconds or less.</li> </ul>
Technical considerations	<ul style="list-style-type: none"> <li>◆Reflow soldering 1. The product might break or might make the tombstoning, if the soldering conditions are too far from our recommended conditions.</li> </ul>
5. Cleaning	
Precautions	<ul style="list-style-type: none"> <li>◆Cleaning conditions 1. Please don't wash by the ultra-sonic waves.</li> </ul>
Technical considerations	<ul style="list-style-type: none"> <li>◆Cleaning conditions 1. Washing by the ultra-sonic waves might break the product.</li> </ul>
6. Handling	
Precautions	<ul style="list-style-type: none"> <li>◆Handling 1. Keep the product away from any magnets.</li> <li>◆Cutting the PC boards 1. Please don't give any stress of the bending or the twisting for the cutting process of PC boards. 2. Please don't give any shock and stress to the products in transportation.</li> <li>◆Mechanical considerations 1. Please don't give too much shock to the product. 2. Please don't give any shock and stress to the products in transportation.</li> <li>◆The stress for picking and placing 1. Please don't give any shock into an exposed ferrite core.</li> <li>◆Packing 1. Please don't pile the packing boxes up as much as possible.</li> </ul>
Technical considerations	<ul style="list-style-type: none"> <li>◆Cutting the PC boards 1. Please don't give the bending stress or the twisting stress to the products because they might break in such cases.</li> <li>◆Mechanical considerations 1. The mechanical shock might break the products. 2. The products might break depending on the handling in transportation.</li> <li>◆Pick-up pressure 1. The electrical characteristics of the products might be shifted by too much physical shock and stress.</li> <li>◆Packing 1. The products and the tape might break, if the packing boxes are piled up.</li> </ul>
7. Storage conditions	
Precautions	<ul style="list-style-type: none"> <li>◆Storage 1. The packing boxes can be kept at the ambient which the temperature is from 0 to 40degC and the humidity is less than 70%. 2. The ambient temperature of less than 30degC is recommended not to get the tape and the solderability worse. 3. Please solder the products by a half year after they have been shipped. Otherwise please use them after checking the solderability in advance.</li> </ul>
Technical considerations	<ul style="list-style-type: none"> <li>◆Storage 1. The ambient of high temperature or high humidity might accelerate to make the solderability and the tape worse.</li> </ul>

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