

APPROVAL SHEET

WQFM160808_P

WQFM201209_P

WQFM201205_P

WQFM201609_P

**Multi-Layer Power Inductor
(AEC-Q200 Compliant)**



*Contents in this sheet are subject to change without prior notice.

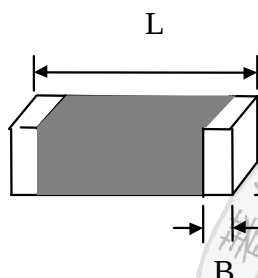
Features

1. General purpose chip ferrite power inductor for high integration electronics device.
2. Ceramic structure provides high reliability 、high productivity.
3. Low DC resistance with high current.
4. RoHS compliance.
5. AEC-Q200 Compliant

Applications

1. DC line filter, DC/DC inductor.
2. Suitable for DVD,DSC,PND,PC,NB,Power Line.

Shape and Dimension



Unit: mm (inches)

WQFM Series	L	W	T	B (Min/Max)
WQFM160808	1.6±0.15	0.8±0.15	0.8±0.15	0.3±0.2
WQFM201209	2.0±0.15	1.25±0.15	0.9±0.1	0.5±0.2
WQFM201205	2.0±0.15	1.25±0.15	0.5±0.05	0.5±0.2
WQFM201609	2.0±0.15	1.60±0.15	0.9±0.1	0.5±0.2

Ordering Information

WQ	FM	1608	08	M	R47	P	P
Product Code WL: Inductor (AECQ200)	Series Multilayer	Dimensions 1608:EIA 0603 2012:EIA 0805 2016:EIA 0806	Thickness 05 = 0.5mm 08 = 0.8mm 09= 0.9mm	Tolerance M: ± 20%	Value R47=0.47uH 2R2=2.2uH	Packing Code P=7" Reeled (Embossed tape)	P P=General

Electrical Characteristics

● WQFM160808 series (EIA 0603)

Walsin Part Number	L(uH) Inductance	Tolerance	Measuring Frequency (MHz)	RDC DC Resistance (Ω) Max.	Rated Current (mA)	SRF (MHz)
WQFM160808MR47PP	0.47	M	1	0.1	1200	70
WQFM160808M1R0PP	1.0	M	1	0.2	950	60
WQFM160808M2R2PP	2.2	M	1	0.3	750	50

● WQFM201209 series (EIA 0805)

Walsin Part Number	L(uH) Inductance	Tolerance	Measuring Frequency (MHz)	RDC DC Resistance (Ω) Max.	Rated Current (mA)	SRF (MHz)
WQFM201209MR47PP	0.47	M	1	0.08	1300	100
WQFM201209M1R0PP	1.0	M	1	0.1	900	50
WQFM201209M2R2PP	2.2	M	1	0.23	800	40

● WQFM201205 series (EIA 0805)

Walsin Part Number	L(uH) Inductance	Tolerance	Measuring Frequency (MHz)	RDC DC Resistance (Ω) Max.	Rated Current (mA)	SRF (MHz)
WQFM201205M2R2PP	2.2	M	1	0.33	600	40

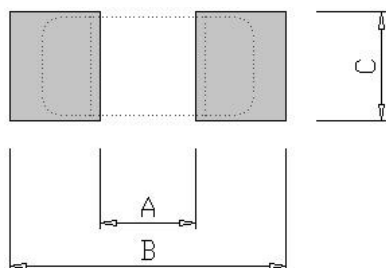
● WQFM201609 series (EIA 0806)

Walsin Part Number	L(uH) Inductance	Tolerance	Measuring Frequency (MHz)	RDC (Ω) Max.	Rated Current (mA)	SRF (MHz)
WQFM201609MR47PP	0.47	M	1	0.06	1600	80
WQFM201609M1R0PP	1.0	M	1	0.09	1400	70
WQFM201609M2R2PP	2.2	M	1	0.11	1200	50

TEST INSTRUMENT :

- HP4291B-RF Impedance / Material Analyzer
 - HP4338A/B Milliohm meter
- Test Frequency : 1MHz / OSC Level : 100mV

Land Patterns for Reflow Soldering

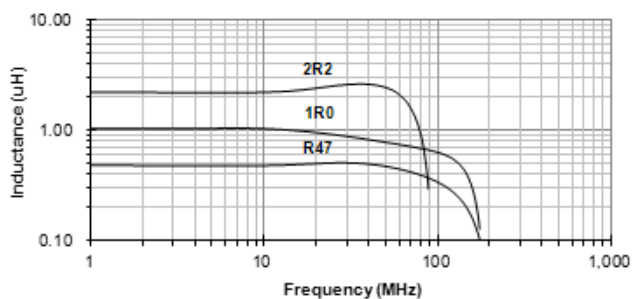


Size (mm)	A	B	C
1608	0.5 ~ 0.7	1.8 ~ 2.0	0.65 ~ 0.95
2012	1.0 ~ 1.2	3.0 ~ 4.0	1.0 ~ 1.4
2016	0.7 ~ 0.9	2.3 ~ 2.5	1.7 ~ 1.9

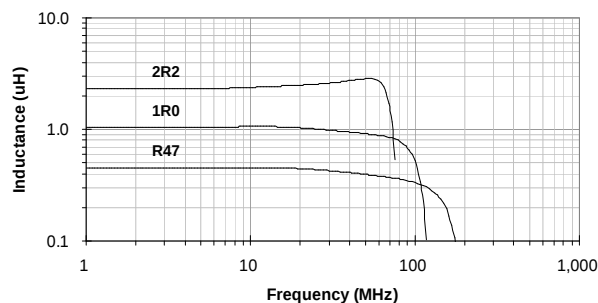
Current Characteristic

Inductance@ Frequency

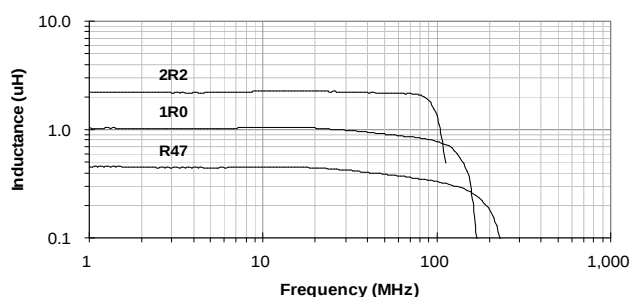
160808 Series



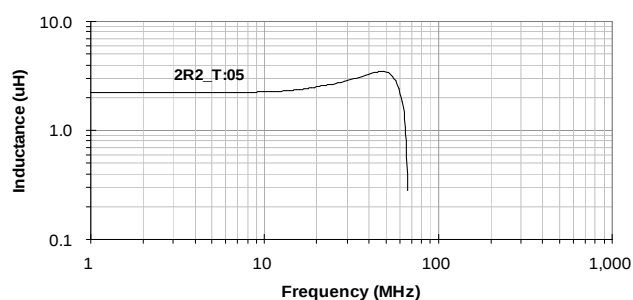
201209 Series



201609 Series

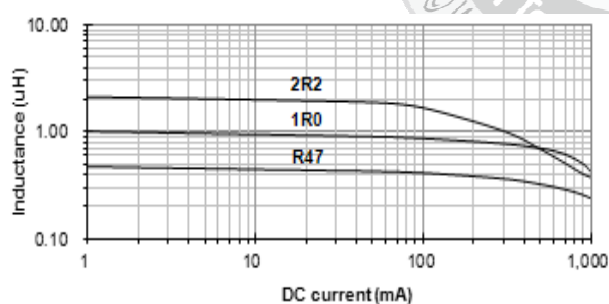


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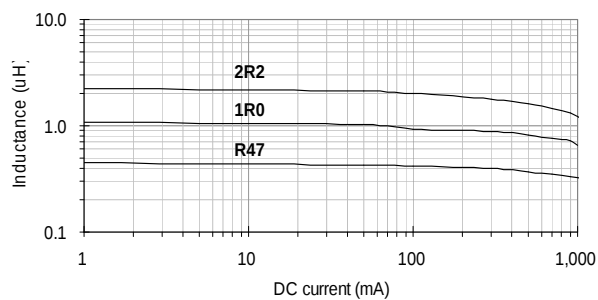


Inductance vs. DC-bias

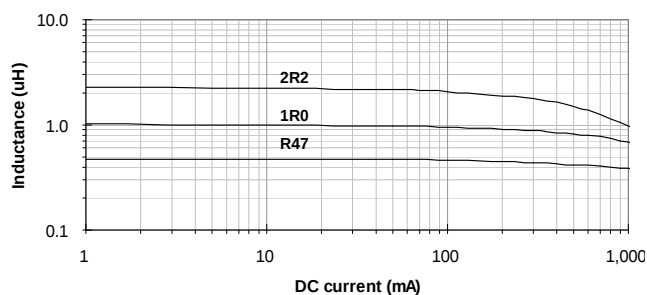
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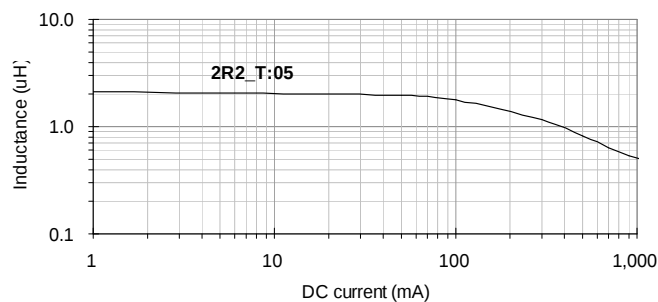
201209 Series



201609 Series

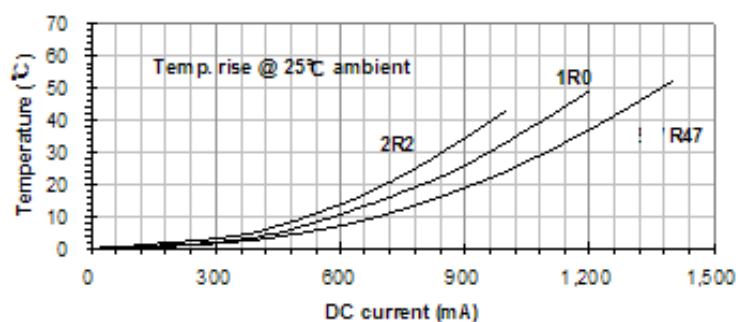


201205 Series

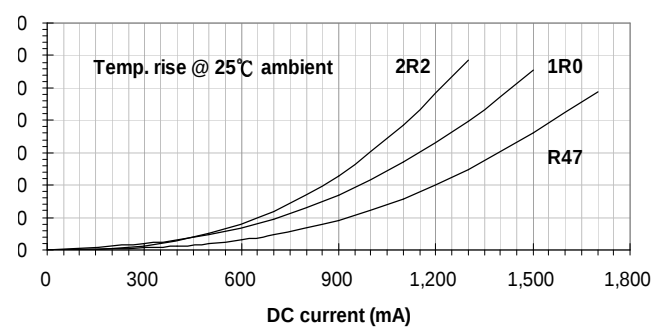


Temperature vs DC-bias

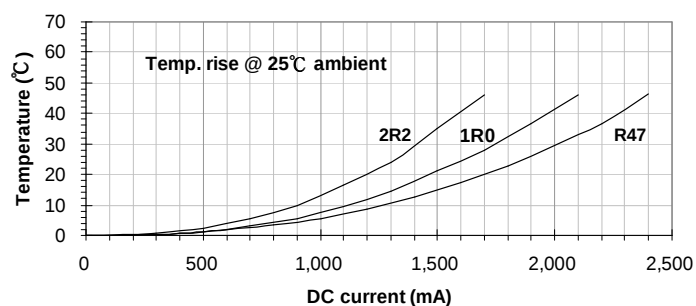
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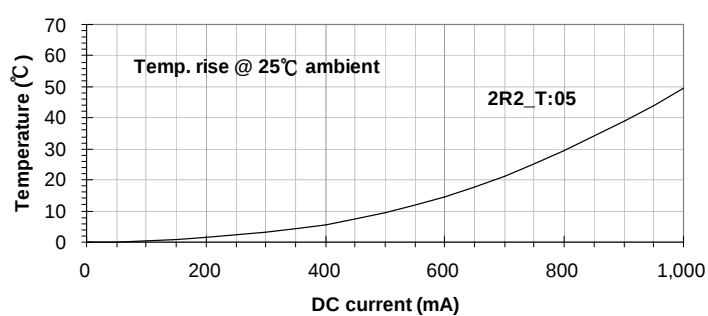
201209 Series



201609 Series



201205 Series



Reliability and Test Conditions

Test item	Test condition	Criteria
High Temperature Exposure	1.Temperature : $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 2.Test time : 1000 hours Measurement: at ambient temperature 24 hours after test completion	1.No mechanical damage 2.Inductance value should be within $\pm 20\%$ of the initial value.
Temperature Cycle	1.Temperature : $-55 \sim +125^{\circ}\text{C}$ 2.Cycle : 1000 cycles 3.Dwell time : 30minutes Measurement : at ambient temperature 24 hours after test completion	1.No mechanical damage 2.Inductance value should be within $\pm 30\%$ of the initial value
Biased Humidity	1.Temperature : $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 2.Humidity : 85 % RH 3.Test time : 1000 hours 4.Apply current : full rated current Measurement: at ambient temperature 24 hours after test completion	1.No mechanical damage 2.Inductance value should be within $\pm 50\%$ of the initial value
Operational Life	1.Temperature : $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 2.Test time : 1000 hours 3.Apply current : full rated current Measurement : at ambient temperature 24 hours after test completion	1.No mechanical damage 2.Inductance value should be within $\pm 50\%$ of the initial value
Mechanical Shock	Condition F:1500g's/0.5ms/Half sine	1.No mechanical damage 2.Inductance value should be within $\pm 30\%$ of the initial value
Vibration Test	5g's for 20 minutes,12cycles each of 3 orientations Test from 10-2000Hz.,12cycles each of 3 orientations	1.No mechanical damage 2.Inductance value should be within $\pm 30\%$ of the initial value

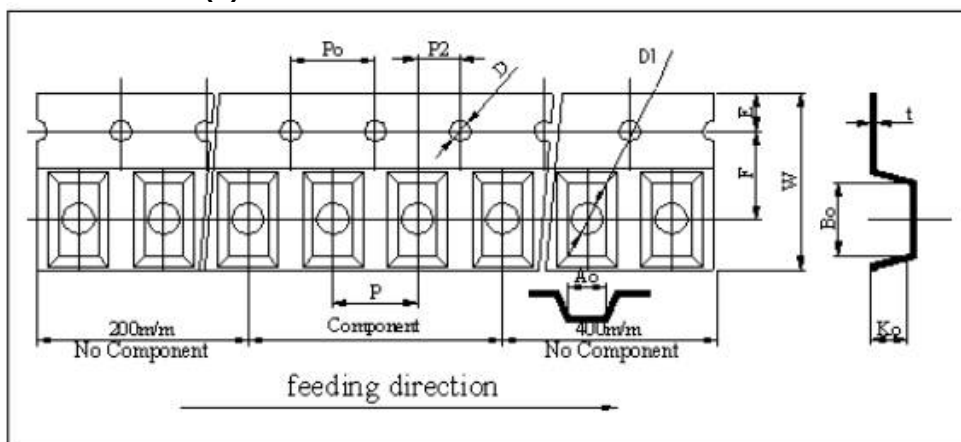
Test item	Test condition	Criteria									
Resistance to Solder Heat	1.Solder temperature : $260 \pm 5^{\circ}\text{C}$ 2.Flux : Rosin 3.DIP time : 10 ± 1 sec	1.More than 95 % of terminal electrode should be covered with new solder 2.No mechanical damage 3.Inductance value should be within $\pm 20\%$ of the initial value									
ESD	Classification Levels 1C 1000 V (DC) to < 2000 V (DC)	1.No mechanical damage 2.Impedance value should be within ± 30 % of the initial value									
Solderability Test	1.Solder temperature : $235 \pm 5^{\circ}\text{C}$ 2.Flux : Rosin 3.DIP time : 5 ± 1 sec	1.More than 95 % of terminal electrode should be covered with new solder 2.No mechanical damage									
Board Flex	Epoxy-PCB(1.6mm) Deflection 2mm(min) 60s minimum holding time	No mechanical damage.									
Terminal Strength	<table border="1"> <thead> <tr> <th>Size</th><th>Apply Force(F)</th><th>Test Time</th></tr> </thead> <tbody> <tr> <td>1608</td><td>10 N</td><td>10 ± 1 sec.</td></tr> <tr> <td>≥ 2012</td><td>17.7 N</td><td>60 ± 1 sec.</td></tr> </tbody> </table>	Size	Apply Force(F)	Test Time	1608	10 N	10 ± 1 sec.	≥ 2012	17.7 N	60 ± 1 sec.	No mechanical damage.
Size	Apply Force(F)	Test Time									
1608	10 N	10 ± 1 sec.									
≥ 2012	17.7 N	60 ± 1 sec.									

GENERAL TECHNICAL DATA

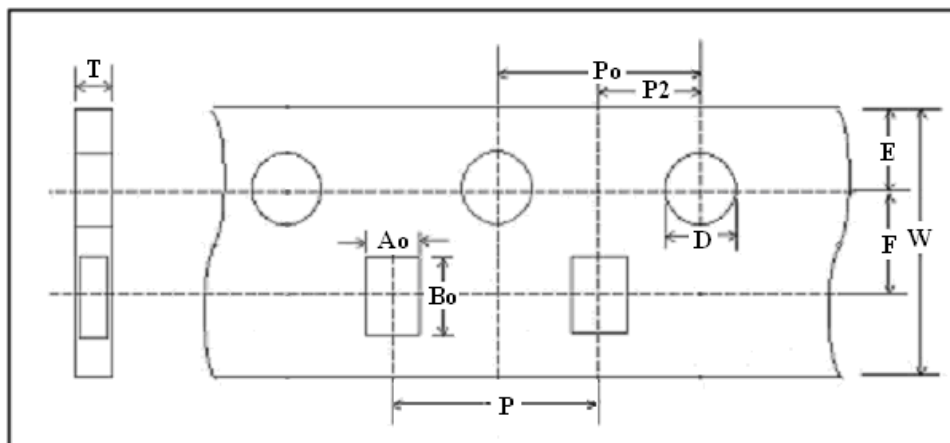
- Operating temperature range : $- 55^{\circ}\text{C} \sim +125^{\circ}\text{C}$
- Storage Condition : Less than 40°C and 70% RH
- Storage time : 12 months Max.
- Soldering method : Reflow

Tape and Reel Specifications

Plastic Carries(E)



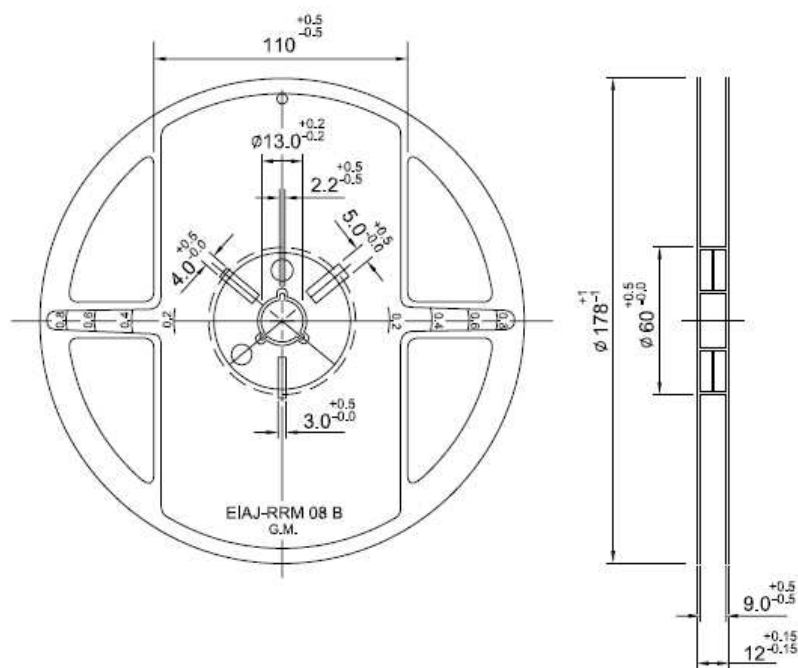
Paper Carrier(P)



Taping Dimensions

(mm)	160808	201209	201205	201609
Symbol	P	E	P	E
W	8.00 ± 0.10	8.00 ± 0.10	8.00 ± 0.10	8.00 ± 0.10
P	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10
E	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.05	1.75 ± 0.10
F	3.50 ± 0.10	3.50 ± 0.10	3.50 ± 0.05	3.50 ± 0.10
D	1.56 ± 0.10	1.55 ± 0.05	1.55 ± 0.05	1.55 ± 0.05
D1	NA	1.00 ± 0.05	NA	1.00 ± 0.05
P_0	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10
$10P_0$	40.0 ± 0.20	40.0 ± 0.20	40.0 ± 0.10	40.0 ± 0.20
P_2	2.00 ± 0.10	2.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.10
A_0	0.97 ± 0.05	1.40 ± 0.10	1.45 ± 0.05	1.90 ± 0.10
B_0	1.80 ± 0.05	2.30 ± 0.10	2.25 ± 0.05	2.30 ± 0.10
$K_0(T)$	0.75 ± 0.05	1.13 ± 0.10	0.60 ± 0.03	1.15 ± 0.10
t	NA	0.22 ± 0.05	NA	0.22 ± 0.05

Reel Dimensions



7" Reel Packaging Quantity				
PART SIZE	160808	201209	201205	201609
Qty.(pcs)	4,000	3,000	4,000	3,000
BOX	5 reels / inner box	5 reels / inner box	5 reels / inner box	5 reels / inner box

Recommended Soldering Conditions

