CONTENTS

Power Inductor – *L252012FW Series*

1. Part No. Expression

L 2 5 2 0 1 2 F W R 2 4 M

(a) (b) (c) (d) (e)

(a) Series Code

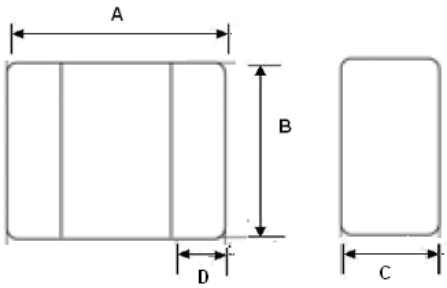
(b) Dimension Code

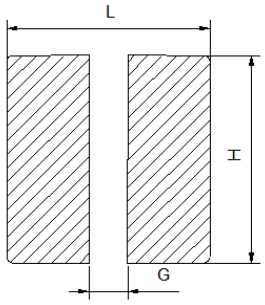
(c) Material Code

(d) Inductance Code

(e) Tolerance Code

2. Configuration & Dimensions: (Unit: mm)

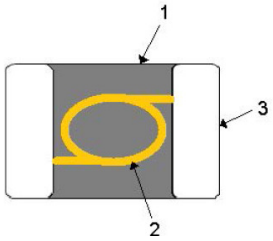




Recommended PCB Layout

A	B	C	D	L	G	H
2.5±0.2	2.0±0.2	1.2 max	0.55±0.25	2.8 Ref	1.2 Ref	2.0 Ref

3. Material List



No.	Composition part	Material name
1	Alloy Body	Alloy Powder
2	Circuit-Copper	Copper Wire
3	Terminal	Silver paste

4. General Specifications

(a) Operating Temp. : -40°C to +125°C (including self-temperature rise).

(b) Storage Temp. : -40°C to +125°C (on board).

(c) Irms：Heat Rated Current (Irms) will cause the coil temperature rise approximately △T of 40°C.

(d) Isat：Saturation Current (Isat) will cause L0 to drop approximately 30%.

(e) Absolute maximum voltage 20VDC.

(f) Storage Condition (Component in its packaging)

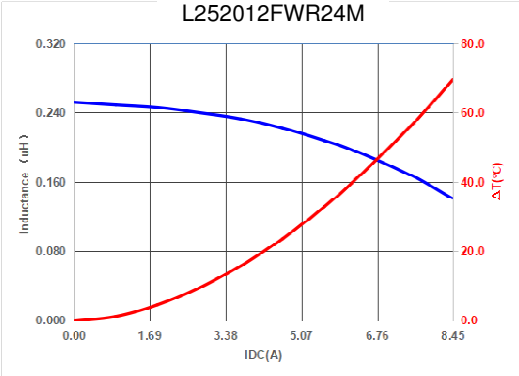
i) Temperature: Less than 40°C

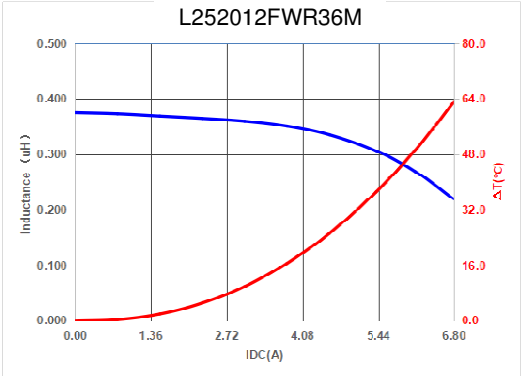
ii) Humidity: 60% RH

5. Electrical Characteristics

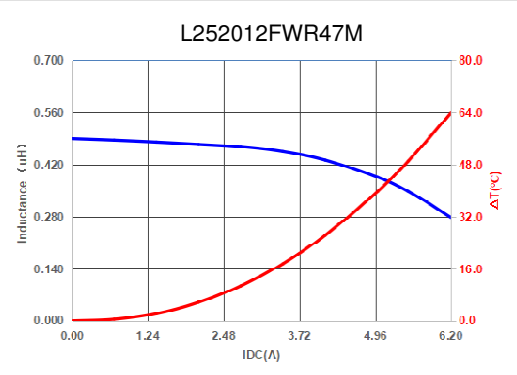
Part Number	Inductance (uH)	Test Frequency (Hz)	I rms (A)		I sat (A)		DCR (mΩ)	
			typ.	max.	typ.	max.	typ.	max.
L252012FWR24M	0.24±20%	1M/1V	6.2	5.5	7.5	6.5	15	18
L252012FWR36M	0.36±20%	1M/1V	5.4	4.7	6.1	5.6	17	21
L252012FWR47M	0.47±20%	1M/1V	5.0	4.4	5.5	4.6	21	25
L252012FWR56M	0.56±20%	1M/1V	4.8	4.1	5.0	4.5	24	29
L252012FWR68M	0.68±20%	1M/1V	4.5	3.9	4.6	4.0	28	34
L252012FWR82M	0.82±20%	1M/1V	4.1	3.6	4.3	3.8	32	39
L252012FW1R0M	1.00±20%	1M/1V	3.7	3.3	4.0	3.6	37	45
L252012FW1R5M	1.50±20%	1M/1V	3.0	2.6	3.3	2.9	60	72
L252012FW2R2M	2.20±20%	1M/1V	2.5	2.2	2.6	2.3	81	98
L252012FW3R3M	3.30±20%	1M/1V	2.2	1.9	2.3	2.1	112	134
L252012FW4R7M	4.70±20%	1M/1V	1.8	1.6	1.8	1.6	175	210

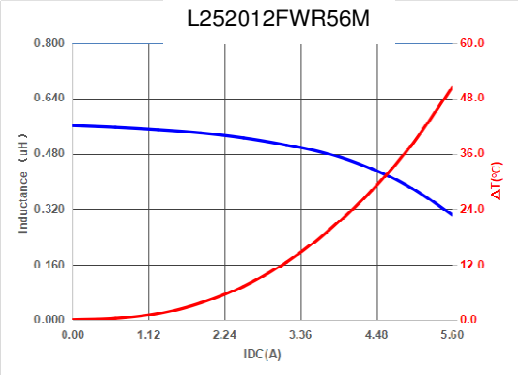
6. Characteristics Curves

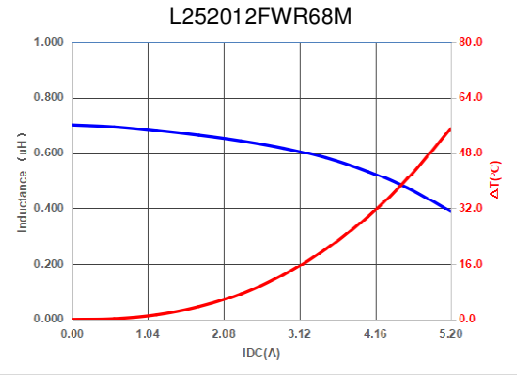


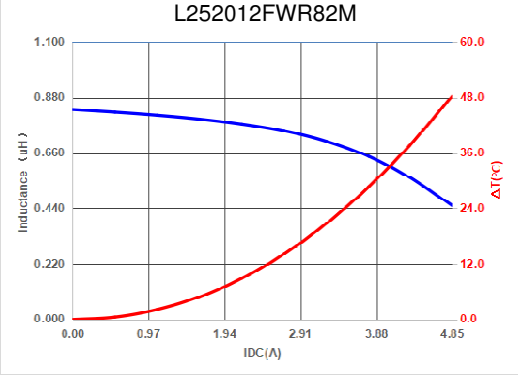


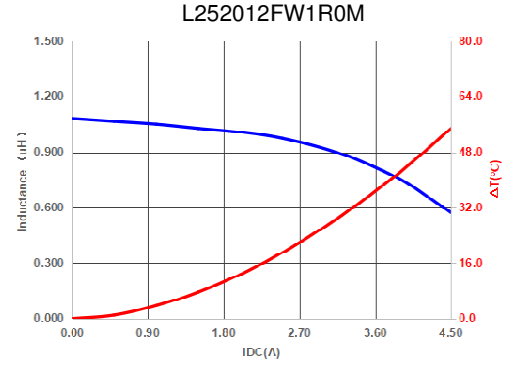
NOTE: Specifications subject to change without notice. Please check our website for latest information.

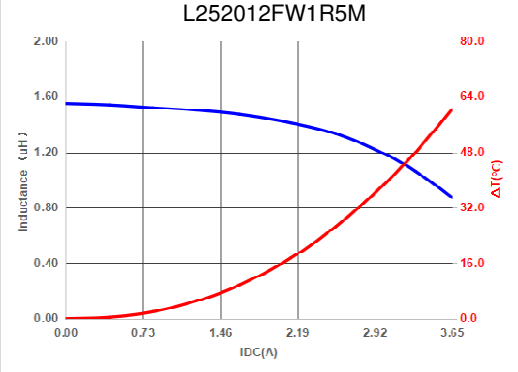

L252012FWR47M
Inductance (uH)
ΔT(℃)
IDC(A)
0.700
0.560
0.420
0.280
0.140
0.000
80.0
64.0
48.0
32.0
16.0
0.0
0.00
1.24
2.48
3.72
4.96
6.20


L252012FWR56M
Inductance (uH)
ΔT(℃)
IDC(A)
0.800
0.640
0.480
0.320
0.160
0.000
60.0
48.0
36.0
24.0
12.0
0.0
0.00
1.12
2.24
3.36
4.48
5.60

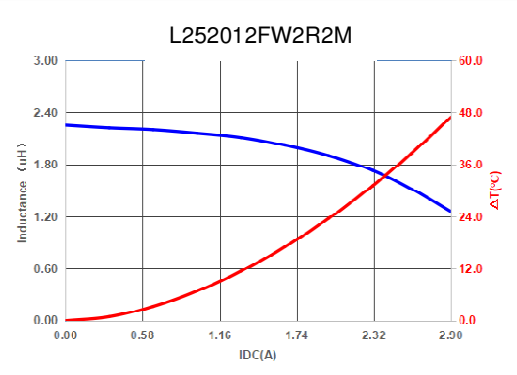

L252012FWR68M
Inductance (uH)
ΔT(℃)
IDC(A)
1.000
0.800
0.600
0.400
0.200
0.000
80.0
64.0
48.0
32.0
16.0
0.0
0.00
1.04
2.08
3.12
4.16
5.20

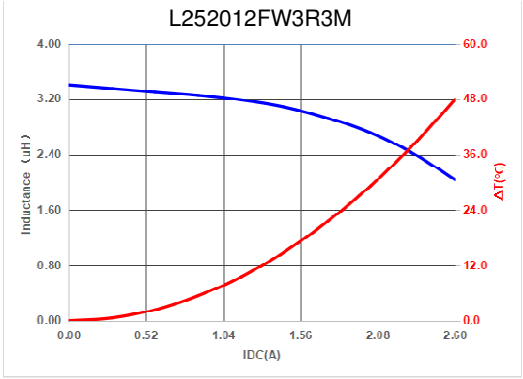

L252012FWR82M
Inductance (uH)
ΔT(℃)
IDC(A)
1.100
0.880
0.660
0.440
0.220
0.000
60.0
48.0
36.0
24.0
12.0
0.0
0.00
0.97
1.94
2.91
3.88
4.85

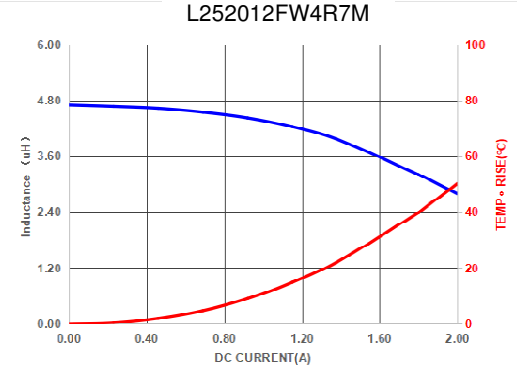

L252012FW1R0M
Inductance (uH)
ΔT(℃)
IDC(A)
1.500
1.200
0.900
0.600
0.300
0.000
80.0
64.0
48.0
32.0
16.0
0.0
0.00
0.90
1.80
2.70
3.60
4.50


L252012FW1R5M
Inductance (uH)
ΔT(℃)
IDC(A)
2.00
1.60
1.20
0.80
0.40
0.00
80.0
64.0
48.0
32.0
16.0
0.0
0.00
0.73
1.46
2.19
2.92
3.65

Power Inductor – *L252012FW Series*







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7. Soldering and Mounting

Mildly activated rosin fluxes are preferred. The terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

7-1 Soldering Re-flow

Recommended temperature profiles for lead free re-flow soldering in Figure 1. Table 1.1&1.2 (J-STD-020E).

7-2 Soldering Iron

Products attachment with soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended (Fig 2).

Note:

a) Preheat circuit and products to 150°C.

b) 355°C tip temperature (Max).

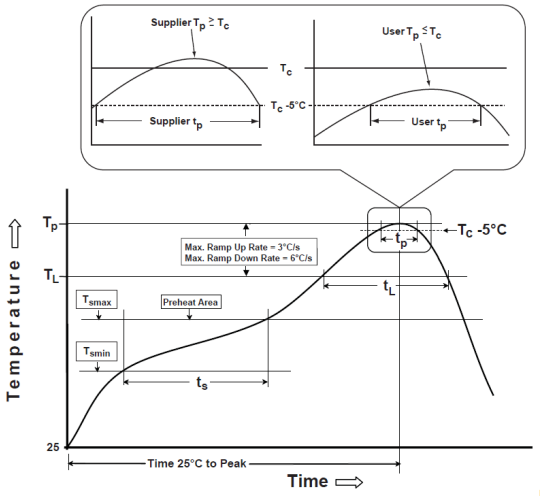
c) Never contact the ceramic with the iron tip.

d) 1.0mm tip diameter (Max).

e) Use a 20 Watt soldering iron with tip diameter of 1.0mm.

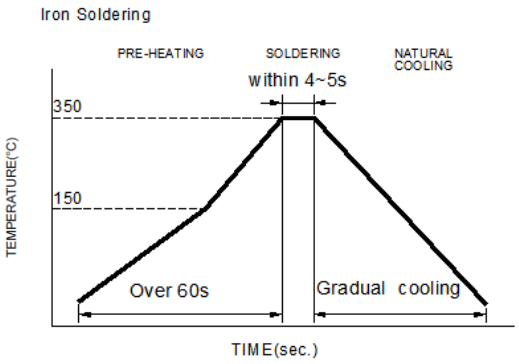
f) Limit soldering time to 4~5 secs.

Fig.1 IR Soldering Reflow



Reflow times: 3 times max

Fig.2 Iron soldering temperature profiles



Iron Soldering times: 1 times max.

Soldering iron Method: 350± 5℃ max

Table (1.1): Reflow Profiles

Profile Type:	Pb-Free Assembly
Preheat -Temperature Min(T_{smin}) -Temperature Max(T_{smax}) -Time(t_s)from(T_{smin} to T_{smax})	 150℃ 200℃ 60-120seconds
Ramp-up rate($T_L$to T_p)	3℃/second max.
Liquidus temperature(T_L) Time(t_L)maintained above T_L	217℃ 60-150 seconds
Classification temperature(T_c)	See Table (1.2)
Time(t_p) at Tc- 5℃ (Tp should be equal to or less than Tc.)	*< 30 seconds
Ramp-down rate(T_p to T_L)	6℃ /second max.
Time 25℃ to peak temperature	8 minutes max.

Tp: maximum peak package body temperature, **Tc**: the classification temperature.

For user (customer) **Tp** should be equal to or less than **Tc.**

* Tolerance for peak profile temperature (Tp) is defined as a supplier minimum and a user maximum.

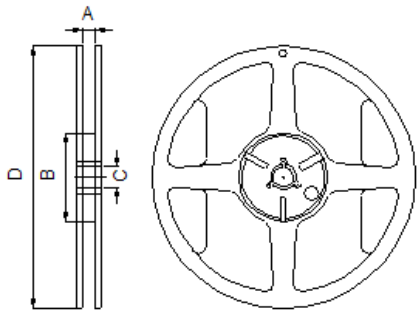
Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

	Package Thickness	Volume mm^3 <350	Volume mm^3 350-2000	Volume mm^3 >2000
PB-Free Assembly	<1.6mm	260℃	260℃	260℃
	1.6-2.5mm	260℃	250℃	245℃
	≥2.5mm	250℃	245℃	245℃

Reflow is referred to standard IPC/JEDEC J-STD-020E。

8. Packaging Information

8-1 Reel Dimension

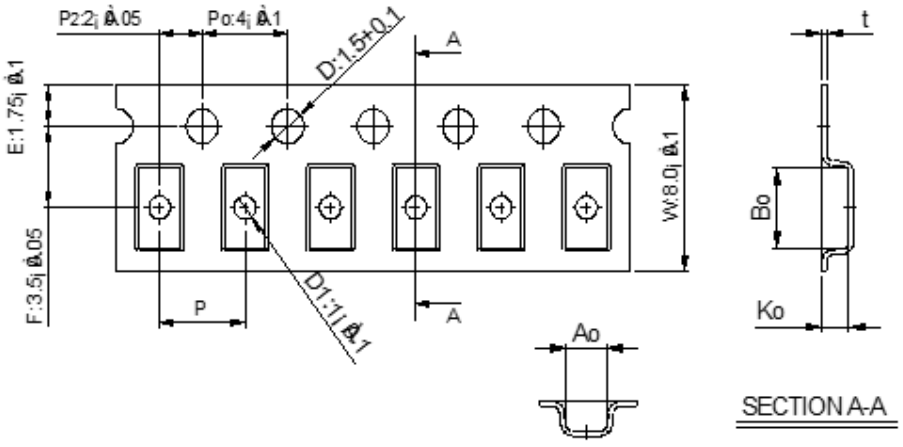


7"x8mm

Type	A(mm)	B(mm)	C(mm)	D(mm)
7"x8mm	9.0±0.5	60±2	13.5±0.5	178±2

NOTE: Specifications subject to change without notice. Please check our website for latest information.

8-2 Tape Dimension

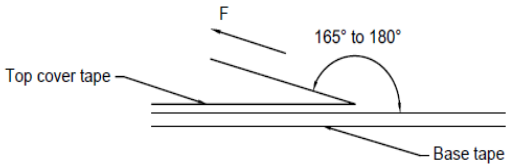


Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)
252012	3.10±0.1	2.45±0.1	1.40±0.1	4.0±0.1	0.23±0.05

8-3 Packaging Quantity

Chip Size	252012
Chip/Reel	3000

8-4 Tearing Off Force



The force for tearing off cover tape is 10 to 100 grams in the arrow direction under the following conditions.

Tearing Speed mm	Room Temp. (℃)	Room Humidity (%)	Room atm (hPa)
300±10%	5~35	45~85	860~1060

Application Notice:

1. Storage Conditions:

   To maintain the solderability of terminal electrodes:

   a) Recommended products should be used within 12 months from the time of delivery.

   b) The packaging material should be kept where no chlorine or sulfur exists in the air.

2. Transportation:

   a) Products should be handled with care to avoid damage or contamination from perspiration and skin oils.

   b) The use of tweezers or vacuum pick up is strongly recommended for individual components.

   c) Bulk handling should ensure that abrasion and mechanical shock are minimized.