DIP POWER CHOKE COIL

SDM109HHA SERIES

1. PART NO. EXPRESSION :

S D M 1 0 9 H H A - 1 R 0 M F

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

(a) Series code

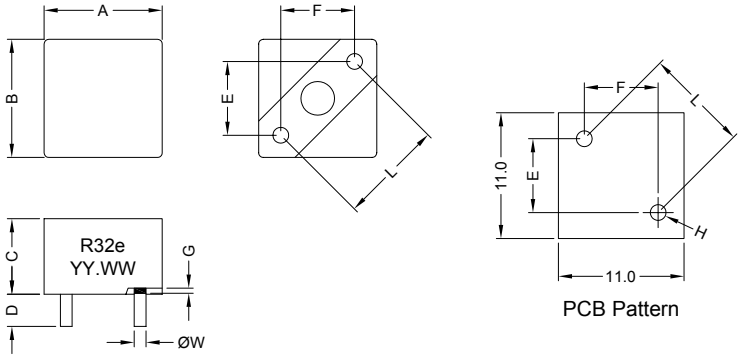
(b) Dimension code

(c) Inductance code : 1R0 = 1.00uH

(d) Tolerance code : M = ±20%

(e) F : RoHS Compliant

2. CONFIGURATION & DIMENSIONS :

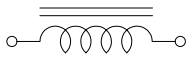


PCB Pattern

Unit:m/m

Series	A	B	C	D	E	F	ØW	L	G	H
SDM109HHA-R32MF	10.5 Max.	10.5 Max.	10.0 Max.	3.4±0.5	5.3±0.5	5.3±0.5	1.4±0.1	7.5±0.5	0.5±0.2	1.7 Typ.
SDM109HHA-R47MF	10.5 Max.	10.5 Max.	10.0 Max.	3.4±0.5	5.3±0.5	5.3±0.5	1.3±0.1	7.5±0.5	0.5±0.2	1.6 Typ.
SDM109HHA-R80MF	10.5 Max.	10.5 Max.	10.0 Max.	3.4±0.5	5.3±0.5	5.3±0.5	1.2±0.1	7.5±0.5	0.5±0.2	1.5 Typ.
SDM109HHA-1R0MF	10.5 Max.	10.5 Max.	10.0 Max.	3.4±0.5	5.3±0.5	5.3±0.5	1.1±0.1	7.5±0.5	0.5±0.2	1.4 Typ.

3. SCHEMATIC :



4. MATERIALS :

(a) Core : e Iron Core

(b) Wire : Enamelled Copper Wire

(c) Solder : Sn99.95%-Cu0.05%

RoHS Compliant

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

11.06.2010

5. GENERAL SPECIFICATION :

a) Test Frequency : 100KHz/1.0V

b) Operating temp. : -25°C to +125°C

c) Ambient temp. : 20°C

d) Irms (A) : Will cause an approximately temp. rise ΔT ≦ 40°C

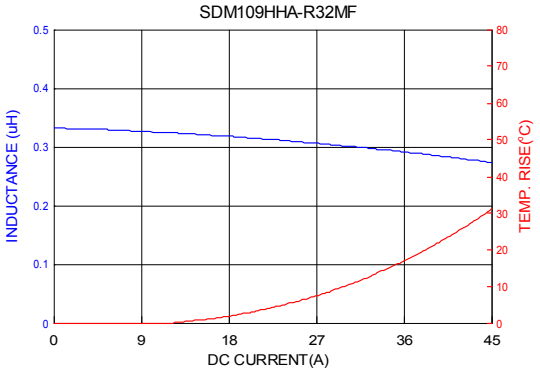
e) Isat (A) : Will cause L_0 to drop approximately 20%

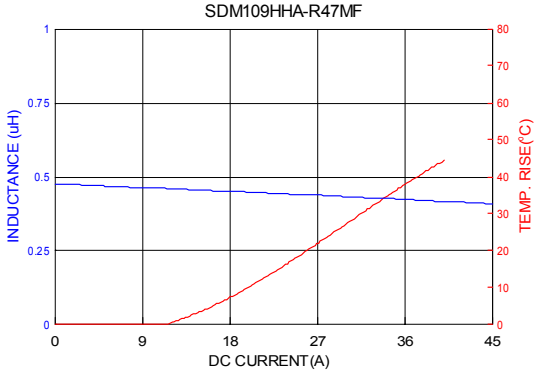
f) Part temperature (ambient + temp. rise) : Should not exceed 125°C under worst case operating conditions.

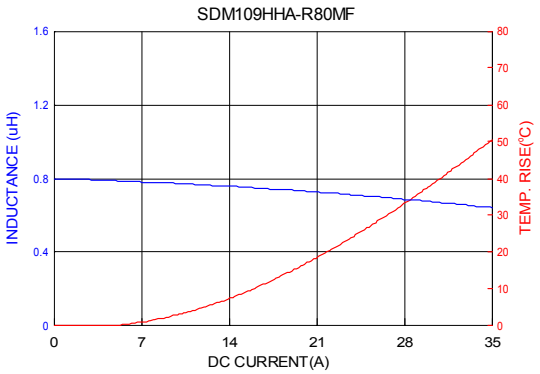
6. ELECTRICAL CHARACTERISTICS :

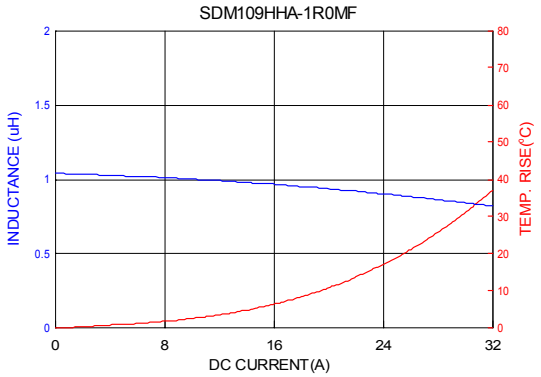
Part No.	Inductance L_0 (uH) ±20% @ 0Adc	Irms (A) Max.	Isat (A) Max.	DCR (mΩ) ±8%	Q Min.
SDM109HHA-R32MF	0.32	35	45	0.36	40
SDM109HHA-R47MF	0.47	32	45	0.67	40
SDM109HHA-R80MF	0.80	25	35	1.05	40
SDM109HHA-1R0MF	1.00	22	32	1.50	40

7. CHARACTERISTICS CURVES :









RoHS Compliant

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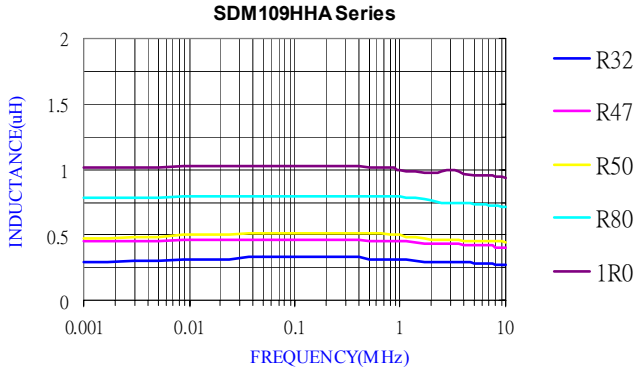
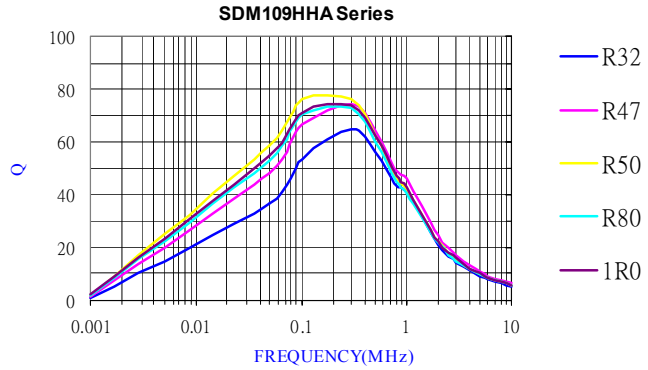
7. CHARACTERISTICS CURVES :



Inductance (uH)	Frequency (MHz)															
	0.001	0.05	0.1	0.3	0.5	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10
SDM088HBA-R30MF	0.30	0.33	0.33	0.32	0.32	0.32	0.32	0.29	0.29	0.29	0.28	0.28	0.28	0.27	0.27	0.27
SDM088HBA-R47MF	0.45	0.47	0.47	0.46	0.46	0.46	0.46	0.43	0.43	0.42	0.42	0.42	0.42	0.41	0.41	0.41
SDM088HBA-R50MF	0.48	0.51	0.51	0.51	0.50	0.50	0.50	0.47	0.47	0.46	0.46	0.46	0.45	0.45	0.45	0.44
SDM088HBA-R80MF	0.78	0.80	0.80	0.79	0.79	0.79	0.79	0.76	0.75	0.75	0.74	0.74	0.73	0.73	0.72	0.72
SDM088HBA-1R0MF	1.01	1.02	1.02	1.01	1.00	1.01	1.00	0.98	1.00	0.97	0.96	0.95	0.95	0.94	0.94	0.93



Inductance (uH)	Frequency (MHz)															
	0.001	0.05	0.1	0.3	0.5	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10
SDM088HBA-R30MF	0.82	36.4	53.2	64.5	56.5	43.0	41.4	21.2	14.4	11.1	9.07	7.74	6.79	6.08	5.53	5.08
SDM088HBA-R47MF	1.32	48.2	66.3	74.7	64.3	48.8	46.0	24.5	16.8	13.0	10.7	9.16	8.05	7.21	6.56	6.04
SDM088HBA-R50MF	1.76	58.6	76.3	75.9	62.4	46.0	42.3	22.3	15.3	11.9	9.78	8.37	7.36	6.60	6.01	5.53
SDM088HBA-R80MF	1.72	52.9	70.7	72.9	60.3	44.9	40.1	21.5	15.0	11.7	9.68	8.29	7.31	6.56	5.97	5.49
SDM088HBA-1R0MF	2.04	54.3	70.8	74.0	62.4	47.2	42.4	22.3	15.9	12.2	10.1	8.71	7.67	6.89	6.27	5.77

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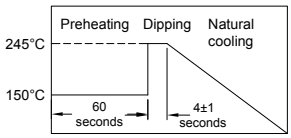
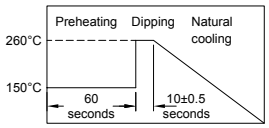
8. RELIABILITY AND TEST CONDITION :

ITEM	PERFORMANCE	TEST CONDITION
Electrical Characteristics Test		
Inductance	Refer to standard electrical characteristics list	HP4284A or CH3302/1320/1320S
DCR		HIOKI3540
Heat Rated Current (Irms)		Irms(A) will cause an temp rise ≦ 40°C typ.
Saturation Current (Isat)		Isat(A) will cause Lo to drop approximately 20%
Mechanical Performance Test		
Solderability Test	More than 90% of the terminal electrode should be covered with solder.	 After fluxing, component shall be dipped in a melted solder bath at 245±5°C for 5 seconds
Solder Heat Resistance	1. Appearance : No significant abnormality 2. Inductance change : Within ±10% of initial value	Preheat : 150°C, 60sec. Solder : lead free Solder Temperature : 260±5°C Flux : rosin Dip Time : 10±0.5sec. 
Reliability Test		
High Temperature Life Test	1. Appearance : No damage 2. Inductance : Within ±10% of initial value. No disconnection or short circuit.	Temperature : 85±5°C Time : 500±12 hours Recovery: 4 to 24hrs of recovery under the standard condition after the removal from test chamber
Low Temperature Life Test		Temperature : -20±5°C Time : 500±12 hours Recovery: 4 to 24hrs of recovery under the standard condition after the removal from test chamber
Thermal Shock		Conditions of 1 cycle. Step / Temperature (°C) / Times (min.) 1 / -25±3 / 30±3 2 / Room Temperature / Within 3 3 / 125±3 / 30±3 4 / Room Temperature / Within 3 Total : 5 cycles Recovery: 4 to 24hrs of recovery under the standard condition after the removal from test chamber
Humidity Resistance	1. Appearance : No damage 2. Inductance : Within ±10% of initial value. No disconnection or short circuit.	Temperature : 40±5°C Humidity : 90% to 95% Applied Current : Rated Current Time : 500±12 hours Recovery: 4 to 24hrs of recovery under the standard condition after the removal from test chamber
Random Vibration Test	Appearance : Cracking, chipping and any other defects harmful to the characteristics should not be allowed.	Frequency : 10-55-10Hz for 1 min. Amplitude : 1.52mm Directions and times : X, Y, Z directions for 2 hours. A period of 2 hours in each of 3 mutually perpendicular directions (Total 6 hours).

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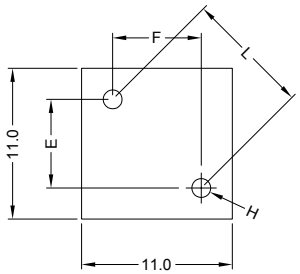
9. SOLDERING AND MOUNTING :

9-1. Recommended PC Board Pattern



Unit:m/m

Series	E	F	L	H
SDM109HHA-R32MF	5.3±0.5	5.3±0.5	7.5±0.5	1.7 Typ.
SDM109HHA-R47MF	5.3±0.5	5.3±0.5	7.5±0.5	1.6 Typ.
SDM109HHA-R80MF	5.3±0.5	5.3±0.5	7.5±0.5	1.5 Typ.
SDM109HHA-1R0MF	5.3±0.5	5.3±0.5	7.5±0.5	1.4 Typ.

9-2. Soldering

Mildly activated rosin fluxes are preferred. The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder, chip and substrate. Our terminations are suitable for all wave and re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

9-2.1 Solder Re-flow :

Recommended temperature profiles for re-flow soldering in Figure 1.

9-2.2 Soldering Iron (Figure 2) :

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.

Note :

a) Preheat circuit and products to 150°C.
b) 280°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 3 secs.

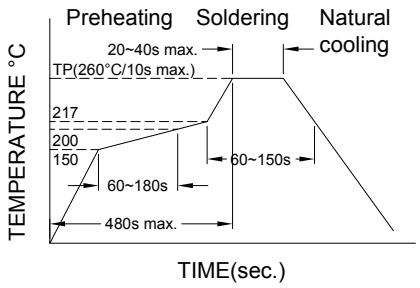


Figure 1. Re-flow Soldering

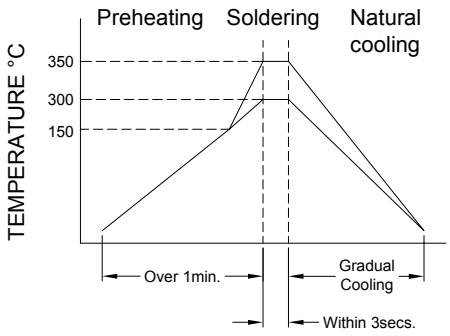


Figure 2. Iron Soldering

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10. PACKING AND QUANTITY :

Size	SDM109HHA
Styrofoam	120
Inner Box	840
Carton	1680

Application Notice

1. Storage Conditions :
   To maintain the solderabililty of terminal electrodes :
   a) Temperature and humidity conditions : Less than 30°C and 70% RH.
   b) Recommended products should be used within 6 months from the time of delivery.
   c) 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.

RoHS Compliant

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