



承 認 書



SPECIFICATION FOR APPROVAL

CUSTOMER: _____ FILE NO.: HT-SEPC-554

CUSTOMER P/N: _____

DESCRIPTION: SMD TYPE MOLDING POWER INDUCTOR

PART NO: HT-S1040-3R3M-H1

DATE: 2015年5月27日 REVISION: A

SPECIFICATION ACCEPTED BY:	
COMPONENT ENGINEER	
ELECTRICAL ENGINEER	
MECHANICAL ENGINEER	
SAFETY	
APPROVED	

深圳市兴达诚电子有限公司

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SPECIFICATION FOR APPROVAL



CUSTOMER:		REV NO:	A
DESCRIPTION:	SMD TYPE MOLDING POWER INDUCTOR	PAGE NO:	PAGE 1 OF 9
PART NO:	HT-S1040-3R3M-H1	DATE:	2015年5月27日

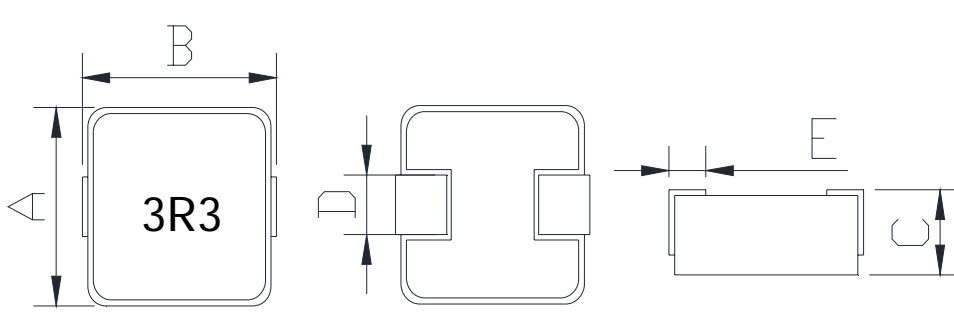
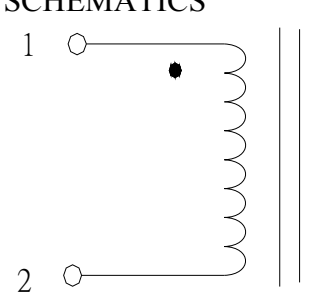
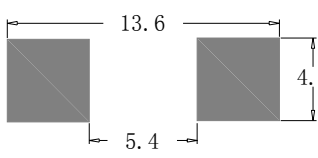
Change Record:

CHANGE DATE	CHANGE WRITING	MODIFY PERSON	REVISION
2015.05.27	New revision	刘良明	A

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杨永东	张慧军	刘良明

CUSTOMER:		REV NO:	A
DESCRIPTION:	SMD TYPE MOLDING POWER INDUCTOR	PAGE NO:	PAGE 2 OF 9
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1. DRAWING

<p>ASSEMBLY (UNIT: mm)</p> 	<p>SCHEMATICS</p> 												
<p>SUGGESTED PCB LAYOUT</p> 													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">CODE</th> <th style="width: 15%;">A</th> <th style="width: 15%;">B</th> <th style="width: 15%;">C</th> <th style="width: 15%;">D</th> <th style="width: 15%;">E</th> </tr> <tr> <td>DIMENSION</td> <td>10.0±0.5</td> <td>11.0±0.5</td> <td>4.0MAX</td> <td>3.0±0.5</td> <td>2.0±0.5</td> </tr> </table>	CODE	A	B	C	D	E	DIMENSION	10.0±0.5	11.0±0.5	4.0MAX	3.0±0.5	2.0±0.5	
CODE	A	B	C	D	E								
DIMENSION	10.0±0.5	11.0±0.5	4.0MAX	3.0±0.5	2.0±0.5								

2. ELECTRICAL CHARACTERISTICS @25°C

ITEM	SPEC. RANGE	TEST CONDITION	TEST INSTRUMENTS
L ₀ (μH)	3.3*(1±20%)	100KHz/1.0V	ZX 8526A
IDC(A)	10		MICROTEST 6377+6220
Isat(A)	16		
DCR(mΩ)	13.5 MAX		TH 2512A ZX 5512B
IR(COIL-CORE)	100MOHM MIN	DC 50V	CS 2670A
HIPOT(COIL-CORE)	1mA MAX	AC 50V(3 SEC.)	CS 2670A

3. GENERAL SPECIFICATION

- a. Rating DC current: Temperature rise(ΔT) is 40°C approximately at IDC.
- b. Saturation DC current: Inductance drop approximately 30% of L₀ at Isat.
- c. Storage temp.: -40°C ~ 85°C
- d. Storage R.H.: 30% ~ 70%
- e. Operating temp.: -25°C ~ +125°C
- f. Resistance to solder heat: 260°C/10 secs.

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4.1 TEST DATA OF ELECTRICAL CHARACTERISTIC

TEST ITEM	L ₀	Temperature rise	L _{Isat}	DCR	
	(μH)	(°C)	(μH)	(mΩ)	
CON.	100KHz/1V	IDC 10.0A	Isat 16A	At 25°C	
SPEC.	3.3*(1±20%)	ΔT 40°C	Drop 30 %	13.5 MAX	
1	3.42	25.5	2.45	12.54	
2	3.43	23.6	2.46	12.54	
3	3.33	25.4	2.45	12.54	
4	3.48	24.5	2.46	12.85	
5	3.28	24.6	2.45	12.84	
6	3.23	25.1	2.43	12.76	
7	3.32	23.8	2.46	12.85	
8	3.32	24.5	2.48	12.69	
9	3.42	25.1	2.41	12.85	
10	3.34	24.3	2.46	12.84	
X	3.355	24.64	2.451	12.731	
R	0.26	1.90	0.06	0.31	

TEST INSTRUMENTS

- PRECISION LCR METER ZX 8526A
- BIAS CURRENT SOURCE MICROTTEST 6377+6220
- AUTOMATIC COMPONENT ANALYZER TH 2512A ZX 5512B
- LCR METER ZX 8526A
- OHM METER TH 2512A ZX 5512B
- WITHSTAND VOLTAGE TESTER CS 2670A

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4.2 TEST DATA OF DIMENSIONS

CODE	A	B	C	D	E		
	(mm)	(mm)	(mm)	(mm)	(mm)		
SPEC.	10.0±0.5	11.0±0.5	4.0MAX	3.0±0.5	2.0±0.5		
1	10.03	10.65	3.85	3.05	2.15		
2	10.05	10.65	3.75	3.06	2.60		
3	10.02	10.66	3.77	3.04	2.08		
4	10.04	10.58	3.82	3.03	2.14		
5	10.05	10.66	3.69	3.02	2.25		
6	10.03	10.68	3.72	3.03	2.14		
7	10.05	10.64	3.76	3.07	2.12		
8	10.04	10.59	3.74	3.03	2.15		
9	10.00	10.68	3.75	3.03	2.12		
10	10.02	10.75	3.85	3.03	2.13		
X	10.033	10.654	3.770	3.039	2.188		
R	0.05	0.17	0.16	0.05	0.52		

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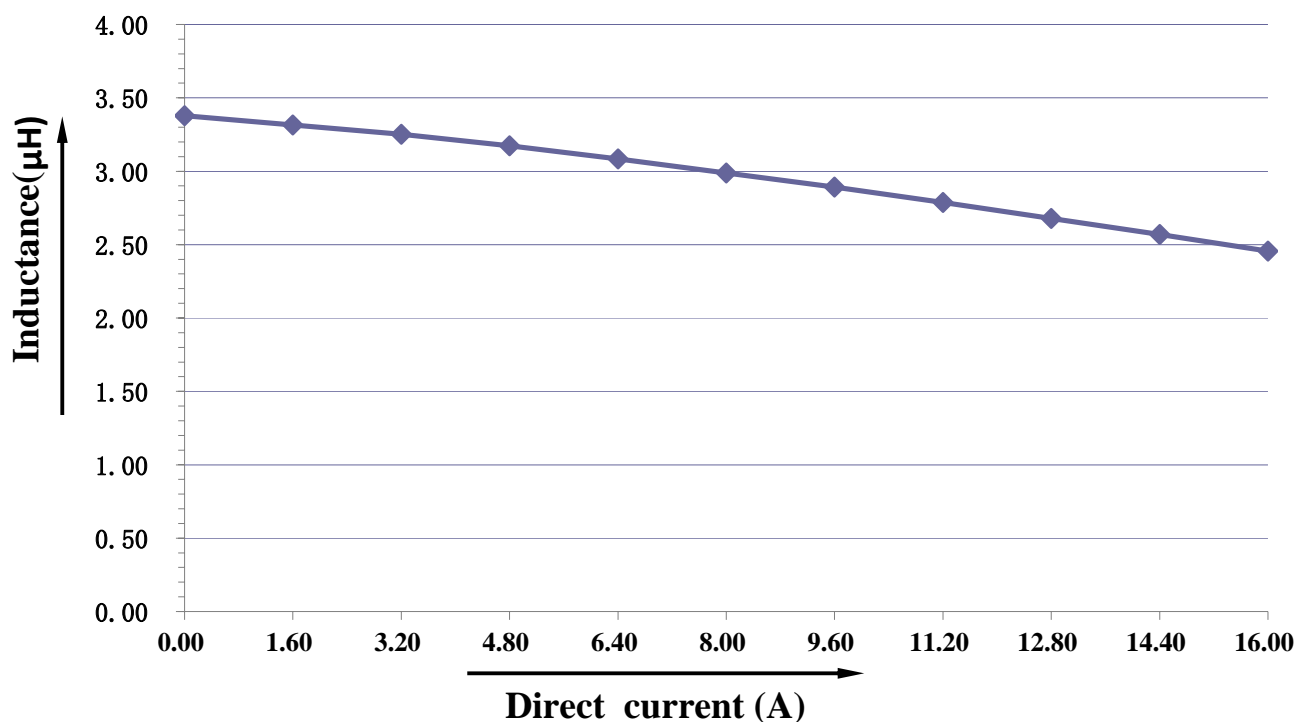
5. MATERIAL LIST

NO	ITEM	DESCRIPTION	SUPPLIER	REMARK
1	POWDER	ALLOY POWDER	MAGNETIC	
2	WIRE	ENAMELED COPPER WIRE EIW	JUNGSHING OR EQU	
3	PAINT	TRANSPARENT COLOR	BOLIN OR EQU	

6.1 ELECTRICAL CHARACTERISTIC CURVE----L vs Isat

Inductances (uH) VS Direct current (A)

CURRENT(A)	0.0	1.6	3.2	4.8	6.4	8.0	9.6	11.2	12.8	14.4	16.0		
L_1 (uH)	3.379	3.316	3.252	3.173	3.083	2.989	2.893	2.787	2.678	2.57	2.455		
Drop%	0.0%	1.9%	3.8%	6.1%	8.8%	11.5%	14.4%	17.5%	20.7%	23.9%	27.3%		



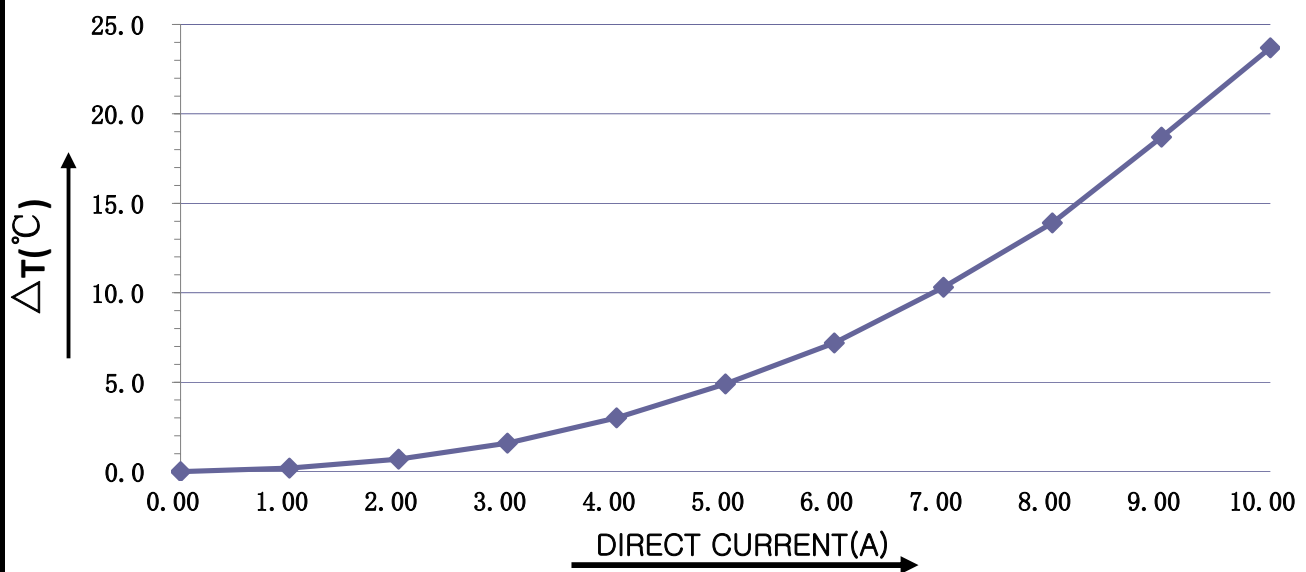
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6.2 ELECTRICAL CHARACTERISTIC CURVE---- ΔT vs IDC

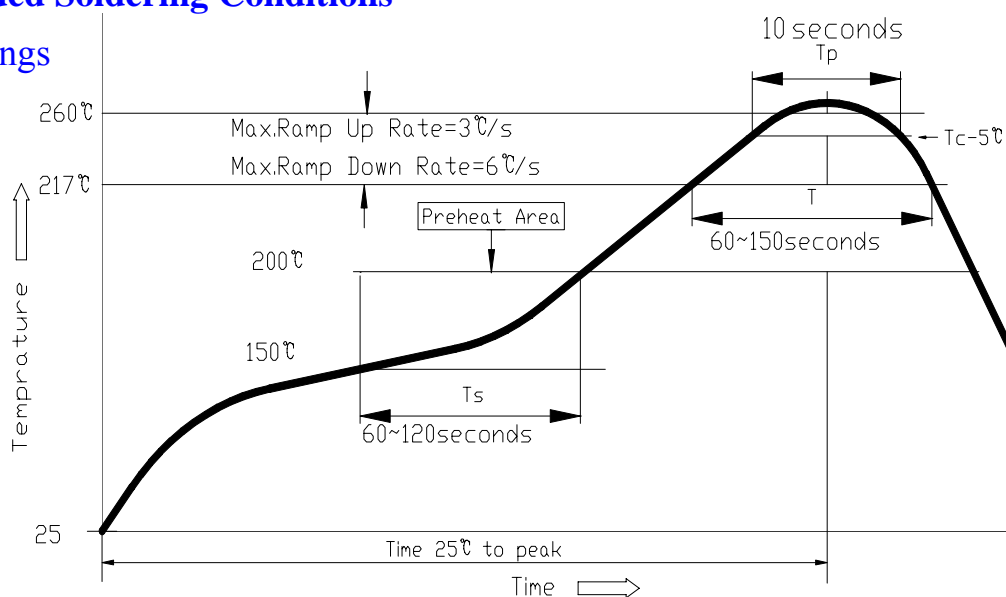
Temperature Rise($^{\circ}$ C)vs Direct Current(A)

CURRENT(A)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0		
$\Delta T(^{\circ}$ C)	0.0	0.2	0.7	1.6	3.0	4.9	7.2	10.3	13.9	18.7	23.7		



7. Recommended Soldering Conditions

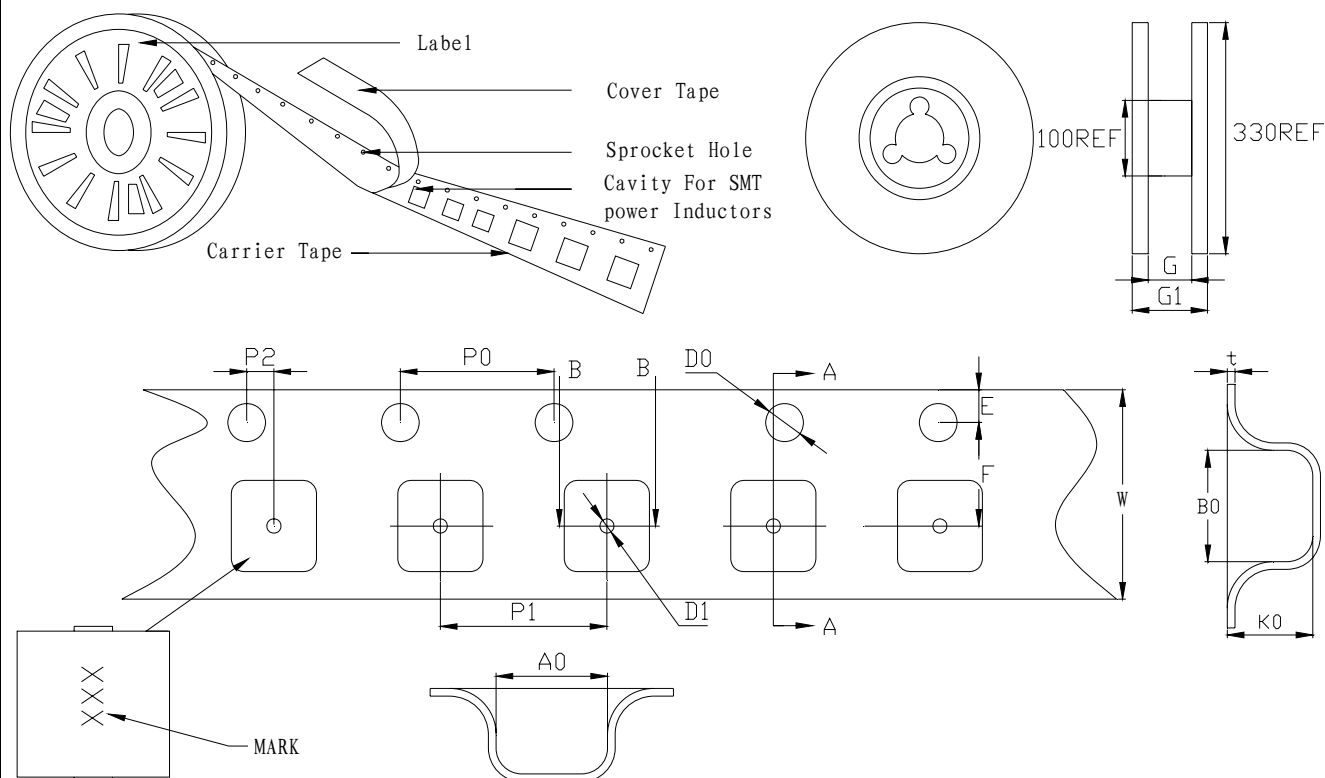
Reflow Solderings



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8. PACKAGING(unit: mm)



TYPE	DIMENSION OF REEL				PACKING UNIT
					(PCS/R)
HT-S1040	W	24.0±0.35	D1	∅1.50MIN	800 PCS/R
	E	1.75±0.15	A0	10.70±0.15	
	F	11.50±0.15	B0	12.0±0.15	
	P1	16.00±0.15	K0	4.50±0.15	
	P0	4.00±0.15	t	0.35±0.15	
	P2	2.00±0.15	G	24.8±0.3	
	D0	∅1.50±0.15	G1	32.2±0.3	

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9.1 RELIABILITY TEST

TEST ITEM	SPECIFICATION	TEST CONDITION
Withstanding voltage test	After test, inductors shall have no evidence of electrical and mechanical damage.	AC voltage of 100v and AC current of 1mA applied between inductor's terminal and core for 3 secs.
Resistance to soldering heat	1. Inductor shall have no evidence of electrical and mechanical damage. 2. Inductance shall not change more than $\pm 5\%$. 3. Q shall not change more than $\pm 20\%$.	a. Temp: $260 \pm 5^\circ\text{C}$ b. Time: 10 ± 1.0 secs
Solderability test	The terminal shall be at least 95% covered with solder.	After fluxing, the terminal shall be dipped in a melted solder bath at $245 \pm 5^\circ\text{C}$ for 4 ± 1.0 secs.
High temperature & high humidity test	The anti-erosion quality of the surface and the specimen's inductance shall not change from the initial value within $\pm 10\%$	a. Test condition 1)Temp.: 85°C , R.H.:85% 2)Time: 144 ± 2 hours b. Measurement methods: The experimental component should be put at normal condition for 2 hours then to measure again after test
Salt spray test		a. Test condition 1)Temp.: $35 \pm 2^\circ\text{C}$ 2)Time: 48 ± 2 hours 3)Salt solution PH:6.5~7.2 b. Measurement methods: The experimental component should be put at normal condition for 2 hours then to measure again after test
Vibration test	1. Inductance shall be within $\pm 10\%$ of the initial value. 2. Appearance:no damage	a. Frequency: 10 to 55HZ b. Amplitude: 1.5mm c. Direction and time: X, Y and Z directions for 2 hours each.

We have suggested the storage period of lead-free product should not over 6 months.

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9.2 RELIABILITY TEST

TEST ITEM	SPECIFICATION	TEST CONDITION
Free fall test	No mechanical damage shall be noticed.	Drop 5 times on a concrete floor from 1m the height
Temperature Cycling test		a. Test condition 1)Temp.: -55°C ,time: $30\pm 3\text{min}$ 2)Temp.: $+125^{\circ}\text{C}$,time: $30\pm 3\text{min}$ 3)Cycles times:12 cycles b. Measurement methods: The experimental component should be put at normal condition for 2 hours then to measure again after test
High Temperature resistance test	1. Inductance shall be within $\pm 10\%$ of the initial value 2. Appearance:No damage	a. Test condition 1)Applied rated current 2)Temp.: $85^{\circ}\text{C}\pm 2^{\circ}\text{C}$ 3)Test time: $1000+24/-0\text{H}$ b. Measurement methods: The experimental component should be put at normal condition for 24 hours then to measure again after test.
Low temperature resistance test		a. Test condition 1)Temp.: $-55^{\circ}\text{C}\pm 2^{\circ}\text{C}$ 2)Test time: $1000+24/-0\text{H}$ b. Measurement methods: The experimental component should be put at normal condition for 24 hours then to measure again after test.

We have suggested the storage period of lead-free product should not over 6 months.

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