SPECIFICATION FOR APPROVAL

REF. :

PROD. NAME	Shielded SMD Power Inductor	ABC'S DWG NO.	HE1040□□□□S□-□□□		
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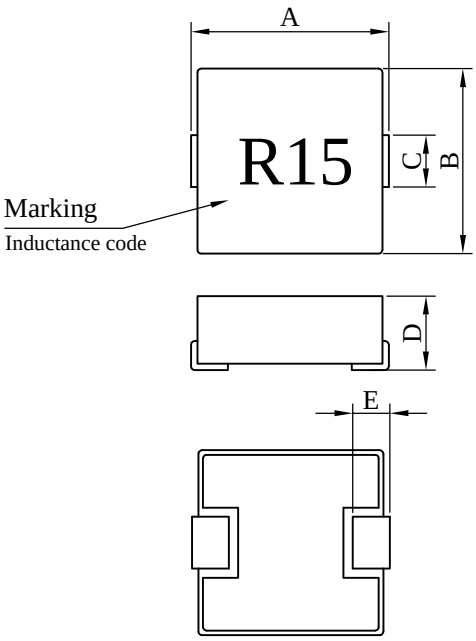
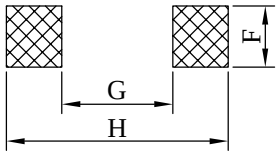
Ⅰ．Configuration and dimensions：





(PCB Pattern)

Unit：mm

A	B	C	D	E	F	G	H
11.50 max.	10.00 ±0.30	2.80 ±0.50	4.00 max.	2.00 ±0.50	3.30 ref.	6.00 ref.	12.00 ref.

Ⅱ．Description：

a．Powder molding construction

b．Magentically shielded

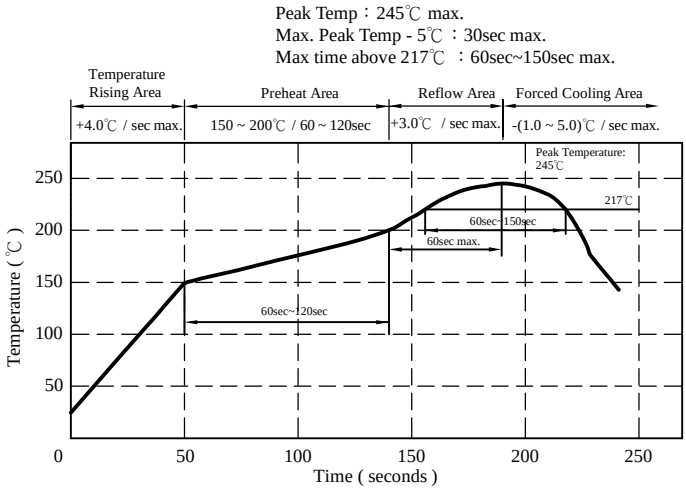
c．Enamelled copper wire：N class

d．Product weight：2.30g（ref.）

e．Moisture sensitivity Level 2a

f．Products comply with RoHS' requirements

g．Halogen free



Ⅲ．General specification：

a．Storage temp.：-55℃ ~ +125℃

b．Operating temp .：-55℃ ~ +125℃

(Temp. rise included)

c．Resistance to solder heat：260℃. 10 secs.

千如電子集團
ABC-ATEC ELECTRONICS GROUP

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Ⅳ . Electrical characteristics：

DWG. No.	Inductance (uH)	RDC (mΩ)		Isat (A)	Irms (A)
		typ.	max.	typ.	typ.
HE1040R15MS□-□□□	0.15 ±20%	0.50	0.65	75.0	40.0
HE1040R19MS□-□□□	0.19 ±20%	0.70	0.80	60.0	38.0
HE1040R36MS□-□□□	0.36 ±20%	1.05	1.20	58.0	30.0
HE1040R39MS□-□□□	0.39 ±20%	1.10	1.30	50.0	30.0
HE1040R41MS□-□□□	0.41 ±20%	1.10	1.30	45.0	30.0
HE1040R45MS□-□□□	0.45 ±20%	1.10	1.30	45.0	29.0
HE1040R47MS□-□□□	0.47 ±20%	1.60	1.80	40.0	26.0
HE1040R56MS□-□□□	0.56 ±20%	1.60	1.80	39.0	25.0
HE1040R68MS□-□□□	0.68 ±20%	2.40	2.70	39.0	22.0
HE1040R88MS□-□□□	0.88 ±20%	2.70	3.00	38.0	20.0
HE10401R0MS□-□□□	1.00 ±20%	3.00	3.30	28.0	18.0
HE10401R5MS□-□□□	1.50 ±20%	3.80	4.20	24.0	16.0
HE10402R2MS□-□□□	2.20 ±20%	6.70	7.00	22.0	12.0
HE10403R3MS□-□□□	3.30 ±20%	10.80	11.80	17.0	10.0
HE10404R7MS□-□□□	4.70 ±20%	15.00	16.50	15.0	9.5
HE10405R6MS□-□□□	5.60 ±20%	17.60	19.30	14.0	8.5
HE10406R8MS□-□□□	6.80 ±20%	21.20	23.30	12.0	8.0
HE10408R2MS□-□□□	8.20 ±20%	26.00	29.00	9.0	7.0
HE1040100MS□-□□□	10.0 ±20%	33.20	36.50	8.5	6.8
HE1040150MS□-□□□	15.0 ±20%	40.00	45.00	7.0	6.0
HE1040220MS□-□□□	22.0 ±20%	60.00	66.00	5.5	5.0
HE1040330MS□-□□□	33.0 ±20%	85.00	92.00	5.0	4.4
HE1040470MS□-□□□	47.0 ±20%	130.0	145.0	3.5	4.0
HE1040560MS□-□□□	56.0 ±20%	150.0	170.0	2.8	3.8
HE1040680MS□-□□□	68.0 ±20%	175.0	200.0	2.6	3.5

1). Electrical specifications at 25℃

2). Inductance Test Condition. :500kHz / 0.25V

3). Isat base on ΔL / L0A=30% typ.(Approximately transient current)

4). Irms base on Temp. rise 40℃ typ.

5). Rated Voltage：50V max.

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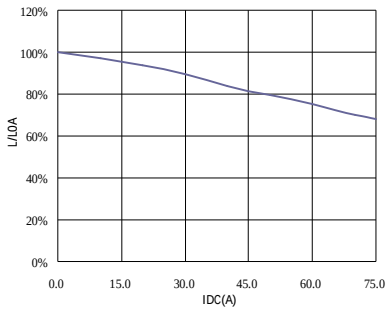
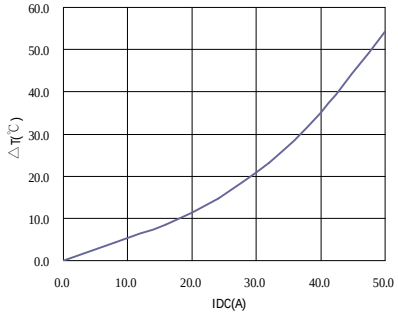
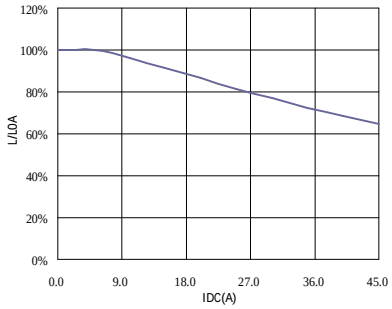
Ⅴ．Curve：

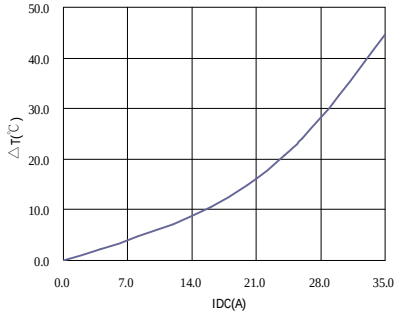
HE1040R15MS□



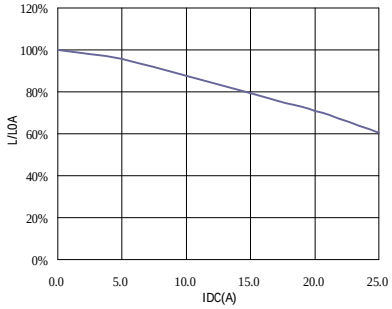


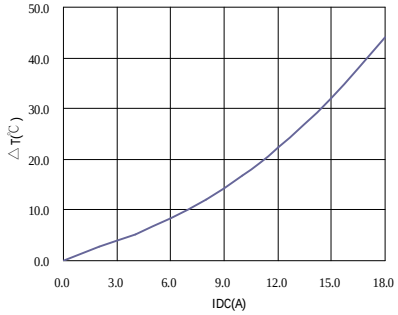
HE1040R47MS□



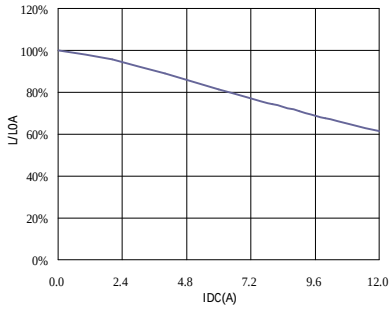


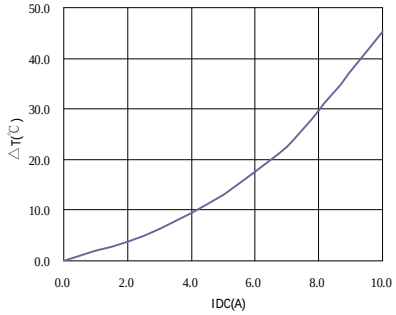
HE10402R2MS□





HE10408R2MS□





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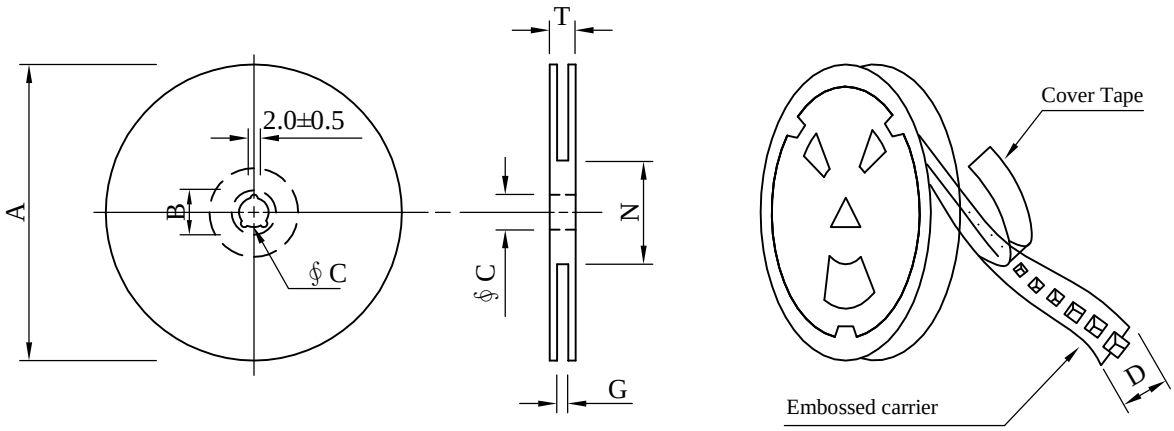
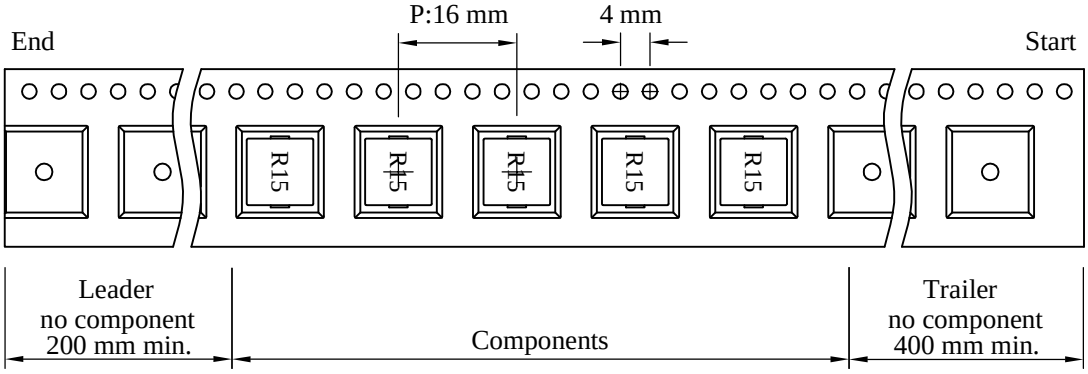
Ⅵ．Packaging information：

(1) Configuration



※Carrier tape width : D



User direction of feed

(2) Dimensions

Unit:mm

Style	A	B	C	D	G	N	T
13 - 24	330	21±0.8	13±0.5	24	26^{+0}	60^{-0}	30.4

(3) Q'TY & G.W. Per package

Code	Inner : Reel			Outer : Carton		
	Q'TY (pcs)	G.W. (g)	Style	Q'TY (pcs)	G.W. (kg)	Size (cm)
B	800	2,400	13 - 24	3,200	11.00	38 x 37 x 22

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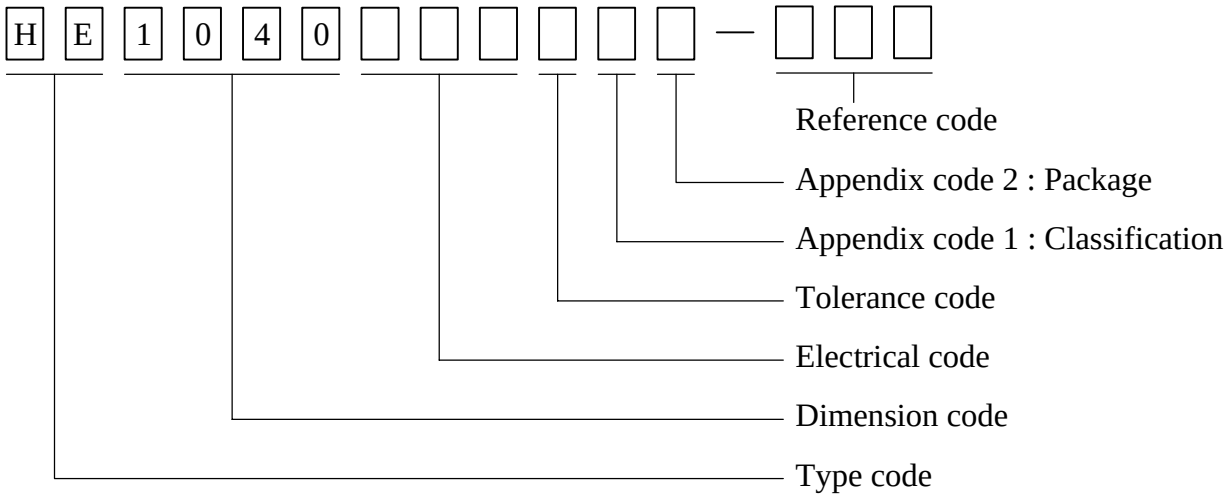
Ⅶ．Drawing number expression：



Appendix code 1：Product Classification

Appendix code 2：Package Information

Code	Inner package	Cover tape	Carrier tape	Bag	Package Q'TY	Remark
B	T /R (Reel package)	Adhesive	Non-antistatic	Non-antistatic	800 pcs	

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Ⅷ．Reliability test：

Item	Reference documents	Test Condition	Test Specification
1.High Temperature Exposure	MIL-STD-202 Method 108	1.Temperature: 125±2℃ 2.Time:96±2 hours.	1.No mechanical or electrical damage. 2.Inductance shall not change more than ±20%.
2.Temperature Cycling	JESD22-A 104	1.Temperature: -40℃ ~ +125℃ 2.Number of cycle:100 cycle 3.Dwell time:30 minutes	1.No mechanical or electrical damage. 2.Inductance shall not change more than ±20%.
3.Biased Humidity Test	MIL-STD-202 Method 103	1.Temperature：85±2 ℃ 2.Humidity: 85% RH. 3.Time:96±2 Hours	1.No mechanical or electrical damage. 2.Inductance shall not change more than ±20%.
4.Operational Life	JESD22-A 108	1.Temperature: 125℃ (Temp. rise included) 2.Time:96±2 hours. 3.Rated current	1.No mechanical or electrical damage. 2.Inductance shall not change more than ±20%.
5.External Visual	JESD22-B 101 & MIL-STD-883 Method 2009	Inspect product constructions, marking and workmanship.	1.No pollution on the surface of products. 2.Clear marking. 3.No crack.
6.Physical Dimensions	JESD22-B 100	Verify physical dimensions to the applicable product detail specification.	Per product specification standard
7.Resistance to solvents	MIL-STD-202 Method 215	Immerse into solvent for 3±0.5 minutes & brush 10 times for 3 cycles.	1.No body change in apperarance. 2.No marking blurred. 3.Inductance shall not change more than ±20%.
8.Vibration Test	MIL-STD-202 Method 204	1.Frequency and Amplitued : 10-2000-10 Hz, 1.5 mm. 2.Direction:X, Y, Z 3.Test duration:2 hours for each direction, 6 hours in total.	1.No mechanical or electrical damage. 2.Inductance shall not change more than ±20%.
9.Resistance To Soldering Heat Test	MIL-STD-202 Method 210 & J-STD020D.1	1.Highest temperature：245±5℃. 2.Time（temp.≧ 217℃）：60~150 Second. 3.IR reflow times：3 times.	1.No mechanical or electrical damage. 2.Inductance shall not change more than ±20%.
10.Saturation Current	JIS C 6436 & User SPEC.	1.Applied rated current for 5 second. 2.Saturation current	Inductance shall not drop more than 30% typ.
11.Over load	JIS C 6436 & User SPEC.	1.Applied one and half rated current for a period of 5 minutes. 2.Rated current	No electrical or mechanical damage
12.Temperature Rise Current	JIS C 6436 & User SPEC.	1.Applied rated current for 10 minutes. 2.Temperature measure by digital surface thermometer. 3.Irms current	Surface temperature rise is less than 40℃ typ.
13.Solderability Test	J-STD-002 & JESD22-B 102	1.Baking in pre-testing： 150±5℃ / 16Hours±30 min. 2.Peak temperature：240±5℃ 3.Time（temp.≧217℃）：60~150 second. 4.IR reflow times：1 times.	More than 95% soldering coverage min on terminations.
14.Electrical Characteriazation	MIL-STD-202 Method 304 & User SPEC.	1.Operating temperature：-55℃~125℃ 2.Room temperature：25℃.	1.No mechanical or electrical damage. 2.Inductance shall not change more than ±20%.
15.Drop	CNS-C6354 & GB/T 2423.8	1.Products shall be mounted on SPEC. PCB and dropped down from a height of 1m 2.Drop total time：6 time (Every side of sample drop 2 time)	1. Adhesion on PCB shall be enough. 2. Product appearance shall not break. 3. No electrical damage.
16.Terminal Strength Test	IEC 60068-2-21	1.Apply push force to samples mounted on PCB. 2.Force of 1.8 kg for 60±1 seconds.	After test, inductors shall be no mechanical damage.

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Ⅸ．Change history：

DATE/REV.	DISCRIPTION	DRAWN	CHECKED	APPROVED
20171115-A	New Release	Colin	Leo	Nick
20190103-B	Add the Rated Voltage：50V max.	Miz Hsieh	Nick Chen	Nick Chen
20190710-C	Add the current curve	Miz Hsieh	Nick Chen	Ken hsiao
20190903-D	1.Add Inductance from 100 to 680 2.MIL-STD-202 Method 210 Modify the Rresistance to solder heat 245℃.10 secs.→260℃.10 secs.	Sammy Peng	Nick Chen	Nick Chen
20191121-E	Modify the Unit：m/m → mm ; Kg → kg	Miz Hsieh	Nick Chen	Ken hsiao