

SPECIFICATIONS FOR APPROVAL

USER :

ITEM : SPH10040-100M

사내 MODEL :

Halogen free

RoHS Comp.

AEC-Q200 Comp.

SIGNATURE OF APPROVAL	DESCRIPTION



LS COMMUNICATION Co ., LTD.

LS Bldg.,#350-30,Seoksoo-2dong,Manan-gu Anyang-si, Gyeonggi-do, KOREA.

TEL : (031) 474-5027~8.

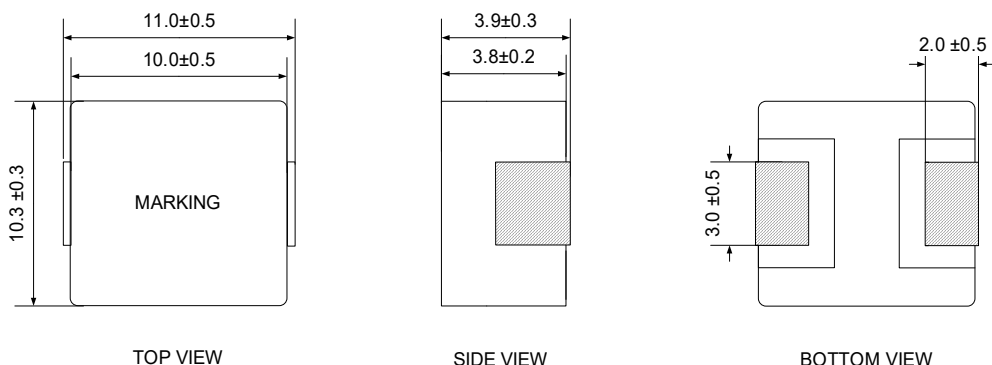
FAX : (031) 474-2045

ITEM:POWER INDUCTOR		SPECIFICATION			
TYPE:SMD				MODEL : SPH10040-100M	
No.	DATE	REVISION DESCRIPTION		PAGE	
REVISION RECORD					
REV.					
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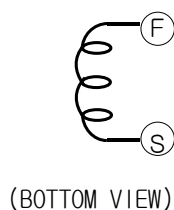
ITEM:POWER INDUCTOR	SPECIFICATION	
TYPE:SMD		MODEL : SPH10040-100M

UNIT: mm

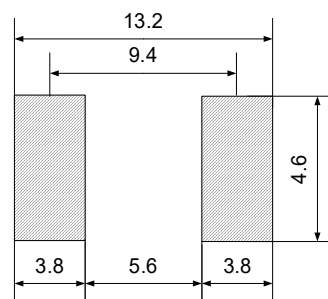
1.ILLUSTRATION & DIMENSION



2.TERMINAL PIN CONNECTION



Recommended PCB Pattern



3.ELECTRIC CHARACTERISTICS

NO	ITEM	MESURE	SPECIFICATION	REMARKS
1	INDUCTANCE	START & FINISH	$10 \text{ [uH]} \pm 20 \text{ [%]}$ at 100KHz	LCR-METER HP-4285A at 1Vrms
2	DC RESISTANCE	START & FINISH	$30 \text{ [m}\Omega\text{]} \text{ MAX}$	MILLI OHM METER 3541
3	Saturation CURRENT	START & FINISH	DC 8.5 [A]	LCR-METER HP-4285A at 100KHz, 1Vrms
4	Temperature rise current	START & FINISH	DC 7.8 [A] ($\Delta T = 40^\circ\text{C}$)	

*Inductance : Measured with a LCR meter 4285A(Agilent) or equivalent. (Test Freq. 100kHz, Level 1V)

*DC Resistance : Measured with a Resistance Hitester 3541(HIOKI) or equivalent. The measurement point of DCR is side of terminal.

*Saturation Current : Agilent 4285A + Agilent 42841A / Inductance drop = 30% at rated current

*Temperature rise current: DC current that causes the temperature rise ($\Delta T = 40^\circ\text{C}$) from 25°C ambient

*Withstand voltage : Withstand voltage 30V DC.

*Unless otherwise specified, measurements are the standard atmospheric condition.

4.Materials information

- 1)Main Material : Fe Powder
- 2)Wire : Insulated coating copper wire
- 3)Terminal : Copper coated with Tin

5.Factory place(country)of origin

- 1)China , 2)Vietnam

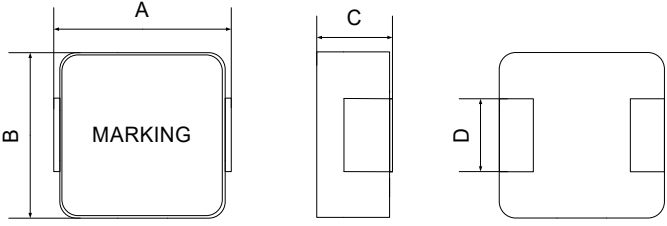
DATE	DESCRIPTION	DESIGN	CHECK	APPRO.
20.07.17		류재찬	이진수	류형열
		SPEC NO: D5-5044A		

6.Inspection Report

Inspection Report

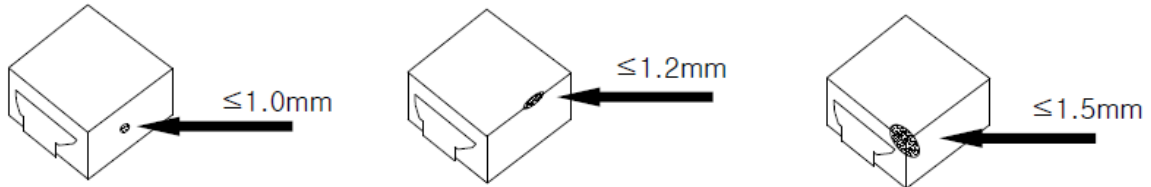
U S E R	-	ITEM	Power Inductor	수 량	10ea	DATE	20.05.12
LOT NO	-	MODEL	SPH10040-100M	SPEC NO	D5-5044A	INSPECTED BY	류제찬
TEST LEVEL	100KHz,1V	측정장비	Agilent HP-4285A, 3541, Agilent HP-42841A				

ITEM	INDUCTANCE	Isat (8.5A)	DCR (mΩ)	DIMENSION(mm)				
				A	B	C	D	
STD	10uH±20%	-30% at Inductacne value	30mΩ MAX	11.5 MAX	10.3±0.3	4.2 MAX	3.0±0.5	
1	9.44	7.58	28.1	11.08	10.14	3.95	2.94	
2	9.46	7.77	28.0	11.07	10.15	3.96	2.93	
3	9.65	7.64	28.2	11.06	10.14	3.97	2.96	
4	9.56	7.60	28.1	11.08	10.15	3.93	2.95	
5	9.56	7.61	28.1	11.07	10.15	3.92	2.94	
R	0.21	0.19	0.2	0.02	0.01	0.05	0.03	
Aeg	9.53	7.64	28.1	11.0	10.1	3.94	2.94	

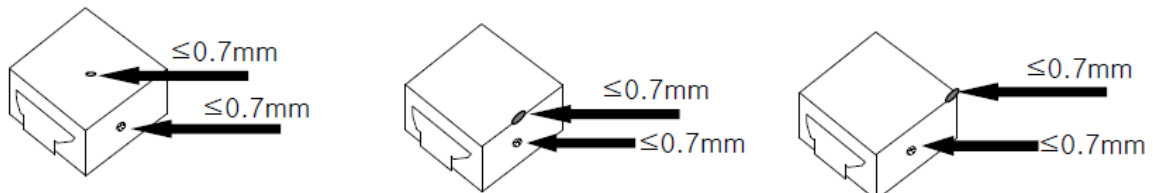
DIMENSION 	TEST	DESIGN	CHECK	APPRO.
	OK	류제찬	이진수	류형열
etc				

※ Appearance inspection standard

- The coil won't be looking from the chip off part.
- The crack won't be looking from the part.
- The foreign material won't be looking from the part.
- About the maximum length of chip off
 - When the chip off is in one face : 1.0mm
 - When the chip off is between two face : 1.2mm
 - When the chip off is three face : 1.5mm



- The part of chip off is two places or less.
- The chip off of 0.7mm over are not allowed in two face.



※ Standard atmospheric conditions

Unless otherwise specified, the standard range of atmospheric conditions in making measurements and test as follows;

Ambient temperature : 15℃ to 35℃ , Relative humidity : 25% to 85% ,

Air pressure : 86kPa to 106kPa

If more strict measurement is required, measurement shall be made within following limits;

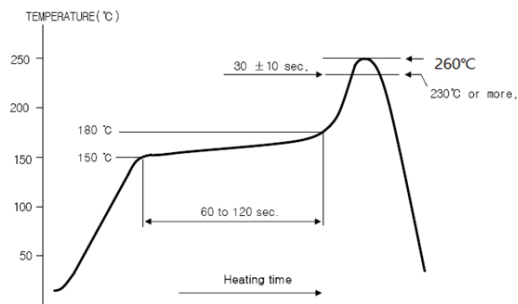
Ambient temperature : 20±1℃ , Relative humidity : 63 ~ 67% , Air pressure : 86kPa to 106kPa

ITEM:POWER INDUCTOR		SPECIFICATION	
TYPE:SMD			MODEL : SPH10040-100M
7.GENERAL SPECIFICATION			
ITEM	Ref. Spec. Meth /Cond	CONDITIONS	End Point Δ Requirements
High Temperature Exposure(Storage) AEC-Q200 Test No.3	MIL-STD-202 Method 108	125℃ for 1000hrs. at rated operating temperature (e.g. 125 ℃ part can be stored for 1000hrs. @ 125 ℃ Same applies for 105℃ and 85℃. Unpowered. Measurement at 24±2 hours after test conclusion.	L=±15% of initial, DCR ±15%
Temperature cycle AEC-Q200 Test No.4	JESD22 Method JA-104	1000 cycles (-40℃ to +125℃). Note : If 85℃ part Or 105℃ part the 1000 cycles will be at that temperature. Measurement at 24±2 hours after test conclusion.	L=±15% of initial, DCR ±15%
Biased Humidity AEC-Q200 Test No.7	MIL-STD-202 Method 103	1000hours 85℃/85% RH. Unpowered. Measurement at 24±2 hours after test conclusion.	L=±15% of initial, DCR ±15%
Operational Life AEC-Q200 Test No.8	MIL-STD-T27	1000hrs. @105℃. 85℃ or 125℃ part will be Tested at that temperature.(Apply Rated Current) Measurement at 24±2 hours after test conclusion.	L=±15% of initial, DCR ±15%
External Visual AEC-Q200 Test No.9	MIL-STD-883 Method 2009	Inspect device construction, marking and Workmanship. Electrical test not required.	No abonormalities
Physical Dimension AEC-Q200 Test No.10	JESD22 Method JB-100	Verify physical dimensions to the applicable advice detail specification. Note: User(s) and Suppliers spec. Electrical Test not required.	All parts within dimensional tolerance
Resistance to Solvents AEC-Q200 Test No.12	MIL-STD-202 Method 215	Add Aqueous wash chemical. OKEM Clean or equivalent. Do not use banned solvents.	Not Applicable
Mechanical Shock AEC-Q200 Test No.13	MIL-STD-202 Method 213	Figure1 of Method 213. Condition C 100G, Drop 3 times.	Pass all criteria as defined in DPS-11,865 L=±15% of initial, DCR ±15%
Vibration AEC-Q200 Test No.14	MIL-STD-202 Method 204	5g's for 20 minutes, 12 cycles each of 3 Orientations. Note: Use 8"*5"PCB, .031"thick, 7Secure points on one long side and 2 secure points At corners of opposite sides. Parts mounted within 2" from any secure poing. Test from 10~2000Hz.	Pass all criteria as defined in DPS-11,865 L=±15% of initial, DCR ±15%

ITEM:POWER INDUCTOR		SPECIFICATION	
TYPE:SMD			MODEL : SPH10040-100M
ITEM	Ref. Spec. Meth / Cond	CONDITIONS	End Point Δ Requirements
Resistance to Soldering Heat AEC-Q200 Test No.15	MIL-STD-202 Method 210	Condition B No pre-heat of samples. Note: Single Wave Solder - Procedure 2 for SMD and Procedure 1 for Leaded with solder within 1.5mm of device body.	Free of solder defects for 95% of the critical area of each lead.
E.S.D AEC-Q200 Test No.17	AEC-Q200-002	Per AEC-Q200-002 ESD Rank: Refer to Item 3. Rating	Pass all criteria as defined in DPS-11,865 L=±15% of initial, DCR ±15%
Solderability AEC-Q200 Test No.18	J-STD-002	For both Leaded & SMD. Electrical test not Required. Magnification 50×. Conditions : c) Method D category 3 @ 260°C.	95% or greater coverage in critical area of each lead.(Appendix A & B)
Electrical Characterization AEC-Q200 Test No.19	User Spec.	Parametrically test per lot and sample size Requirements, summary to show Min, Max, Mean And standard deviation at room as well as Min and max operating temperatures.	L=±15% of initial, DCR ±15%
Board Flex AEC-Q200 Test No.21	JIS-C-6429	Appendix 2 Note : 2mm (Min)	Pass all criteria as defined in DPS-11,865 L=±15% of initial, DCR ± 15%
Terminal Strength AEC-Q200 Test No.22	AEC-Q200-006	Appendix 1 Note : Force of 1.8kg for 60 seconds.	Pass all criteria as defined in DPS-11,865 L=±15% of initial, DCR ± 15%
Operating Temp.	-	-40°C ~ +105°C	Including self temperature rise. (ΔT=40°C Max.)
Storage temperature	-	-40°C ~ +125°C	

ITEM:POWER INDUCTOR	SPECIFICATION	
TYPE:SMD		MODEL : SPH10040-100M

8.REFLOW

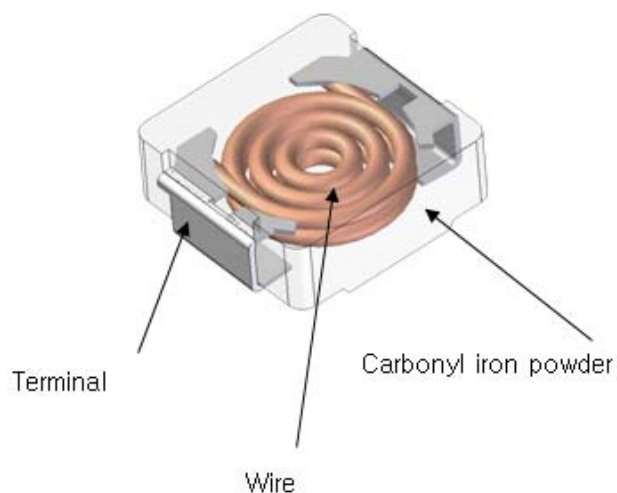


- Rate of Rise : 2~3°C / sec
- Pre-Heating : 60~120sec
- Pre-Heating Temp. : 150~180°C
- Above 217°C : 45~75 sec
- Peak Temp. : 260°C, 10sec max
- Cooling : 4°C max / sec

9.PARTS LIST

NO	COMPONENT	MATERIAL	TYPE NO. AND STANDARD	MANUFACTURER
1	Powder	Fe	Powder	AN TAI Or Equal ,BASF, TAIPINGYANG
2	Wire	Cu	Insulated coating copper wire	TOTOKU. LSCable, Elektrisola Or Equal
3	Terminal	Cu	Copper coated with Tin	Xinde,Poongsan, AI QUAN Or Equal

※ STRUCTURE OF THE PARTS

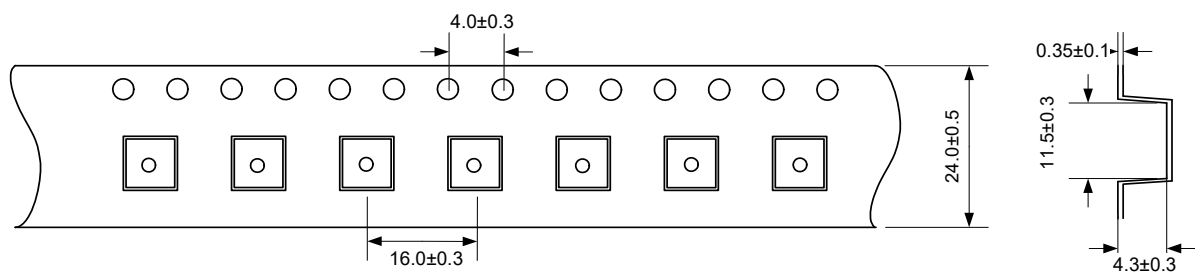


10.PACKING UNIT

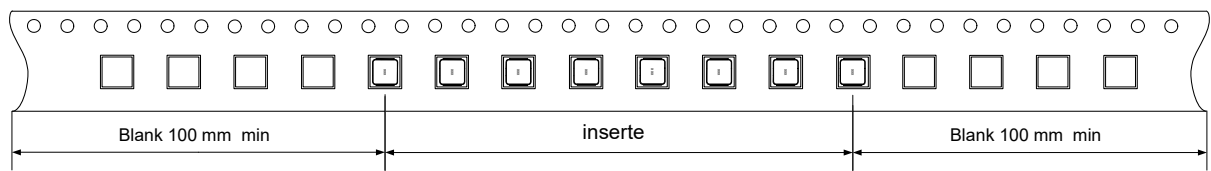
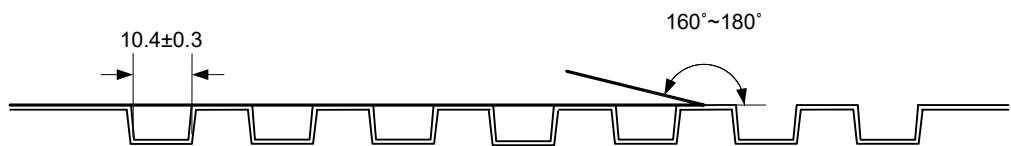
ITEM	LS TYPE	REEL PACKING (Q'TY/REEL)	OUT BOX (Q'TY / C/T)
POWER INDUCTOR	SPH10040	500 PCS	2,000 PCS

*LOT NO. YEAR/MONTH/DAY/LINE

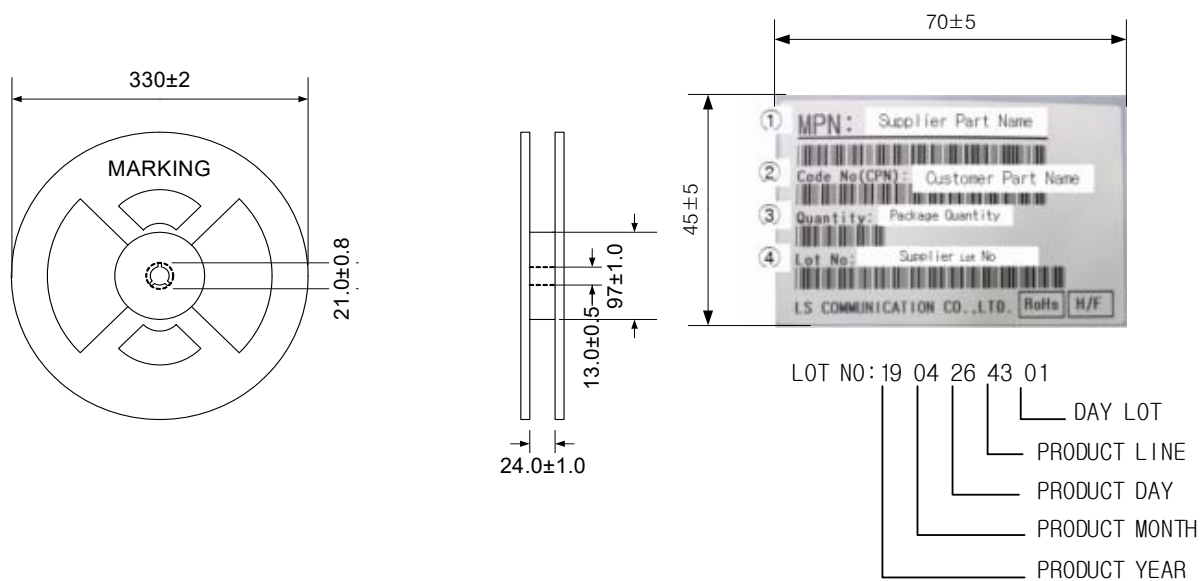
1)REEL TAPE DIMENSION



*REEL BACK TEST
20g~120g



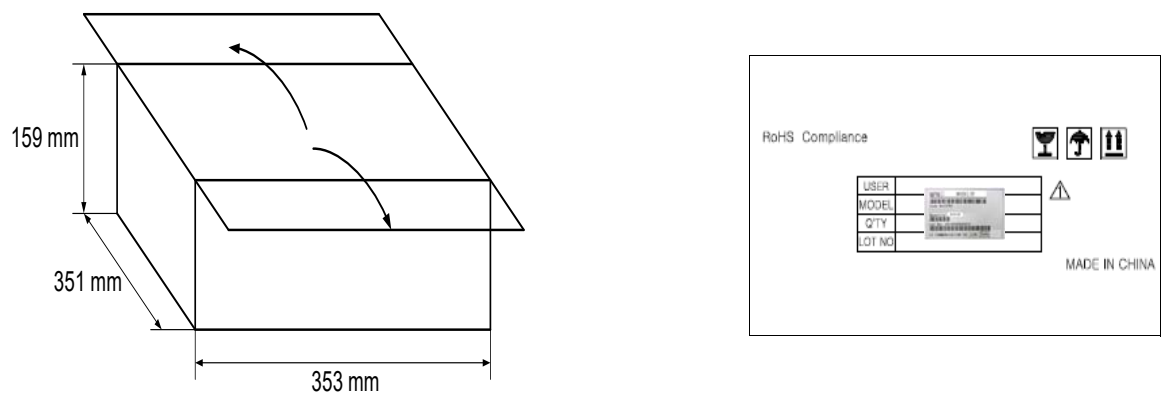
2) REEL DIMENSION



3) Vacuum-packing



4) OUT BOX



11.Caution

- When use the products, be careful to mentioned below for safety using.
- Be careful to stored conditions(normal temperature, normal humidity) when the products are used.
- This product is intended for commercial, non-military applications and should be used only in accordance with these specifications.
- Do not use dropped product. If the product suffered mechanical stress,electrical characteristics may become poor.
- The products may have defects by excessive bending stress or scratch.So be careful to setup of machine.
- Comply with the specifications for rework on soldering after being mounted,excessive heating may result in short circuits, degradation, reliability, etc.
- As the product temperature rises due to self-heating, the margin must betaken into account.
- Do not exceed in operating conditions set forth in these specifications.
- Do not use this product in a corrosive environment.(gas, salt, acid, alkaline, etc.)

12.UL CARD

UL CADE OF COMPONENT	
COMPONENT	WIRE



ONLINE CERTIFICATIONS DIRECTORY

OBMW2.E143312 Magnet Wire - Component

[Page Bottom](#)

Magnet Wire - Component

[See General Information for Magnet Wire - Component](#)

ELEKTRISOLA (MALAYSIA) SDN BHD
JALAN DAMAI SATU
JANDA BAIK
28750 BENTONG, PAHANG MALAYSIA

E143312

Mtl Dsg	Mark Dsg	Coat Typ		ANSI Type	Temp Class @
		BC	OC		
Estersol 180	E180	Polyester-	—	MW-77	180
		imide			
		(solderable)			
Amidester 200	A200	Polyester-	—	MW-74	200
		imide			
Polysol-N 155	PN155	Polyurethane	Nylon	MW-80	155
				MW-28	(+)130
Polysol 155	P155, G155	Polyurethane	—	MW-79, MW-75	155, (+)130
Polysol 155g	Pg155	Polyurethane	—	MW-75	130
Polysol 155p	Pp155, Gp155	Polyurethane	—	MW-79	155
Polysol 160	P160	Polyurethane	—	MW-79	155
Polysol 180	P180, G180, Pv180	Polyurethane	—	MW82, MW79	180, (+)155
Polysol 170	P170 or G170	Polyurethane	—	MW-79	155
Polysol-N 180	PN180	Polyurethane	Nylon	MW83	180
Polysol P155p	P155p or G155p	Polyurethane	—	MW-79	155

@ - Magnet wire from a higher temperature class may be used in an insulation system as a substitute for magnet wire from a lower temperature class when both magnet wires are from the same family (non-solderable for non-solderable, solderable for solderable, polyurethane for polyurethane, etc.).

(+) - Additional consideration is needed before wire is used in an insulation system thermal aging program.

Marking: Company name, material designation or marked designation and factory identification on package or reel.

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