

APPROVAL SHEET

CUSTOMER : LG ELECTRONICS Inc.

MODEL : 15LV766M

I T E M : MAIN TRANS

PART NO : 17P0C-LS01

S.J SPEC NO : LGTR-18-01



APPROVED

DATE : 2018. 01. 03.



SOOJUNG ELECTRONICS IND. CO., LTD.

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승인원 CHECK LIST (TRANS)

				Checking (MAKER)		Remark
대분류	소분류	내용	CTQ 지정	Yes	No	
Approval	표지	승인원 표지에 P/N 는 정확한가?		☐		
		승인원 표지에 SPEC는 정확한가?		☐		
		생산지 가 정확하게 표기 되었는가?		☐		
		작성일자 를 정확히 표기 되었는가?		☐		
		영업/QA담당자명 및 연락처가 정확히 기재되었는가?		☐		
		"Safety"마크는있는가?(우측상단)	★	☐		
	Revision Record	RevisionRecord란의내용은 정확히기재되어있는가?		☐		
		Revision Record 란은 의 Date 는 정확한가?		☐		
		Rev 번호는 정확히 적혀있는가?		☐		
	INDEX	승인원에 포함되어야 할 모든 내용이 list화 되어 있는가?		☐		
	도면	치수 및 공차가 정확히 기재되어 있는가?		☐		
		Marking Spec은 제대로 기재되어 있는가?		☐		
		Bonding의 위치 표기는 제대로 되어 있는가?		☐		
		"Safety" 마크는 있는가?(우측상단)		☐		
		Bobbin의 Pin번호는 표기되어 있는가?		☐		
		Pin간 거리 tolerance는 spec을 만족하는가?		☐		
	Winding Specification	Schematic 도면과 같이 동일한 Pin no로 구성되었는가?		☐		
		권선차수별 올바르게 기재되었는가?		☐		
		Wire권선 종류는 제대로 적용되었는가?		☐		
		권선방법은 제대로 기재되었는가?		☐		
		각 권선별 turn수는 정확한가?	★	☐		
		절연tape의 색상과 size는 올바른가?	★	☐		
		절연tape의 turn수는 정확한가?	★	☐		
	Packing Method	Inner Box의 형상과 제질명기가 정확한가?		☐		
		Inner Box 1PCS당 담을수 있는 샘플 수량이 기재되었는가?		☐		
		Out Box의 형상과 제질명기가 정확한가?		☐		
		Out Box 하나당 packing되는 샘플 수량이 정확히 기재되었는가?		☐		
	UL Card	각 재질군별 난연등급 규격을 취득한 제품으로 적용되었는가?		☐		
	RAW Material List	부품에적용되고있는원자재만기재되어있는가?		☐		
		원자재업체명,부품형명이정확한가?		☐		
	Internal Construction	Trans내부 권선구조가 잘 도식화 되어 있는가?		☐		
	분해검사 성적서	실측치 기입과 측정담당자 명기가 되어 있는가?		☐		
		모든 재질군 분해검사가 실제로 진행되었는가?		☐		
	4M LIST	4M 변경 신고기준서는 첨부되었는가?		☐		
Reliability test	환경시험	테스트 환경조건 명기가 정확한가?		☐		
		사용온도 조건이 명기가 되어있는가?		☐		
		내습성,내열성,내한성 온도/시간 조건이 명확한가?		☐		
		온도Cycle 단계별 조건이 명확한가?		☐		
		열충격테스트조건명기가정확한가?		☐		
		(Cycle단계별적용temp및시간이LGE기준과동일수준인가?)				
	전기적성능	Inductance값이 각 teminal별로 제대로 기재되어 있는가?		☐		
		Leakage Inductance값이 기재되어 있는가?		☐		
		DC저항값이 기재되어 있는가?		☐		
		내전압 시험조건이 정확히 명기되어 있는가?	★	☐		
		절연저항 값이 제대로 기재되어 있는가?	★	☐		
		Impulse test조건은 제대로 명기되어 있는가?	★	☐		
	기계적성능	충간 short test 기준은 명확한가?		☐		
		Terminal 발거력 spec은 명확한가?		☐		
		납붙임성테스트조건은 명확한가?		☐		
QC공정도	4M 관점의 QC공정도	4M 관점에서 기재되어 있는가?	★	☐		
승인원	승인원	승인원의 모든 내용에서 오타가 없는가?		☐		

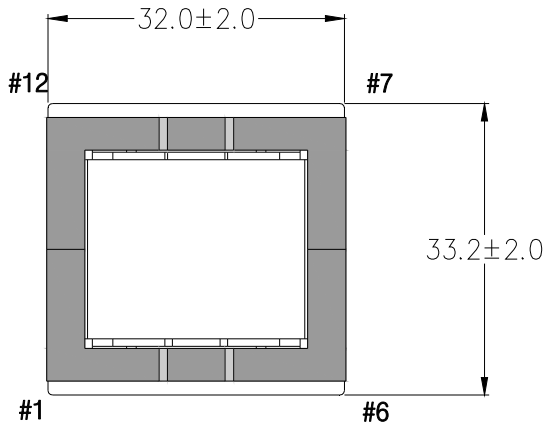
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SPECIFICATION		D A T E	2018. 01. 03		
PART NAME	MAIN TRANS		PART NO	17P0C-LS01	
1. RECORD OF REVISION					
REV NO.	REASON	CONTENTS	DATA OF APPROVAL	CHECKED	REMARKS
		- 신규제정	2018. 01. 03		
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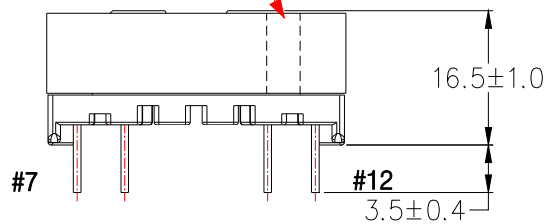
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3. DIMENSION (UNIT:mm)

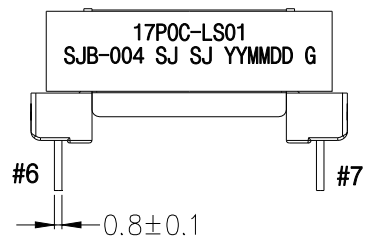


Gap core position
marking(white:3mm Min)

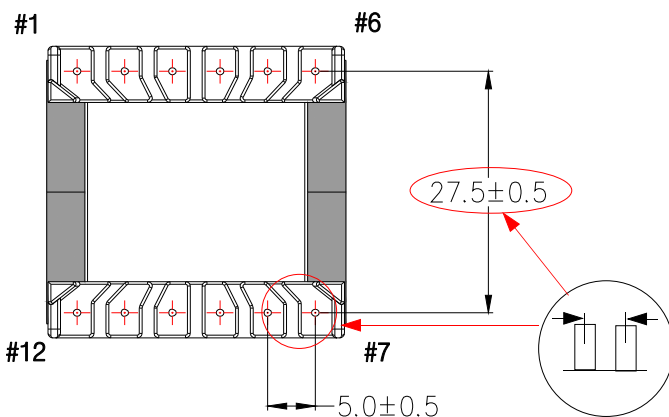


*** MARKING SPEC***
17POC-LS01
SJB-004 SJ SJ YYMMDD Y

PART NO	17POC-LS01		
SJB-004 SJ	SOOJUNG ELECTRONIC "CLASS B" SYSTEM		
SJ	MAKER		
SJ	CHINA WENDENG FACTORY ID		
DSJ	CHINA DANDONG FACTORY ID		
LOT NO (YYMMDD)			
YY(YEAR)	MM(MONTH)	DD(DAY)	
2017Y => 17	01M => 01	01D => 01	
2018Y => 18		...	
2019Y => 19	12M => 12	31D => 31	
G	CORE MAKER MARKING G: GUANYOUDA, H:HUAXING		



※PIN Dimensions : After removing lead-acid
measurement

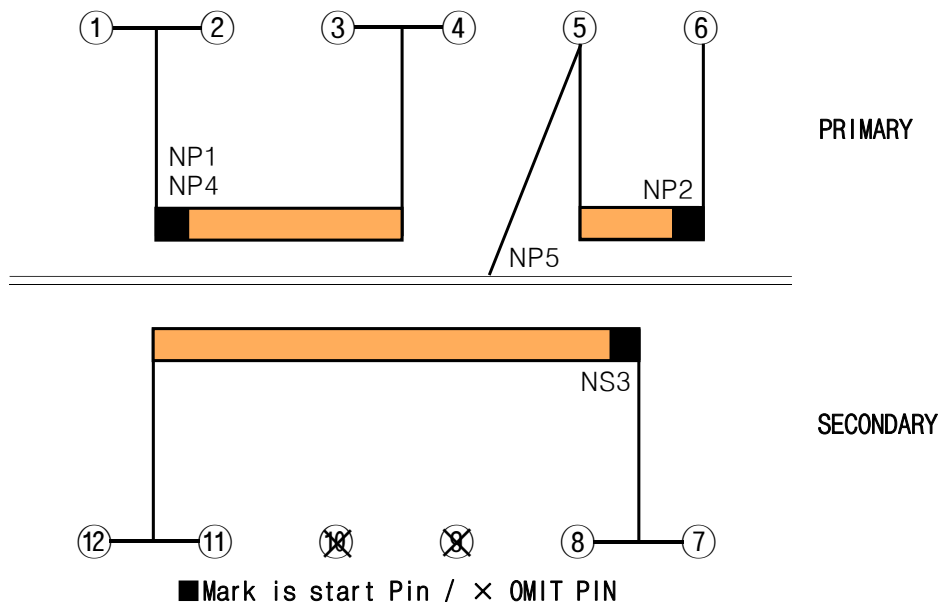


※ CORE GAP : SECONDARY INSERT
※ OMIT PIN No. : #9, 10

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4. SCHEMATIC



5. WINDING SPECIFICATION

No.	TERMINAL		WIRE	TURNS	WINDING METHOD	BARRIER TAPE		INSULATION TAPE		
	S	F				PRI.	SEC.	MATERIAL	T/W (mm)	TURNS
NP1	1,2	3,4	1UEW 0.35 ϕ $\times$ 4	6Ts	SOLENOID	4.0mm	4.0mm	P.E TAPE	0.025/20.5 (WHITE)	2Ts Min
NP2	6	5	1UEW 0.30 ϕ	4Ts	SPACE	3.0mm	-	P.E TAPE	0.025/20.5 (WHITE)	3Ts Min
NS3	7,8	11,12	TIW-M 0.45 ϕ $\times$ 4	4Ts	SPACE	-	3.0mm	P.E TAPE	0.025/20.5 (WHITE)	3Ts Min
NP4	1,2	3,4	1UEW 0.35 ϕ $\times$ 4	6Ts	SOLENOID	4.0mm	4.0mm	P.E TAPE	0.025/20.5 (WHITE)	3Ts Min
NP5	5	-	COPPER TAPE 10W	0.9Ts	SOLENOID	3.0mm	3.0mm	P.E TAPE	0.025/20.5 (WHITE)	3Ts Min
* CORE FIXING TAPE								P.E TAPE	0.025/9.0 (WHITE)	2Ts Min

※ WINDING DIRECTION : PRIMARY VIEW C.C.W(Clock Contrary Winding)

※ PIN WIRING SEC.: 0.7Ts Min.(TIW-M,UEW)

※ WIRE TOLERANCE : 0.30mm $\pm$ 0.005, 0.35mm $\pm$ 0.005

※ BARRIERTAPE TOLERANCE : 3.0mm MIN, 4.0mm MIN

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6. ELECTRICAL CHARACTERISTICS						
NO.	ITEM	TERMINAL	SPECIFICATION	REMARK		
6-1	INDUCTANCE	1,2 - 3,4	5uH ± 10%	LCR METER HP-4284A (at 100KHz/1.0V)		
		6 - 5	μ H ±30%			
		7,8 - 11,12	μ H ±20%			
6-2	LEAKAGE INDUCTANCE	1,2 - 3,4 (SECONDARY ALL SHORT)	uH MAX			
6-3	D. C RESISTANCE	1,2 - 3,4	Ω MAX	DC MILLI-OHM METER GOM-802		
		6 - 5	Ω MAX			
		7,8 - 11,12	Ω MAX			
6-4	WITHSTANDING VOLTAGE	P COIL - S COIL	AC 3.0KV r.m.s (1 MINUTE) (Mp Condition (AC 3.6KV(RMS) 2Sec)	 TOS-8850 CUT OFF CURRENT : 5mA		
		P COIL - CORE S COIL - CORE	AC 1.5KV (rms) 1MINUTE. (M.P Condition : AC 1.8KV (rms) 2Sec.)			
6-5	INSULATION RESISTANCE	P COIL - S COIL	100(M) Ohm MIN (AT DC 500V)	 TOS 8850		
6-6	D.C OVERLAP	1,2 - 3,4	90% MIN. WITH RESPECT TO ORIGINAL INDUCTANCE VALUE WHEN A DC IS SUPERIMPOSED.			
6-7	IMPULSE TEST	1,2 - 5 (3,4-7,8 / 11,12-6 SHORT)	AC 1.5 KV Pulse 4 Times			
6-8	QUALITY FACTOR	1,2 - 3,4	MIN	HP-4284A (AT 100KHz/ 1.0V)		
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7. ENVIRONMENTAL

* STANDARD TEST CONDITION : TEMP. $20^{\circ}\text{C} \pm 15^{\circ}\text{C}$, HUMIDITY $65\% \pm 20\%$.

IF WHEN ANY OBJECTION IS SUGGESTED, THE TEST CAN BE OPERATED AT $20 \pm 2^{\circ}\text{C}$, $65 \pm 5\% \text{RH}$.

NO	ARTICLE	SPECIFICATION	TEST CONDITION															
7-1	USED TEMPERATURE RANGE	-25℃ ~ +105℃																
7-2	KEEPING TEMPERATURE	-25℃ ~ +105℃																
7-3	LOW TEMPERATURE RESISTANT	MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE (IT SHOULD BE MANAGED BY ±10% FROM 10 μH TO 1 μH) (IT SHOULD BE MANAGED BY ±40% UNDER 1 μH TO 0.3 μH) (IT SHOULD BE MANAGED BY 0.5 μH MAX. UNDER 0.3 μH)	-25℃ ± 2℃, 96Hr MEASURE AFTER 2 Hr AT ROOM TEMP.															
7-4	HIGH TEMPERATURE RESISTANT		+105℃ ± 2℃, 96Hr MEASURE AFTER 2 Hr AT ROOM TEMP.															
7-5	HUMIDITY RESISTANT		+95%RH ± 5% (40℃ ± 5℃) 96Hr MEASURE AFTER 2Hr AT ROOM TEMP															
7-6	TEMPERATURE CYCLE		<table><tr><th>STEP</th><th>TEMP</th><th>TIME</th></tr><tr><td>1</td><td>-25℃ ± 2℃</td><td>30 MINUTE</td></tr><tr><td>2</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr><tr><td>3</td><td>+105℃ ± 2℃</td><td>30 MINUTE</td></tr><tr><td>4</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr></table>	STEP	TEMP	TIME	1	-25℃ ± 2℃	30 MINUTE	2	+25℃ ± 2℃	10 MINUTE	3	+105℃ ± 2℃	30 MINUTE	4	+25℃ ± 2℃	10 MINUTE
			STEP	TEMP	TIME													
		1	-25℃ ± 2℃	30 MINUTE														
		2	+25℃ ± 2℃	10 MINUTE														
3	+105℃ ± 2℃	30 MINUTE																
4	+25℃ ± 2℃	10 MINUTE																
REPEAT 5 TIME FROM STEP 1 AND TEST AFTER 2 Hr. AT ROOM TEMP.																		
7-7	HEAT SHOCK- RESISTANT	2 HR AT-20℃ →2 HR AT 70℃ : 10 CYCLE																

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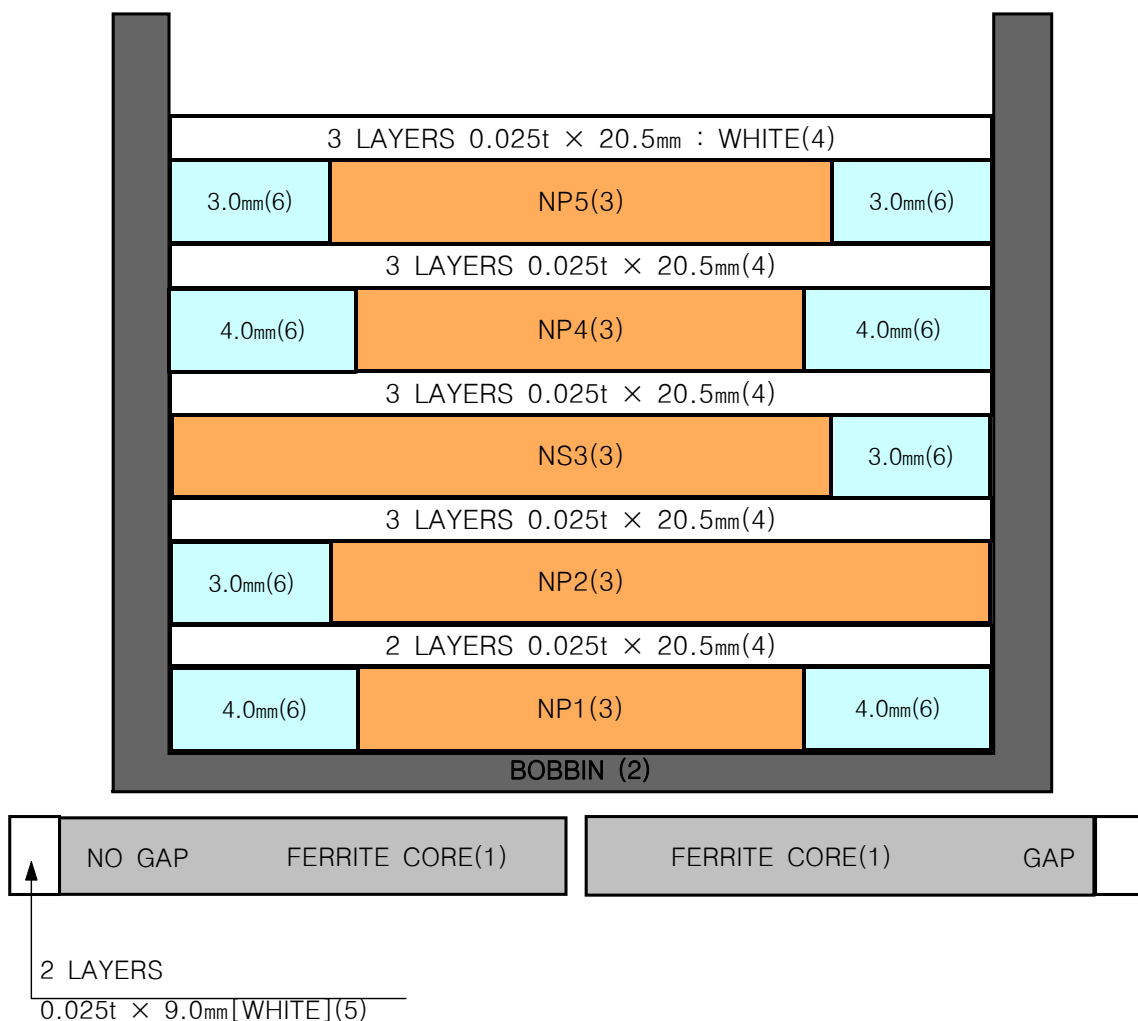
8. MECHANICAL CHARACTERISTICS

NO	ARTICLE	SPECIFICATION	TEST CONDITION
8-1	LAYER SHORT TEST	THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE	SUPPLY SURGE VOLTAGE (AT 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION
8-2	SOLDER HEAT TEST	MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE (IT SHOULD BE MANAGED BY $\pm 10\%$ FROM $10\mu\text{H}$ TO $1\mu\text{H}$) (IT SHOULD BE MANAGED BY $\pm 40\%$ UNDER $1\mu\text{H}$ TO $0.3\mu\text{H}$) (IT SHOULD BE MANAGED BY $0.5\mu\text{H}$ MAX. UNDER $0.3\mu\text{H}$)	DIP THE TERMINAL IN SOLDER POT AT $260 \pm 5^\circ\text{C}$ FOR 10 SECONDS MEASURE AFTER 2Hr AT ROOM TEMP.
8-3	SOLDER ABILITY	95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER	DIP THE TERMINAL IN SOLDER AT $245^\circ\text{C} - 5^\circ\text{C}$ FOR 3 SECONDS
8-4	TERMINAL PULL STRENGTH	THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED INITIAL VALUE	PULL THE PIN WITH 2.5Kgf DURING 30 ± 5 SEC

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9. INTERNAL CONSTRUCTION

< PRIMARY >
#1 - #6< SECONDARY >
#7 - #12

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10. MATERIAL LIST							
NO	COMPONENT	NAME OF MATERIAL	UL FILE NO.	MANUFACTURER OF MATERIAL	MATERIAL COLOR		
(1)	CORE	FERRITE EFD3130 : GP95		NANTONG GUANYOUDA AGNETIC.,LTD	BLACK		
		FERRITE EFD3130 : HX-6P		NANTONG HUAXING MAGNETIC MATERIAL CO.,LTD			
(2)	BOBBIN	(94V-0) PHENOL RESIN EFD3130 H 12P(6+6) PM-9820 T200HF	E41429 E59481	SUMITOMO BAKELITE CO., LTD. CHANG CHUN PLASTICS CO., LTD	BLACK		
		TERMINAL		IL-KWANG ELECTRONIC MATERIAL CO., LTD HYUNSUNG ELECTRONIC CO., LTD.	SILVER		
(3)	WIRE	POLYURETHANE(MW75) 1UEW 0.30 ϕ, 0.35 ϕ	E210918	CNI ELECTRONICS CO., LTD	NATURAL		
		0.45 ϕ (TIW-M)	E213764	COSMOLINK CO., LTD	BRASS YELLOW		
(4)	INSULATION TAPE	POLYESTER TAPE Cat NO.DTS-204(e), DTS-204K(f) CT*(b)(g) 0.025t x 20.5mm (WHITE)	E105147	DUCK SUNG HITECH CO., LTD.	WHITE		
			E165111	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LTD.			
(5)	CORE FIXING TAPE	POLYESTER TAPE Cat NO.DTS-204(e), DTS-204K(f) CT*(b)(g) 0.025t x 9.0mm (WHITE)	E105147	DUCK SUNG HITECH CO., LTD.	WHITE		
			E165111	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LTD.			
(6)	BARRIER TAPE	P.N.W (BUSIKPO) H-5673(+)orH-5673(a) WF*(c)(h) 3.0mm, 4.0mm	E92677	TAEHWA INDUSTRIAL CO., LTD.	WHITE		
			E165111	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LTD.			
(7)	COPPER TAPE	COPPER TAPE 0.05mm x 10mm	E92677	TAEHWA INDUSTRIAL CO., LTD.	BRASS YELLOW		
(8)	VARNISH	DVB-2177(@)	E93947	NOROO PAINT & COATINGS CO.,LTD.	LEMON YELLOW		
(9)	GAP CORE MARK	POLYESTER FILM TAPE 0.025t x 3.0mm MIN (WHITE) Cat NO.DTS-204(e), DTS-204K(f) CT*(b)(g) or INK	E105147	DUCK SUNG HITECH CO., LTD.	WHITE		
			E165111	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LTD.			
				BON MARQUE			
(10)	SOLDER	HSE-09		HEE SUNG METAL CO., LTD.	SILVER		
		LFC4.0		SEOUL ALLOY METAL CO., LTD.			
(11)	FLUX	PF-120L		SOLUX CO., LTD.	LEMON YELLOW		
(12)	MARKING	INK		BON MARQUE	BLACK		
				IMAJE			
				HITACHI			
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17P0C-LS01																																																				
11. UL CARD																																																				
* YELLOW CARD																																																				
Insulation System	SOO JUNG ELECTRONICS IND CO., LTD. E157693 35-1 HONGJAE 4-DONG SEO DAE MOON-GU SEOUL ,120-094 REPUBLIC OF KOREA Class 130 (B) transformer insulation system, designated SJB-001, Class 130 (B) transformer insulation system, designated SJB-002, Class 130 (B) transformer insulation system, designated SJB-003, <u>Class 130 (B) transformer insulation system, designated SJB-004,</u>																																																			
BOBBIN	CHANG CHUN PLASTICS CO LTD E59481 7TH FL 301 SONGKIANG RD TAIPEI, 104 TAIWAN <table border="1"> <thead> <tr> <th></th> <th></th> <th>Min.</th> <th></th> <th>H</th> <th>H</th> <th colspan="2">R T I</th> <th>C</th> </tr> <tr> <th></th> <th></th> <th>Thk</th> <th>Flame</th> <th>W</th> <th>A</th> <th rowspan="2">Elec</th> <th>Mech</th> <th>T</th> </tr> <tr> <th>Mtl Dsg</th> <th>Color</th> <th>mm</th> <th>Class</th> <th>I</th> <th>I</th> <th>Imp</th> <th>Str</th> <th>I</th> </tr> </thead> <tbody> <tr> <td colspan="9">Phenolic Molding Compound (PMC), furnished as pellets, granular material, or powder.</td> </tr> <tr> <td>T200HF</td> <td>BK,BN</td> <td>0.38</td> <td>V-0</td> <td>3</td> <td>0</td> <td>150</td> <td>150</td> <td>150</td> <td>3</td> </tr> </tbody> </table>					Min.		H	H	R T I		C			Thk	Flame	W	A	Elec	Mech	T	Mtl Dsg	Color	mm	Class	I	I	Imp	Str	I	Phenolic Molding Compound (PMC), furnished as pellets, granular material, or powder.									T200HF	BK,BN	0.38	V-0	3	0	150	150	150	3			
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SUMITOMO BAKELITE CO LTD E41429 5-8 HIGASHI-SHINAGAWA 2-CHOME SHINAGAWA-KU TOKYO, 140-0002 JAPAN <table border="1"> <thead> <tr> <th></th> <th></th> <th>Min.</th> <th></th> <th>H</th> <th>H</th> <th>H</th> <th colspan="2">R T I</th> <th>C</th> </tr> <tr> <th></th> <th></th> <th>Thk</th> <th>Flame</th> <th>W</th> <th>A</th> <th>V</th> <th rowspan="2">Elec</th> <th>Mech</th> <th>T</th> </tr> <tr> <th>Mtl Dsg</th> <th>Color</th> <th>mm</th> <th>Class</th> <th>I</th> <th>I</th> <th>A</th> <th>Imp</th> <th>Str</th> <th>I</th> </tr> </thead> <tbody> <tr> <td colspan="10">Phenolic (PF), "Sumikon", furnished as pellets, granular material.</td> </tr> <tr> <td>PM-9820</td> <td>BK</td> <td>0.51</td> <td>V-0</td> <td>3</td> <td>1</td> <td>-</td> <td>150</td> <td>150</td> <td>150</td> </tr> </tbody> </table>					Min.		H	H	H	R T I		C			Thk	Flame	W	A	V	Elec	Mech	T	Mtl Dsg	Color	mm	Class	I	I	A	Imp	Str	I	Phenolic (PF), "Sumikon", furnished as pellets, granular material.										PM-9820	BK	0.51	V-0	3	1	-	150	150	150
		Min.		H	H	H	R T I		C																																											
		Thk	Flame	W	A	V	Elec	Mech	T																																											
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UL CARD						
* YELLOW CARD						
WIRE (UEW)	CNI ELECTRONICS CO LTD E210918 16-13 ONCHEON-DAERO 1122BEON-GIL ASAN-SI, CHUNGCHEONGNAM-DO 31532 REPUBLIC OF KOREA					
	Mtl Dsg	Mark Dsg	Base Coat	Top Coat	ANSI Type	Temp Class
	UEW	UEW	Polyurethane	-	MW75-C	130#
	PEW	PEW	Polyester	-	MW 5-C	155#
[#] - The magnet wire may perform better than the rating reflects and may not be suitable for insulation system, varnish or end-product testing. Further consideration is necessary prior to its use in testing.						
WIRE (TIW-M)	COSMOLINK CO LTD E213764 449 GUN GIN-LEE IWON-MYUN OKCHUN-GUN, CHUNG CHONG BUK-DO 373-860 REPUBLIC OF KOREA					
	Cat. No.	Insulation Type	TIW Conductor Size Range	Temp Class °C	Rated Volts UL 60950-1 V peak	Rated Volts UL 60601-1 V rms
	TIW-M	Reinforced	32 - 18 AWG	130 (B)	1410	-
COPPER TAPE	TAE HWA INDUSTRIAL CO LTD E92677 31-22 GIMPO-DAERO 2659BEON-GIL WOLGOT-MYEON GIMPO-SI, GYEONGGI-DO 415-875 REPUBLIC OF KOREA					
	Cat. No.	Color	Temp(°C)	Flame Retardant+	Sunlight Resistant+	Cold Resistant+
	E-3338	Copper	-	YES	No	No
Flame retardant copper foil tapes with conductive acrylic adhesive + Complies with "Flame Retardant" and/or "Cold Resistant" and/or "Sunlight Resistant" requirements if authorized in the table above and when so marked						
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UL CARD

* YELLOW CARD

DUCK SUNG HITECH CO LTD

225-2 SHINNEUNG-RI SEOUN-MYEON

ANSEONG-SI, GYEONGGI-DO 456-850 REPUBLIC OF KOREA

E105147

Cat. No.	Color	Temp(°C)	Flame Retardant+	Sunlight Resistant+	Cold Resistant+
DTS-204K (f)	All	130	No	No	No

PET film insulating tapes with acrylic adhesives

DTS-204 (e)	All and clear	130	No	No	No
-------------	---------------	-----	----	----	----

PET film insulating tapes with non-woven polyester fiber reinforcement with rubber adhesive

+ Complies with "Flame Retardant" and/or "Cold Resistant" and/or "Sunlight Resistant" requirements if authorized in the table above and when so marked.

(e) - May be marked: "Film side CTI Performance Level Category PLC=2 Voltage 260, per UL 746A/ASTM D 3638," and/or "Adhesive side CTI Performance Level Category PLC=0 Voltage 600, per UL 746A/ASTM D 3638" or equivalent.

(f) - May be marked: "Film side CTI Performance Level Category PLC=2 Voltage 250, per UL 746A/ASTM D 3638," and/or "Adhesive side CTI Performance Level Category PLC=0 Voltage 600, per UL 746A/ASTM D 3638" or equivalent.

JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD

SOUTHWEST AROUND RD

JINGJIANG, JIANGSU 214500 CHINA

E165111

Cat. No.	Color	Temp(°C)	Flame Retardant+	Sunlight Resistant+	Cold Resistant+
CT* (b)(g)	All except Clear	130	Yes	No	No

Polyethylene terephthalate film insulating tapes

+ Complies with "Flame Retardant" and/or "Cold Resistant" and/or "Sunlight Resistant" requirements if authorized in the table above and when so marked

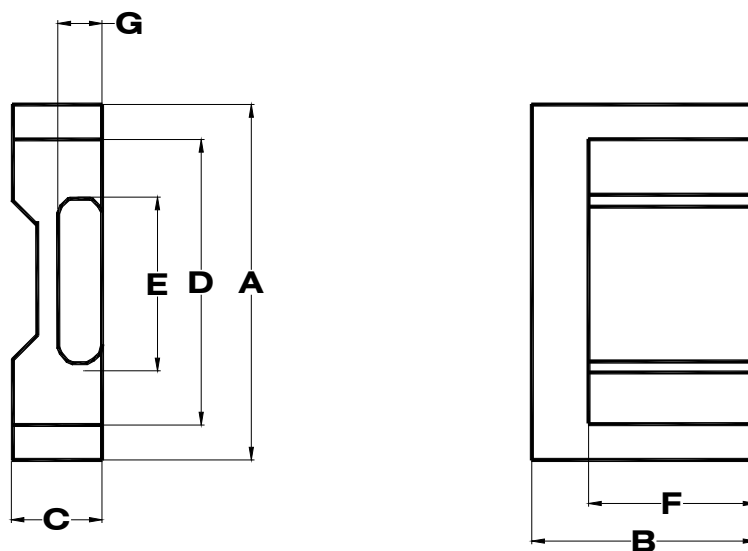
(b) - Comparative Tracking Index (CTI) performance indicates material Group IIIa, PLC=2, CTI equal to or greater than 250 but less than 400 v.

(g) - The CTI test was conducted per IEC 112, 3rd Edition 1979 and the assigned level is based on the testing of both film and adhesive sides.

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PART NAME		PART NO																										
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UL CARD																												
* YELLOW CARD																												
BARRIER TAPE	TAE HWA INDUSTRIAL CO LTD 31-22 GIMPO-DAERO 2659BEON-GIL WOLGOT-MYEON GIMPO-SI, GYEONGGI-DO 415-875 REPUBLIC OF KOREA			92677																								
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				Optional Ratings																								
	Cat. No.	Color	Temp(°C)	Flame Retardant+	Sunlight Resistant+	Cold Resistant+																						
	H-5673a	White	130	NO	No	No																						
	H-5673 (+)	White	130	NO	No	No																						
	Polyester PET film insulating tapes with polyester non-woven fiber reinforcement and acrylic adhesive																											
	+ Complies with "Flame Retardant" and/or "Cold Resistant" and/or "Sunlight Resistant" requirements if authorized in the table above and when so marked																											
	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD SOUTHWEST AROUND RD JINGJIANG, JIANGSU 214500 CHINA			E165111																								
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			Optional Ratings																									
Cat. No.	Color	Temp(°C)	Flame Retardant+	Sunlight Resistant+	Cold Resistant+																							
WF* (c)(h)	White	130	Yes	No	No																							
Nonwoven cloth/polyethylene terephthalate film insulating tapes																												
+ Complies with "Flame Retardant" and/or "Cold Resistant" and/or "Sunlight Resistant" requirements if authorized in the table above and when so marked																												
(c) - Comparative Tracking Index (CTI) performance indicates material Group I, PLC=0, CTI equal to or greater than 600 v.																												
(h) - The CTI test was conducted per IEC 60112, 4th Edition 2003 and the assigned level is based on the testing of both film and adhesive sides.																												
VARNISH	NOROO PAINT & COATINGS CO LTD 615 PAKDAL-DONG ANYANG-SHI, KYONGGI-DO 430-030 REPUBLIC OF KOREA			E93947																								
	<table border="1"> <thead> <tr> <th colspan="2"></th> <th colspan="3">Thermal Class (° C)</th> </tr> <tr> <th>Varnish Designation</th> <th>ANSI Type</th> <th>Twisted Pair</th> <th>Helical Coil</th> <th>Curved Electrode</th> </tr> </thead> <tbody> <tr> <td>DVB-2177(@)</td> <td>MW 5-C</td> <td>180</td> <td>200</td> <td>-</td> </tr> </tbody> </table>						Thermal Class (° C)			Varnish Designation	ANSI Type	Twisted Pair	Helical Coil	Curved Electrode	DVB-2177(@)	MW 5-C	180	200	-									
			Thermal Class (° C)																									
	Varnish Designation	ANSI Type	Twisted Pair	Helical Coil	Curved Electrode																							
DVB-2177(@)	MW 5-C	180	200	-																								
(#) - May fill with 0-30 percent silica. (@) - May be followed by suffix XX in which XX represents percentage of solid content, except S. * - To be followed by one or two numbers and/or one or two letters																												
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12. CORE DIMENSION



** DIMENSION (UNIT: mm)

TYPE	DIMENSION (m/m)							REMARKS
	A	B	C	D	E	F	G	
EFD3130	31.6±0.6	15.2±0.5	9.10±0.3	23.8±0.45	23.4 min	11.5±0.2	4.90±0.20	GUANYOUDA
EFD3130	31.4±0.6	15.0±0.5	9.10±0.3	11.3±0.30	23.4 min	14.6±0.30	4.90±0.15	HUAXING

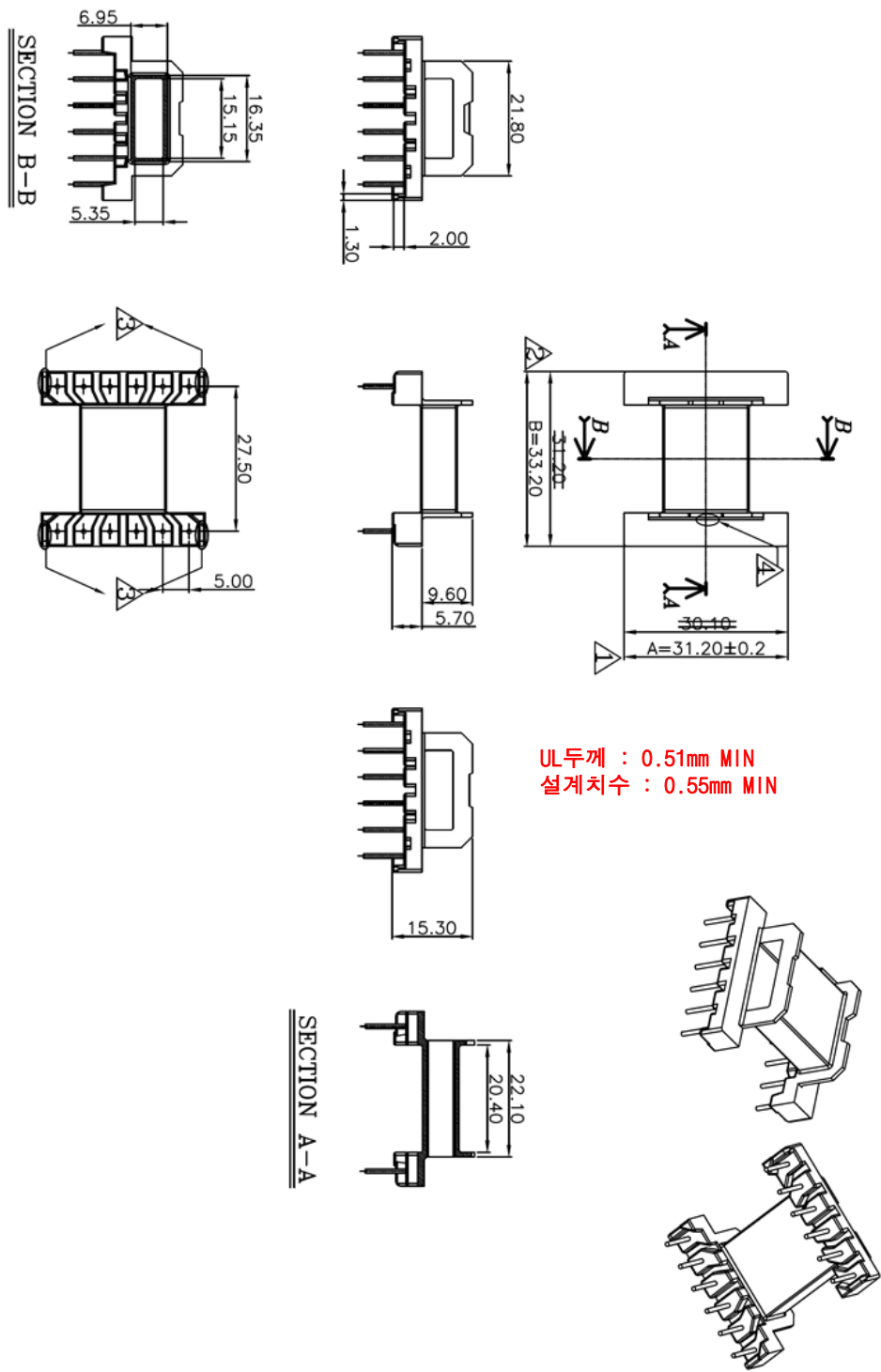
** EFFECTIVE PARAMETERS

TYPE	EFFECTIVE PARAMETERS			REMARKS
	Le (mm)	Ae (mm ²)	Ve (mm ³)	
EFD3130	67.62	68.68	4660	GUANYOUDA
EFD3130	67.62	68.7	4695	HUAXING

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13. BOBBIN DIMENSION (UNIT: mm)



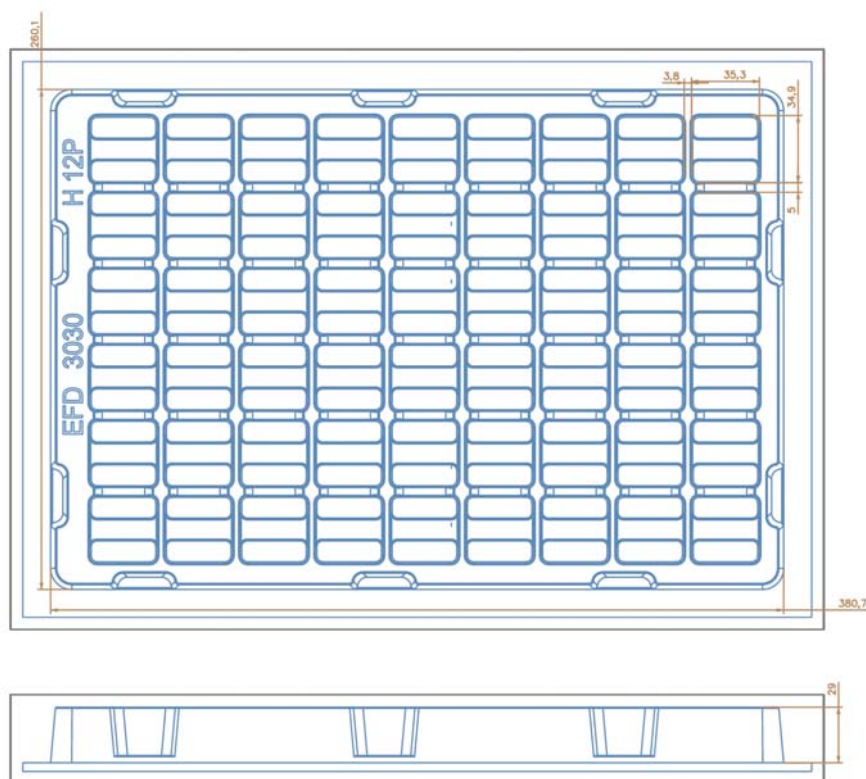
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14. PROCESS FLOW											
NO	공 정			기능	관 리 항 목	관 리 기 준	검 사 방 법		표 준	기록/양식	공정별 관련불량 및 비고
	기 호	공 정 명	사 용 설 비				확인요령	부 서			
01	△ ◇	수입검사 -BASE -CORE -PE TAPE -WIRE	버니어캘리퍼 마이크로메터	수동	치수 핀홀 접착성 외관상태	이상 없을것	SAMPLE	Q.C	구매 사양서	수입 검사 성적서	. 치수 불량 . 파손, 핀홀 . WIRE 피복 벗겨짐 . BASE 단자 위치 바뀜 . 접착성 나쁨
02	○	권 선	권 선 기	반자동	절연상태 권선절연상태 권선수	"	전수검사	생산팀	작업 지도서		. 권선 및 절연수 불량 . 절연거리 미 확보 . 권선위치 불량
03	○	결 선 납 땜	니 퍼 납 조	수동	납땜온도	460℃ MAX.	수회 / 일	"	"		. SHORT . 미 결선,냉땜 . BASE 변형
					납땜시간	0.2φ 이하:1.5Sec. 0.2φ 이상:2.5Sec. USTC,TIW-M : 3~4Sec.					
04	○	CORE조립		수동	CORE종류 GAP SIZE EPOXY	이상 없을것	전수검사 SAMPLE 육안검사	"	"		. 코아 역삽 . GAP CORE 혼입
05	◇	1차 검사	TURN METER	반자동	INDUCTANCE 권선수	"	전수검사	"	"		. L값 상,하 불량 . 권선수 미달
06	○	EPOXY 처리		반자동	EPOXY 종류 EPOXY 위치	이상 없을것	전수검사 SAMPLE 육안검사	"	"		. EPOXY 위치
07	○	경 화	건 조 기	반자동	경화온도	120℃ ±10℃	SAMPLE	"	"		. 미 함침
					경화시간	1.5 HR					
08	○	핀 형 합	핀형합기	반 자 동	핀간거리	"	전수검사	생산팀			. 핀 형합 불량 . 베이스 변형 . 단자 이탈
09	◇	최종검사 	LCR METER 내전압 IMPULSE TESTER	수 동	INDUCTANCE 내전압 Layer Short	"	전수검사	"	"		. L값 상,하 불량 . 단자 이물 . 내전압 불량 . Layer Short 불량
10	○	마 킹	불멸 잉크	수 동	마킹방향 마킹외관	"	육안검사	"	"		. 역방향 마킹 . 외관불량
11	○	포 장		수 동	수량관리 포장상태	"	육안검사	"	"		
12	◇	출하검사 	LCR METER 내전압 TESTER	수 동	INDUCTANCE 내전압 절연사항	"	SAMPLE	품질 관리팀	승 인 원		
13	▽	출 고						영업팀	"	INSPC-TION REPORT	
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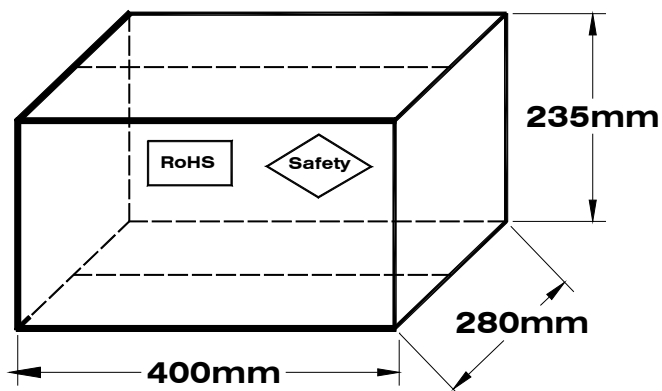
15. PACKING METHOD

- * INNER BOX (PETorPVC/PAPER TRAY) : 6PCS × 9PCS = 54PCS
- * INNER BOX SIZE (PETorPVC/PAPER TRAY) : (L) 380mm x (W) 260mm x (H) 25mm



- * OUT BOX(CARTON) : 54PCS × 8PCS = 432PCS

NAME	
ITEM	
LOT NO.	
Q' TY	EA
SOOJUNG ELECTRONICS INC CO., LTD.	



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CUSTOMER : LG ELECTRONICS Inc.

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16. INSPECTION DATA													
ITEM NAME		17POC-LS01				TEST DATE		2018. 01. 03					
PART NO.						INSTRUMENT		4284A LCR METER(HP) (at 100KHz,1V)					
시험 항목	PIN NO.	SPEC	1	2	3	4	5	6	7	8	9	10	
L	1,2 - 3,4	5uH $\pm$ 10%											
	6 - 5	uH $\pm$ 30%											
	7,8 - 11,12	uH $\pm$ 20%											
LEAKAGE INDUCTANCE	1,2 - 3,4 (SECONDARY ALL SHORT)	uH MAX											
DCR (m Ω)	1,2 - 3,4	Ω MAX											
	6 - 5	Ω MAX											
	7,8 - 11,12	Ω MAX											
내 전 압	P-S, COIL	AC3.0KV 1분간											
	P COIL-CORE	AC1.5KV 1분간											
	S COIL-CORE	AC1.5KV 1분간											
절연저항	COIL-CORE	100M Ω MIN. (AT DC500V)											
IMPULSE TEST	1,2 - 5 (3,4-7,8 / 11,12-6 SHORT)	1.5 KV 4TIME											
DC 전류중첩	1,2 - 3,4	A/ 90% of INITIAL INDUCTANCE	L										
			%										
Q FACTOR	1,2 - 3,4	MIN											
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PART NAME	MAIN TRANS	PART NO	17POC-LS01		
17. ASSIGNMENTS 1) Apply import inspection specification to the matters which are not given in drawing specification method. 2) Packing method follows specification approval. 3) If INDUCTANCE : ref is not satisfied with given specification. internal structure disassembly inspection should be necessary. 4) Wire bundle method. * CENTER SOLENOID: Error between the center of overall wire bundle area and the center of wire bundle is required to be smaller than 2 mm. * PIN SOLENOID : Error between the bottom barrier tape and winding start point is required to be smaller than 2 mm. * SOLENOID AFTER : Error between the last wire of the wire bundle and start wire of after-solenoid is required to be smaller than 2 mm. * TAB SOLENOID : Bundle should be continued from previous bundle. If bundle method is 2 layer, bundle should be done from top to bottom. * SPACE SOLENOID : The area between wires should be uniform. Error between start and start point of the wire bundle area is required to be smaller than 2mm. Error between end point and end point of the wire bundle area is required to be smaller than 2mm. * SOLENOID : No space is allowed between wires in bundling. The space between wire is required to be smaller than diameter of the wire*2. In same layer no cross is allowed between wires. 5) PERFORMANCE OF THIS DRAWING IS REQUESTED TO MEET PART NUMBER 17POC-LS01 6) Auxiliary tape can be used in order to enhance. But it needs prior approval from design department.					
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18. CHEMICAL ANALYSIS REPORT FOR BOBBIN

재 질 증 명 서 MATERIAL IDENTIFICATION	
원 재 료 명 (GENERIC NAME OF MATERIAL)	PHENOL
할로겐 FREE 유무	할로겐 FREE
원 재 료 번 호 (GRADE NO.)	PM 9820
원 재 료 회 사 (MANUFACTURER OF MATERIAL)	SUMITOMO BAKELITE CO LTD
난 연 성 (FLAMMABILITY CLASSIFICATION)	94V-0
UL 등록 번 호 (UL FILE NO.)	E41429

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19. CHEMICAL ANALYSIS REPORT FOR BASE

재질 증명서 MATERIAL IDENTIFICATION	
원 재 료 명 (GENERIC NAME OF MATERIAL)	PHENOL
할로겐 FREE 유무	할로겐 FREE
원 재 료 번 호 (GRADE NO.)	T200HF
원 재 료 회 사 (MANUFACTURER OF MATERIAL)	CHANG CHUN PLASTICS CO LTD
난 연 성 (FLAMMABILITY CLASSIFICATION)	94V-0
UL 등록 번 호 (UL FILE NO.)	E59481
WEIHAI JINKAID ELECTRONICS CO.,LTD 대표자 : 등 병도	

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20. CHEMICAL ANALYSIS REPORT FOR CP-WIRE

제 질 증 명 서 (MATERIALS CERTIFICATE)

*, (주)대흥보린

2014. 10. 06

*. Round Wire (ETPCS / Sn100%)

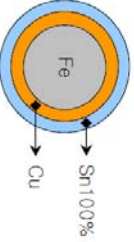
1. 재료 구성비 (MATERIALS COMPOSITION) (Weight %)

호칭 (Item)	Plating Thickness(Sn)		Iron (Fe)	Copper (Cu)	Tin (Sn)	REMARK
	0.60mm	5±1 μm	Balance	15.51%	2.41 ~ 3.61%	
	0.70mm		Balance	15.58%	2.07 ~ 3.10%	
	0.80mm		Balance	15.65%	1.81 ~ 2.71%	
	1.00mm		Balance	15.71%	1.45 ~ 2.17%	

2. 기초재료 화학성분 (BASE MATERIALS CHEMICAL COMPOSITION) (Weight %)

Steel Wire	Fe	C	Si	Mn	P	S	-	-	-	-
	Balance	0.0240	0.04	0.26	0.0185	0.0107	-	-	-	(%)
Electro Copper	Cu	As	Sb	Bi	Pb	S	Fe	Ag	-	-
	99.99↑	0.50	0.50	0.50	1.0	0.2	1.10	2.34	-	(ppm)
Tin Ingot	Sn	Sb	As	Pb	Bi	Cu	Fe	Al	Cd	Zn
	99.93↑	0.005	0.011	0.027	0.004	0.005	0.005	0.001	0.001	0.001

3. 석도금 조성 및 단면 (TIN PLATED COMPOSITION) (Weight %)



We certify that this paper is the certificate of our products for inspection and materials

Quality Assurance Manager

Min Kyu . Choi

IL-KWANG ELECTRONIC MATERIALS CO., LTD.
Head Office & Factory: #725-9 Wonsu-dong, Danwon-gu, Ansan-city, Kyunggi-do, Korea.
Phone 82-31-495-1971~3 Fax 82-31-495-1974
e-mail - ilkwang@cpleadwire.com Homepage - <http://www.cpleadwire.com>

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SPECIFICATION		D A T E	2018. 01. 03
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21. WIRE SPECIFICATION

폴리 우레탄 동선 (1UEW)

치수					절연파괴	내마모 파괴하중		최대도체저항	신장율(%)
도체		완성외경			전압	평균치	최소치	Ω/km(20℃)	
지름	허용차	최소	중심	최대	V(이상)	(이상)	(이하)	(이하)	(이상)
0.05	±0.003	0.058	0.064	0.069	950	-	-	10,240.0	10.0
0.06		0.068	0.075	0.081		-	-	6,966.0	
0.07		0.078	0.085	0.091		-	-	4,990.0	
0.08		0.090	0.097	0.103		-	-	3,778.0	
0.09		0.100	0.107	0.113	1100	-	-	2,959.0	15.0
0.10		0.110	0.118	0.125		-	-	2,381.0	
0.11		0.120	0.128	0.135		-	-	1,957.0	
0.12		0.132	0.140	0.147		-	-	1,636.0	
0.13		0.142	0.150	0.157	1300	-	-	1,389.0	
0.14		0.152	0.160	0.167		-	-	1,193.0	
0.15		0.162	0.170	0.177		-	-	1,037.0	
0.16		0.174	0.182	0.189		-	-	908.8	
0.17		0.184	0.192	0.199	1600	-	-	803.2	
0.18	±0.004	0.196	0.204	0.211		-	-	715.0	
0.19		0.206	0.214	0.221		-	-	640.6	
0.20		0.216	0.224	0.231		-	-	577.2	
0.21		0.226	0.234	0.241		-	-	522.8	
0.22		0.236	0.244	0.252		-	-	480.1	
0.23		0.248	0.256	0.264		-	-	438.6	
0.24		0.258	0.266	0.274		-	-	402.2	
0.25		0.268	0.276	0.284		-	-	370.2	
0.26		0.278	0.286	0.294		240	200	341.8	
0.27		0.288	0.296	0.304		240	205	316.6	
0.28	±0.005	0.298	0.306	0.314		240	205	294.1	20.0
0.29		0.308	0.316	0.324		240	205	273.9	
0.30		0.320	0.329	0.337		270	230	254.0	
0.32		0.340	0.349	0.357		275	230	222.8	
0.35		0.370	0.379	0.387	2000	280	235	185.7	20.0
0.37	±0.006	0.390	0.399	0.407		280	235	165.9	
0.40		0.422	0.431	0.439		310	265	141.7	
0.45		0.472	0.481	0.490		320	270	112.1	
0.50		0.524	0.533	0.542	2150	355	300	89.95	
0.55	±0.008	0.574	0.583	0.592		360	300	74.18	
0.60		0.624	0.634	0.644		360	305	62.64	
0.65		0.674	0.684	0.694		365	310	53.26	
0.70	±0.010	0.726	0.736	0.746	2400	400	340	45.84	
0.75		0.778	0.788	0.798		435	370	39.87	
0.80		0.830	0.841	0.852		475	400	35.17	25.0
0.85		0.880	0.892	0.904		475	400	31.11	
0.90	±0.012	0.932	0.944	0.956		515	430	27.71	
0.95		0.984	0.996	1.008		550	460	24.84	
1.00	±0.012	1.034	1.048	1.062		555	465	22.49	

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22. WIRE SPECIFICATION

부표 1. 3중절연권선 (TIW-M)

도 체*		절연 두께 (3층 전체)			표준 외경 (± 0.02)	최대 외경	직 도체저항 (20℃)	신 율 (%)
표준치	허용차	표준	최소평균	부분최소	(mm)	(mm)	(Ω /km)	(%)
(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(Ω /km)	(%)
0.20	± 0.008	0.100	0.0880	0.0762	0.40	0.430	607.6	5 ↑
0.22	± 0.008				0.42	0.450	465.5	
0.25	± 0.008				0.45	0.480	382.5	
0.26	± 0.008				0.46	0.490	372.5	
0.28	± 0.008				0.48	0.510	307.3	
0.30	± 0.01				0.50	0.540	262.9	
0.32	± 0.01				0.52	0.560	230.0	
0.35	± 0.01				0.55	0.600	191.2	
0.37	± 0.01				0.57	0.620	170.6	
0.40	± 0.01				0.60	0.660	145.3	
0.45	± 0.01				0.65	0.710	114.2	
0.50	± 0.01				0.70	0.760	91.43	
0.55	± 0.02				0.75	0.810	78.15	
0.60	± 0.02				0.80	0.860	65.26	
0.65	± 0.02				0.85	0.910	55.31	
0.70	± 0.02				0.90	0.960	47.47	
0.75	± 0.02				0.95	1.010	41.19	
0.80	± 0.02				1.00	1.060	36.08	
0.85	± 0.02				1.05	1.110	31.87	
0.90	± 0.02				1.10	1.160	28.35	
0.95	± 0.02				1.15	1.210	25.38	
1.00	± 0.03				1.20	1.260	23.33	

※ 도체 지름 : 전 Size 0.01mm 단위로 생산 가능

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20. 4M QC 공정도

공정 번호	공정 흐름도	공정명	작업내용	4M			
				Man(사람)	Machine(장비)	Material(재료)	Method(방법)
1		원/부자재 수입검사	원자재 수입검사	황홍영 한옥	Vernier Calipers LCR Meter	CORE / BOBBIN / WIRE 외	수입검사 기준서 승인원
2		권선	BOBBIN에 WIRE 권선 및 PIN결선	기금화,원매 주위정,리첸	권선기 , NIPPER 등	BOBBIN / WIRE INSULATION TAPE BARRIER TAPE 외	권선 작업지도서
			공정검사(권,결선상태)	진금화 임미령	육안 / V/C TURN METER(대화)	권선품	작업지도서
3		납땜 (★CTQ)	권선품 PIN 결선부위 납땜	왕옥산 임해도	자동솔더기 / 티밍	권선품 SOLDER / FLUX	온도: 460℃ MAX 시간: 선경별 납땜시간
			공정검사(납땜상태)		육안 / LUPE	납땜 완료 권선품	SHORT, 납땜 높이
4		조립	권선품에 CORE 조립	윤락미	LCR METER (HP)	CORE / 권선품 GAP	CORE 조립작업지도서
			Bonding / Fixing	주해령 근려쌍	 자동 테이핑기	BOND / FIXING TAPE	Bonding / Fixing 작업지도서
			공정검사(조립상태)	하홍성 왕증산	육안 / LUPE	조립 완료 제품	조립상태: GAP위치 TAPE 턴수: 2Ts
5		1차 검사	특성(L값,턴수)검사 외관(납땜상태 등)검사	로쌍.고곤	LCR METER (HP) TURNs METER(대화) 육안/LUPE	조립 완료 제품	1차 검사 기준서
6		건조	건조 작업	형전국 진홍국	자연경화(건조)	조립 완료 제품	건조 작업 지도서 온도: 10℃±25℃ 시간: 24Hr
			공정검사		육안	건조 완료 제품	건조 상태 외관 PIN이물
7		2차 검사	특성검사	왕화룡 주효균	종합계측기(TPNHUI) / 내압기/ SURGE (TOS)	건조 완료 제품	검사 기준서 승인원 특성 SPEC
			외관 검사		육안 / LUPE PIN JIG	건조 완료 제품	검사 기준서 승인원 특성 SPEC
8		마킹	마킹작업	장국근	자동 MARKING기	건조 완료 제품 INK	마킹 작업 지도서 승인원 마킹 사양
			공정검사(마킹상태)	주해연	육안	마킹 완료 제품	마킹 사양 위치등 사양
9		포장	제품 포장 진행	정옥량	TAPE 절단기	완제품 , 포장 BOX 포장 TAPE	포장 작업 지도서 포장 규격
10		출하검사	출하검사	구려민	LCR/ DCR/내압기 V/C / 육안	완제품	출하 검사 기준서 출하 검사 성적서
11		출하	출하진행	왕애홍.총미령			출고 요청 수량 확인

* 작성방법

1. 공정번호 : 원자재 수입검사부터 완제품 출하까지 순차적 공정 No부여 (실제 공정 No와 일치해야함)
2. 공정흐름도 : 협력사에서 사용되는 기준에 따라 도형으로 표기
3. 공정명 : 해당공정 이름 (CTQ공정은 ★ 표기)
4. 작업내용 : 공정에 대한 작업내용
5. 사람 : CTQ공정에 한해 작업자 이름 (교대근무일경우 전/후 모두기입)
6. 장비 : 해당공정 사용장비명 및 회사명

21. 4M 관리 기준

4M	4M 표준 분류 항목	세부항목	설명	1차 Vendor			2차/3차 Vendor			제출 서류
				자체 승인	LGE 승인	중요	1차 협의	LGE 승인	중요	
MAN	일반 작업/검사자 변경		외국인, 신입사원, 일용직	○			○			1. 교육결과 (자체)
	중요 작업/검사자 변경		CTQ 공정 (중요공정)		○		○			1.4M변경서
	상호 변경				○		○			2. 교육결과
	품질책임자, 친환경 책임자 변경		품질 부서장, 친환경 책임자		○		○			3. 인수인계서(품질부서장변경시)
MACHINE	생산설비 (In-Line)	교정 / 수리		○			○			1.4M변경서
		Spare Part 교환		○			○			2. 변경전/후검사성적서
		신규 / 수정				○			○	3. 설비점검자료 4. 변경전/후신뢰성자료(신규, 수정)
	(QA) 검사설비, Jig	교정 / 수리		○			○			1.4M변경서
		Spare Part 교환		○			○			2. 변경전/후검사성적서
		신규/ 수정				○	○			3. 설비점검자료 4. 변경전/후신뢰성자료(신규, 수정)
	금형	이동	금형 타 업체 이동(이관)		○			○		1.4M변경서
		신작	금형 호기 추가			○			○	2. 변경전/후초기검사성적서
		수정	성형부 수정, 교환(Punch, Die, Core)			○			○	3. 금형점검자료
		수리		○			○			4. 변경전/후신뢰성자료(금형신작)
	Line	신설, 복수	사내 Line 증설		○		○			1.4M변경서
		이동	설비, Jig 변동 없음			○	○			2. 변경전/후검사성적서 3. 작업지도서 4. QC공정도
MATERIAL	원자재	재질/성분 변경	1. 재질변경시 : 사전 HSMS 등록			○			○	1.4M변경서
		물성 변경				○			○	2. 변경전/후검사성적서,
		안료/도료 변경				○			○	3. 변경전/후신뢰성자료
		Scrap 사용 비율 변경				○			○	4. 유해물질검사성적서
		색상(Color) 변경				○			○	5. 변경전/후사양승인원
		표면 처리, 도금, 도장				○			○	
	부자재 세척제, 이형제, 보호비닐, 부직포 Gasket류, Rubber류	추가	1. 업체 요구에 의한 변경: 생산성 향상 2. 재질변경시: 사전 HSMS 등록			○			○	1.4M변경서
		삭제				○			○	2. 변경전/후검사성적서
	하위 부품	변경 (업체변경)	1. 재질변경시 : 사전 HSMS 등록			○			○	3. 유해물질검사성적서(재질변경시) 4. 작업지도서
						○			○	1.4M변경서 2. 변경전/후검사성적서, 3. 변경전/후신뢰성자료 4. 유해물질성적서(추가, 변경) 5. 변경전/후사양승인원 *사전HSMS에등록
METHOD	생산지	추가	1. 재질변경시 : 사전 HSMS 등록			○			○	1.4M변경서
		이동	1. 재질변경시 : 사전 HSMS 등록			○			○	2. 변경전/후검사성적서
		하위 Vendor	1. 재질변경시 : 사전 HSMS 등록			○			○	3. 변경전/후신뢰성자료
		변경	1. 재질변경시 : 사전 HSMS 등록			○			○	4. 유해물질성적서 5. QC공정도 6. 공장심사자료: 2,3차 Vendor는 1차 Vendor 실시자료
		수입검사		○			○			1.4M변경서
		공정검사		○			○			2. 변경전/후검사성적서
		출하검사			○		○			3. 검사기준서(또는작업지시서) 4. 사양승인원
		작업방법 변경				○			○	1.4M변경서
		사출/성형 조건				○			○	2. 변경전/후검사성적서
		후가공 변경				○			○	3. 변경전/후신뢰성자료(단순변경은제외) 4. QC공정도 5. 작업지도서
	Label/Marking		규격 Label 변경 : 규격그룹 검토			○	○			1.4M변경서 2. 변경전/후사양승인원 3. 작업지도서 4. 규격승인관련자료(규격Label변경시)
	Packing 변경	BOX, Tray	1. 업체 요구에 의한 변경			○	○			1.4M변경서 2. 변경전/후검사성적서 3. 변경전/후신뢰성자료(Packing시험) 4. 사양승인원
	ROM 변경	ROM 버전 변경	PDP 모듈 별도 협의			○				1.4M변경서 2. 변경전/후검사성적서 3. 변경전/후신뢰성자료 4. 사양승인원

1) 1차 Vendor : 제품을 조립하는 Maker

2) 2(3)차 Vendor : 1(2)차 Vendor에 공급하는 Maker

* 4M의 Vendor 정의 : 원재료를 생산 또는 조립하는 가공 업체, Agent 또는 공급권만 가지고는 있는 Supplier는 Vendor에서 제외함.

3) 단순 : 단순 4M으로 관련자료를 기준으로 LGE QA에서 승인함

4) 중요 : 관련부서 (연구소, 부품개발, 규격, 인정시험, 제품 Event)등 검토 후 승인함.