

# 深圳市华升微电子有限公司

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## 承 认 书

### SPECIFICATION FOR APPROVAL



客 户 customer	_____		
产品品名: Description	HSW-H1016S		
客户料号 Part Number	_____		
规格/型号 specification	10/100 BASE-T TRANSFORMER		
日 期 Date:	2017-08-12		
备 注 Remark:	A0 版本		
供应商	制作/日期	审核/日期	批准/日期
	张天声	刘君	贺江
客户	承认/日期	审核/日期	批准/日期

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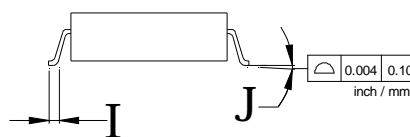
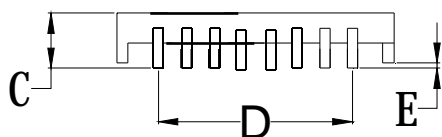
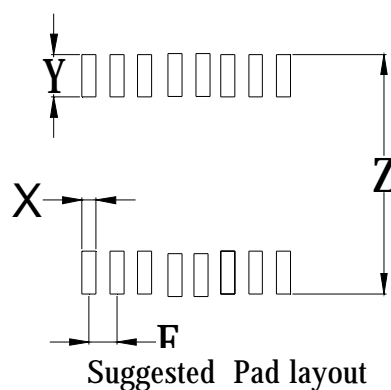
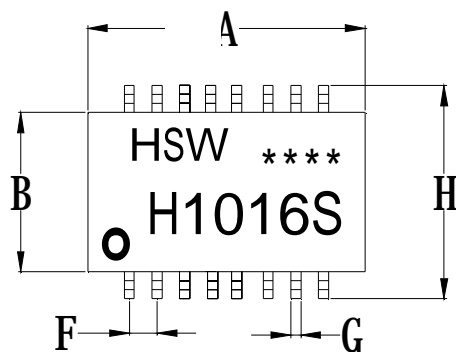


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## 1.Mechanical Drawing:

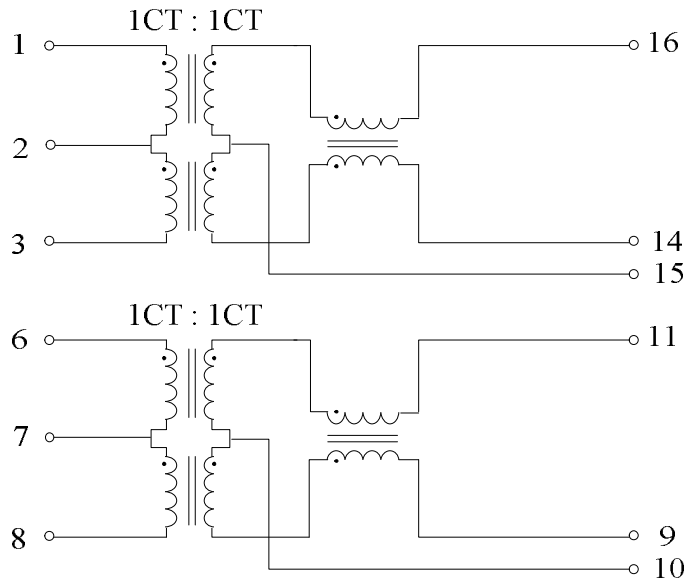


DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	12.20	13.20	0.480	0.520
B	6.60	7.70	0.260	0.303
C	2.29 (max)		0.0980(max)	
D	8.89 (typical)		0.350 (typical)	
E	0.15	0.45	0.006	0.018
F	1.27 (typical)		0.050 (typical)	
G	0.46 (typical)		0.018 (typical)	
H	9.10	9.70	0.358	0.382
I	0.45	0.95	0.018	0.037
J	0°	8°	0°	8°
X	0.64 (typical)		0.025 (typical)	
Y	1.91 (typical)		0.075 (typical)	
Z	10.67 (typical)		0.420 (typical)	

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## 2. Schematic:



## 3. Electrical Specification @25°C

Inductance OCL:	350uH Min @ 100KHz	0.1V
Leakage Inductance:	0.50uH Max @ 100KHz	0.1V
Interwinding Capacitance:	25pF TYP @ 100KHz	0.1V
DC Resistance:	1.2 Ω	Max
Turn Ratio:	1CT:1CT(TX)/1CT:1CT(RX)±5%	
Polarity:	1-16,6-11 In-Phase	
Insertion Loss:	0.5-100 MHz	-1.1dB Max
	0.5-30 MHz	-18dB Min
	30.1-60MHz	-18+20log(f/30)dB Min
Return Loss	60.1-80MHz	-12dB Min
	0.5-40MHz	-35dB Min
Cross Talk:	40.1-100MHz	-33+20*log(f/50)dB Min
	CMRR:	0.5-100MHz
Isolation HI-POT:	1500VAC	1mA 1S
Operating Temperature:	0°C	to 70°C

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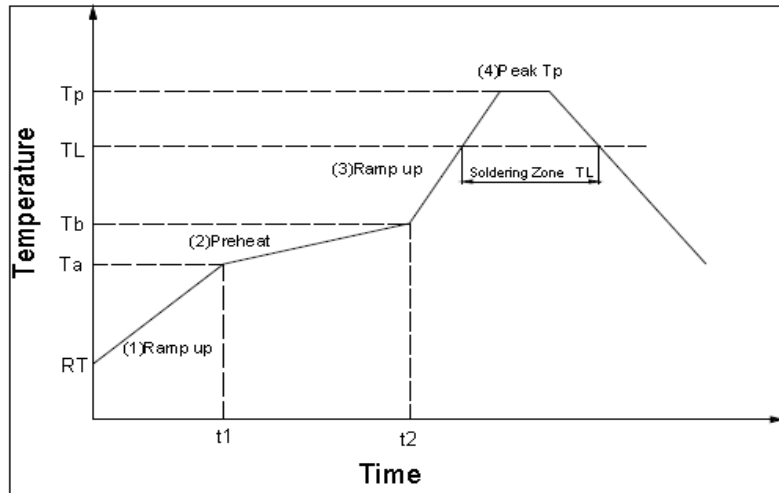


SPEC \ NO	1	2	3	4	5
L:(AT 100KHz 0.1V)					
350uH Min					
1-3	598	590	604	580	613
6-8	602	598	589	584	604
LK:(AT 100KHz 0.1V)					
0.5uH Max					
1-3(16-14 short)	0.18	0.20	0.18	0.20	0.15
6-8(11-9 short)	0.19	0.16	0.16	0.21	0.17
CWW:(AT 100KHz 0.1V)					
25PF TYP					
1-3 TO 16-14	16.4	20.1	16.2	16.2	17.2
6-8 TO 11-9	15.2	18.4	15.2	16.7	16.4
DCR:(AT 25°C)					
0.7Ω Max					
1-3	0.45	0.43	0.46	0.44	0.43
6-8	0.46	0.45	0.43	0.46	0.45
1.1Ω Max					
16-14	0.88	0.90	0.89	0.90	0.89
11-9	0.89	0.91	0.92	0.87	0.91
URNS RATIO:					
(1-3):(16-14)=1CT:1CT±5%	OK	OK	OK	OK	OK
(6-8):(11-9)=1CT:1CT±5%	OK	OK	OK	OK	OK
HI-POT:					
AT:1500VAC 1mA 1S					
1-3 TO 16-14	OK	OK	OK	OK	OK
6-8 TO 11-9	OK	OK	OK	OK	OK



## 5. Recommended Reflow Soldering Curve:

IR reflow graph



IR reflow profile

Form-1 (Reference JEDEC J-STD-020C Table 5-2)

IR reflow profile		Sn-Pb	Pb-free
step#	Profile Feature	Condition/Duration	Condition/Duration
step1	Ramp-up rate	1.5-3°C/sec.	1.5-3°C/sec.
step2	Preheat : 100~150°C(Ta-Tb)	t1-t2 : 60~120 sec.	t1-t2 : 60~180 sec.
step3	Ramp-up rate(T <sub>L</sub> to T <sub>P</sub> )	1.5-3°C/sec.	1.5-3°C/sec.
	Temperature maintained above 183°C(T <sub>L</sub> )	T <sub>L</sub> : 60-150sec.	T <sub>L</sub> : 80-150sec.
step4	Peak temperature(T <sub>P</sub> )	230 +5/-10°C	260 +0/-5°C
	Time within 5°C of actual peak temperature	30±10 sec.	30±10 sec.
step5	Ramp-down rate	6°C/sec.Max	6°C/sec.Max
Note1	Subject the samples to 3 cycles of the above defined reflow conditions		Subject the samples to 3 cycles of the above defined reflow conditions
Note2	Time 25°C to peak temperature : 6 minutes max.		Time 25°C to peak temperature : 8 minutes max.
Note3			The time between reflows shall be 5 minutes minimum and 60minutes maximum

### SnPb Eutectic Process- "Package Peak Reflow Temperature"

Form-2 (Reference JEDEC J-STD-020C Table 4-1)

产品厚度	产品体积 < 350mm <sup>3</sup>	产品体积 ≥ 350mm <sup>3</sup>
< 2.5mm	240 +0/-5°C	225 +0/-5°C
≥ 2.5mm	225 +0/-5°C	225 +0/-5°C

### Pb-free Process - "Package Peak Reflow Temperature"

Form-3 (Reference JEDEC J-STD-020C Table 4-2)

产品厚度	产品体积 < 350mm <sup>3</sup>	产品体积 350mm <sup>3</sup> -2000mm <sup>3</sup>	产品体积 > 2000mm <sup>3</sup>
< 1.6mm	260 +0/-5°C	260 +0/-5°C	260 +0/-5°C
1.6mm-2.5mm	260 +0/-5°C	250 +0/-5°C	245 +0/-5°C
> 2.5mm	250 +0/-5°C	245 +0/-5°C	245 +0/-5°C



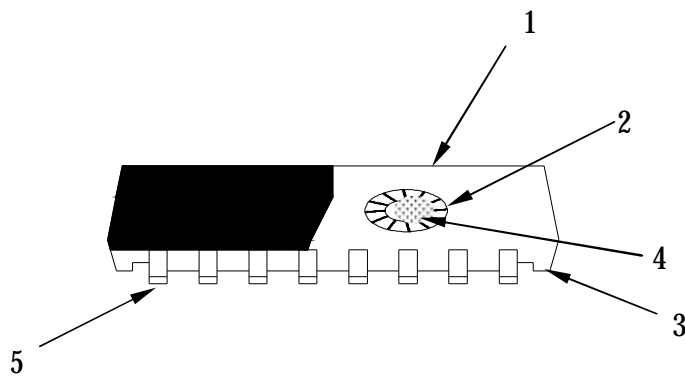
## 5. Reliability:

Reliability			
No.	Test Item	Refer To Standard	Test Condition
1	Resistance To Soldering Heat--Convection Reflow	IPC/JEDEC J-STD-020D	1).Peak Temperature: Refer to Specification According to Package Body Thickness And Volume 2).Preheat Temperature and Soak Time: 150~200℃,60~120 Seconds 3).Average Ramp-up Rate: 3℃/Second Max 4).Above 217℃: 60~150 Seconds 5).Peak Temperature-5℃: Over 30 S
2	Thermal Shock	IEC68-2-14 Method A	1.Low Temperature:-40℃ 2.High Temperature:125 3.Dwell Time:30 Minutes 4.Transition Time: Less Than 5Minutes 5.Number of Cycles: 10
3	High Temperature	IEC68-2-2 Method A	125℃,96Hours
4	Low Temperature	IEC68-2-1 Method A	-40℃,96Hours
5	Temperature Humidity Cycle	IEC68-2-38	Temp Humidity soak time 25~65℃ 93+/-3%RH 1.5 hr 65℃ 93+/-3%RH 4 hr 65~25℃ 80~96%RH 2.5 hr 25~65℃ 93+/-3%RH 1.5hr 65℃ 93+/-3%RH 4hr 65~25℃ 80~96%RH 2
6	Vibration	IEC68-2-6	1.Sine Wave 2.Amplitude:0.75mm 3.Frequence:5~500~5Hz 4.Direction: X,Y,Z 5.Number of Sweep Cycles Per Direction:10 6.Duration: 2 Hours Each Direction
7	Mechanical Shock	MIL-STD-202	1).Half -Sine Wave 2).Peak Acceleration:50G 3).Duration:11mS 4).Direction: X,Y,Z,-X,-Y,-Z 5).Number of Shock Per Direction:3
8	Free Drop	ISO4180	1) Height: Refer to Specification According to Production weight 2).1Corner,3Edges,6Faces .Total Are 10 Times
9	Solderability	JESD22-B102D	1).Precondition:150±5℃,16±0.5Hours 2).Flux Type:ROL1 3).Immersion Flux Time: 5~10 Seconds 4).Solder Temperature:245±5℃ 5).Solder Immersion Time:5±0.5 Seconds 6).Solder Immersion/Emersion Speed:25.4±6.4mm/Second
10	Accelerated Moisture Resistance---Unbiased Autoclave	JESD22-A102-C	1.Temperature:121℃ 2. Humidity: 100% 3. Vapor Pressure: 29.7 Psia or 205KPa 4.Duration:96 hours



## 7. Material List: 材料清单

No. 序号	Item 项目	Base Material 基材	Plate 电镀	Rating 等级	Manufacturer 制造商	UL 安规证书	Remarks 备注
1	Transformer Core磁芯	Mn-Zn锰锌 Ni-Zn镍锌	----	----	YST	N/A	
2	Wire铜线	QPN/180聚胺脂	----	180°C	SUNTEK	E234867	
3	Case胶壳	phenolic moulding powder (电木粉)	----	130°C	WAH HONG	E150608	
4	Varnish 绝缘油	绝缘油1032C0H	----	180°C	KIAWEIAI	E213437	
5	Solder 焊料	SnCu锡铜	----	----	YIK SHING TAT	N/A	
6	Flux 助焊剂	Water solubility 水溶性松香	----	----	RUN YUAN	N/A	







## UL Info.

### WIRE UL



ONLINE CERTIFICATIONS DIRECTORY

### OBMW2.E234867 Magnet Wire - Component

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### Magnet Wire - Component

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

**ZHUHAI SUNTEK WIRE CO LTD**  
62 HANQING RD PINGSHATOWN  
JINWAN DISTRICT  
ZHUHAI, GUANGDONG 519055 CHINA

E234867

Mtl Dsg	Mark Dsg	Coat Type		ANSI Type	Temp Class
		BC	OC		
κUEW 180*	(1)	Polyurethane	—	MW82	180
κUEW 155*				MW79#	155
κUEW 130*				MW75#	130
κUEW/NY or QAN/180*				(1)	Polyurethane
κUEW/NY or QAN/155*				MW80#	155
κUEW/NY or QAN/130*				MW28#	130
κSEIW or QZY -κ/180*	(1)	Polyesterimide	—	MW77#	180
κSEIW or κPEW/155*	(1)	Polyesterimide	—	MW26#	155
κPEW/130*	(1)	Polyesterimide	—	-#	130

\* May be suffixed by LZ, EL or LZL.

LZ - Signifies magnet wires twisted together; EL - signifies base coated magnet wire laid parallel with top coat applied overall; LZL - signifies base coated magnet wire twisted together and covered with top coat overall.

# This magnet wire may perform better than rating reflects and hence may not be suitable for an insulation system thermal aging program.

κ May be prefixed by Q, 1, 2, 3 to indicate coating thickness.

- None ANSI Type.

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

Last Updated on 2008-07-02

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## Case UL



### QMFZ2.E150608 Plastics - Component

Additional information regarding this certification can be found in UL's iQ Family of Databases ([www.ul.com/iq](http://www.ul.com/iq)).

**NEW** -- for additional information concerning the individual material, click on the material designation.

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### Plastics - Component

[See General Information for Plastics - Component](#)

**WAH HONG INDUSTRIAL CORP**  
11ST FL-6 235 CHUNG CHENG 4TH RD  
KAOHSIUNG, 801 TAIWAN

E150608

Material Dsg	Color	Min. Thk mm	Flame Class	H		R T I			H D		
				W	A	Elec	Mech		V	4	C
				I	I	Imp	Str	R	5	I	
<b>Bulk Molding Compound "Polyester" (BMC), glass reinforced, furnished as bulk or sheets.</b>											
BUG-4112CM	ALL	1.7-1.9	V-0	0	-	105	130	130			0
	NC	3.0	-	0	-	-	-	-			
<b>Bulk Molding Compound "Polyester" (BMC), glass reinforced, furnished as bulk, sheets.</b>											
3550C(a)	ALL	1.5	5VA, RP-50	1	0	140	150	180	0	4	1
		3.0	V-0	0	0	140	150	180			
		6.0	V-0	0	0	140	150	180			
3950C	ALL	1.5	V-0	0	0	130	130	130	0	4	0
		3.0	V-0	0	0	130	130	130			
BUG-4112C	ALL	1.5	V-0	1	0	105	130	130	0	4	0
		3.0	V-0	0	0	105	130	130			
		6.0	V-0	0	0	105	130	130			
BUG-4112D	ALL	1.5	V-0	1	0	105	130	130	0	4	0
		3.0	V-0	0	0	105	130	130			
<b>Diallyl Phthalate (DAP), molding compound, furnished as pellets.</b>											
VH-9100	ALL	0.37	V-0	0	3	130	130	130	0	4	0
	BK	0.82-0.90	V-0	2	0	130	130	130			
<b>Epoxy Casting Compound (EP - Casting), furnished as two liquid components.</b>											
VH-6020 A/B	NC	1.5	-	-	-	90	90	90			6
	BK, YL, BN	1.5	V-0	-	-	90	90	90			
		3.0	V-0	-	-	90	90	90			
		6.2	V-0	-	-	90	90	90			
VH-6230 A/B	NC	1.5	V-1	0	0	90	90	90	0	5	0
		3.0	V-0	0	0	90	90	90			
		6.0	V-0	0	0	90	90	90			
<b>Epoxy Molding Compound (EP - Molding), reinforced, furnished as granular material, pellets.</b>											
VH-7100	NC, BK	2.3	V-0	-	-	130	130	130			3
		3.5	V-0	-	-	130	130	130			
<b>Polyamide 66 (PA66), flame retardant, furnished as pellets.</b>											



## Varnish UL

OBOR2.E213437 - (Systems, Electrical Insulation) Varnishes - Component 页码, 1/1



**ONLINE CERTIFICATIONS DIRECTORY**

**OBOR2.E213437**

**(Systems, Electrical Insulation) Varnishes - Component**

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### Varnishes - Component

[See General Information for Varnishes - Component](#)

QUANTPOLY CHEMICAL CORP  
2 YEONG GONG 5TH RD  
YEONG AN TSIANG  
TAINING HSIEN, 828 TAIWAN

E213437

Varnish Deg	ANSI Magnet Wire Type	Varnish Thermal Class C		
		TP	HC	CE
V821XXX	MW75-C	155	180	—
1032XXX	MW75-C	155	130	—
V852xx	MW 35	180	200	—

**Note:** X may be replaced by an alpha numeric code

**Note:** xx may be replaced by an alpha numeric code where the first "x" represents the viscosity and the second "x" represents the solid content.

Marking: Company name or "E213437" and varnish designation on shipping container.

Last Updated on 2006-03-24

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