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**12.5W**  
**AC Adapter**  
**SPECIFICATION**

**Model No.** : **ATS012T-W051U(USA/Level VI)**  
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**Description** : **5.0Volts / 2.5Amps**  
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**Part No.** : **ATS012TW051U415207**  
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**Version** : **A1**  
\_\_\_\_\_

**Date** : **06 – Dec. – 2017**  
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## 1. Feature :

- ◆ **Input** : Universal 100 ~ 240 Vac / 50 - 60 Hz Input, without any slide switch.
- ◆ **Output** : +5.0V / 0~2.5 A
- ◆ **Case Dimension** : 72(L) \* 34(W) \* 59(H) mm ±1.0mm
- ◆ **Efficiency** : Eff (av) ≥ 80.22%
- ◆ **Safety** : PSE
- ◆ **EMI** : Class B ; Conduction & Radiation Meet
- ◆ **Protection** : OVP (Over Voltage Protection) 、 SCP (Short Circuit Protection) 、 OCP (Over Current Protection)
- ◆ High frequency design , less power consumption.
- ◆ Suitable for usage at Telecommunication, Computer, Industrial Controller, & OA System.
- ◆ Meet CEC / DOE(LEVEL VI) / NRCAN / Erp / GEMS(LEVEL VI)

## 2. Input :

2.1 Voltage	Universal 100~240Vac, single phase
2.2 Frequency	50 - 60 Hz
2.3 Current	0.31A Max.
2.4 Inrush Current	60A Max. / 240Vac (Cold Start At 25 °C , Full Load)
2.5 Efficiency	Eff (av) ≥ 80.22 % (At 115 Vac & 230 Vac)
2.6 Power Consumption	Pi ≤ 0.075 W ( At 115 Vac & 230Vac & No Load)

$$\text{※Eff (av)} = \frac{E1 + E2 + E3 + E4}{4}$$

E1=efficiency with 25% rated load ; E2= efficiency with 50% rated load  
 E3=efficiency with 75% rated load ; E4= efficiency with 100% rated load

## 3. Output :

3.1 DC Output	Voltage	+5V ± 5%
	Current	2.5A Max.
	Regulation	4.75Vmin. ~ 5.00Vtyp. ~ 5.25Vmax.
	Ripple & Noise	100 mVpp Max.
	Total Power	12.5W Max.

Remark : For ripple & noise measurement, use a 20MHz bandwidth frequency oscilloscope, and add a 0.1μF multilayer Cap. and a Low ESR Electrolytic Cap. (47μF) at output connector terminals. (At nominal line voltage, Full Load)

#### 4. Protection :

4.1 Over Voltage Protection (OVP)	V out *180%(Max)
4.2 Short Circuit Protection (SCP)	Automatic recovery after short-circuit fault being removed
4.3 Over Current Protection(OCP)	5.0A (Max)( Auto Recovery)

Remark : When Short Circuit Protection or Over Current Protection is activated,the power supply will shutdown automatically.

Once the abnormal condition resulting in the failure being removed, the power supply will restart accordingly. When

Over Voltage Protection is activated, the power supply will shutdown .

#### 5. Safety 、 EMI and EMC Requirement :

##### 5.1 Safety Requirement

a. Safety : PSE

b. Dielectric Strength : 10mA Max. Cut off current

(1)	Primary to Secondary	3000Vac for 1 Minute
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c. Insulation Resistance :

(1)	Primary to Secondary	10 M Ohm for 500Vdc
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5.2 EMI Requirement : Class B ; Conduction & Radiation Meet

5.3 Leakage Current : Less than 0.25mA

#### 6. Operation and Environment Performance :

##### 6.1 Temperature Range

Operating	+ 0°C ~ + 40°C
Storage	- 20 °C ~ + 80 °C

##### 6.2 Humidity Range(Non-condensing)

Operating	20% ~ 80% RH
Storage	10% ~ 90% RH

6.3 Cooling : By natural air..

7. M.T.B.F. : 300,000Hrs.(Calculated Hours at 25°C,By Telcordia SR-332)

## 8. Mechanical :

8.1 Weight : 165 g Ref.

8.2 Cable Type : Black UL2468 18AWG

( Wire + Plug )

Plug :  $\varnothing 5.5 * \varnothing 2.1 * 9.5 \text{mm}$

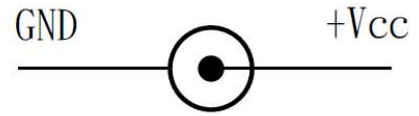
( Tuning Fork & Cannelure )

8.3 Cable Length : 1500mm

8.4 Case Dimension : 72mm(L)\*34mm(W)\*59mm(H)  $\pm 1.0 \text{mm}$

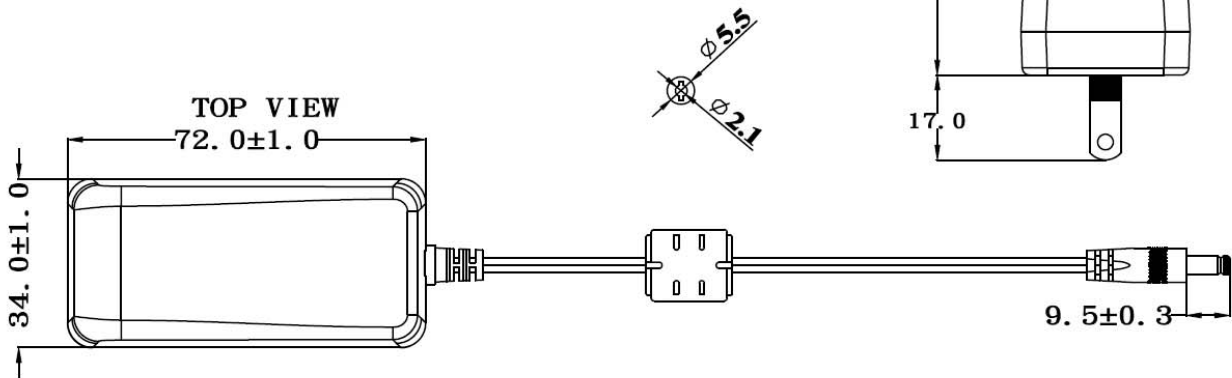
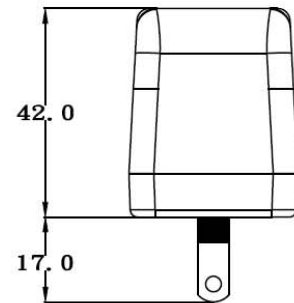
8.5 Material Flammability : UL 94V-0

8.6 External Appearance : As drawing below ( Scale  $\rightarrow$  mm )

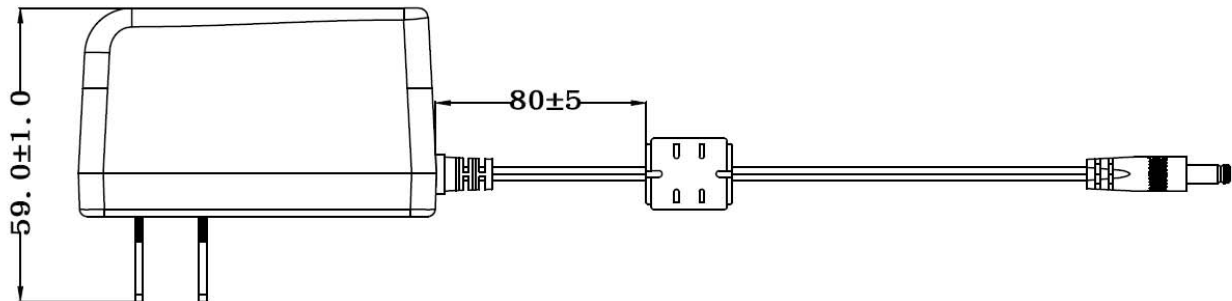


Output Cable Plug Pin Assignment

Front-View

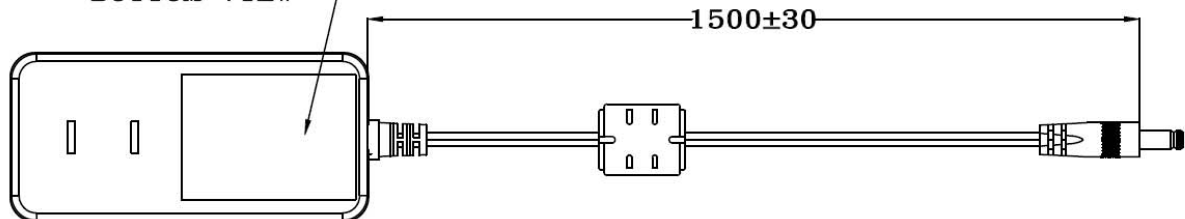


SIDE VIEW



LABEL

BOTTOM VIEW



8.7 Spec. Label Materials : Metalized Polyester Label ( Silver Gloss )  
 Color : Black Background with Silver Printing  
 Label Dimension : 34.5mm(L)\*24.5mm(W)+/-0.1 mm  
 Label Thickness : #75

100%



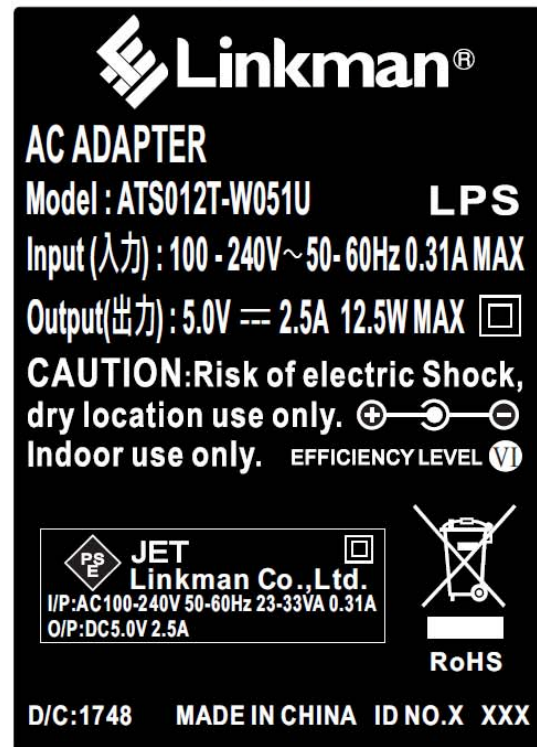
"XXX"

Label supplier's code.  
 It is accurate that the number  
 of words depends on the real  
 finished product.

ID NO. "X"

Manufacturer's code.  
 It is accurate that the number  
 of words depends on the real  
 finished product.

300%



**Label Part No. :9443084530**

## A. Line Regulation Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
90Vac / 50 % Load	4.75~5.25 V	5.083 V	5.071 V	5.066 V
115Vac / 50 % Load	4.75~5.25 V	5.083 V	5.071 V	5.066 V
132Vac / 50 % Load	4.75~5.25 V	5.083 V	5.071 V	5.066 V
180Vac / 50 % Load	4.75~5.25 V	5.083 V	5.070 V	5.065 V
230Vac / 50 % Load	4.75~5.25 V	5.083 V	5.070 V	5.065 V
264Vac / 50 % Load	4.75~5.25 V	5.083 V	5.070 V	5.065 V

## B. Efficiency Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac	80.22 % Min.	81.26 %	81.09 %	81.90 %
230Vac	80.22 % Min.	80.86 %	80.30 %	80.82 %

$$\text{Eff (av)} = \frac{E_1 + E_2 + E_3 + E_4}{4}$$

E1=efficiency with 25% rated load ; E2= efficiency with 50% rated load  
E3=efficiency with 75% rated load ; E4= efficiency with 100% rated load

## C. Load Regulation Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 0 % Load	4.75~5.25 V	5.190 V	5.174 V	5.174 V
115Vac / 50 % Load	4.75~5.25 V	5.083 V	5.071 V	5.066 V
115Vac / 100 % Load	4.75~5.25 V	4.976 V	4.968 V	4.959 V
230Vac / 0 % Load	4.75~5.25 V	5.190 V	5.173 V	5.174 V
230Vac / 50 % Load	4.75~5.25 V	5.083 V	5.070 V	5.066 V
230Vac / 100 % Load	4.75~5.25 V	4.975 V	4.967 V	4.959 V

## D. Ripple & Noise Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	100 mVpp Max.	28.0 mVpp	34.7 mVpp	30.2 mVpp
230Vac / 100 % Load	100 mVpp Max.	20.6 mVpp	23.6 mVpp	22.6 mVpp

Remark : For ripple & noise measurement, use a 20MHz bandwidth frequency oscilloscope, and add a 0.1 $\mu$ F multilayer Cap. and a Low ESR Electrolytic Cap. (47  $\mu$ F) at output connector terminals. (At nominal line voltage, Full Load)

## E. Inrush Current

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
240Vac / 100 % Load	60A Max	47.6 A	48.0 A	47.2 A

## F. Over Current Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	5.0A Max.	3.55 A	3.62 A	3.45 A
230Vac / 100 % Load	5.0A Max.	3.66 A	3.74 A	3.52 A

## G. Short Circuit Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	Auto Recovery	OK	OK	OK
230Vac / 100 % Load	Auto Recovery	OK	OK	OK

## H. Input Power Consumption(No Load)

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 0 % Load	$\leq 0.075$ W	0.03W	0.04W	0.03W
230Vac / 0 % Load	$\leq 0.075$ W	0.04W	0.06W	0.04W

## Efficiency Test Report

- A. Model Number : ATS012T-W051Z(Z=A,B,C,E,K,U,R)(5.0V /2.5A /12.5W)
- B. DC Power Cord : UL2468 , 18AWG , 1.5M
- C. Average Efficiency :
- DOE Level VI  $0.0834 \cdot \ln(P_{out}) - 0.0014 \cdot P_{out} + 0.609 = 80.22\% \text{ Min.}$
- GEMS VI  $0.0834 \cdot \ln(P_{out}) - 0.0014 \cdot P_{out} + 0.609 = 80.22\% \text{ Min.}$
- Erp (Stage 2)  $0.075 \cdot \ln(\text{Nameplate Output}) + 0.561 = 75.04\% \text{ Min.}$
- CEC Level IV  $0.09 \cdot \ln(\text{Nameplate Output}) + 0.5 = 72.73\% \text{ Min.}$
- NRCan Level IV  $0.09 \cdot \ln(\text{Nameplate Output}) + 0.5 = 72.73\% \text{ Min.}$
- D. NO Load Power Consumption :
- DOE Level VI 0.1W Max.
- GEMS VI 0.1W Max.
- Erp (Stage 2) 0.3W Max.
- CEC Level IV 0.5W Max.
- NRCan Level IV 0.5W Max.
- E. Testing Dequpment :
1. AC Power Source : " Zentech " 2700M-10
2. Electronic Load : " PRODIGIT " 3311C
3. Power Meter : " YOKOGAWA " WT210
4. Digital Meter : " FLUKE " 45
- F. AC Input Voltage : 115Vac/60Hz

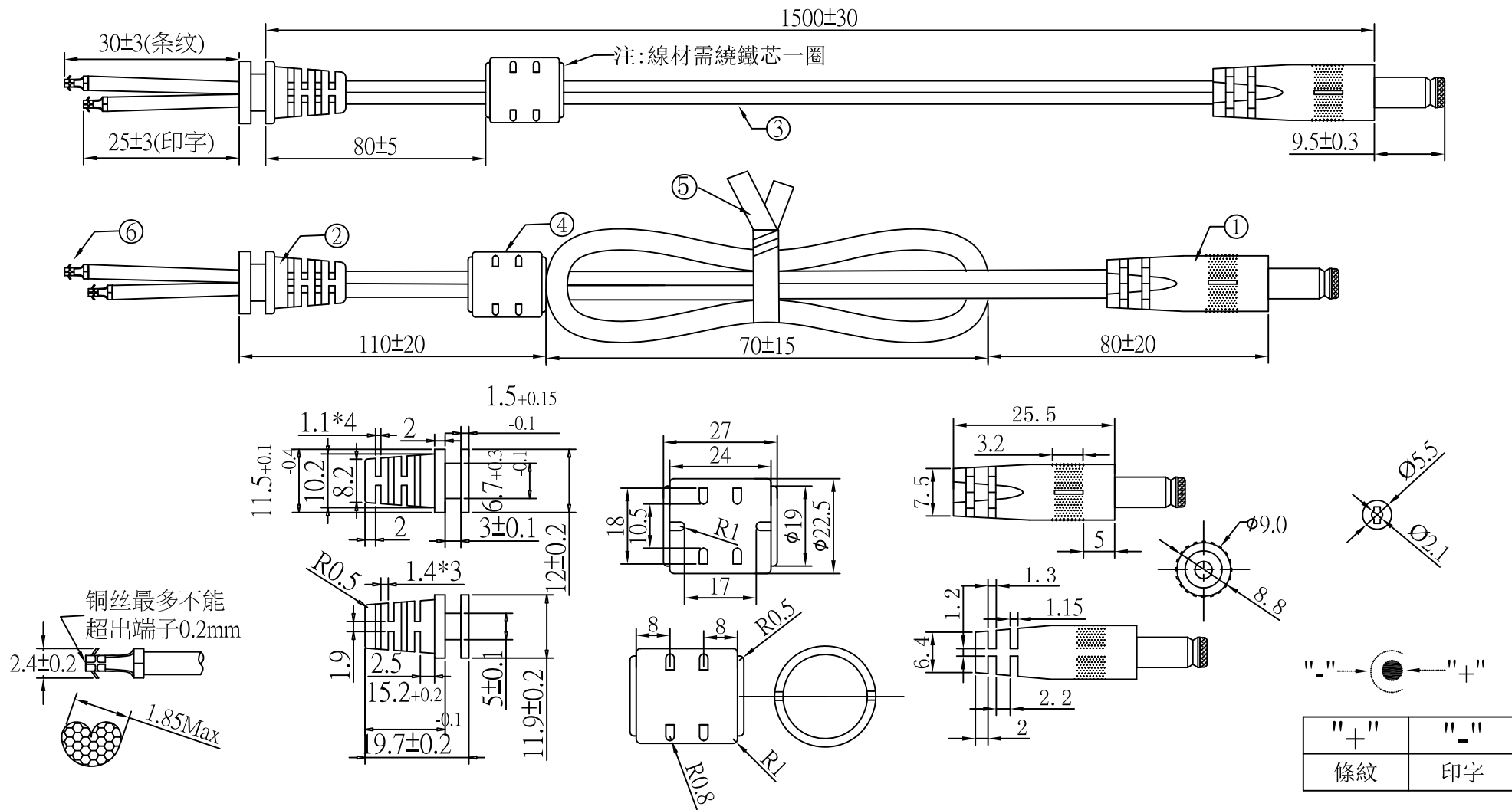
Load Conditions Reported Quantity	100%* I <sub>0</sub>	75%* I <sub>0</sub>	50%* I <sub>0</sub>	25%* I <sub>0</sub>	0%* I <sub>0</sub>
Rms Output Current(mA)	2500mA	1876mA	1250mA	624mA	0mA
Rms Output Voltage(V)	4.968V	5.019V	5.071V	5.122V	5.174V
Active Output Power(W)	12.42W	9.42W	6.34W	3.20W	0.00W
Rms Input Voltage(V)	115V	115V	115V	115V	115V
Rms Input Current(A)	0.264A	0.209A	0.153A	0.088A	0.015A
Rms Input Power(W)	15.63W	11.65W	7.72W	3.90W	0.03W
Voltage T.H.D.(%)	0.12	0.11	0.13	0.11	0.12
True Power Factor	0.517	0.486	0.440	0.386	0.016
Power Consumed by UUT(W)	3.21W	2.23W	1.38W	0.70W	0.03W
Efficiency	79.46%	80.82%	82.11%	81.95%	*
Average Efficiency	81.09%				*

- G. AC Input Voltage : 230Vac/50Hz

Load Conditions Reported Quantity	100%* I <sub>0</sub>	75%* I <sub>0</sub>	50%* I <sub>0</sub>	25%* I <sub>0</sub>	0%* I <sub>0</sub>
Rms Output Current(mA)	2500mA	1876mA	1250mA	624mA	0mA
Rms Output Voltage(V)	4.967V	5.019V	5.070V	5.122V	5.173V
Active Output Power(W)	12.42W	9.42W	6.34W	3.20W	0.00W
Rms Input Voltage(V)	230V	230V	230V	230V	230V
Rms Input Current(A)	0.183A	0.142A	0.098A	0.570A	0.007A
Rms Input Power(W)	15.69W	11.61W	7.84W	3.99W	0.04W
Voltage T.H.D.(%)	0.13	0.12	0.10	0.10	0.10
True Power Factor	0.375	0.358	0.348	0.306	0.023
Power Consumed by UUT(W)	3.27W	2.19W	1.50W	0.79W	0.04W
Efficiency	79.14%	81.10%	80.81%	80.12%	*
Average Efficiency	80.30%				*

Tester : Ken





注意:此圖面所需材料符合"ROHS"標準

- ① 5.5\*2.1\*21音叉車沟黑色半边,外模P-146號模(二次成型),用料外PVC60P黑色
- ② SR-101號模,用料PVC60P黑色,吊重:1米/20磅/60秒
- ③ UL 2468 18AWG(0.16\*41) BK OD:2.2\*4.4裁線長度:1590+10/-0
- ④ 鐵芯:16\*16\*9,外模A-156號模(二次成型),用料外PVC60P黑色
- ⑤ PE无鐵芯紮帶10CM黑色
- ⑥ 1.8双钩机板端\*2PCS(进文提供:P1815-A)
- ⑦ 單位:MM

一般公差表		
1.0mm以下	±0.1mm	15.0mm以下 ±0.6mm
2.0mm以下	±0.15mm	20.0mm以下 ±0.8mm
3.0mm以下	±0.20mm	30.0mm以下 ±1.0mm
10.0mm以下	±0.50mm	30.0mm以上 ±1.2mm

02	更正磁環模型尺寸	2016/06/20
01	新出	2015/02/10
版次	變更內容	日期

料號	R44M1G15012B		
客戶		制圖	潘勝
頁數	01	審核	
		批準	
圖號	ADT-3371	日期	2016/07/20