

# <SPECIFICATION>

SPEC.No. ASDIQ-SPE-122(00)

Date: Aug.05,2022

To :

CUSTOMER'S PRODUCT NAME

ASDI PRODUCT NAME:

STPM-SERIES

## RECEIPT CONFIRMATION

UNCONDITIONAL CONSENT

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CONDITIONAL CONSENT

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APPROVED

--

CHECKED

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## ASDI SIGNATURE

APPROVED	CHECKED	PREPARED
Xianglong Li	Liang Wang	Jiayin Cai



Xiamen ASDI Electronics Co.,Ltd.



# CAUTION WHEN HANDLING

Before use the products, please read this specification.

# CAUTION FOR SAFETY USING

When use the products, be careful to mentioned below for safety using.

## CAUTION

\*The product should be used within 12 months.

Focus on the storage conditions.

Solderability may become weak if it exceeds the period.

\*Do not use and store the product in condition of gas corrosion (Salt, Acid, Alkaline).

\*The products must be preheated before soldering.

The operating temperature including self-generated heat must be within  $-55 \sim +125^{\circ}\text{C}$ .

\*Rework by soldering iron; Please keep the mentioned conditions in this specification.

\*In case of insert P.C. Board on chassis, do not add mechanical stress to the product.

\*Be careful to arrange of non-magnetic field type inductors.

The error may be caused by magnetic field coupling.

\*In case handle the products, please use wrist strap for ground static discharge on human body.

The product keeps away from magnet or magnetized things.

\*Do not use the product beyond the mentioned conditions in this specification.

\*About an application

The products listed on this specification sheet are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.

\*The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property. Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below or for any other use exceeding the range or conditions set forth in this specification sheet.

- |                                 |   |
|---------------------------------|---|
| 1) Aerospace/Aviation equipment | 6) Transportation control equipment   |
| 2) Military equipment           | 7) Power-generation control equipment<br>which directly endanger human life   |
| 3) Seabed equipment             | 8) Atomic energy-related equipment  |
| 4) Safety equipment             | 9) Other applications that are not<br>considered general-purpose applications |
| 5) Medical equipment            |   |

If you intend to use the products in the following applications, please contact our sales office.

Transportation equipment (cars, electric trains, ships, etc.), Public information-processing equipment, Electric heating apparatus / burning equipment, Disaster prevention/crime prevention equipment

When using this product in general-purpose applications, you are kindly requested to take into consideration securing protection circuit/equipment or providing backup circuits, etc., to ensure higher safety.

CUSTOMER	ASDI PART No. STPM-SERIES	CUSTOMER'S DWG NO.
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2.Manufacturing Location

China

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Xiamen ASDI Electronics Co.,Ltd.

(1)Features

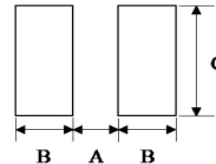
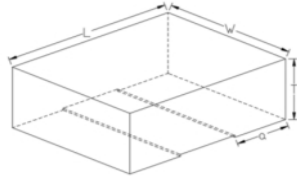
- 1.Soft saturation.
- 2.High current, low DCR, high efficiency.
- 3.Very low acoustic noise and very low leakage flux noise.
- 4.High reliability.
- 5.100% Lead (Pb)-Free and RoHS compliant.
6. Operating temperature -55~+125℃(Including self-temperature rise)



(2)Applications

Note PC power system, incl. IMVP-6 DC/DC converter.

(3)Dimensions



Series	L(mm)	W(mm)	T(mm)	a(mm)	A	B	C
STPM160810A	1.6±0.2 [0.063±0.008]	0.8±0.2 [0.031±0.008]	1.0Max [0.039Max]	0.4±0.2 [0.016±0.008]	0.6~0.8	0.6~0.8	0.6~0.8
STPM201208A	2.0±0.2 [0.079±0.008]	1.2±0.2 [0.047±0.008]	0.8Max [0.031Max]	0.6±0.2 [0.024±0.008]	0.8~1.2	0.8~1.2	1.2~2.0
STPM201210A	2.0±0.2 [0.079±0.008]	1.2±0.2 [0.047±0.008]	1.0Max [0.039Max]	0.6±0.2 [0.024±0.008]	0.8~1.2	0.8~1.2	1.2~2.0
STPM201610A	2.0±0.2 [0.079±0.008]	1.6±0.2 [0.063±0.008]	1.0Max [0.039Max]	0.6±0.2 [0.024±0.008]	0.8~1.2	0.8~1.2	1.2~2.0
STPM252010A	2.5±0.2 [0.098±0.008]	2.0±0.2 [0.079±0.008]	1.0Max [0.039Max]	0.8±0.2 [0.031±0.008]	1.2~1.6	0.8~1.2	1.8~2.4

Note:

1. Inductance tolerance code (M=±20%).
2. Rated current: Isat or Irms, whichever is smaller.
3. Isat: Max.Value, DC current at which the inductance drops less than 30% from its value without current;  
Typ. Value, DC current at which the inductance drops 30% from its value without current.
4. Irms: DC current that will cause the temperature rise (ΔT) from 22°C ambient.
5. For Max. Value, ΔT<40℃; for Typ. Value, ΔT is approximate 40℃.

(4)Part Numbering

**STPM**
**201610**
**A**
-
**R47**
**M**  
A
B
C
D
E

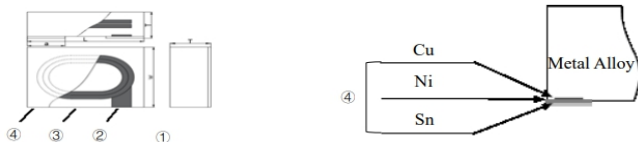
A: Series  
 B: Dimension  
 C: Type  
 D: Inductance                      R47=0.47μH  
 E: Inductance Tolerance        M=±20%

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(5)Electrical Specification

ASDI Part Number	Inductance L0 (uH)±20% @ 0 A	I rms (A) Typ.	I rms (A) Max.	I sat (A) Max.	I sat (A) Typ.	DCR (mΩ) Max.	DCR(mΩ) Typ.	Thickness (mm)
STPM160810A-1R0M	1.00	2.0	1.8	2.1	2.3	110	100.0	1.0Max
STPM160810A-2R2M	2.20	1.1	1.0	1.2	1.3	290	272.0	1.0Max
STPM201208A-1R0M	1.00	3.0	2.7	3.2	3.6	70	63.0	1.0Max
STPM201208A-2R2M	2.20	1.6	1.3	1.8	2.2	155	144.0	1.0Max
STPM201210A-R47M	0.47	4.5	4.1	4.6	5.1	27	24.00	1.0Max
STPM201610A-R47M	0.47	4.8	4.4	4.8	5.3	22	19.00	1.0Max
STPM201610A-1R0M	1.00	3.5	3.2	3.5	4.0	42	38.00	1.0Max
STPM201610A-2R2M	2.20	2.3	2.0	2.4	2.7	95	85.00	1.0Max
STPM252010A-R47M	0.47	5.5	5.0	6	6.7	20	17.00	1.0Max
STPM252010A-1R0M	1.00	4.5	4.0	4.5	5.0	40	36.00	1.0Max

(6)Material List

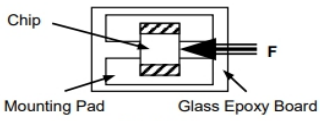
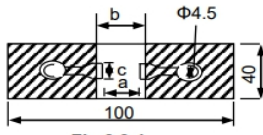
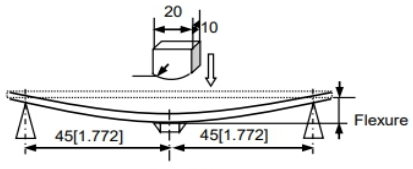


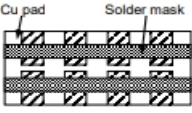
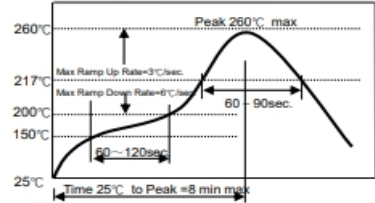
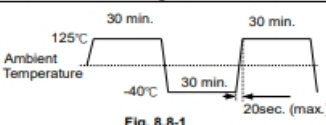
N0.	Description	Specification
①	Metal Alloy Body	Metal Alloy Powder
②	Inner Wire	Enameled Copper Wire
③	Pull-out Electrode	Cu
④	Terminal	Electro-Plating: Cu/Ni/Sn

(7)Electrical Tests

Test Item	Performance	Test Condition
DC Resistance (DCR)	Refer to Electrical Characteristics.	Test equipment: High Accuracy Milliohmeter-AX-1152D
Inductance (L)		a. Test equipment: High Accuracy RF Impedance Analyzer-WK 6500B. b. Test signal:1V. c. Test frequency refers to Electrical Characteristics.
		a. Set test current to be 0 mA. b. Measure initial temperature of chip surface.
Temperature Rise Current (Irms)		c. Gradually increase voltage and measure chip temperature for corresponding current. d. Definition of Temperature Rise Current (Irms) : Irms is direct electric current as chip surface temperature rose just 40°C against chip initial surface temperature.
Saturation Current (Isat)		a. Test equipment: High Accuracy RF Impedance Analyzer- WK 6500B. b. Measuring Frequency: 1MHz. c. Test Current: 1mA. d. Definition of Saturation Current (Isat) : Isat is the value of DC current as inductance L (μH) decreased just 30% against initial value
Self-Resonant Frequency (SRF)	Refer to Electrical Characteristics.	a. Test equipment: High Accuracy RF Impedance Analyzer--WK 6500B. b. Test signal: 1V.

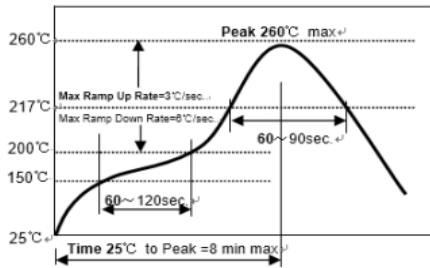
(8)Reliability Tests

Items	Requirements	Test Methods and Remarks																								
8.1 Terminal Strength	No removal or split of the termination or other defects shall occur.  Fig. 8.1-1	① Solder the inductor to the testing jig (glass epoxy board shown in Fig.8.1-1) using eutectic solder. Then apply a 10N force in the direction of the arrow. ② Keep time: 10±1s. ③ Speed: 1.0mm/s.																								
8.2 Resistance to Flexure	No visible mechanical damage. Unit: mm [inch] <table border="1" data-bbox="367 1444 694 1630"> <thead> <tr> <th>Type</th> <th>a</th> <th>b</th> <th>c</th> </tr> </thead> <tbody> <tr> <td>160808</td> <td>0.6</td> <td>2.2</td> <td>1.2</td> </tr> <tr> <td>201208</td> <td>0.8</td> <td>2.4</td> <td>1.4</td> </tr> <tr> <td>201210</td> <td>0.8</td> <td>2.4</td> <td>1.4</td> </tr> <tr> <td>201610</td> <td>0.8</td> <td>2.4</td> <td>1.4</td> </tr> <tr> <td>252010</td> <td>1.3</td> <td>3.0</td> <td>2.3</td> </tr> </tbody> </table>  Fig.8.2-1	Type	a	b	c	160808	0.6	2.2	1.2	201208	0.8	2.4	1.4	201210	0.8	2.4	1.4	201610	0.8	2.4	1.4	252010	1.3	3.0	2.3	① Solder the inductor to the test jig (glass epoxy board shown in Fig.8.2-1) Using a eutectic solder. Then apply a force in the direction shown Fig. 8.2-2. ② Flexure: 2mm. ③ Pressurizing Speed: 0.5mm/sec. ④ Keep time: 30 sec. ⑤ Test board size: 100×40×1.0.  Fig.8.2-2
Type	a	b	c																							
160808	0.6	2.2	1.2																							
201208	0.8	2.4	1.4																							
201210	0.8	2.4	1.4																							
201610	0.8	2.4	1.4																							
252010	1.3	3.0	2.3																							
8.3 Vibration	① No visible mechanical damage. ② Inductance change: Within ±10%.	① Solder the inductor to the testing jig (glass epoxy board shown in Fig.8.3-1) using eutectic solder.																								

	 <p style="text-align: center;">Glass Epoxy Board Fig. 8.3-1</p>	<p>② The inductor shall be subjected to a simple harmonic motion having total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55 Hz.</p> <p>③ The frequency range from 10 to 55 Hz and return to 10 Hz shall be traversed in approximately 1 minute. This motion shall be applied for a period of 2 hours in each 3 mutually perpendicular directions (total of 6 hours).</p>
8.4 Dropping	<p>① No visible mechanical damage.</p> <p>② Inductance change: Within <math>\pm 10\%</math>.</p>	Drop chip inductor 10 times on a concrete floor from a height of 100 cm.
8.5 Temperature	Inductance change should be within $\pm 20\%$ of initial value measuring at 25°C.	Temperature range: $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$ Reference temperature: $+25^{\circ}\text{C}$
8.6 Solderability	<p>① No visible mechanical damage.</p> <p>② Wetting shall exceed 90% coverage.</p>	<p>① Solder temperature: <math>245 \pm 2^{\circ}\text{C}</math></p> <p>② Duration: 3 sec.</p> <p>③ Solder: Sn/3.0Ag/0.5Cu.</p> <p>④ Flux: 25% Resin and 75% ethanol in weight.</p>
8.7 Resistance to Soldering Heat	<p>① No visible mechanical damage.</p> <p>② Inductance change: Within <math>\pm 10\%</math>.</p>	<p>① Re-flowing Profile: Please refer to Fig. 8.7-1.</p> <p>② Test board thickness: 1.0mm</p> <p>③ Test board material: glass epoxy resin</p> <p>④ The chip shall be stabilized at normal condition for 1~2 hours before measuring</p> 
8.8 Thermal Shock	<p>① No mechanical damage.</p> <p>② Inductance change: Within <math>\pm 10\%</math>.</p>  <p style="text-align: center;">Fig. 8.8-1</p>	<p>① Temperature, Time: (See Fig.8.8-1) <math>-40^{\circ}\text{C}</math> for <math>30 \pm 3</math> min <math>\rightarrow</math> <math>125^{\circ}\text{C}</math> for <math>30 \pm 3</math> min.</p> <p>② Transforming interval: 20 sec.(Max.)</p> <p>③ Tested cycle: 100 cycles.</p> <p>④ The chip shall be stabilized at normal condition for 1~2 hours before measuring.</p>
8.9 Resistance to Low Temperature	<p>① No mechanical damage.</p> <p>② Inductance change: Within <math>\pm 10\%</math>.</p>	<p>① Temperature: <math>-40 \pm 2^{\circ}\text{C}</math></p> <p>② Duration: <math>1000^{+24}</math> hours.</p> <p>③ The chip shall be stabilized at normal condition for 1~2 hours before measuring.</p>
8.10 Resistance to High Temperature	<p>① No mechanical damage.</p> <p>② Inductance change: Within <math>\pm 10\%</math>.</p>	<p>① Temperature: <math>125 \pm 2^{\circ}\text{C}</math></p> <p>② Duration: <math>1000^{+24}</math> hours.</p> <p>③ The chip shall be stabilized at normal condition for 1~2 hours before measuring.</p>
8.11 Damp Heat (Steady States)	<p>① No visible mechanical damage.</p> <p>② Inductance change: Within <math>\pm 10\%</math>.</p>	<p>① Temperature: <math>60 \pm 2^{\circ}\text{C}</math></p> <p>② Humidity: 90% to 95% RH.</p> <p>③ Duration: <math>1000^{+24}</math> hours.</p> <p>④ The chip shall be stabilized at normal condition for 1~2 hours before measuring.</p>
8.12 Loading Under Damp Heat	<p>① No visible mechanical damage.</p> <p>② Inductance change: Within <math>\pm 10\%</math>.</p>	<p>① Temperature: <math>60 \pm 2^{\circ}\text{C}</math></p> <p>② Humidity: 90% to 95% RH.</p> <p>③ Duration: <math>1000^{+24}</math> hours.</p> <p>④ Applied current: Rated current.</p> <p>⑤ The chip shall be stabilized at normal condition for 1~2 hours before measuring.</p>
8.13 Loading at High Temperature (Life Test)	<p>① No visible mechanical damage.</p> <p>② Inductance change: Within <math>\pm 10\%</math>.</p>	<p>① Temperature: <math>85 \pm 2^{\circ}\text{C}</math></p> <p>② Duration: <math>1000^{+24}</math> hours.</p> <p>③ Applied current: Rated current.</p> <p>④ The chip shall be stabilized at normal condition for 1~2 hours before measuring.</p>

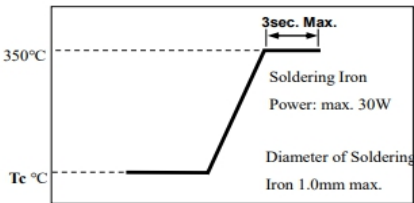


(9)Soldering and Mounting  
9-1,Reflow Profile



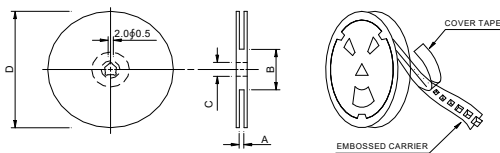
Preheat condition	150 ~200°C/60~120sec
Allowed time above	217°C: 60~90sec
Max temp	260°C
Max time at Max temp	10sec
Solder paste	Sn/3.0Ag/0.5Cu
Allowed Reflow time	2x Max

9-1, Reflow Profile



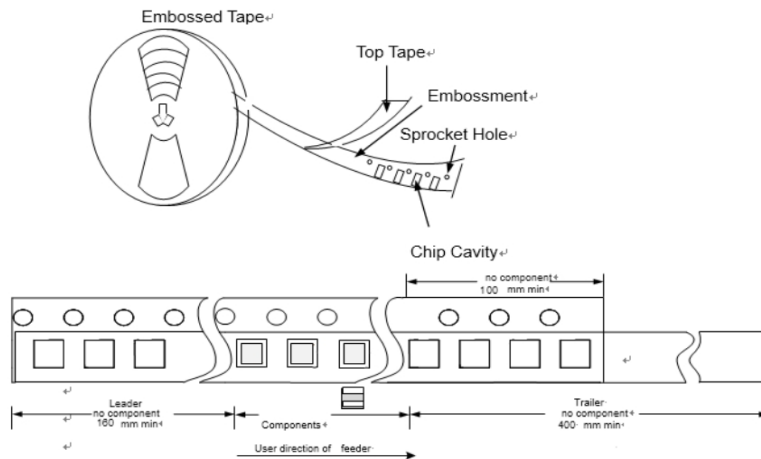
Iron soldering power	Max.30W
Pre-heating	150 °C / 60sec
Soldering Tip temperature	350°CMax
Soldering time	3sec Max
Solder paste	Sn/3.0Ag/0.5Cu
Max	1 times for iron soldering

(10)Packaging Information  
10-1,Reflow Profile



A(mm)	B(mm)	C(mm)	D(mm)
8.4	58	13.5	178

10-2,Tape Dimension



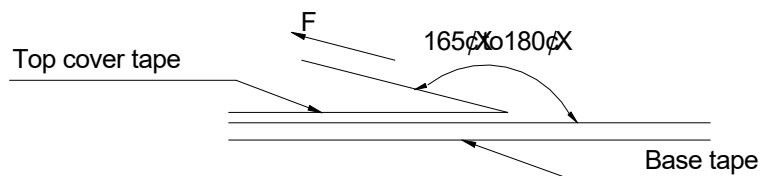
Type	Ao	Bo	P	Po	Pi	Ko max	t max	W
160810	1.10±0.1	1.90±0.1	4.0±0.1	4.0±0.1	2.0±0.05	1.3	0.3	8.0±0.1
201208	1.50±0.1	2.30±0.1	4.0±0.1	4.0±0.1	2.0±0.05	1.1	0.3	8.0±0.1
201210	1.50±0.1	2.30±0.1	4.0±0.1	4.0±0.1	2.0±0.05	1.3	0.3	8.0±0.1
201610	1.90±0.1	2.30±0.1	4.0±0.1	4.0±0.1	2.0±0.05	1.3	0.3	8.0±0.1
252010	2.30±0.1	2.80±0.1	4.0±0.1	4.0±0.1	2.0±0.05	1.3	0.3	8.0±0.1

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### 10-3, Packaging Quantity

STPM	160810	201208	201210	201610	252010
Chip / Reel	4000	4000	4000	4000	3000

### 10-4, Tearing Off Force



The force for tearing off cover tape is 10 to 130 grams in the arrow direction under the following conditions (referenced ANSI/EIA-481-C-2003 of 4.11 standard).

#### (1)Note

##### ·Storage Conditions

To maintain the solderability of terminal electrodes:

1. ASDI products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
2. Temperature and humidity conditions: Temperature: 5 to 30deg.C, Humidity: 75% Max.
3. Recommended products should be used within 12 months form the time of delivery.
4. The packaging material should be kept where no chlorine or sulfur exists in the air.

##### ·Transportation

1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

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Xiamen ASDI Electronics Co.,Ltd.

单击下面可查看定价，库存，交付和生命周期等信息

[>>ASDI](#)