

# <SPECIFICATION>

SPEC.No. ASDIQ-SPE-234(00)

Date: Jul.14,2023

To :

CUSTOMER'S PRODUCT NAME

ASDI PRODUCT NAME:

STPM160808A-2R2M

## RECEIPT CONFIRMATION

UNCONDITIONAL CONSENT

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CONDITIONAL CONSENT

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APPROVED

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CHECKED

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## ASDI SIGNATURE

APPROVED

Xianglong Li

CHECKED

Liang Wang

PREPARED

Jiayin Cai



Xiamen ASDI Electronics Co.,Ltd.



CUSTOMER

ASDI PART No.  
STPM160808A-2R2M

CUSTOMER'S DWG NO.

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### 1. Features

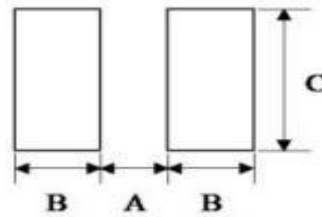
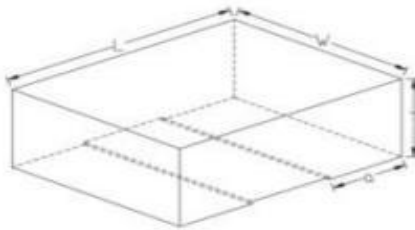
1. Soft saturation .
2. High current, low DCR, high efficiency.
3. Very low acoustic noise and very low leakage flux noise.
4. High reliability.
5. 100% Lead (Pb)-Free and RoHS compliant.



### 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
160808	1.6±0.2	0.8±0.2	0.8Max	0.4±0.2	0.6~0.8	0.6~0.8	0.6~0.8

### 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 ( $\Delta T$ ) from 22°C ambient.
5. For Max. Value,  $\Delta T < 40C$  ; for Typ. Value,  $\Delta T$  is approximate 40C.

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#### 4.Part Numbering

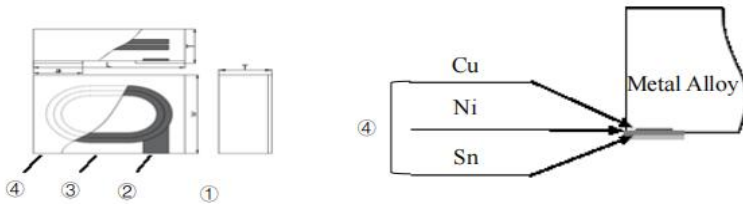
STPM
160808
A
-
2R2
M

- ① Series Name
- ② Dimension 160808=1.6×0.8×0.8mm
- ③ Type
- ④ Inductance 2R2 =2.2μH
- ⑤ Inductance Tolerance M = ±20%

#### 5.Specification

ASDI Part Number	Inductance (μH)	DCR Typ. (mΩ)	DCR Max. (mΩ)	I sat Typ. (A)	I sat Max. (A)	I rms Typ. (A)	I rms Max. (A)	Test Frequency (MHz)	SRF (MHz)
STPM160808A-2R2M	2.2	220	260	1.5	1.3	1.4	1.2	1	38

#### 6.Material List



No.	Description	Specification
①	Metal Alloy Body	Metal Alloy powder
②	Inner Wire	Enamelled Copper Wire
③	Pull-out Electrode	Cu
④	Terminal	Electro-Plating: Cu/Ni/Sn

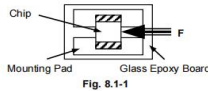
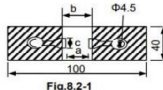
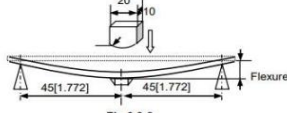
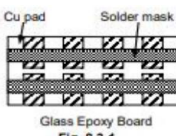
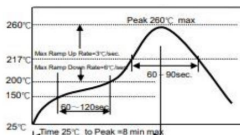
#### 7.Electrical characteristic test

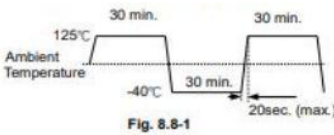
Test item	Judgement standard	Test conditions
DCR	Reference electrical characteristics	Test equipment: High Accuracy Milliohmmeter-AX 1152D
L		a. Test equipment: High Accuracy RF ImpedanceAnalyzer-WK 6500B. b. Test signal: 1V.8 c. Test frequency refers to Electrical Characteristics.
Temperature Rise Current (I <sub>rms</sub> )	Approximately ΔT ≅ 40°C.	a. Set test current to be 0 mA b. Measure initial temperature of chip surface. c. Gradually increase voltage and measure chip temperature for corresponding current. d. Definition of Temperature Rise Current (I <sub>rms</sub> ): I <sub>rms</sub> is direct electric current as chip surface temperature rose just 40°C against chip initial surface temperature.

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Saturation Current (Isat)	$\Delta L \leq 30\%$ typical.	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 (uH) 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

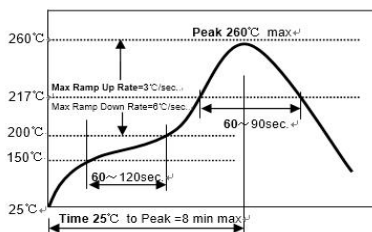
### 8. Reliability Tests

Test item	Requirements	Test conditions																								
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+ls 3. Speed: 1.0mm/s.																								
Resistance to Flexure	No visible mechanical damage. Unit: mm [inch] <table border="1" data-bbox="384 891 582 1008"> <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 in Fig. 8.2-2. 2. Flexure: 2mm. 3. Pressurizing Speed: 0.5mm/sec 4. Keep time: 30 sec. 5. Test board size: 100x40x 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																							
Vibration	1. No visible mechanical damage. 2. Inductance change: Within +10%.  Fig. 8.3-1	1. Solder the inductor to the testing jig (glass epoxy board shown in Fig. 8.3-1) using eutectic solder. 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. 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).																								
Dropping	1. No visible mechanical damage. 2. Inductance change: Within +10%.	Drop chip inductor 10 times on a concrete floor from a height of 100 cm.																								
Temperature	Inductance change should be within +20% of initial value measuring at 25°C.	Temperature range: -40°C~+125°C Reference temperature: +25°C																								
Solderability	1. No visible mechanical damage. 2. Wetting shall exceed 90% coverage.	1. Solder temperature: 245±2°C 2. Duration: 3 sec. 3. Solder: Sn/3.0Ag/0.5Cu 4. Flux: 25% Resin and 75% ethanol in weight.																								
Resistance to Soldering Heat	1. No visible mechanical damage. 2. Inductance change: Within +10%	1. Re-flowing Profile: Please refer to Fig 8.7-1. 2. Test board thickness: 1.0mm 3. Test board material: glass epoxy resin 4. The chip shall be stabilized at normal condition for 1-2 hours before measuring. 																								

Thermal Shock	<p>1.No mechanical damage. 2.Inductance change: Within +10%</p>  <p>Fig. 8.8-1</p>	<p>1.Temperature,Time: (See Fig.8.8-1) 40°C for 30+3 min+ 125C for 30+3min. 2.Transforming interval: 20 sec.(Max.). 3.Tested cycle: 100 cycles. 4.The chip shall be stabilized at normal condition for 1~2 hours before measuring.</p>
Resistance to Low Temperature	<p>1.1No mechanical damage. 2.Inductance change: Within +10%</p>	<p>1.Temperature: -40+2C 2.Duration: 1000+24 hours. 3.The chip shall be stabilized at normal condition for 1-2 hours before measuring.</p>
Resistance to High Temperature	<p>1.No mechanical damage. 2.Inductance change: Within +10%</p>	<p>1.Temperature: 125+2°C 2.Duration: 1000+24 hours. 3.The chip shall be stabilized at normal condition for 1-2 hours before measuring.</p>
Damp Heat(Steady States)	<p>1.No visible mechanical damage. 2.Inductance change: Within +10%.</p>	<p>1.Temperature: 60-2°C 2.Humidity: 90% to 95% RH 3.Duration: 1000+24 hours. 4.The chip shall be stabilized at normal condition for 1~2 hours before measuring.</p>
Loading Under Damp Heat	<p>1.No visible mechanical damage. 2.Inductance change: Within +10%.</p>	<p>1.Temperature: 60-2°C 2.Humidity: 90% to 95% RH 3.Duration: 1000+24 hours. 4.Applied current: Rated current. 5.The chip shall be stabilized at normal condition for 1~2 hours before measuring.</p>
Loading at High temperature (Life Test)	<p>1.No visible mechanical damage. 2.Inductance change: Within +10%.</p>	<p>1.Temperature: 85+2°C 2.Duration: 1000+24 hours. 3.Applied current: Rated current. 4.The chip shall be stabilized at normal condition for 1~2 hours before measuring.</p>

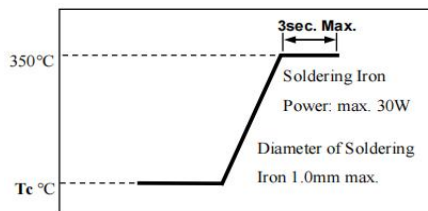
## 9.Soldering and Mounting

### 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

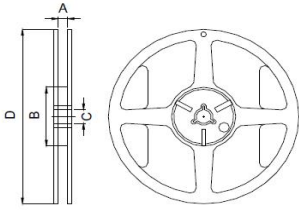
### 9-1, Reflow PROFILE



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

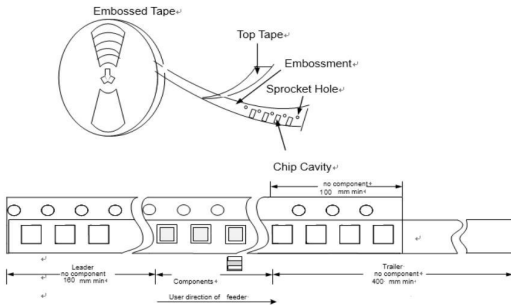
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10.Packaging Information  
(1)Reel Dimension



A(mm)	B(mm)	C(mm)	D(mm)
8.4+1.5	58±2.0	13.5±0.2	178±2.0
-0mm	mm	mm	mm

(2)Tape Dimension

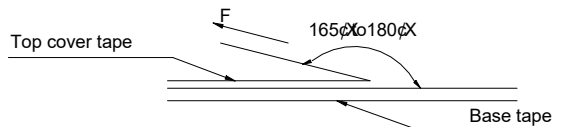


Type	Ao	Bo	P	Po	P1	Ko max	t max	W
160808	1.10±0.1	1.90±0.1	4.0±0.1	4.0±0.1	2.0±0.05	1.1	0.3	8.0±0.1

(3)Packing Quantity

Dimension	Thickness(mm)	Tape	Quantity
160808	0.8Max	plastic tape	4K

(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).

Room Temp. (C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed mm/min
5-35	45-85	860~1060	300

11.Note

·Storage Conditions

To maintain the solderability of terminal electrodes:

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

·Transportation

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

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