

# <SPECIFICATION>

SPEC.No. ASDIQ-SPE-111(00)

Date: Aug.27,2022

To :

CUSTOMER'S PRODUCT NAME

ASDI PRODUCT NAME:

SPUI43N-SERIES

## RECEIPT CONFIRMATION

UNCONDITIONAL CONSENT

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CONDITIONAL CONSENT

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APPROVED

|  |
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CHECKED

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|  |
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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 monthes.

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 '-40~+125℃

\*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    |
| 3)Seabed equipment             | which directly endanger human life      |
| 4)Safety equipment             | 8)Atomic energy-related equipment       |
| 5)Medical equipment            | 9)Other applications that are not       |
|                                | considered general-purpose applications |

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.  
SPUI43N-SERIES

CUSTOMER'S DWG NO.

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## 2.Manufacturing Location

China

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## (5)Electrical Specification

| ASDI Part Number | Inductance    |  | Frequency<br>(Hz/0.25V) | Rated current                      |                                     | DCR       |
|------------------|---------------|--|-------------------------|------------------------------------|-------------------------------------|-----------|
|                  | L0 (uH)±20%   |  |                         | Saturation<br>current<br>I sat (A) | Tempetature<br>current<br>I rms (A) | (mΩ)±15%. |
|                  | ±10%<br>@ 0 A |  |                         |                                    |                                     | @25°C     |
| SPUI43N-1R0M     | 1.00          |  | 100kHz                  | 3.80                               | 2.85                                | 32.0      |
| SPUI43N-2R2M     | 2.20          |  | 100kHz                  | 2.80                               | 2.60                                | 47.0      |
| SPUI43N-3R3M     | 3.30          |  | 100kHz                  | 2.50                               | 2.00                                | 60.0      |
| SPUI43N-4R7M     | 4.70          |  | 100kHz                  | 2.20                               | 1.85                                | 75.0      |
| SPUI43N-6R8M     | 6.80          |  | 100kHz                  | 2.00                               | 1.70                                | 100       |
| SPUI43N-8R2M     | 8.20          |  | 100kHz                  | 1.80                               | 1.60                                | 132       |
| SPUI43N-100M     | 10.0          |  | 100kHz                  | 1.70                               | 1.55                                | 195       |
| SPUI43N-150M     | 15.0          |  | 100kHz                  | 1.10                               | 0.90                                | 250       |
| SPUI43N-220M     | 22.0          |  | 100kHz                  | 0.95                               | 0.80                                | 395       |
| SPUI43N-330M     | 33.0          |  | 100kHz                  | 0.78                               | 0.60                                | 560       |
| SPUI43N-470M     | 47.0          |  | 100kHz                  | 0.65                               | 0.45                                | 860       |
| SPUI43N-680M     | 68.0          |  | 100kHz                  | 0.55                               | 0.37                                | 1250      |
| SPUI43N-101K     | 100           |  | 100kHz                  | 0.53                               | 0.32                                | 1100      |
| SPUI43N-151K     | 150           |  | 100kHz                  | 0.45                               | 0.28                                | 1860      |
| SPUI43N-221K     | 220           |  | 100kHz                  | 0.40                               | 0.25                                | 4500      |
| SPUI43N-331K     | 330           |  | 100kHz                  | 0.36                               | 0.21                                | 5000      |
| SPUI43N-471K     | 470           |  | 100kHz                  | 0.30                               | 0.20                                | 7000      |
| SPUI43N-561K     | 560           |  | 100kHz                  | 0.25                               | 0.17                                | 7800      |
| SPUI43N-102K     | 1000          |  | 100kHz                  | 0.20                               | 0.15                                | 16000     |

## Note:

- All test data referenced to 25°C ambient.
- Testing Instrument : L/Q: HP4284A,CH11025,CH3302,CH1320 ,CH1320S LCR METER / Rdc:CH16502,Agilent33420A MICRO OHMMETER.
- Heat Rated Current (Irms) will cause the coil temperature rise approximately  $\Delta t$  of 40°C (keep 1min.).
- Saturation Current (Isat) will cause L0 to drop 30% typical. (keep quickly).
- The part temperature (ambient + temp rise) should not exceed 125°C under worst case operating conditions. Circuit design, component, PCB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.
- Special inquiries besides the above common used types can be met on your requirement.

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(6)Structure and Components

| No. | Components | Material                      |
|-----|------------|-------------------------------|
| 1   | Core       | Ferrite core.                 |
| 2   | Wire       | Polyester Wire or equivalent. |
| 3   | Ink        | Halogen-free ketone           |



(7)Reliability Tests

| No.                         | Test item                      | Performance  | Test details  |
|-----------------------------|--------------------------------|--|---|
| 1                           | Operating temperature          | -40~+125℃  |   |
| 2                           | Storage Temperature            | -10~+40℃,50~60%RH (Product without taping)         |   |
| Electrical Performance Test |                                |  |   |
| 3                           | Inductance                     | Refer to standard electrical characteristics list. | HP4284A,CH11025,CH3302,CH1320,CH1320SLCR Meter.   |
| 4                           | DCR                            |  | CH16502,Agilent33420A Micro-Ohm Meter.  |
| 5                           | Saturation Current (Isat)      | ΔL30% typical.                                     | Saturation DC Current (Isat) will cause L0 to drop ΔL(%) (keep quickly).  |
| 6                           | Heat Rated Current (Irms)      | Approximately ΔT≤40℃                               | Heat Rated Current (Irms) will cause the coil temperature rise ΔT(℃) without core loss.<br>1.Applied the allowed DC current(keep 1 min.).<br>2.Temperature measured by digital surface thermometer  |
| Reliability Test            |                                |  |   |
| 7                           | High Temperature Exposure Test | Electric specifications should be satisfied        | Temperature:125±2℃.<br>Duration:1000±12hrs.<br>Measured at room temperature after placing for 2 to 3hrs. (MIL-PRF-27)   |
| 8                           | Low Temperature Life Test      |  | Temperature:-40±2℃.<br>Duration:500±12hrs.<br>Measured at room temperature after placing for 2 to 3hrs.   |
| 9                           | Biased Humidity Test           |  | Humidity:85±3%RH.<br>Temperature:85±2℃.<br>Duration:1000±12hrs.<br>Measured at room temperature after placing for 2 to 3hrs (AEC-Q200-REV C)  |
| 10                          | Thermal shock test             |  | Condition for 1 cycle<br>Step1:-40+0 / -2℃ 15±1 min.<br>Step2:Room temperature within ≤0.2 min.<br>Step3:+125+2 / -0℃ 15±1min.<br>Number of cycles:300<br>Measured at room temperature after placing for 2 to 3 hrs.<br>(AEC-Q200-REV C)  |
| 11                          | Vibration test                 |  | Frequency: 10-2000-10Hz for 20 min.<br>Amplitude: Parts mounted within 2" from any secure point.<br>Directions and times: X, Y, Z directions for 20 min.<br>This cycle shall be performed 12 times in each of three mutually perpendicular directions(Total 12 hours).<br>(MIL-STD-202 Method 204 D Test condition B) |
| 12                          | Reflow test                    |  | Pre-heat: 150±5℃<br>Duration: 5 minutes<br>Temperature: 260±5℃, 20~40 seconds<br>(IPC/JEDEC J-STD-020C)   |
| 13                          | Solder test                    |  | Terminals should be covered by over 95% solder on visual inspection   |

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(8)Soldering and Mounting  
8-1,Soldering

Mildly activated rosin fluxes are preferred.  
The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder, chip and substrate.  
ASDI terminations are suitable for re-flow soldering systems.  
If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

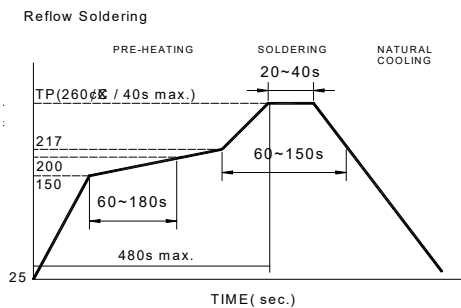
8-2,Solder re-flow

Recommended temperature profiles for re-flow soldering in Figure 1.

8-3,Soldering Iron

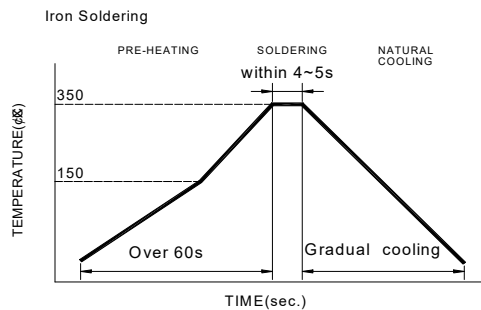
Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

- Preheat circuit and products to 150°C
- Never contact the ceramic with the iron tip
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- 355°C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 4-5sec.



Reflow times: 3 times

Fig.1



Iron Soldering times: 1 times

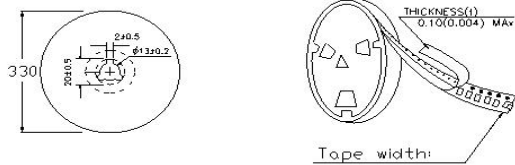
Fig.2

|         |                   |             |
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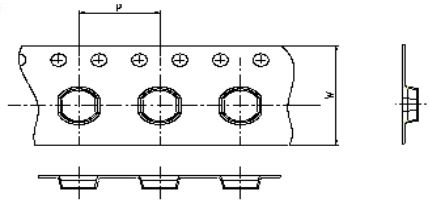
(9)Packaging Information

9-1,Reel Dimension



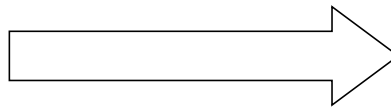
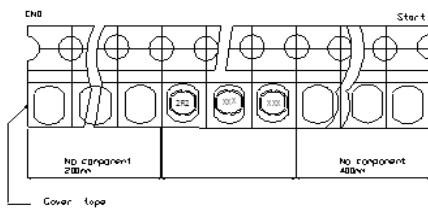
| Type     | A(mm)    | B(mm) | C(mm)    | D(mm) |
|----------|----------|-------|----------|-------|
| 13"x12mm | 12.5±0.5 | 100±2 | 13.5±0.5 | 330.0 |

9-2,Tape Dimension



|   |    |
|---|----|
| W | 12 |
| P | 8  |

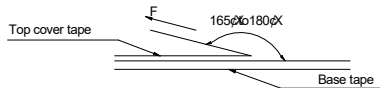
Unreeling  
Direction



9-3,Packaging Quantity

|             |      |
|-------------|------|
| SPUI        | 43   |
| Chip / Reel | 2000 |

9-4,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

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

(10)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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