



## SPECIFICATION

宏致電子股份有限公司

桃園縣中壢市東園路13號

No.13, Dongyuan Rd., Jhongli City,

Taoyuan County 320, Taiwan (R.O.C.)

TEL: +886-3-463-2808

FAX: +886-3-463-1800

SPEC. NO: PS-51205-XXXXX-XXX REVISION: 1

PRODUCT NAME: MINI ODD SATA CONN.

PRODUCT NO: 51205

PREPARED:  <b>Yuxiang</b>  DATE: <b>2012.04.18</b>	CHECKED:  <b>Sam Chen</b>  DATE: <b>2012.04.18</b>	APPROVED:  <b>Jason Chen</b>  DATE: <b>2012.04.18</b>
---	---	--



Aces P/N: **51205 series**

**TITLE: MINI ODD SATA CONN. SMT TYPE**

RELEASE DATE: 2012.04.18

REVISION: **1**

ECN No:1204389

PAGE: **2** OF **9**

1	REVISION HISTORY .....	3
2	SCOPE .....	4
3	APPLICABLE DOCUMENTS.....	4
4	REQUIREMENTS .....	4
5	PERFORMANCE .....	5
6	INFRARED REFLOW CONDITION .....	8
7	PRODUCT QUALIFICATION AND TEST SEQUENCE.....	9



Aces P/N: **51205 series**

TITLE: **MINI ODD SATA CONN. SMT TYPE**

RELEASE DATE: 2012.04.18

REVISION: **1**

ECN No:1204389

PAGE: **3** OF **9**

## 1 Revision History

Rev.	ECN #	Revision Description	Approved	Date
1	ECN-1204389	RELEASE	Yuxiang	2012.04.19

TITLE: **MINI ODD SATA CONN. SMT TYPE**

RELEASE DATE: 2012.04.18

REVISION: **1**

ECN No:1204389

PAGE: **4** OF **9**

## 2 SCOPE

This specification covers performance, tests and quality requirements for the **MINI ODD SATA CONN. SERIES** products.

## 3 APPLICABLE DOCUMENTS

EIA-364      ELECTRONICS INDUSTRIES ASSOCIATION

## 4 REQUIREMENTS

### 4.1 Design and Construction

Connector shall be of the design, construction and physical dimensions specified on the applicable sales drawing. Aces' s P/N: **51205series**

### 4.2 Materials and Finish

- 4.2.1 Contact: High performance copper alloy (**Phosphor Bronze**)  
Plated:    (a) Finish: **See order information**  
              (b) Under plate: **Nickel-plated all over**  
              (c) Solder tail: **Gold flash on solder tail**
- 4.2.2 Housing: **Thermoplastic, High temp. UL94V-0, Halogen Free**  
Color: **Black**
- 4.2.3 Shell: High performance copper alloy (**Phosphor Bronze**)  
Plated:    (a) Finish: **Matt tin plated all over**  
              (b) Under plate: **Nickel-plated all over**

### 4.3 Ratings

- 4.3.1 Voltage: **15 Volts AC**
- 4.3.2 Current: **DC 1.0 Amperes**
- 4.3.3 Operating Temperature : **-35°C to +85°C**

**TITLE: MINI ODD SATA CONN. SMT TYPE**

RELEASE DATE: 2012.04.18

REVISION: **1**

ECN No:1204389

PAGE: **5** OF **9**

## 5 Performance

### 5.1. Test Requirements and Procedures Summary

<b>ELECTRICAL</b>		
<b>Item</b>	<b>Requirement</b>	<b>Standard</b>
Examination of Product	Product shall meet requirements of applicable product drawing and specification.	Visual, dimensional and functional per applicable quality inspection plan.
Low-signal Level Contact Resistance	<b>30 m <math>\Omega</math></b> Max.(initial)per contact <b>15 m <math>\Omega</math></b> Max. Change allowed	Mate connectors, measure by dry circuit, <b>20mV</b> Max., <b>100mA</b> Max. (EIA-364-23)
Insulation Resistance	<b>100 M <math>\Omega</math></b> Min.	Unmated connectors, apply <b>250 V</b> DC between adjacent terminals. (EIA-364-21)
Dielectric Withstanding Voltage	No discharge, flashover or breakdown.	Test between adjacent contacts of unmated connectors. <b>AC 100 VAC</b> Min. at sea level for <b>1</b> minute. Current leakage: 2 mA max. (EIA-364-20)
Mated connector Impedance (Signal Port)	<b>100 <math>\Omega</math> <math>\pm</math>15%</b>	<ol style="list-style-type: none"> <li>Set the Time Domain Reflectometer (TDR) pulse in differential mode with a positive going (V+) and a negative going pulse (V-). Define a reflected differential trace: <math>V_{diff}=V+ - V-</math></li> <li>With the TDR connected to the risetime reference trace, verify an input risetime of 70 ps (measured 20% - 80% <math>V_p</math>). Filtering may be used to slow the system down (see NOTE 2)</li> <li>Connect the TDR to the sample measurement traces. Calibrate the instrument and system (see NOTE 3)</li> <li>Measure and record the maximum and minimum values of the near end connector impedance.</li> </ol>

**TITLE: MINI ODD SATA CONN. SMT TYPE**

RELEASE DATE: 2012.04.18

REVISION: **1**

ECN No:1204389

PAGE: **6** OF **9**

Temperature rise	<b>30°C</b> Max. Change allowed	<ol style="list-style-type: none"> <li>1. Mate connector: measure the temperature rise at rated current after: <b>1.5 A minimum</b> Power contact.</li> <li>2. The temperature rise above ambient shall not exceed 30°C The ambient condition is still air at 25°C</li> <li>3. Wire power pins P1, P2, P8 and P9 in parallel for power</li> <li>4. Wire ground pins P4, P5, P6, P10 and P12 in parallel for return</li> <li>5. Supply 6A total DC current to the power pins in parallel, returning from the parallel ground pins (P4, P5, P6, P10 and P12)</li> </ol>
------------------	---------------------------------	---

**NOTES**

1. Time domain measurement equipment allows for delay adjustment of the pulses so launch times can be synchronized. Frequency domain equipment will require the use of phase-matched fixturing. The fixturing skew should be verified to be < 1ps on a TDR.
2. The system rise time is to be set via equipment filtering techniques. The filter risetime is significantly close to stimulus risetime. Therefore the filter programmed equals the square root of ( $t_{r(\text{observed})}$ ) squared – ( $t_{r(\text{stimulus})}$ )squared. After filtering, verify the risetime is achieved using the risetime reference traces on the PCB fixture.
3. Calibrate the system by substituting either precision 50-ohm loads or precision air lines (also terminated in 50 ohm loads) for the test fixture. This places the calibration plane directly at the input interface of the test fixture.

**TITLE: MINI ODD SATA CONN. SMT TYPE**

RELEASE DATE: 2012.04.18

REVISION: 1

ECN No:1204389

PAGE: **7** OF **9**

<b>MECHANICAL</b>		
<b>Item</b>	<b>Requirement</b>	<b>Standard</b>
Durability	30 cycles.	The sample should be mounted in the tester and fully mated and unmated the number of cycles specified at the rate of $10 \pm 3$ mm/min. (200 cycles per hour max.) (EIA-364-09)
Insertion Forces (Mating Force)	40N(4.0Kgf) Max.	Measure the force necessary to mate connector assemblies at a maximum rate of 12.5mm per minute. (EIA-364-13)
Removal Force (Un-mating Force)	3N(0.3Kgf) Min.	Measure the force necessary to Un-mate connector assemblies at a maximum rate of 12.5mm per minute. (EIA-364-13)
Contact retention force	1.96N(0.2Kgf)Min	Measure the force necessary to Un-mate connector assemblies at a maximum rate of 12.5mm per minute. (EIA-364-29)
Vibration	1 $\mu$ s Max.	The electrical load condition shall be 100 mA maximum for all contacts. Subject to a simple harmonic motion having amplitude of 0.76mm(1.52mm maximum total excursion) in frequency between the limits of 10 and 55 Hz. The entire 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 2 hours in each of three mutually perpendicular directions. (EIA-364-28, test condition I)
Shock (Mechanical)	1 $\mu$ s Max.	Subject mated connectors to 30 G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction shall be applied along the three mutually perpendicular axes of the test specimen (18 shocks). The electrical load condition shall be DC 100mA maximum for all contacts. (EIA-364-27, test condition H)

**TITLE: MINI ODD SATA CONN. SMT TYPE**

RELEASE DATE: 2012.04.18

REVISION: 1

ECN No:1204389

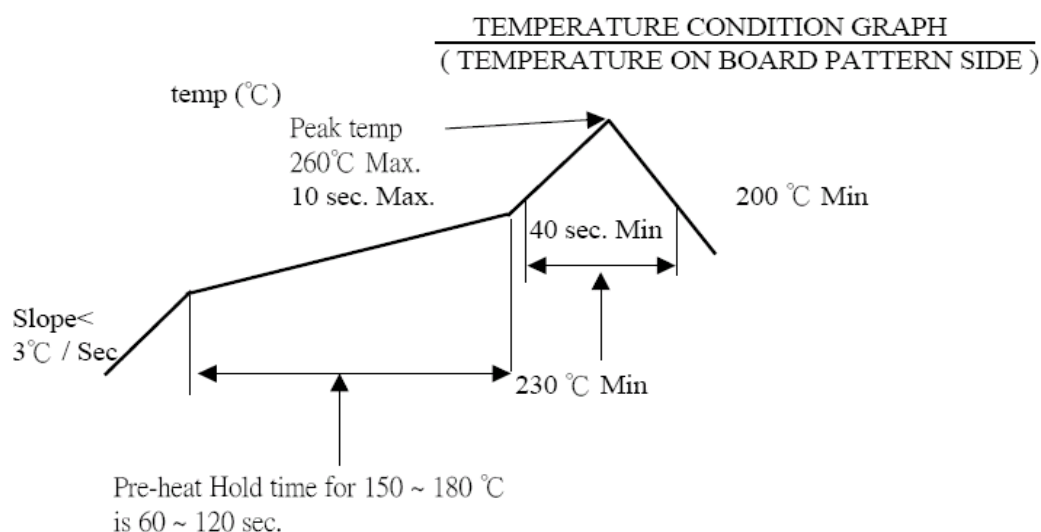
PAGE: 8 OF 9

ENVIRONMENTAL		
Item	Requirement	Standard
Resistance to <b>Hand</b> Soldering Heat	Excessive pressure shall not be applied to the terminals. See Product Qualification and Test Sequence Group 8	Soldering iron : $350 \pm 10^{\circ}\text{C}$ Duration : 3~4 sec.
Thermal Shock	See Product Qualification and Test Sequence Group 4	Mate module and subject to follow condition for 5 cycles. 1 cycles: -40 $\pm 0/-3^{\circ}\text{C}$ , 30 minutes +85 $\pm 3/-0^{\circ}\text{C}$ , 30 minutes (EIA-364-32)
Humidity	See Product Qualification and Test Sequence Group 4	Mated Connector 40 $^{\circ}\text{C}$ , 90~95% RH, Reefer to Method II. (EIA-364-31, Test condition A)
Temperature life	See Product Qualification and Test Sequence Group 5	Subject mated connectors to temperature life at 85 $^{\circ}\text{C}$ for 96 hours. Measure Signal. (EIA-364-17, Test condition III Method A)
Solder ability	Solder able area shall have minimum of 95% solder coverage.	Subject the test area of contacts into the flux for 5-10 sec. And then into solder bath, Temperature at $245 \pm 5^{\circ}\text{C}$ , for 4-5 sec. (EIA-364-52)

**Note 1.** Flowing Mixed Gas shall be conducted by customer request.

## 6 INFRARED REFLOW CONDITION

### 6.1. Lead-free Process





**TITLE: MINI ODD SATA CONN. SMT TYPE**

RELEASE DATE: 2012.04.18

REVISION: 1

ECN No:1204389

PAGE: 9 OF 9

## 7 PRODUCT QUALIFICATION AND TEST SEQUENCE

Test or Examination	Test Group										
	1	2	3	4	5	6	7	8	9	10	11
	Test Sequence										
Examination of Product		1、9		1、7	1、4						
Low-signal Level Contact Resistance		3、8	1、4	2、10	2、5			1、3			
Insulation Resistance				3、9							
Dielectric Withstanding Voltage				4、8							
Temperature rise	1										
Insertion Forces		2、7									
Removal Forces		4、6									
Durability		5									
Vibration			2								
Shock (Mechanical)			3								
Thermal Shock				5							
Humidity				6							
Temperature life					3						
Solder ability							1				
Resistance to Soldering Heat								2			
Impedance (Signal Port)						1					
Sample Size	2	4	4	4	4	4	4	2			