



SPECIFICATION

宏致電子有限公司

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-50013-XXXXX-XXX REVISION: C

PRODUCT NAME: 0.50mm PITCH BTB SMT S/T D/R CONNECTOR

PRODUCT NO: 50013-XXXXX-XXX 50014-XXXXX-XXX

PREPARED: TANGENHUI DATE: 2014/01/18	CHECKED: DAVID DATE: 2014/01/18	APPROVED: SIMON DATE: 2014/01/18
---	--	---



TITLE: 0.50mm PITCH BTB SMT S/T D/R CONNECTOR

RELEASE DATE: 2014/01/18

REVISION: C

ECN No: [ECN-1401255](#)

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.....	7
7	CONNECTOR USAGE.....	8
8	PRODUCT QUALIFICATION AND TEST SEQUENCE.....	9



Aces P/N: **50013 series, 50014 series**

TITLE: 0.50mm PITCH BTB SMT S/T D/R CONNECTOR

RELEASE DATE: 2014/01/18

REVISION: C

ECN No: [ECN-1401255](#)

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

1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
O	ECN-0812036	NEW SPEC	JASON	2008/12/06
A	ECN-1106447	MODIFY MATING FORCE FOR 22~40PINS	XHX	2011/06/29
B	ECN-1112380	MODIFY PITCH 0.4mm TO 0.5mm	XHX	2011/12/21
C	ECN-1401255	ADD WORKING VOLTAGE	TANGENHUI	2014/01/18

TITLE: 0.50mm PITCH BTB SMT S/T D/R CONNECTOR

RELEASE DATE: 2014/01/18

REVISION: C

ECN No: [ECN-1401255](#)PAGE: **4** OF **9**

2 SCOPE

This specification covers performance, tests and quality requirements for [0.50mm pitch BTB connector](#). ACES P/N: [50013 Series](#); [50014 Series](#).

3 APPLICABLE DOCUMENTS

EIA-364: ELECTRONICS INDUSTRIES ASSOCIATION

4 REQUIREMENTS

4.1 Design and Construction

- 4.1.1 Product shall be of design, construction and physical dimensions specified on applicable product drawing.
- 4.1.2 All materials conform to R.o.H.S. and the standard depends on TQ-WI-140101.

4.2 Materials and Finish

- 4.2.1 Contact: High performance copper alloy
Finish: (a) Contact Area: [Gold plated based on order information](#)
(b) Under plate: [Nickel-plated all over](#)
- 4.2.2 Housing: Thermoplastic High Temp., UL94V-0

4.3 Ratings

- 4.3.1 [Working Voltage Less than 36 Volts AC \(per pin\)](#)
- 4.3.2 Voltage: [50 Volts AC \(per pin\)](#)
- 4.3.3 Current: [0.5 Amperes \(per pin\)](#)
- 4.3.4 Operating Temperature : [-40°C to +80°C](#)

TITLE: 0.50mm PITCH BTB SMT S/T D/R CONNECTOR

RELEASE DATE: 2014/01/18

REVISION: C

ECN No: **ECN-1401255**

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

5 Performance

5.1. Test Requirements and Procedures Summary

Item	Requirement	Standard				
Examination of Product	Product shall meet requirements of applicable product drawing and specification.	Visual, dimensional and functional per applicable quality inspection plan.				
ELECTRICAL						
Item	Requirement	Standard				
Low Level Contact Resistance	55 m Ω Max.(initial)per contact ΔR 10 m Ω Max.	Mate connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23)				
Insulation Resistance	500 M Ω Min.	Unmated connectors, apply 500 V DC between adjacent terminals. (EIA-364-21)				
Dielectric Withstanding Voltage	No discharge, flashover or breakdown. Current leakage: 1 mA max.	300 VAC Min. at sea level for 1 minute Test between adjacent contacts of unmated connectors. (EIA-364-20)				
Temperature rise	30°C Max. Change allowed	Mate connector: measure the temperature rise at rated current until temperature stable. The ambient condition is still air at 25°C (EIA-364-70,METHOD1,CONDITION1)				
MECHANICAL						
Item	Requirement	Standard				
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 25.4 ± 3mm/min. (EIA-364-09)				
Mating / Unmating Forces	Unit: Kg				Operation Speed : 25.4 ± 3 mm/minute. Measure the force required to mate/unmate connector. (EIA-364-13)	
	Pins	Mating Force(Max)		Unmating Force(Min)		
		Initial	Final	Initial		Final
	<20	2.0	1.0	0.2		0.2
	22~40	2.0	1.5	0.4		0.3
	42~80	5.0	4.0	0.5		0.4
82~120	5.0	4.0	0.8	0.6		
122~200	8.0	6.0	0.8	0.6		
Terminal / Housing Retention Force	0.2kgf MIN.	Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute.				



Aces P/N: **50013 series, 50014 series**

TITLE: 0.50mm PITCH BTB SMT S/T D/R CONNECTOR

RELEASE DATE: 2014/01/18

REVISION: C

ECN No: [ECN-1401255](#)

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

		On the terminal assembled in the housing.
Fitting Nail /Housing Retention Force	0.2kgf MIN.	Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute. On the fitting nail assembled in the housing.
Vibration	1 μs 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 Condition I)
Shock (Mechanical)	1 μs Max.	Subject mated connectors to 50 G's (peak value) 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 100mA maximum for all contacts. (EIA-364-27, test condition A)

ENVIRONMENTAL

Item	Requirement	Standard
Resistance to Reflow Soldering Heat	See Product Qualification and Test Sequence Group 9 (Lead Free)	Pre Heat : 150°C~180°C, 60~120sec. Heat : 230°C Min., 40sec Min. Peak Temp. : 260°C Max, 10sec Max.
Thermal Shock	See Product Qualification and Test Sequence Group 4	Mate module and subject to follow condition for 5 cycles. 1 cycles: -40 +0/-3 °C, 30 minutes +85 +3/-0 °C, 30 minutes (EIA-364-32, test condition A)
Humidity	See Product Qualification and Test Sequence Group 4	Mated Connector 40°C, 90~95% RH, 96 hours. (EIA-364-31,Condition A, Method II)
Temperature life	See Product Qualification and Test Sequence Group 5	Subject mated connectors to temperature life at 85°C for 96

TITLE: 0.50mm PITCH BTB SMT S/T D/R CONNECTOR

RELEASE DATE: 2014/01/18

REVISION: C

ECN No: [ECN-1401255](#)

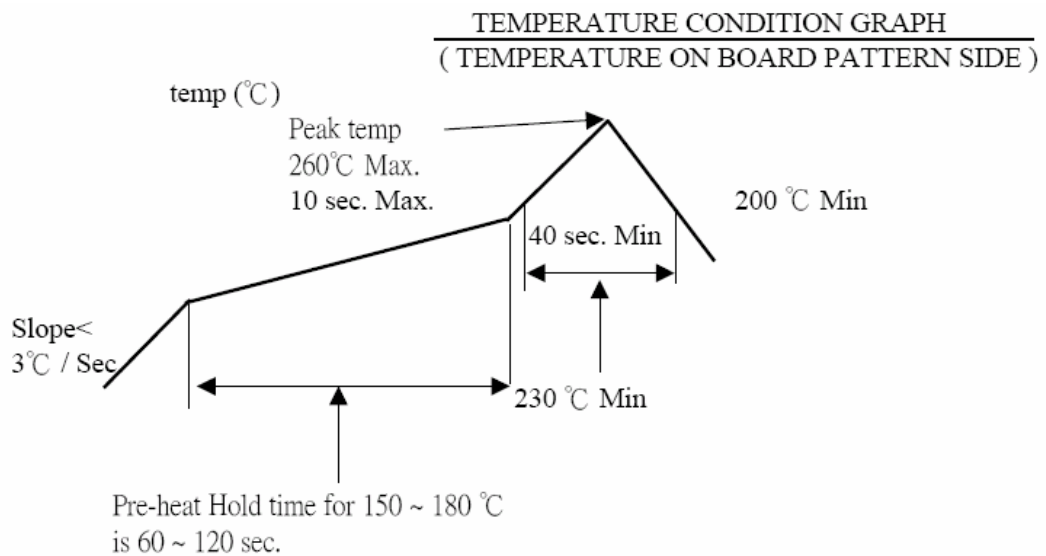
PAGE: **7** OF **9**

		hours. (EIA-364-17, Test condition A)
Salt Spray	See Product Qualification and Test Sequence Group 6	Subject mated/unmated connectors to 5% salt-solution concentration, 35°C for 8 hours . (EIA-364-26, Test condition B)
Solder ability	Solder able area shall have minimum of 95% solder coverage.	And then into solder bath, Temperature at 245 ±5°C , for 4-5 sec . (EIA-364-52)

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

6 INFRARED REFLOW CONDITION

6.1. Lead-free Process



TITLE: 0.50mm PITCH BTB SMT S/T D/R CONNECTOR

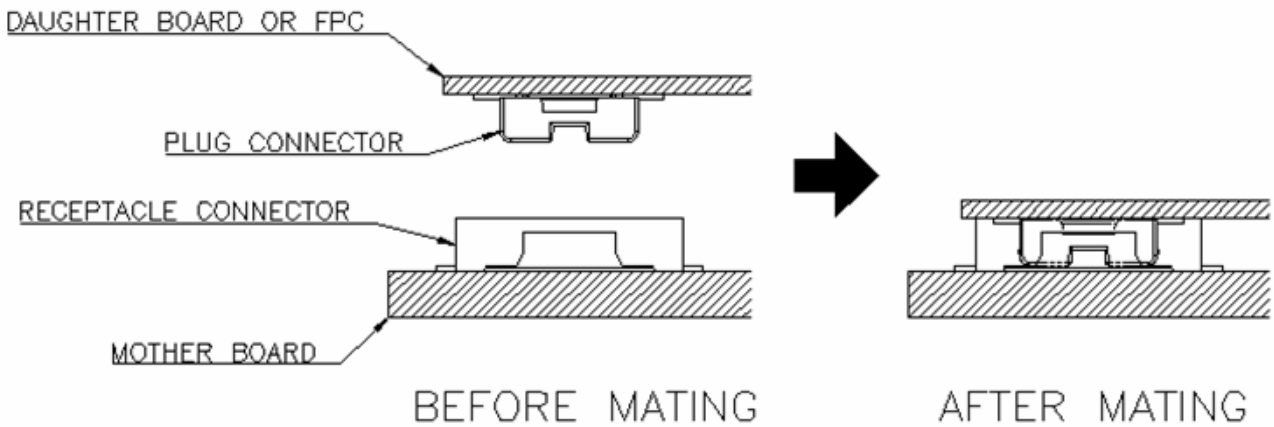
RELEASE DATE: 2014/01/18

REVISION: C

ECN No: [ECN-1401255](#)

PAGE: **8** OF **9**

7 CONNECTOR USAGE



TITLE: 0.50mm PITCH BTB SMT S/T D/R CONNECTOR

RELEASE DATE: 2014/01/18

REVISION: C

ECN No: [ECN-1401255](#)

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

8 PRODUCT QUALIFICATION AND TEST SEQUENCE

Test or Examination	Test Group									
	1	2	3	4	5	6	7	8	9	
	Test Sequence									
Examination of Product				1、7	1、6	1、4			1	
Low Level Contact Resistance		1、5	1、4	2、10	2、9	2、5			3	
Insulation Resistance				3、9	3、8					
Dielectric Withstanding Voltage				4、8	4、7					
Mating / Unmating Forces		2、4								
Temperature rise	1									
Durability		3								
Vibration			2							
Shock (Mechanical)			3							
Thermal Shock				5						
Humidity				6						
Temperature life					5					
Salt Spray						3				
Solder ability							1			
Terminal / Housing Retention Force								1		
Fitting Nail /Housing Retention Force								2		
Resistance to Soldering Heat									2	
Sample Size	2	4	4	4	4	4	2	4	4	