SPEC. NO.: PS-50021-XXXXX-XXX **REVISION:** G

PRODUCT NAME: 0.5mm PITCH BTB SMT S/T D/R CONNECTOR

PRODUCT NO: 50021 Series; 50023 Series; 50024 Series; 50025 Series; 50026 Series; 50027 Series;

PREPARED:	CHECKED:	APPROVED:
DATE: **2020/03/19**	DATE: **2020/03/19**	DATE: **2020/03/19**

1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
O	ECN-0812036	NEW SPEC	JASON	2008/12/06
A	ECN-1207049	DELETE 50028 SEREIS	XHX	2012/07/03
B	ECN-1305063	DELETE 50022 SEREIS	XIAOXIONG	2013/05/07
C	ECN-1401255	ADD WORKING VOLTAGE	TANGENHUI	2014/01/18
D	ECN-1404297	MODIFY Mating / Unmating Forces	FENGXIAO	2014/04/18
E	ECN-1612595	MODIFY Mating / Unmating Forces	LLJ	2016/12/28
F	ECN-1811244	MODIFY Operating Temperature (+80℃ to +85℃)	Huang,Shun Sen	2018/11/12
G	ECN-2003202	MODIFY Mating / Unmating Forces	Leishanjun	2020/03/19

2 SCOPE

This specification covers performance, tests and quality requirements for 0.50mm pitch BTB connector.

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 (Phosphor Bronze)
Finish: (a) Contact Area: Refer to the drawing.
(b) Under plate: Refer to the drawing.
(c) Solder area: Refer to the drawing.
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℃ to +85℃

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 △R 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℃ Max. Change allowed	Mate connector: measure the temperature rise at rated current until temperature stable. The ambient condition is still air at 25℃ (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)

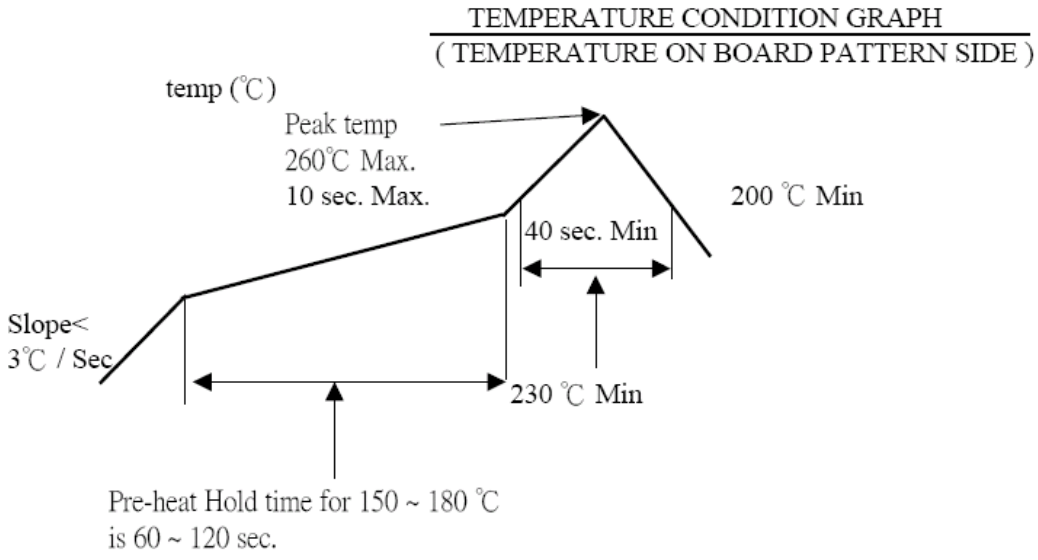
<table>
<tr>
<td>Mating / Unmating Forces</td>
<td>Unit: Kg
<table>
<tr><th rowspan="2">Pins</th><th colspan="2">Mating Force(Max)</th><th colspan="2">Unmating Force(Min)</th></tr>
<tr><th>Initial</th><th>Final</th><th>Initial</th><th>Final</th></tr>
<tr><td><20</td><td>2.0</td><td>2.0</td><td>0.2</td><td>0.2</td></tr>
<tr><td>22~40</td><td>3.0</td><td>3.0</td><td>0.3</td><td>0.2</td></tr>
<tr><td>42~60</td><td>4.0</td><td>4.0</td><td>0.5</td><td>0.4</td></tr>
<tr><td>62~80</td><td>5.0</td><td>5.0</td><td>0.6</td><td>0.5</td></tr>
<tr><td>82~100</td><td>6.0</td><td>6.0</td><td>0.8</td><td>0.6</td></tr>
<tr><td>102~120</td><td>7.0</td><td>7.0</td><td>1.0</td><td>0.8</td></tr>
<tr><td>122~140</td><td>8.0</td><td>8.0</td><td>1.2</td><td>1.0</td></tr>
<tr><td>142~160</td><td>9.0</td><td>9.0</td><td>1.4</td><td>1.2</td></tr>
<tr><td>162~180</td><td>10.0</td><td>10.0</td><td>1.6</td><td>1.4</td></tr>
<tr><td>182~200</td><td>11.0</td><td>11.0</td><td>1.8</td><td>1.6</td></tr>
</table></td>
<td>Operation Speed：
25.4 ± 3 mm/minute.
Measure the force required to mate/Unmate connector.
(EIA-364-13)</td>
</tr>
<tr>
<td>Contact
Retention Force</td>
<td>0.2kgf MIN.</td>
<td>Operation Speed：
25.4 ± 3 mm/minute.
Measure the contact retention force with Tensile strength tester.</td>
</tr>
<tr>
<td>Fitting Nail /Housing
Retention Force</td>
<td>0.2kgf MIN.</td>
<td>Operation Speed：
25.4 ± 3 mm/minute.
Measure the contact retention force with tester.</td>
</tr>
<tr>
<td>Vibration</td>
<td>1 μs Max.</td>
<td>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)</td>
</tr>
<tr>
<td>Shock (Mechanical)</td>
<td>1 μs Max.</td>
<td>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)</td>
</tr>
</table>

ENVIRONMENTAL		
Item	**Requirement**	**Standard**
Resistance to **Reflow** Soldering Heat	See Product Qualification and Test Sequence Group 9 **(Lead Free)**	Pre Heat：150℃~180℃, 60~120sec. Heat：230℃ Min., 40sec Min. Peak Temp.：260℃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: -55 +0/-3 ℃, 30 minutes +85 +3/-0 ℃, 30 minutes (EIA-364-32, test condition I)
Humidity	See Product Qualification and Test Sequence Group 4	Mated Connector 40℃, 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℃ for 96 hours. (EIA-364-17, Test condition A)
Salt Spray (Only For Gold Plating)	See Product Qualification and Test Sequence Group 6	Subject mated/unmated connectors to 5% salt-solution concentration, 35℃ (I) Gold flash for 8 hours (II) Gold plating 5 u" or over 5 u"for 96 hours. (EIA-364-26)
Solder ability	Tin plating: Solder able area shall have minimum of 95% solder coverage. Gold plating: Solder able area shall have minimum of 75% solder coverage	And then into solder bath, Temperature at 245 ±5℃, for 4-5 sec. (EIA-364-52)

Note. Flowing Mixed Gas shell be conduct by customer request.

6 INFRARED REFLOW CONDITION

6.1. Lead-free Process



7 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	