0.5mm Fine Stacking

Hermaphroditic Type BTB Connector

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for 0.5mm pitch fine stacking hermaphroditic type BTB connector. Applicable product descriptions and part numbers are as shown in product drawing.

1.2. Qualification

When tests are performed on the subject product line, procedures specified shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

Tyco Electronics Documents:

109-197: Test Specification (AMP Test Specifications vs. EIA and IEC Test Methods)

114-115008: Application specification

501-115065: Test report

3. REQUIREMENTS

3.1 Design and Construction

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

3.2 Materials

Materials used in the construction of this product shall be as specified on the applicable product drawing.

3.4 Ratings

A. Voltage: 30 Volts AC / DC

B. Current Rating: 0.5 A / Pin Max.

C. Temperature Rating: -40 to 125°C

3.5 Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements.

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

3.6 Test Requirements and Procedures Summary

	Test Items	Requirements	Procedures
3.6.1	Confirmation of product	Product shall be conforming to the requirements of applicable product drawing and Application Specification.	Visually, dimensionally and functionally inspected per applicable quality inspection plan.
	Electrical Requirements		
3.6.2	Current Carrying Capacity	0.5A /Pin	Stabilize at a single current level for 1 hour after 3 consecutive readings at 5 minute intervals are within 1/C. Spec. EIA 364-70 Method 2
3.6.3	Termination Resistance (Low Level)	30 mΩ max. (Initial) 40 mΩ max. (Final)	Subject mated contacts assembled in housing to closed circuit current of 100mA max. at open circuit voltage of 20 mV max.. See Figure 1. Spec. EIA 364-6
3.6.4	Dielectric Withstanding Voltage	Neither creeping discharge nor flashover shall occur. Current leakage: 1 mA max.	500 VAC for 1 minute. Test between adjacent circuits of mated/unmated connectors. Spec. EIA 364-20
3.6.5	Insulation Resistance.	500 MΩ (Initial) 500 MΩ (Final)	Impressed Voltage 500 VDC. Test between adjacent circuits of unmated connectors. Spec. EIA 364-21
	Physical Requirements		
3.6.6	Contact Retention Force	50gms min per contact	A load normal to the solder tail for a minimum of 5 contacts per row of an unmated connector in speed of less than 0.2 inches per minute Spec. EIA 364-29
3.6.7	Contact Normal Force	25gms min per contact	Soldered but not mated Spec. EIA 364-04

3.6.8	Vibration (Frequency)	No electrical discontinuity greater than 0.1 micro-sec shall occur.	Subject mated connectors to 10-55-10 Hz transverses in 1 minute at 1.52 mm amplitude with 100mA applied. Duration: 2 hours each for 3 mutually perpendicular planes. Spec. EIA 364-28 Test Condition I
3.6.9	Physical Shock	No electrical discontinuity greater than 0.1 micro-sec shall occur.	Accelerated Velocity: 50G Waveform: Saw tooth shock pulse Duration: 11 m sec Velocity Change: 11.3 m/s Number of Drops: 18 Drops Spec. EIA 364-27 Method A
3.6.10	Connector Mating Force	68 gf max. per contact	Operation Speed: 25 mm/min. Required connectors were mounted to PCB. Spec. EIA 364-13
3.6.11	Connector Un-mating Force	10 gf min. per contact 30 gf Max. per contact	Operation Speed: 25 mm/min. Required connectors were mounted to PCB. Spec. EIA 364-13
3.6.12	Durability (Repeated Mating / Un-mating using the same connector)	40 mΩ max. (Final)	Operation Speed: 25 mm/min No. of cycles: 50 cycles Spec. Spec. EIA 364-9
Environmental Requirements			
3.6.13	Solderability	Wet Solder Coverage: 95 % min.	Solder Temp.: 250 ⬅ 2^0C Immersion Duration: 3+/-0.5 secs
3.6.14	Resistance to Reflow Soldering Heat (SMT Type)	Housing shall be free from deformation and fusion.	Test Connector on PC Board. Pre-Heat: 100~150^{0}C; 60 sec min. Heat: 210^{0}C MIN; 30 sec max. Peak Temperature: 250 ^{0}C max 10 sec. Spec. EIA 364-56

3.6.15	Thermal Shock	40 mΩ max. (Final)	-40^{0}C / 30 min.; +125^{0}C / 30 min. Making this a cycle, repeat 5 cycles. Spec. EIA 364-32
3.6.16	Humidity-temperature cycling.	Insulation Resistance = 100 MΩ min. (Final) 40 mΩ max. (Final)	Mated connector. Temp: 25~65^{0}C, R.H.: 90~95% 96 Hours Spec. EIA 364-31 Method II
3.6.17	Corrosion Salt	40 mΩ max. (Final)	Connector exposed to 5% salt water spray Duration: 48 hrs. Spec. EIA 364-26 Condition B
3.6.18	Mixed Flowing Gas	40 mΩ max. (Final)	Class: IIa 10 days unmated followed by 10 days mated EIA364-65
3.6.19	Temperature Life (Heat Aging)	40 mΩ max. (Final)	Temp.: +125 ^{0}C, Duration : 21 days EIA364-17

3.7 Product Qualification Test Sequence

Test Items	Test Group										
	1	2	3	4	5	6	7	8	9	10	11
	Test Sequence (a)										
Confirmation of product	1,6	1,9	1,4	1,5	1,5	1,5	1,6	1,5	1,6	1,6	1,3
Low Level Contact Resistance		2,8		2,4	2,4	2,4	2,5	2,4	2,5	2,5	
Dielectric Strength	2										
Insulation Resistance	3						4				
Vibration (Low Frequency)				3							
Physical Shock					3						
Connector Mating Force		3,7									
Connector Un-mating Force		4,6									
Durability (Repeated Mating / Un-mating)		5									
Connector Normal Force			2							4	
Contact Retention Force			3								
Reflow Soldering Heat (SMT Type; Lead-Free)	4										
Thermal Shock						3					
Humidity-temperature cycling							3				
Salt Spray								3			
Mixed Flowing Gas									3		
Temperature Life										3	
Solderability											2

Notes:

(a) Discontinuities shall not take place in this test group, during tests.

4. OPERATION GUIDLINE

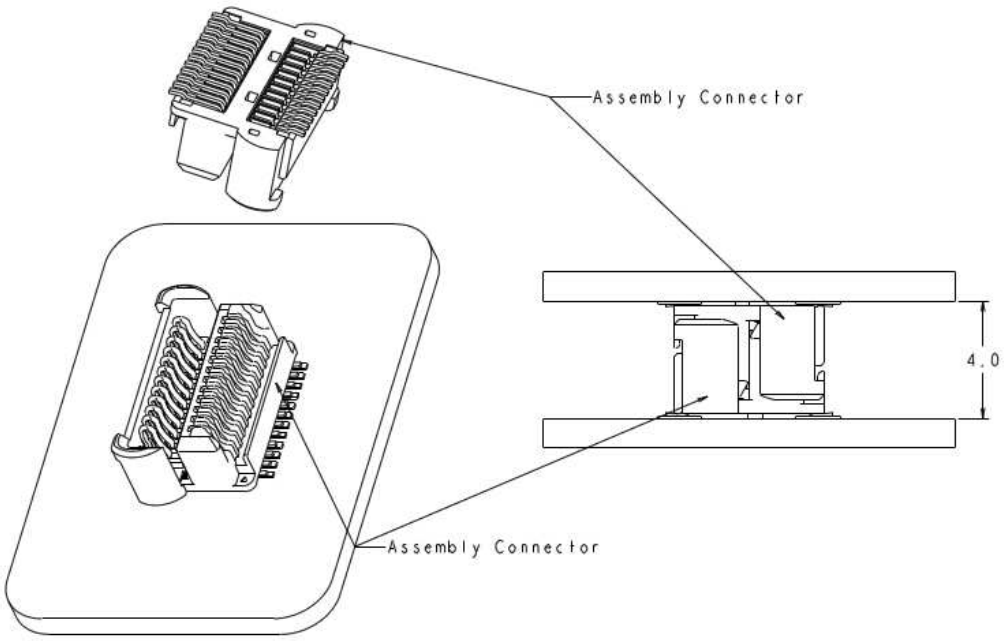


Fig 1 Mated with same connector

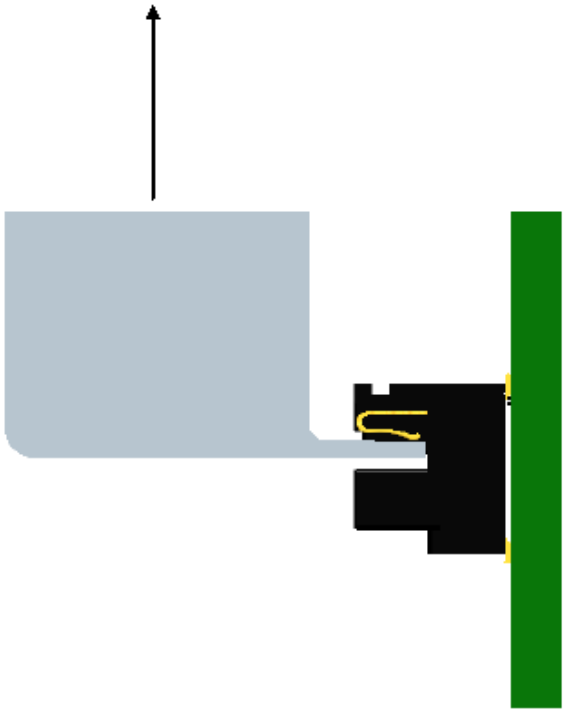


Fig 2 Normal force measurement

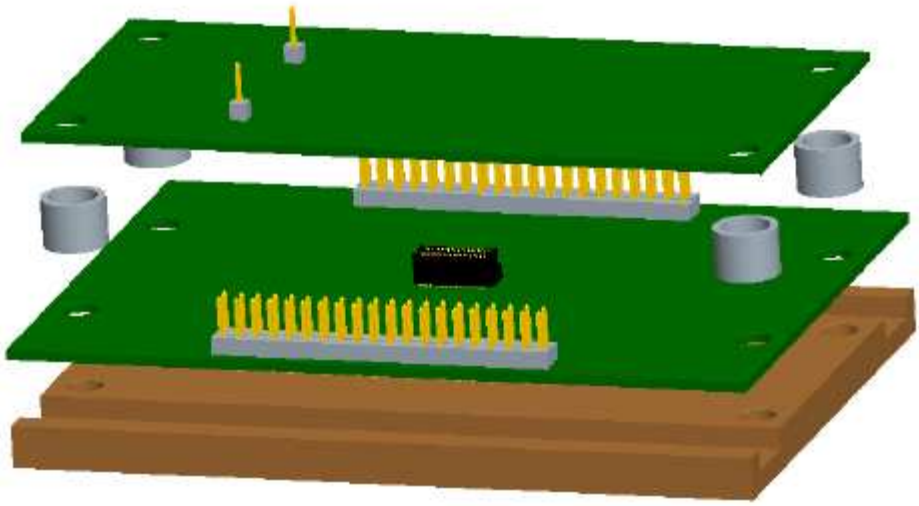
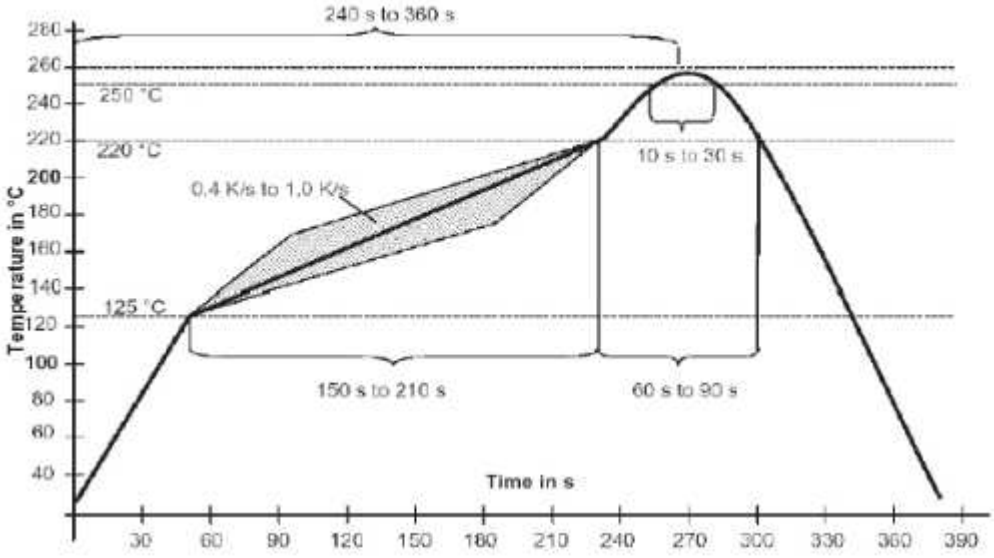


Fig 3 LLCR, Shock & vibration testing



Preheat	125 °C to 220 °C 150 s to 210 s @ 0.4 K/s to 1.0 K/s
Time at T> 217 °C	60 s to 90 s
Peak temperature	260 °C -5/+0 °C
Peaktime	10 s to 30 s (≥ 250 °C)
Cooling rate	≤ 6 K/s
Time from 25 °C to peak	240 s to 360 s

Fig 4 Recommended reflow profile