

PRODUCT SPECIFICATION

PS-7772 Rev. AX2

Title: Swift Connector

Product Specification

Part Number: G99 series

Swift Connector,

Description: 0.6 Pitch, Vertical, SMT Type

Revisions Control

Rev.	ECN Number	Originator	Approval	Issue Date
AX1	NE-XXXXX	IH.Lee		11.11.2019
AX2	NE-XXXXX	IH.Lee		03.13.2020

Product Specification Origination

Originator:	Date:	Checked by:	Date:	Approved by:	Date:
IH.Lee	03.13.2020				

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1. Scope

This document defines the detailed requirements for the Amphenol [Swift](#) connector to insure functionality and reliability.

2. Applicable documents

- 2.1 EIA-364 Standard Test methods for electrical connectors
- 2.2 UL-STD-94 Tests for flammability of plastic materials for parts in devices and appliances.

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 Material and finish

3.2.1 Housing

- High temperature thermoplastic, UL94V-0
- Color: Black

3.2.2 Contact

- Copper Alloy
- Contact area: Selected Gold plating
- Solder area: Matte Tin plating
- Under-plating: Nickel plating overall

3.2.3 Shell

- Stainless steel
- Solder area: Electroless Nickel plating overall

3.3 Rating

- Current: 0.5 A per contact
- Voltage: 30 VDC per contact
- Temperature:
 - Operating: -40°C~ 85°C
 - Non-operating: -55°C~ 85°C
- Durability
 - 15u" Au: 100 cycles
 - 30u" Au: 250 cycles

PRODUCT SPECIFICATION**PS-7772 Rev. AX2****4. Performance and testing****4.1 Test requirements and procedures summary**

Test	Test procedure	Test criteria	
Visual & Dimensional inspection	EIA-364-18 Visual, dimensional and functional inspection.	Must meet the minimum requirements specified by product drawing.	
Electrical:			
Low level Contact Resistance	EIA-364-23 Current: 100 mA maximum Voltage: 20 mV maximum	Initial: 20 milliohms maximum After test: $\Delta R=20$ milliohms maximum	
Dielectric Withstanding Voltage	EIA-364-20 Apply a voltage between adjacent terminals. Voltage: 300 VDC Duration: 1 minute	No defect or breakdown No disruptive discharge No leakage current in excess of 0.5mA	
Insulation resistance	EIA-364-21 Apply a voltage between adjacent terminals. Voltage: 100 VDC	1000 Megaohm minimum	
Temperature Rise (via current cycle)	EIA-364-70 Measure the temperature rise at the rated current. Ambient temperature: 25°C	30°C maximum change from initial	
High Speed Electrical Requirements:			
Line Rate	Insertion Loss	Return Loss	Crosstalk
PCIe 5	-1.5 dB at 16GHz	-10 dB at 16GHz	-40 dB at 16GHz
Mechanical:			
Durability (preconditioning)	EIA-364-09 5 mating/un-mating cycles	No evidence of physical damage.	
Durability	EIA-364-09 Cycle rate: 500±50 per hour Number of cycles: 15u"Au:100 cycles 30u"Au:250 cycles	No evidence of physical damage.	
Mating Force	EIA-364-13 Rate: 25.4 mm/minute	0.4N Max./per pin	

PRODUCT SPECIFICATION**PS-7772 Rev. AX2**

Un-mating Force	EIA-364-13 Rate: 25.4 mm/minute	0.04N Min./per pin
Active Latch Pull out force	EIA-364-13 Rate: 25.4 mm/minute	50 N minimum
Wrenching strength (W/ mated Cable- Passive Latch)	Receptacle test board shall be mounted on test equipment, should be applied by the weight cable to the clamp fixture at a 45 degree angle from the vertical centerline. Rotate 360° load weight at 45 degree angle test total 1cycle at rate of 5cycles/min.	5 N minimum
Wrenching strength (W/ mated Cable- Active Latch)	Receptacle test board shall be mounted on test equipment, should be applied by the weight cable to the clamp fixture at a 45 degree angle from the vertical centerline. Rotate 360° load weight at 45 degree angle test total 1cycle at rate of 5cycles/min.	10 N minimum
Vibration	EIA-364-28, Test Condition VII, Condition D Subject mated specimens to 3.10 G's rms between 20-500 Hz for 15 minutes in each of 3 mutually perpendicular planes.	No Damage No discontinuity longer than 1usec allowed. 20 mOhms maximum change from initial contact resistance
Mechanical Shock	EIA-364-27, Test Condition H Subject mated specimens to 50 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.	No Damage 20 mOhms maximum change from initial contact resistance
Reseating	Manually unmate/mate the connector 3 cycles.	No evidence of physical damage.
Environmental:		
Thermal Shock	EIA-364-32, Method A Test condition 1 -55 °C to 85 °C, perform 5 cycles in mating condition	No Damage 20 mOhms maximum change from initial contact resistance
Humidity- Temperature Cycling	EIA-364-31, Method III Subject unmated specimens to 12(15u"Au) or 24(30u"Au) cycles between 25°C/ 80%RH and 65°C/ 50%RH	No Damage 20 mOhms maximum change from initial contact resistance

PRODUCT SPECIFICATION

PS-7772 Rev. AX2

	Ramp times should be 0.5 hour and dwell times should be 1.0 hour	
Temperature Life (preconditioning)	EIA-364-17, Method A Subject mated specimens to 105°C for 72 hours	No Damage
Temperature Life	EIA-364-17, Method A Test Condition 2, Test Time Condition C Subject mated specimens to 105°C for 120 hours	No Damage 20 mOhms maximum change from initial contact resistance
Mixed flowing gas (MFG)	EIA-364-65, class IIA RH: 70±2% Temperature: 30±1°C Cl ₂ : 10±3 ppb NO ₂ : 200±50 ppb H ₂ S : 10±5 ppb SO ₂ : 100±20 ppb Duration: 15u"Au:5 days 30u"Au:7 days	No evidence of physical damage
Salt Spray	EIA-364-26B Test condition: mated connector. a.) 5±1% salt. b.) temperature :35±2°C. c.) Duration: 48 hours.	No evidence of physical damage LLCR Initial: 20 milliohms maximum After test: ΔR=20 milliohms maximum
Solderability	EIA-364-52 The surfaces to be tested shall be immersed in the flux for a minimum of 5 to 10 seconds. Any droplets of flux that may form shall be removed by blotting, taking care not to remove the flux coating from the surfaces to be tested. The test samples being tested shall be allowed to dry in ambient air for 5 to 20 seconds prior to solder immersion. The test sample termination shall be immersed to a depth equal to a length from its tip to a location normally not less than 0.5 mm below the connector seating plane. Temperature: 245±5°C Duration: 5 seconds	95% of immersed area must show no voids or pin holes.
Resistance to soldering heat (Infrared reflow)	EIA-364-29 Average ramp rate: 1~4°C per second	No evidence of physical damage

PRODUCT SPECIFICATION

PS-7772 Rev. AX2

	Temperature(board surface): 250 +10°C/-0°C Duration:30~35 seconds	
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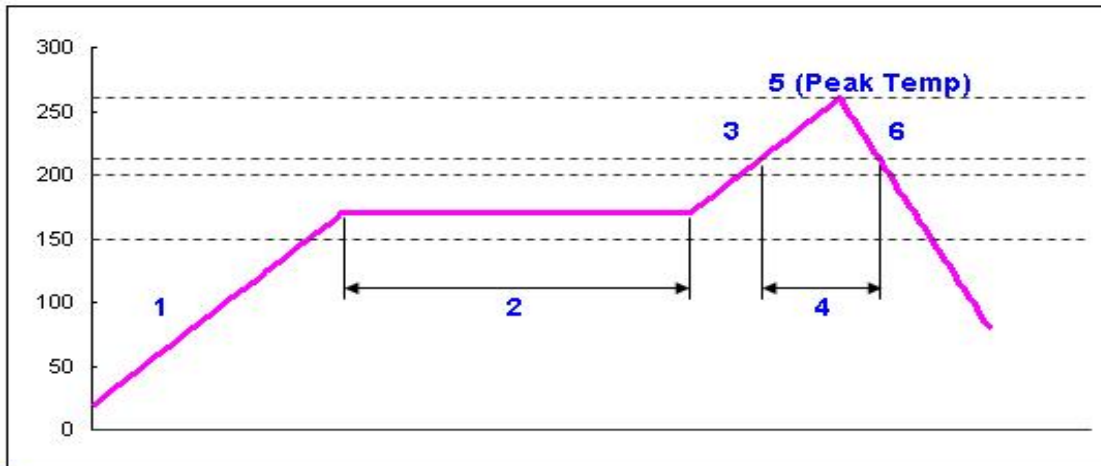
4.2 Test Sequence

Test or Examination	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Examination of connector(s)	1,8	1,10	1,10	1,12	1,8	1,9	1,3	1,7	1,5	1,3	1,3	1,3	1,3	1,3
Current Rating							2							
LLCR	2,5,7	2,5 7,9	2,5 7,9	2,5,7 9,11	2,5 7	4,6			2,4					
Insulation Resistance						3,8								
Dielectric Withstanding Voltage						2,7								
Durability						5								
Durability (Preconditioning)	3	3	3	3	3									
Matting/un-mating Force								3,6						
Reseating	6	8		10	6			2,5						
Thermal Shock		4												
Humidity-Temperature Cycling		6												
Thermal disturbance				8	4									
Temperature Life	4							4						
Temperature Life (Preconditioning)			4	4										
Mechanical Shock			8											
Vibration			6											
Salt Spray									3					
Mix Flowing Gas(MFG)				6										
Solder ability										2				
Resistance to Soldering Heat											2			
Plug Un-mating Force (Active Latch)												2		
Wrenching strength(W/mated cable-passive Latch)													2	
Wrenching strength(W/mated cable-active Latch)														2
Sample size	5	5	5	5	5	5	5	5	5	5	5	5	3	3

Note:

1. Test specimen shall be sure to meet the drawing before the testing.

4.3 Recommended IR reflow profile(Lead-free)



1	Average ramp rate	3°C per second max.
2	Pre-heat temp.(minimum)	150°C
	Pre-heat temp.(maximum)	200°C
	Pre-heat time	60 to 120 seconds
3	Ramp to peak	3°C per second max.
4	Time over liquidus(217°C)	60 to 150 seconds
5	Peak temp.	260 +0/-10°C
	Time within 5°C of peak	10 seconds max.
6	Ramp- cool down	6°C per second max.
	Time 25°C to peak	8 minutes max.