

PRODUCT SPECIFICATION**PS-7793 Rev. AX3**

Title: Mini Cool Edge IO Integrated Connector For Overpass
Product Specification

Part Number: G98 series

Description: Mini Cool Edge IO Integrated Connector,
0.6 Pitch, SMT Type

Revisions Control

Rev.	ECN Number	Originator	Approval	Issue Date
AX1	NE-XXXXX	Joan.Lu		06.12.2020
AX2	NE-XXXXX	Joan.Lu		08.17.2020
AX3	NE-XXXXX	Joan.Lu		11.25.2020

Product Specification Origination

Originator:	Date:	Checked by:	Date:	Approved by:	Date:
Joan Lu	11.25.2020				

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PRODUCT SPECIFICATION**PS-7793****Rev. AX3****1. Scope**

This document defines the detailed requirements for the Amphenol **G98 Series Mini Cool Edge IO integrated for overpass** 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. |
| 2.3 | OIF | OIF 56G PAM4 |

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: Nickel under-plated overall

3.3 Rating

- Current: 1.1 A per 6 pair contact
- Voltage: 30 VDC per contact
- Temperature:
 - Operating: -40°C~ 85°C
 - Non-operating: -55°C~ 85°C

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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: Baseline After test: ΔR=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	
Temperature Rise (via current cycling)	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
56G PAM4	≤ 1 dB up to 16 GHz;	≤ -20+freq dB up to 4 GHz ≤ -18+0.5*freq dB for 4 GHz < f ≤ 28 GHz	ICN_NEXT<1.35mV ICN_FEXT<3.6mV ICN_Total<3.9mV
Mechanical:			
Durability (preconditioning)	EIA-364-09 20 unmate/mate cycles	No evidence of physical damage.	
Durability	EIA-364-09 Cycle rate: 500±50 per hour Number of cycles: 200 cycles for 30μ” Au plating 100 cycles for 15μ” Au plating	No evidence of physical damage.	
Mating Force (Module only)	EIA-364-13 Rate: 25.4 mm/minute	1.1 N Max./per pair pin	
Un-mating Force (Module only)	EIA-364-13 Rate: 25.4 mm/minute	0.1 N Min./per pair pin	

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Active Latch Retention Strength	EIA-364-13 Rate: 25.4 mm/minute Pull in direction parallel to insertion, hold for minimum of 60 seconds	50 N minimum
Wrenching strength (W/ mated Cable-Passive Latch)	Bend cable 90° at minimum bend radius. Pull in 4 axis directions for round cable. Pull in 2 axis directions for flat cable. No damage to plug/ cable assembly.	25 N minimum
Wrenching strength (W/ mated Cable-Active Latch)	Bend cable 90° at minimum bend radius. Pull in 4 axis directions for round cable. Pull in 2 axis directions for flat cable. No damage to plug/ cable assembly.	40 N minimum
Contact Normal Force	EIA-364-04 Rate: 25.4 mm/minute	0.49 N (50 grams) minimum at nominal
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 (baseline) 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 (baseline) contact resistance
Reseating	Manually unmate/mate the connector 3 cycles.	No evidence of physical damage.
Environmental:		

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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 (baseline) contact resistance
Humidity-Temperature Cycling	EIA-364-31, Method III	No Damage 20 mOhms maximum change from initial (baseline) contact resistance
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 (baseline) contact resistance
Mixed flowing gas (MFG)	EIA-364-65, class IIA Test condition: mated connector. 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: 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: baseline After test: ΔR=20 milliohms maximum
Solderability	J-STD-002E Test Method A1 Temp:245°C±5°C Immerse and withdraw at 1mm-5mm, per second and dwell for 5+0/-0.5 seconds. Leads and terminations shall have flux applied uniformly and to cover the surfaces to be tested.	95% of immersed area must show no voids or pin holes.

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Resistance to soldering heat (Infrared reflow)	EIA-364-29 Average ramp rate: 1~4°C per second Temperature(board surface): 250 +10°C/-0°C Duration:30~35 seconds	No evidence of physical damage

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4.2 Test Sequence

Test or Examination	Test Groups													
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Examination of connector(s)	1,8	1,10	1,10	1,12	1,9	1,3	1,7	1,5	1,3	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	4,6			2,4						
Insulation Resistance					3,8									
Dielectric Withstanding Voltage					2,7									
Durability					5									
Durability (Preconditioning)	3	3	3	3										
Matting/un-mating Force							3,6							
Reseating	6	8		10			2,5							
Thermal Shock		4												
Humidity-Temperature Cycling		6												
Thermal disturbance				8										
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				
Active Latch Retention Strength											2			
Contact Normal Force												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

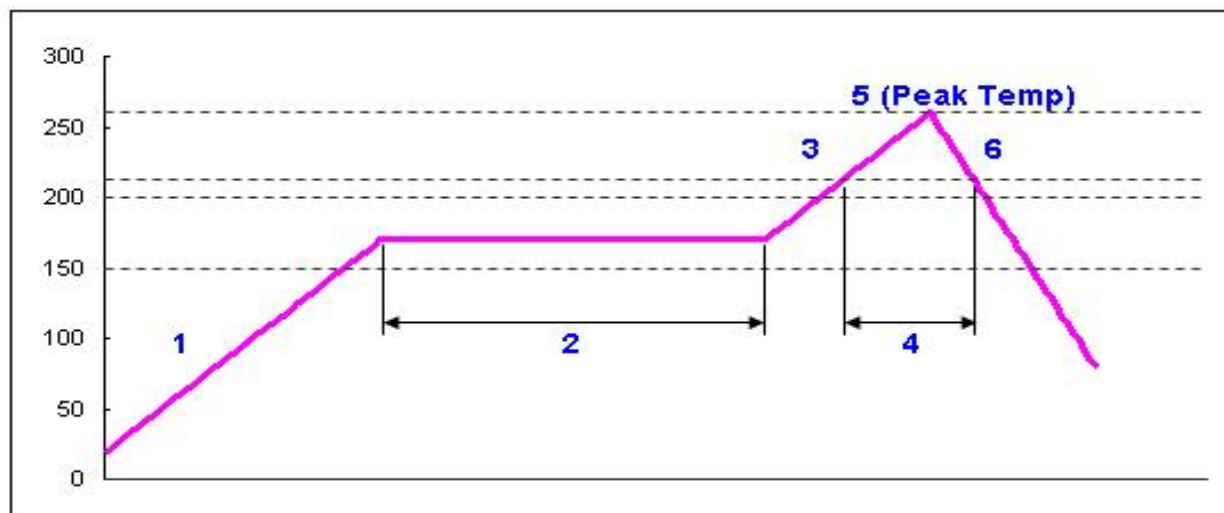
Note:

1. Test specimen: 5 PCS/ group unless otherwise specified.
2. Test specimen shall be sure to meet the drawing before the testing.

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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.