Product specification

1. Scope

This specification applies to the Power module connector, specifying the product's performance indicators, test methods and test requirements.

Applicable Product Models: F00MPC-S13RA750-01/F00MPC-P13SA750-01/F0CLCT-05004120-01/ F0CLCT-03584190-01/F0CLCT-00801010-01.

2. Applicable Standards

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.

3. Materials

Component		Material Specification	Color
Socket	Housing	PBT (UL94V-0)	Black
	Contact	Power ends:Brass(1.5 μm Silver Plated) Signal ends:Brass(0.08 μm Gold Plated)	-
	Board Lock	Phosphor Bronze (Tin-Plated)	-
Plug	Housing	PBT (UL94V-0)	Black
	Pawl spring	Beryllium Copper	-
Female Terminal (Power ends)	Socket Sleeve	Brass(1.5 μm Silver Plated)	-
	Crown Lamella	Beryllium Copper(1.5 μm Silver Plated)	-
Female Terminal (Signal ends)	Socket Sleeve	Brass(0.08 μm Gold Plated)	-
	Crown Lamella	Beryllium Copper(0.08 μm Gold Plated)	-

4. Appearance and Dimensions

4.1 Appearance：The product surface shall be free from defects, dirt, cracks and mechanical damage. Contacts shall be free from rust, oxidation or plating peeling.

4.2 Appearance and dimensions shall comply with the requirements of product drawings.

4.3 Exchangeable: Exchangeable with same specification products.

5. Parameter Range

Parameter Name	Value & Unit
Rated Current	65A(⌀ 5 Power ends) 50A(⌀ 3.58 Power ends) 3A(Signal ends)
Rated Voltage	600V AC/DC(Power ends) 80V AC/DC(Signal ends)
Operating Temperature Range	-55 ℃ ~+125 ℃
Applicable Wire Gauge	6 AWG(⌀ 5 Power ends) 8 AWG(⌀ 3.58 Power ends) 22 AWG(Signal ends)

6. Test Requirements and Procedures Summary

Serial No.	Item	Test Method	Technical Requirements
1	Examination of Product	Visual inspection	Meet the drawing requirements, no damage or abnormality in visual appearance
Electrical Requirement			
2	Dielectric Withstanding Voltage	Apply 1500V AC(rms)for I minute and the leakage current shall not exceed 1mA to the adjacent terminal and ground of the mate connectors	No flashover or insulation breakdown
3	Contact Resistance	Mate the connector, test with a low-power circuit	⌀ 5 Power ends ≤0.7mΩ ⌀ 3.58 Power ends≤0.75mΩ Signal ends ≤12mΩ

4	Insulation Resistance	Apply 500V DC for I minute between adjacent contacts to measure the insulation resistance	Insulation Resistance ≥1000MΩ
Mechanical Characteristics			
5	Female Terminal crimping Wire strength	Axial pull-out force of Female terminal crimped to wire	⌀ 5 Power ends:6AWG≥440N Signal ends:22AWG≥15N
6	Female Terminal Retention Forcet	Terminal and housing cavity mating, axial withdrawal along the axis	Power ends ≥98N
7	Single contact Withdrawal force	Axial pull-out force between mated male and female terminals	⌀ 5 Power ends:4N~10N ⌀ 3.58 Power ends:3N~9N Signal ends:0.3N~2N
Environmental Performance			
8	Durability	Connector in assembled condition without environmental test, perform 500 mating and unmating cycles	Appearance: No damage; Contact resistance and mating/unmating forces comply with drawing specifications.
9	Sinusoidal Vibration	Waveform: Sine sweep. Frequency range: 10Hz ~2000Hz. Acceleration amplitude: 147 m/s² (15g). Sweep rate: 1 oct/min (octave per minute). Directions: Three orthogonal axes X, Y, Z, tested separately for each axis. Duration per axis: 120 min.	Appearance: No damage; Current Discontinuity ≤1μs; Contact Resistance: ⌀ 5 Power ends ≤0.7mΩ ⌀ 3.58 Power ends≤0.75mΩ Signal ends ≤12mΩ
10	Shock Test	Waveform: Half-sine wave. Peak acceleration: 980 m/s² (100g). Pulse duration: 6ms. Directions: X, Y, Z three axes, both positive and negative directions for each axis. Number of shocks: 3 shocks per direction.	

11	Temperature	Mate the connector and measure the temperature rise of contacts at different current levels.	Refer to the attachment (⌀ 5Power ends)Figure 6.1 (⌀ 3.58Power ends)Figure 6.2 (Signal ends)Figure 6.3
12	Steady-State Humidity Test	Test Temperature: 40℃±2℃, Relative Humidity: 98%±2% RH, Duration: 240h (10 days, Condition A).	Appearance: No damage; Contact resistance: ⌀ 5 Power ends ≤0.7mΩ ⌀ 3.58 Power ends≤0.75mΩ Signal ends ≤12mΩ Insulation resistance≥1000MΩ; No flashover or insulation breakdown;
13	Temperature cycling	The connector under unmated condition is placed in a test chamber for temperature cycling test. Each cycle consists of exposure at -55±5℃ for 2 hours and 125±5℃ for 2 hours, total of 3 cycles. After test, the housing and contact assembly shall be free of deformation, cracks, plating peeling and other damages.	Appearance: No damage; Contact Resistance: ⌀ 5 Power ends ≤0.7mΩ ⌀ 3.58 Power ends≤0.75mΩ Signal ends ≤12mΩ
14	Salt Spray	Salt concentration: 5%, temperature: (35±2) ℃, test time: (48±2) h; after the test, rinse residual salt with clean water, wipe dry before measurement	
15	Resistance to Soldering Heat	The connector plug is assembled on the PCB and passed through the soldering furnace. The temperature of furnace zone is set to 140℃, solder bath temperature is 265℃±5℃, chain conveyor speed is 1350 mm/60 s.	Appearance: no damage

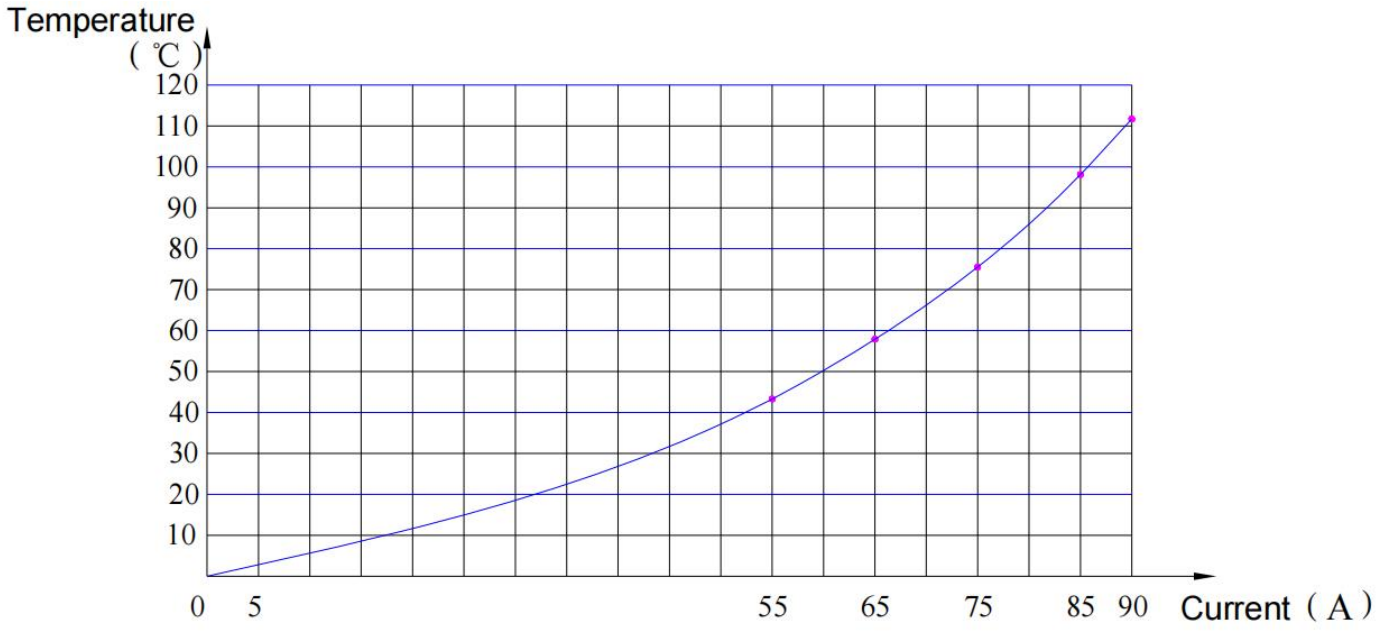

Figure 6.1 Contact Temperature Rise vs Current Curve (⌀ 5 Power ends)

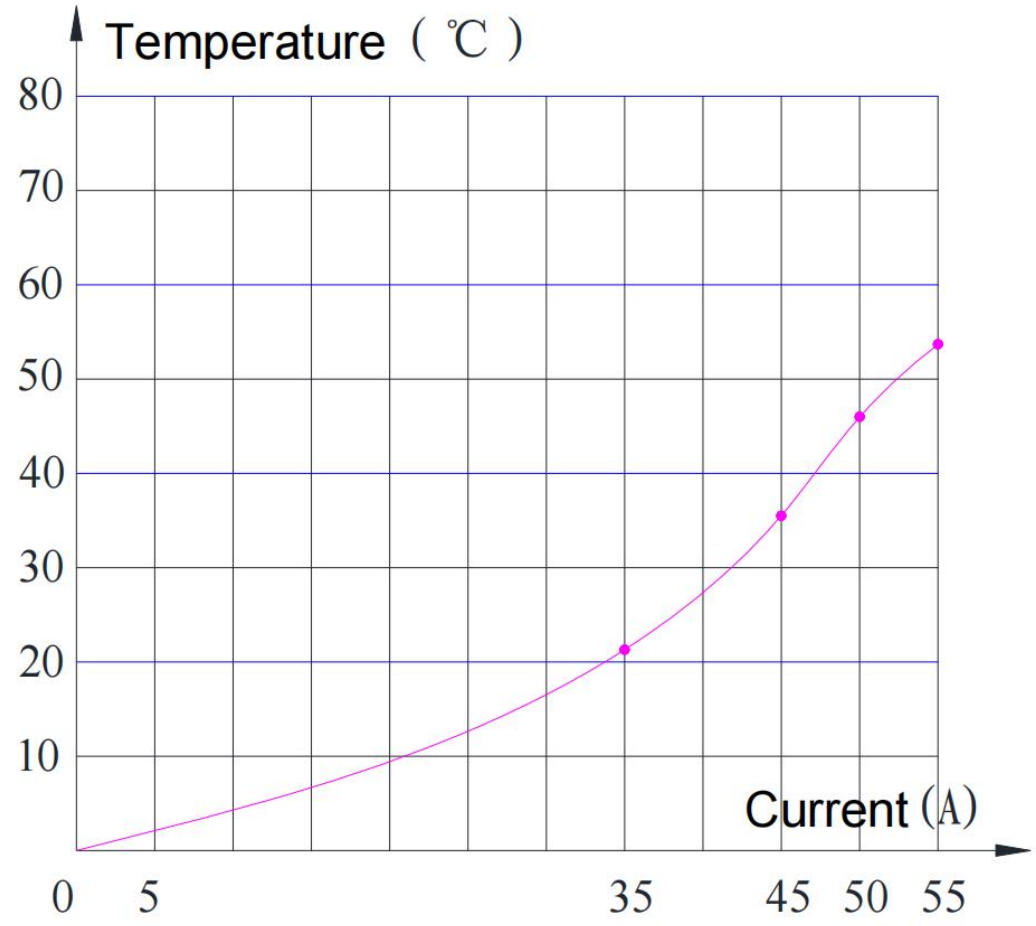

Figure 6.2 Contact Temperature Rise vs Current Curve (⌀ 3.58 Power ends)

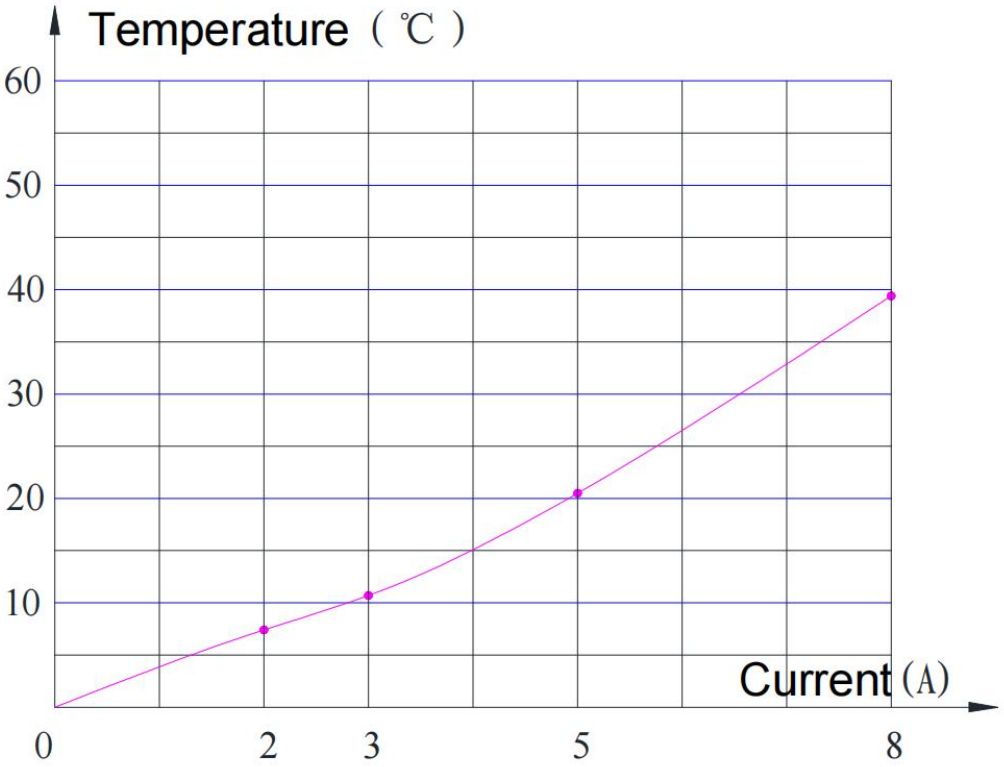

Figure 6.3 Contact Temperature Rise vs Current Curve (Signal ends)