Revision History

Version Numbe	Revision Date	Page	Description of Changes
A1	2016-11-18	/	/
A2	2022-11-20		Temperature rise graph

PROPRIETARY NOTE

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1. Scope

This specification covers the material and performance requirements for the 40A/Per Pair (PDC10/11 series) power connectors.

2. Applicable documents

In the event of conflict between requirements of this specification and product drawing, product drawing shall take precedence. In the event of conflict between requirements of this specification and referenced documents, this specification take precedence.

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

Must be compatible with lead-free soldering process

Housing: High Temperature Thermoplastic UL94-V0;

Contact: Copper Alloy, Gold plated at mating area & solder tail, all over Nickel;

3.3 Ratings

Voltage Rating: 50V DC

Current Rating: 40 A

Operating Temperature: -35℃ ~ +105℃.

4. Test requirement and procedures summary

4.1 Examination of product

Test	Requirements	Test Procedure
Examination of product	Meets requirements of applicable product drawing and specification	Visual, dimensional and functional per applicable quality inspection plan

4.2 Electrical Performance requirements

Test	Requirements	Test Procedure
Contact Resistance (Low Level)	0.5mΩ Max (initial) 1.0 mΩ Max (final)	Mated contacts assembled in housing; 20mV Max, 100mA max. (EIA-364-23)
Insulation Resistance	500 MΩ (Min), 500V DC	Impress Voltage 500V DC. Test between adjacent circuits of unmated connectors. (EIA-364-21)

4.2 Electrical Performance requirements

Dielectric withstanding Voltage	500V AC RMS at sea level No discharge, flashover or breakdown.	500V AC for 1 min. Test between adjacent circuits of unmated connectors. (EIA-364-20)
Temperature rise	Temperature rise is 35℃ maximum over ambient temperature.	EIA-364-70 method 2

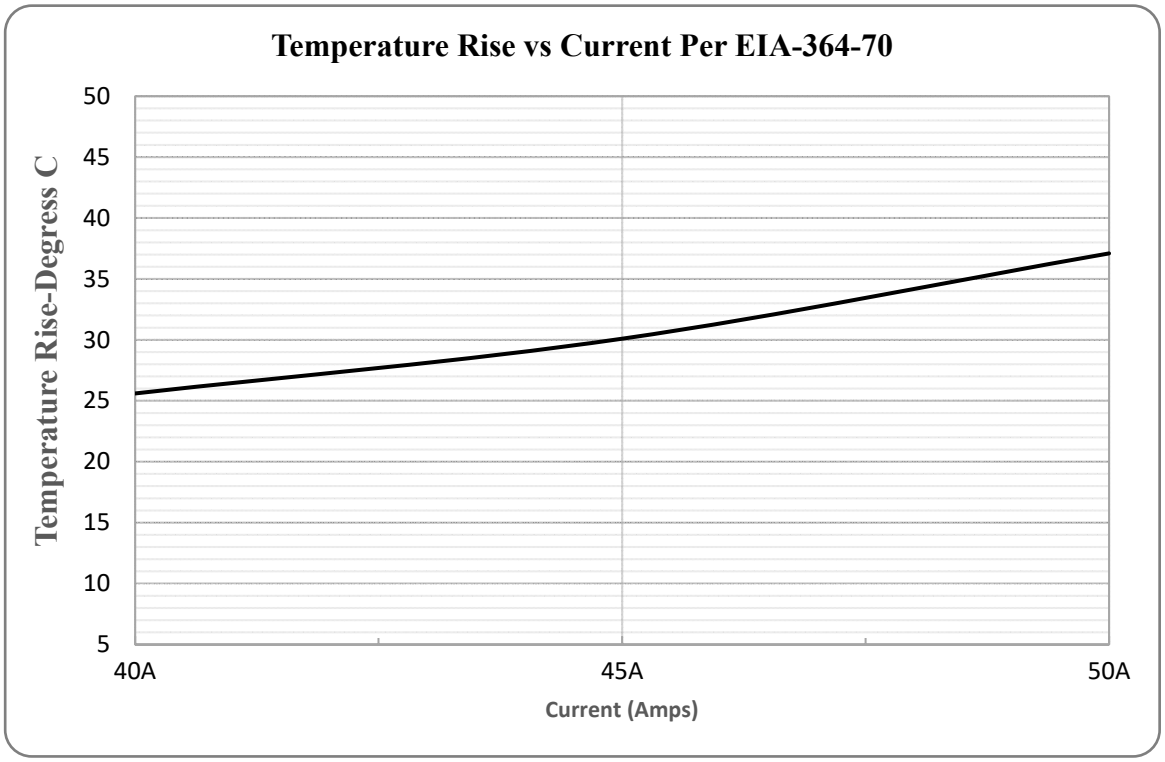
4.3 Mechanical performance requirements

Test	Requirements	Test Procedure
Mating force	35N Max. (3.6Kgf Max.)	Operation speed: 100mm/min. Measure the force required to mate connector. (EIA-364-13)
Withdrawal force	4.9~35 N Max.(0.5~3.6Kgf)	Operation speed: 100mm/min. Measure the force required to unmate connector (EIA-364-13)
Durability	Contact Resistance 1.0mΩ Max	Mating/Unmating 5000 cycles (EIA-364-09)
Durability (preconditioning)	No evidence of physical damage	Mating/unmating 20 cycles (EIA-364-09)
Physical Shock	1. No electrical discontinuity of 0.1μsec or longer duration. 2. No evidence of physical damage	Accelerated Velocity: 285G Wave form: Half sin, Duration: 2msec. Number of Drops: 6 drops each to normal and reversed directions of X, Y and Z axes, totally 18 drops. (EIA-364-27)
Vibration	1. No electrical discontinuity of 0.1μsec or longer duration. 2. No evidence of physical damage	EIA-364-28, test condition VII, test condition letter D (15 minutes in each of 3 mutually perpendicular directions.

4.4 Environmental performance requirements

Test	Requirements	Test Procedure
Thermal Shock	1. Contact Resistance 1.0mΩ Max 2. No evidence of physical damage	Mated connectors. -55℃ ~ +85℃ for 30 minutes/cycle, repeat 10 cycles. (EIA-364-32 test condition I)
Temperature Life	1. Contact Resistance 1.0mΩ Max 2. No evidence of physical damage	Mated connector. 105℃ Duration: 120H (EIA-364-17)

Figure-1

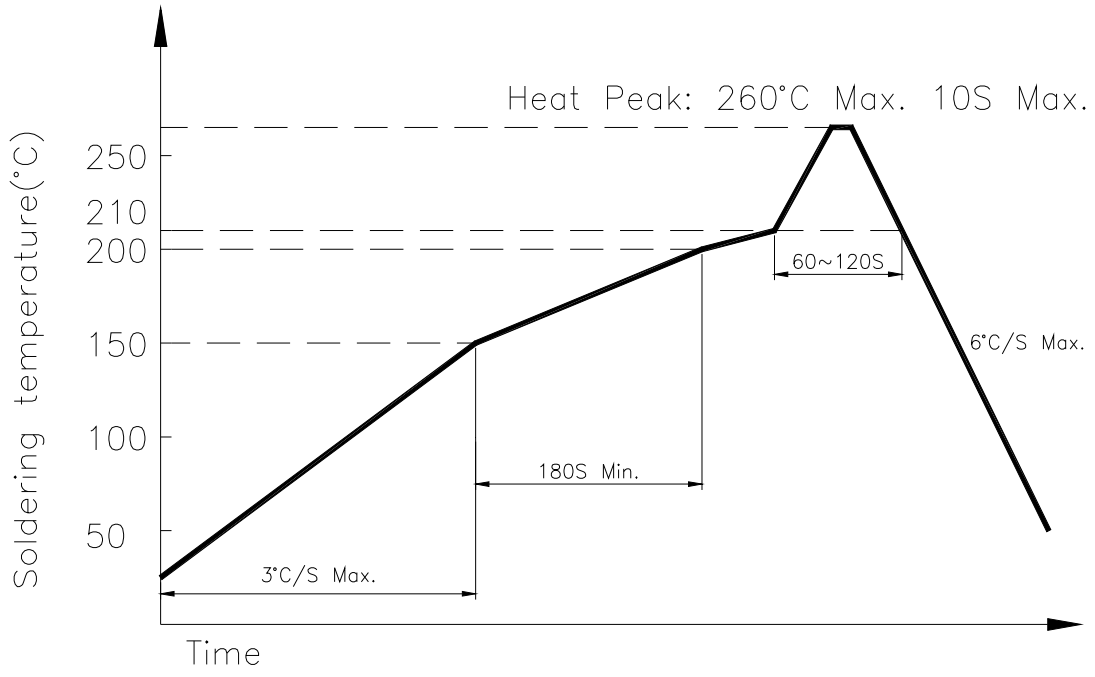


Test	Requirements	Test Procedure
Temperature Life (Preconditioning)	1. Contact Resistance 1.0mΩ Max 2. No evidence of physical damage	Mated connector. 105℃ Duration: 72H (EIA-364-17)
Thermal Disturbance	1. Contact Resistance 1.0mΩ Max 2. No evidence of physical damage	Cycle the connector between 15℃+/-3℃ and 85℃+/-3℃, as measured on the part. Ramps should be a minimum of 2℃/Min., and dwell times should insure that the contacts reach the temperature Extremes (a minimum of 5 minutes) Humidity is not controlled. Perform 10 such cycles.
Temperature-Humidity Cycle test	1. Contact Resistance 1.0mΩ Max 2. No evidence of physical damage	Mated Connector Initial measurement, cold shock and vibration. Except cycle the connector between 25℃ ±3℃ at 80%±3%RH and 65℃ ±3℃ at 50%±3%RH. Ramp times should be 0.5 hour and dwell times should be 1.0 hour. Dwell times start when the temperature and humidity have stabilized within the specified levels. Perform 24 such cycles. EIA-364-31, method III

4.4 Environmental performance requirements

Test	Requirements	Test Procedure
Salt Spray	Contact Resistance 1.0mΩ Max	Subject mated connectors to 5% salt concentration for 24 hours. (EIA-364-26)
Solderability	Wet Solder Coverage: 95%Min.	Solder Temperature: 245±5℃ Immersion Duration: 3±0.5 seconds (EIA-364-56)
Resistance to Reflow Soldering Heat	No physical damage shall occur	Test connector on PCB Pre-Heat 150~200℃: 180sec.Min. Heat 210℃ Min.: 60~120sec. Heat Peak 260℃ Max. 10sec. Max. Refer to reflow temperature profile figure-1 (EIA-364-56)

Figure-2



IR Reflow temperature profile

4.5 Product qualification and requalification test

Test or Examination	Test Group						
	A	B	C	D	E	F	G
Examination of product	1,4,7, 9,12	1,4,7,9, 12,15	1,4,7,9, 12,15	1,4,7, 9,12, 15,18	1,4, 11	1,4,7	1
Contact Resistance (low level)	5,10, 13	5,10, 13,16	5,10, 13,16	5,10, 13,16, 19	5,12	5,8	
Insulation Resistance					14		
Dielectric withstanding Voltage					13		
Current Rating							3
Mating force					6,9		
Withdrawal force					7,10		
Durability					8		
Durability (preconditioning)	6	6	6	6			
Reseating	11	14		17			
Physical Shock			14				
Vibration			11				
Thermal Shock		8					
Temperature Life	8						
Temperature Life (Preconditioning)			8	8			
Thermal Disturbance				14			
Temperature-Humidity Cycle test		11					
Salt Spray						6	
Solder ability	3	3	3	3	3	3	2
Resistance to Reflow Soldering Heat	2	2	2	2	2	2	

Note: Test 5pcs samples/test group