

LEOCO CORPORATION	PRODUCT SPECIFICATION	No.	S-18-2079	Rev.	1
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* USB TYPE-C Connector *

This product specification contains the test method, the following datum are the general performance and requirements of the leoco USB Type-C connector.

1. Scope:

This document applies to this specific type of connector used on leoco products.

2. Referenced documents:

EIA-364 Standard

3. Construction and dimensions shall be in accordance with the referenced drawings.

4. RATING:

4.1 Voltage 额定电压: 30V AC Max.

4.2 Current 额定电流:

5.0 A for collective VBUS Pins(A4, A9, B4, and B9) and
1.25 A for Vconn Pin(B5 of the plug connector) with the
corresponding GND Pins(A1, A12, B1, and B12);
0.25 A for all the other contacts individually.

4.3 Temperature 温度:

Operating Temperature: -40°C ~ +80°C

4.4 Test Condition 测试条件

All tests shall be performed as bellow conditions unless otherwise specified.

4.4.1. Temperature range : +15°C to +35°C

4.4.2. Humidity range : 25% to 85%

5. General Connector Performance Requirements 特性要求

5.1 Visual Inspection 外观特性

Item 项目	Description 内容	Test Method & Condition 测试方法和条件	Requirement 标准要求
5.1-1	Visual Inspection 外观检验	EIA-364-18: Visual inspection in compliance with applicable specification and document are performed.	Visual no physical damage

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Item 项目	Description 内容	Test Method & Condition 测试方法和条件			Requirement 标准要求		
5.2 Electrical Performance 电气特性							
5.2-1	Low Level Contact Resistance 接触阻抗	EIA-364-23B: Mate connectors and apply a maximum voltage of 20 mV and a current of 100 mA			40 mΩ max. Initial. After test 10 mΩ max. change		
5.2-2	Insulation Resistance 绝缘阻抗	EIA-364-21: Apply a voltage of 100V DC for 1 minute between adjacent of unmated and mated connectors.			100 MΩ min.		
5.2-3	Dielectric Withstanding Voltage 耐电压	EIA-364-20: Apply a voltage of 100V AC for 1 minute between adjacent contacts of unmated and mated connectors.			No breakdown		
5.2-4	Contact Current Rating 温升	EIA-364-70, method B: A current of 5.0 A shall be applied collectively to VBUS pins (i.e., pins A4, A9, B4, and B9) and 1.25 A applied to the Vconn pin (i.e., B5 of the plug connector) with the return path through the corresponding GND pins (i.e., pins A1, A12, B1, and B12). A minimum current of 0.25 A shall also be applied individually to all the other contacts.			Temperature rise shall not exceed 30°C.		
5.3 Mechanical Performance 机械特性							
5.3-1	Insertion Force 插入力	EIA-364-13 The connector insertion force test shall be done at a maximum speed of 12.5 mm per minute.			Within the range from 5 N to 20 N.		

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Item 项目	Description 内容	Test Method & Condition 测试方法和条件	Requirement 标准要求			
5.3-2	Extraction Force 拔出力	EIA-364-13 The connector extraction force test shall be done at a maximum speed of 12.5 mm per minute.	Within the range from 8 N to 20 N.			
5.3-3	Durability 耐久性	EIA 364-09 Connectors shall be subjected to 10,000 cycles of Insertion and Extraction. The speed is 500±50 cycles per hour.	No damage			
5.3-4	Random Vibration 振动测试	EIA-364-28, Test Condition VII, Test letter D: Mated samples are subjected to 3.1G's vibration test per axis, Frequency is 200HZ. Test duration for each axis is 15 minutes in each of 3 mutually perpendicular directions.	Discontinuity <1 microsecond No damage			
5.4 Environmental Performance 环境特性						
5.4-1	Humidity-Temperature Cycling 恒温恒湿	EIA 364-31D: Mated connectors, Cycle the connector or socket between 25°C ± 3°C at 80 % ± 3% RH and 65°C ± 3°C 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.	No damage			
5.4-2	Temperature Life 高温老化	EIA 364-17C, Method A: Mated connectors test temperature and duration: 105° C without applied voltage for 120 hours. 105° C without applied voltage for 72 hours when used as preconditioning.	No damage			

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5.4-3	Thermal shock 热冲击	EIA 364-32, Test Condition I: Mated connectors are exposed with following test condition: - 55°C for 30 minutes and + 85°C for 30 minutes for 10 cycles. There is a 5 minutes maximum transition time between two extreme temperatures.	No damage			
5.4-4	Thermal Disturbance 热干扰	EIA 364-32, Cycle the connector or socket between 15°C ± 3°C and 85°C ± 3°C, as measured on the part. Ramps should be a minimum of 2°C per minute, 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.	No damage			
5.4-5	Salt Spray 盐雾试验	EIA-364-26 Test Condition B Mated connector expose to salt spray for 24 hours Temperature: 35±2°C Salt density: 5 wt.%	No damage			
5.4-6	Solderability 粘锡性	EIA-364-52 Solder temperature: 245±5°C Solder time: 5±1 seconds	95%(min) of immersed area			
5.4-7	Resistance to Soldering Heat 耐焊锡热性	EIA-364-56 Connector mounted on PCB Peak temperature: 260±5°C Peak time: 5±1 seconds.	No damage			

6. Product Qualification and Requalification Test Sequence.

Item No.	Test Item	Test Group								
		A	B	C	D	E	F	G	H	I
1	Examination of product	1,8	1,10	1,8	1,10	1,14	1,3	1,5	1,3	1,3
2	Low-Level Contact Resistance(LLCR)	2,5,7	2,5,7,9	2,5,7	2,5,7,9	3,11		2,4		
3	Insulation resistance					13				
4	Dielectric withstanding voltage					2,12				
5	Current rating						2			
6	Insertion force					5				
7	Extraction Force					6,8,10				
8	Durability	3(a)	3(a)	3(a)	3(a)	4(b), 7(c), 9(e)				
9	Vibration			6						
10	Reseating	6	8		8					
11	Thermal shock		4							
12	Temperature life	4		4(d)	4(d)					
13	Humidity		6							
14	Salt Spray						3			
15	Thermal disturbance				6					
16	Solderability								2	
17	Resistance to soldering heat									2

NOTE:

- (a) Preconditioning 50 cycles;
- (b) Preconditioning 4 cycles;
- (c) Preconditioning 25 cycles;
- (d) Preconditioning 105°C for 72 hours;
- (e) Test Group E-9 :
Perform 2,468 plug/unplug cycles. Rotate the receptacle or plug 180° and perform 2,500 plug/unplug cycles. Rotate the receptacle or plug 180° and perform 2,500 plug/unplug cycles. Rotate the receptacle or plug 180° and perform 2,500 plug/unplug cycles.
- (f) Reseating: Manually unplug/plug the connector or socket. Perform 3 such cycles.

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