

PRODUCT SPECIFICATION

Title : USB A TO MICRO-B CABLE ASSEMBLY

		TITLE: USB A to Micro-B cable assembly specification	
B	ADD PN 687840046		
A	INITIAL RELEASE	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION.	
REV. DESCRIPTION			
DOCUMENT NO. PS-68784-001		Prepared By: Juntao.Huang	DATE: 2008/11/14
		Approved By: Christopher. Luo	DATE: 2008/11/14
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1.0 Scope

This specification covers the requirements for the USB-A to MICRO-B CABLE ASSEMBLY. (USB2.0 cable assembly).

2.0 Product Description

See the sales drawing for product shape; dimension and materials, the other section of this specification for the necessary referenced document and specification. The part number serial covered in this specification are as following table:

Molex P/N	Detail	Length
68784-0001	USB A PLUG TO MICRO B PLUG CABLE ASSY 1000 MM	1000±20MM
68784-0002	USB A PLUG TO MICRO B PLUG CABLE ASSY 1500 MM	1500±30MM
68784-0003	USB A PLUG TO MICRO B PLUG CABLE ASSY 2000 MM	2000±40MM
68784-0046	USB A PLUG TO MICRO B PLUG CABLE ASSY 1200 MM	1200±25MM

3.0 Cable Environmental Characteristics

Temperature Range:

- A. Operating Temperature Range: 0 °C to +50 °C
- B. Storage Temperature Range: -20 °C to +60 °C
- C. Nominal Temperature Rating: +20 °C

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4.0 Performance

4.1 Electrical characteristics

All electrical characteristics must be measured at or referenced to +20 °C (68 °F).
Voltage Rating: 30 V rms maximum.

table 1. Electrical Standards

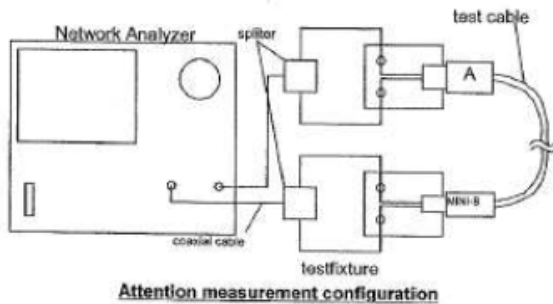
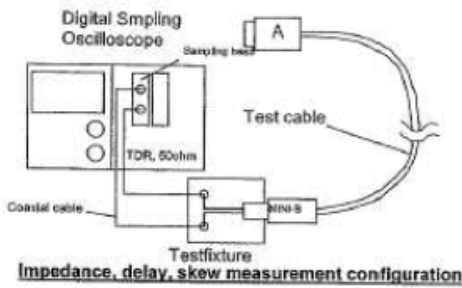
Item	Test condition	Requirement
Contact Resistance	Mate connectors, measure by dry circuit, 20mV maximum ,100mA maximum Except wire conductor resistance.(EIA-364-23) (Mated test contacts must be in a connector housing.)	USB-A Plug: 30mΩ max. Micro B plug: 30mΩ (Max) initial, Maximum change (delta) of +10 mΩ after 10,000 insertion/extraction cycles at a maximum rate of 500 cycles per hour. (When manually operated, mating speed should be below 200 cycles per hour.)
Insulation Resistance	Test voltage=500+/-50V DC Mate/Un-mate connector, apply 500(Type A) V DC adjacent terminals or ground(EIA-364-21)	1000 Mohm Min. Between adjacent contacts and contacts and shell
Dielectric Strength	Test Voltage=500+/-50V AC for one minute Mate/Un-mate connectors, apply 500(Type A) V AC adjacent terminals or ground (EIA-364-20)	-NO flashover, No spark over No excess leakage, No breakdown
Temperature Rise	Mate connectors and measure the temperature rise of contact when the maximum AC rated current is passed (EIA-364-70)	Temperature Rise 30 °C maximum
Capacitance	Measured between adjacent circuits of unmated connectors at 1kHz. EIA-364-30	2pF maximum unmated per contact.
Cable Impedance	Connect the cable to test fixture, measure by TDR. Measurement configuration is on next page.	-USB 2.0 spec. Differential impedance (rt 200 ps10~90%) -76.5 Ohm to 103.5 Ohm Com. Impedance(rt 200 ps10~90%) 21 Ohm to 39 Ohm
Attenuation	Connect connector to attenuation test fixture, measure by network Analyzer. Measurement configuration are next page	Refer to the table 2

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Propagation Delay	Connect the cable to test fixture, measure by TDR. Measurement configuration are next page	MICRO USB spec. 10 ns/ cable max.
Propagation Delay Skew	Connect the cable to test fixture, measure by TDR. Measurement configuration are next page	USB 2.0 spec. 100ps/ cable max

Table 2. attenuation

Frequency (MHz)	Attenuation (max) (dB/cable)
0.064	0.08
0.256	0.11
0.512	0.13
0.772	0.15
1	0.20
4	0.39
8	0.57
12	0.76
24	0.95
48	1.35
96	1.90
*200	3.20
*400	5.80



Note:* fit to USB 2.0 version

4.2 Mechanical characteristics and others

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Table 1: Mechanical characteristics.

Item	Condition	Specification
Appearance (cable assy')	Visual inspection EIA-364-18	No defects such as cable damage, short scratches or blemishes
First time mating and First time Un-mating force	Mate and un-mate connector at maximum rate of 12.5mm per minute EIA-364-13	USB-A plug : 1st time mating force: 35N maximum 1st time un-mating force:10N minimum MICRO-B Plug : 1 st time mating force:35N maximum 8N minimum after 10000 insertion/extraction cycles (No burs or sharp edges are allowed on top of locking latches)
Durability	Mate and Un-mate up to 1500 (USB A plug) cycles repeatedly at maximum rate 200 cycles per hour,(EIA-364-09)	Appearance-No breakdown
Cable Pullout force	The object of this test procedure is to detail a standard method for determining the holding effect of a USB plug cable clamp without causing any detrimental effects upon the cable or connector components when the cable is subjected to inadvertent axial tensile loads. (EIA-364-38)	After the application of a steady state axial load of 40 Newtons for one minute. (Appearance: No break down)
Vibration Resistance Test	Mate connectors and subject to the following vibration conditions, for a period of 15 minutes in each of 3 mutually perpendicular EIA-364-28	Appearance: No damage Contact Resistance: 30 m Ohm max Discontinuity: 1.0 microsecond max.
Physical Shock	Mate connectors and subject to the following shockconditions,3 shocks shall be applied along 3 mutually perpendicular axes, passing DC 100mA current during the test (Total of 18 shocks)	Appearance: No damage Contact Resistance:30 m Ohm max. Discontinuity: 1.0 microsecond max

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	Test pulse: Half Sine Peak value :294m/s sq.(30G) Duration:11ms EIA-364-27	
Flexing test	Weight :3N Angle:120 degree Speed :20turns/minute Flexing:100cycles.	No damage such as breaks of exposure of conductor Insulation damage, etc.
Thermal Shock	EIA 364-32 Test Condition I The object of this test is to determine the resistance of a USB connector to exposure at extremes of high and low temperatures and to the shock of alternate exposures to these extremes, simulating the worst case conditions for storage, transportation, and application	10 cycles -55 °C and +85 °C. The USB connectors under test must be mated. Appearance: No damage Contact resistance: 30 m Ohm max. Dielectric strength :No breakdown Insulation resistance:1000hm min.
Humidity Resistance Test	Mate connector and expose to humidity for 168 hours (7 cycles) . the test specimens shall be conditioned at ambient room condition for 1 to 2 hours after which the specified measurements shall be performed EIA-364-31 Method III	Appearance: No damage Contact resistance: 30 m Ohm max. Dielectric strength :No breakdown Insulation resistance:1000hm min.
Flammability	UL 94 V-0 This procedure is to ensure thermoplastic resin compliance to UL flammability standards.	The manufacturer will require its thermoplastic resin vendor to supply a detailed C of C with each resin shipment. The C of C shall clearly show the resin's UL listing number, lot number, date code,ect

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