3M™ High Routability External MiniSAS Cable Assembly 8G26 Series
Product Specification 78-5102-0099-7
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Contents

3M Electronic Solutions Division
Interconnect Products
6801 River Place Blvd.
Austin, TX 78726-9000
www.3Mconnectors.com

1.0 Scope

This document summarizes test methods, test conditions and product performance requirements for 3M External MiniSAS Twin Axial Cable Assemblies 8G26 Series. In the event of performance data conflicts between this specification and any documents listed below, this specification supersedes those documents. Materials and finishes listed in the documents below apply and are included in this specification for reference only.

2.0 Related Documents

78-5100-4815-0	Customer drawing for 3M External MiniSAS Twin Axial Cable Assemblies 8G26 Series
PS-0107	Product Specification for 3M™ External Jacketed Ribbon Twin Axial Cable SL9000
EIA-364	Standard for Environmental Test Methods
SFF-8086	Standard for Mini Multilane 10 Gbs 4x Common Elements Connector
SFF-8088	Standard for Mini Multilane 10 Gbs 4x Shielded Connector
SAS 2.1	Serial Attached SCSI (SAS) Interface Manual

3.0 Performance Testing

Unless otherwise specified, all tests shall be performed on 8G26 cables mated to 3M 8A26 series right angle connectors and 8C26 series EMI cages at ambient environmental conditions per EIA-364. Unless otherwise specified, all values and limits are typical of those obtained by qualification testing of the subject product. All specifications are subject to revision and change without notice from 3M.

4.0 Performance and Characteristics Overview

4.1 Ratings

Dielectric withstanding voltage: 300 VACrms at sea level

Current (AC or DC):

0.5 A/contact

Current rating conditions: 30°C temperature rise, 20% derated

Temperature: -20°C to +80°C

Humidity: 80% RH maximim

4.2 Materials

Plug Back Shell

Material: Zinc Alloy

Plating: Nickel

Paddle Card

Material: FR4

Mating Pad Underplating: Min 100 micro-inch nickel

Mating Pad Finish: Min 30 micro-inch gold

High-speed Ribbon Twin Ax Cable

See related specification PS-0107 for External Ribbon Twin Axial Cable

4.3 Regulatory Compliance

See Regulatory Information Appendix (RIA) in the “RoHS compliance” section of **www.3Mconnectors.com** for compliance information. See customer drawings for regulatory specifics on

5.0 Electrical

Description or Parameter	Values & Limits	Units	Requirement or Conditions	Test Standard or Method
Dielectric withstanding voltage	300	VACrms	Measured between adjacent and opposing contacts. No disruptive discharge during 1 minute duration. Current leakage < 1mA	EIA-364-20B Method B Condition I
Low level contact resistance	≤10	Milliohms	Apply maximum voltage of 20mV and a current of 100mA. 10 milliohm maximum ΔR contact resistance per mated interface throughout testing.	EIA-364-23A
Insulation resistance	>1000	Megohms	Measured between adjacent and opposing contacts with 500 VDC applied for 1 minute.	EIA-364-21C

6.0 Signal Integrity

Description or Parameter	Values & Limits	Units	Requirement or Conditions	Test Standard or Method
Propogation Delay	4.96 typ	ns/m	Measured with a 3 meter sample.	SFF-8417 sect 8.2.7.3
Intrapair skew (within pair)	<10	ps/meter	Measure with TDR method using 3 meter samples. Risetime of 40ps (10-90%). Skew measured at 70 ohm crossing point.	
Differential reflection loss, SDD22			1,3, and 5 meter assemblies measured from 100 MHz to 6 GHz	Meets SAS2.1 limit line
	<-10	dB	up to 2.08 GHz	
	<-7.9+	dB	<-7.9+13.3 x log(f / 3 GHz) between 2.08 and 6 GHz	
Differential insertion loss, SDD21		dB	1,3, and 5 meter assemblies measured from 100 MHz to 6 GHz	Per SAS2.1 sect 5.5.4: Loss less than TCTF test load specified in sect 5.6.3

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Differential to common Mode conversion, SCD21	**<-18**	**dB**	**1,3, and 5 meter assemblies measured from 100 MHz to 6 GHz**	**Meets SAS2.1 limit line**
Differential to common Mode reflection, SCD22			**1,3, and 5 meter assemblies measured from 100 MHz to 6 GHz**	**Meets SAS2.1 limit line**
	<-26	**dB**	**up to 300 MHz**	
	<-12.7+	**dB**	**<-12.7+13.3 x log(f / 3 GHz) between 300 MHz and 4.78 GHz**	
	<-10	**dB**	**between 4.78 abd 6 GHz**	
Differential to common Mode reflection, SCD22	**4.96 typ**	**ns/m**	**Measured with a 3 meter sample.**	**SFF-8417 sect 8.2.7.3**
SCD21 - SDD21	**<-10**	**dB**	**1, 3, and 5 meter assemblies measured from 100 MHz to 6 GHz**	**Meets SAS2.1 limit line**
Near End Crosstalk	**<-26**	**dB**	**1and 5 meter assemblies measured from 100 MHz to 6 GHz. Total NEXT calculated as described in note g of table 23 in SAS2.1 standard (rev7)**	**Meets SAS2.1 limit line**

7.0 Mechanical

Description or Parameter	Values & Limits	Units	Requirement or Conditions	Test Standard or Method
Critical Dimension Measurement		**mm**	**Measure dimensions specified in SFF-8088.**	
Durability			**250 mating cycles at max rate of 10 cycles / min**	**EIA-364-09**
	≤80	**Milliohms**	**Maximum initial R**	
	≤20	**Milliohms**	**Maximum delta R**	
Mechanical Shock	**<1**	**Micro-second**	**Mated connectors tested, no physical abnormalities after test. No electrical discontinuity > 1 us. Maximum initial R of 80 milliohms and maximum delta R of 20 milliohms. Normal duration 11 ms, 30g peak acceleration, ½ sine wave, 3 times each in +/- X, Y, & Z (18 shocks total)**	**EIA-364-27, Test Condition "H".**
Random Vibration			**Frequency 20 – 500 Hz, 3.10 g RMS, 15 min duration**	**EIA-364-28, Test Condition VII, letter D.**
	≤80	**Milliohms**	**Maximum initial R**	
	≤20	**Milliohms**	**Maximum delta R**	
Unmating Force	**≤49**	**Newtons**	**Measurement speed: 10mm per minute maximum with the retention latch disengaged**	**EIA 364-13**

Mating Force	**≤55**	**Newtons**	**Measurement speed: 10mm per minute maximum**	**EIA 364-13**
Cable pullout Force (axial load)	**≥88**	**Newtons**	**Mate plug to connector and cage. With latch engaged, apply an axial pullout force on the cable at the rate of 25mm per minute. Minimum of 88N before either side of the latch disengages.**	**Instron**
Cable pullout Force (right angle load)	**≥75**	**Newtons**	**Mate plug to connector and cage. With latch engaged, apply an axial pullout force on the cable at the rate of 25mm per minute. Minimum of 88N before either side of the latch disengages.**	**Instron**
Dynamic Cable Assembly Flex Test	**0**	**continuity test failures**	**Flex the cable assembly 2000 cycles per SFF-8417 without any test failures.**	**SFF-8417, test w/ 1" mandrel**
De-Latch Plug (axial Load)	**≤25**	**Newtons**	**Mate cable plug to connector and cage. Place axial load on latch pull tab to de-latch plug**	**Instron**
Latch Pull (axial Load)	**≤25**	**Newtons**	**Place axial load on latch pull tab with 6.35mm diameter pin without causing any physical damage to the pull tab**	**Instron**

8.0 Environmental

Description or Parameter	Values & Limits	Units	Requirement or Conditions	Test Standard or Method
Temperature Life (Thermal Aging)	**70**	**Degrees C**	**No visual changes, meets SI test requirements for Impedance and S-parametes. Maximum 80 milliohms initial R, maximum 10 milliohm ΔR contact resistance throughout testing.**	**EIA-364-17 Method II Condition A**
	500	**Hours**		
Preconditioning Durability	**≤10**	**milliohms delta R**	**25 mating cycle at the max rate of 10 cycles / min**	**EIA-364-09**
Thermal Shock	**-55 & 85**	**Degrees C**	**No visual changes, meets SI test requirements for Impedance and S-parametes. Maximum 80 milliohms initial R, maximum 10 milliohm ΔR contact resistance throughout testing.**	**EIA-364-32 Condition I**
	5	**Cycles**		

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Humidity-Temperature Cycling	**25 to 65**	**Degrees C**	**No visual changes, meets SI test requirements for Impedance and S-parametes. Maximum 80 milliohms initial R, maximum 10 milliohm ΔR contact resistance throughout testing.**	**EIA-364-31 Condition B Method III**
	80 to 100	**% Relative humidity**		
	240	**Hours**		
Industrial MFG atmosphere	**<10**	**milliohms delta R**	**Four Gas CO Environment (See Table 1). Subject specimens to environmental Class IIA for 7 days unmated and 7 days mated.**	**EIA 364-65, Class IIA**

9.0 Qualification Test Groups and Sequences

Test or Examination	Test Group				
	1	2	3	4	5
	Test Sequence				
Visual	0, 7	0, 9	0, 9	0,4	0,4
Low Level Contact Resistance	1,4,6	1,4,6,8	1,4,6,8	1,3	
Dielectric Withstanding Voltage					1,3
Durability				2	2
Durability (pre-conditioning)	2	2	2		
Mechanical Shock			7		
Random Vibration			5		
Thermal Shock		3			
Humidity and Temperature Cycling		5			
Temperature Life	3				
Temperature Life (pre-conditioning)			3		
Reseating	5	7			

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Test or Examination	Test Group						
	6	7	8	9	10	11	12
	Test Sequence						
Visual	0	0	0	0	0	0	0
Temperarture Rise	1						
Mating Force		1					
Unmating Force		2					
Delatch Plug (Axial Load)			1				
Latch Pull (Axial Load)				1			
Cable Pullout Force (Axial)					1		
Cable Pullout Force (Right Angle)						1	
Dynamic Cable Flex Test							1

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