

CABLINE®-CAF

Part No. Plug: 3437-0**1 (SHELL Only), 20858-0**T-01 (SHELL ASS'Y)

Receptacle : 20525-※**E-※※※

Product Specification

Qualification Test Report No. TR-18016

3	S21308	July 21, 2021	R.Fukuda	M.Muro	H.Ikari
2	S19167	March 5, 2019	Y.Sasa	T.Masunaga	Y.Shimada
1	S19101	February 19, 2019	Y.Sasa	T.Masunaga	Y.Shimada
0	S18186	March 16, 2018	Y.Sasa	T.Masunaga	H.Ikari
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- 1. Scope**

This Product Specification defines the test conditions and the performances of the CABLINE-CAF Connector , a shield FPC connector of 0.4mm contact pitch.
- 2. Product Name and Parts No.**
 - 2.1 Product Name**

CABLINE-CAF
 - 2.2 Parts No.**

SHELL Only : 3437-0**1
SHELL ASS'Y : 20858-0**T-01
 - 2.3 Applicable RECE Connector**

CABLINE-CA RECE : 20525-※**E-※※※※
("※" Is a variation. Please refer to the drawing for details.)
 - 2.4 Applicable FPC**

Thermosetting adhesive. Refer to the product drawing (DWG No.20858) for a detail dimension and structure.
- 3. Rating**
 - 3.1 Operating Conditions**

Amperage: 0.3A AC/DC (per contact)
Voltage: 100V AC (per contact)
Operating temperature: 233~358K(-40°C~+85°C)
(Containing temperature rise by current)
Operating humidity: 85% max
 - 3.2 Storage Conditions**

Storage temperature: 248~333K(-25°C~60°C)
Storage humidity: 85% max. /1year (Non-condensing)
- 4. Test and Performance**

Test Condition
This initial test is equal to it's at shipping condition and unless otherwise specified, all tests and measurements shall be performed under the following conditions in accordance with MIL-STD-202G.

Temperature... 288K~308K (15°C~35°C)
Pressure... 866hPa~1066hPa (650mmHg~800mmHg)
Relative humidity... 45~75%R.H.

4.1. Electrical Performance

No	Items	Test Conditions	Specifications
1	Contact Resistance (Contact & Ground)	Solder the receptacle connector to the test board and mate the plug connector together. Apply the open circuit voltage of 20mV MAX. DC and the closed circuit current of 1mA MAX. DC in accordance with MIL-STD-202G Method 307. Measure the contact resistance as shown in Fig.1 by the four terminals method.	Initial : 60mΩ or less Change ΔR : 40mΩ or less
2	Insulation Resistance	Solder the receptacle connector to the test board and mate the plug connector together, then, apply DC250V between the neighboring contacts in accordance with MIL-STD-202G, Method 302.	Insulation resistance shall not be more than 1000MΩ in the initial and 500 MΩ after testing.
3	Dielectric Withstanding Voltage	Solder the receptacle connector to the test board and mate the plug connector together, then, apply AC 250V (rms) between the neighboring contacts for 1 minute in accordance with MIL-STD-202G, Method 301.	No creeping discharge, flashover, no insulator breakdown shall occur.
4	Temperature rising	Solder the receptacle connector to the test board and mate the plug connector together, then, apply the rating current to each contact and measure temperature rise around the connector.	Temperature rise ΔT : 30K (30°C) MAX.

4.2. Mechanical Performance

No	Items	Test Conditions	Specifications
1	Mating Force and Un-mating Force	Solder the receptacle connector to the test board and mate the plug connector together, then, set the specimen on push-on/pull-off machine. Measure the force at initial and mating/un-mating 30th cycles at a speed of 25±3mm/min. along the mating axis.	<u>Mating Force</u> 60P : 16.61N MAX. 40P : 11.07N MAX. <u>Un-mating Force</u> 60P : 2.16N MIN. 40P : 1.44N MIN.
2	Durability	Solder the connector to the test board and set the specimen on the push-on/pull-off machine. Mate and un-mate 30cycles repeatedly at a speed of 25±3mm/min. along the mating axis.	[Contact Resistance] Shall meet 4.1.1.
3	Vibration	Solder the receptacle connector to the test board and mate the plug connector together, then, set them on the vibrator and apply the following vibration in accordance with MIL-STD-202G, Method 201A. During test, apply 100mA DC to check electrical discontinuity. Frequency : 10Hz→55Hz→10Hz/approx 1min. Directions : Three mutually perpendicular direction. Total Amplitude : 1.52mm Sweep duration : 2 hours for each direction, a total of 6 hours.	[Contact Resistance] Shall meet 4.1.1. [Electrical discontinuity] No electrical discontinuity greater than 1μs. [Appearance] No abnormality
4	Shock	Solder the receptacle connector to the test board and mate the plug connector together, and set them on the shock machine. Apply the following shock in accordance with MIL-STD-202G, Method 213B, Condition A. During test, apply 100mA DC to check electrical discontinuity. MAX.G : 50G Duration : 11msec Wave Form : Half Sinusoidal Test times : 3 times in the 6 direction perpendicular,(a total of 18 times.)	[Contact Resistance] Shall meet 4.1.1. [Electrical discontinuity] No electrical discontinuity greater than 1μs. [Appearance] No abnormality

4.3. Environmental Performance

No	Items	Test Conditions	Specifications
1	Thermal Shock	Solder the receptacle connector to the test board and mate the plug connector together, then, expose them to the following environment in accordance with MIL-STD-202G, Method 107G, Condition A. Temperature : 218K(-55°C) : 30min.→358K(85°C) : 30min. Transition time : 5min. MAX. No. of cycles : 5 cycles	[Contact Resistance] Shall meet 4.1.1.
2	High Temperature Life	Solder the receptacle connector to the test board and mate the plug connector together, then, expose them to the following environment in accordance with MIL-STD-202G, Method 108A, Condition B. Temperature : 358±2K (85±2°C) Duration : 250 hours	[Contact Resistance] Shall meet 4.1.1.
3	Humidity (Steady State)	Solder the receptacle connector to the test board and mate the plug connector together, then, expose them to the following environment in accordance with MIL-STD-202G, Method 103B, Condition A. Temperature : 313±2K (40±2°C) Humidity : 90~95%RH Duration : 240 hours	[Contact Resistance] Shall meet 4.1.1. [Insulation Resistance] Shall meet 4.1.2. [Dielectric Withstanding Voltage] Shall meet 4.1.3.
4	Humidity (Cycling)	Solder the receptacle connector to the test board and mate the plug connector together, then, expose them to the following environment in accordance with MIL-STD-202G, Method 106G. Temperature : 298[263]~338K (25[-10]~65°C) Humidity : 90[80]~98%RH Duration : 10cycles (240hours)	[Contact Resistance] Shall meet 4.1.1. [Insulation Resistance] Shall meet 4.1.2. [Dielectric Withstanding Voltage] Shall meet 4.1.3.
5	Salt Water Spray	Solder the receptacle connector to the test board and mate the plug connector together, then, expose them to the following environment in accordance with MIL-STD-202G, Method 101E, Condition B. Temperature : 308±2K (35±2°C) Salt water density : 5±1% [by weight] Duration : 48 hours	[Contact Resistance] Shall meet 4.1.1.
6	H2S Gas	Solder the receptacle connector to the test board and mate the plug connector together, then, expose them to the following environment. Temperature : 313±2K (40±2°C) Relative Humidity : 80±5%RH Gas : H2S 3±1ppm Duration : 96 hours	[Contact Resistance] Shall meet 4.1.1. [Appearance] No abnormality adversely affecting the performance.

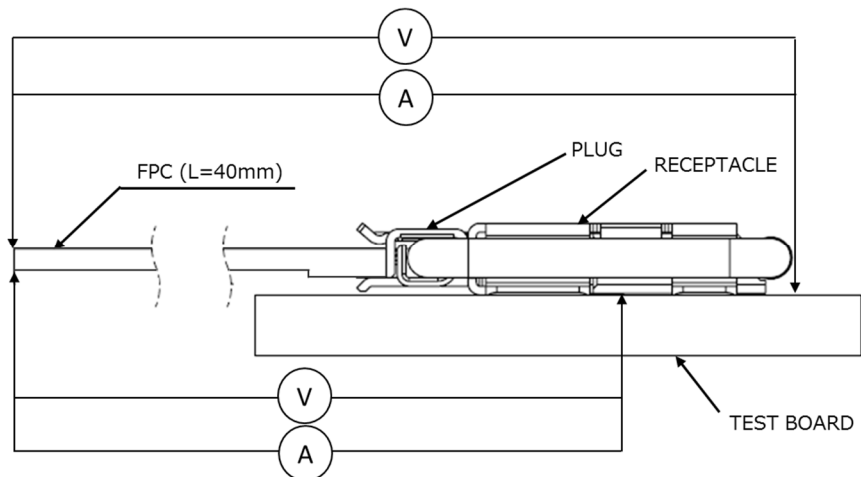
5. Test Sequence and Sample Quantity

Table1. Test Sequence and Sample Quantity

Test Item	Group								
	A	B	C	D	E	F	G	H	J
Contact Resistance		2,6	1,3,5	1,3	1,3	1,5	1,5	1,3	1,3
Insulation Resistance						2,6	2,6		
D. W. Voltage						3,7	3,7		
Temp. Rise	1								
Mating Force		1,5							
Un-mating Force		3,7							
Durability		4							
Vibration			2						
Shock			4						
Thermal Shock				2					
High Temperature Life					2				
Humidity (Steady State)						4			
Humidity (Cycling)							4		
Salt Water Spray								2	
H ₂ S Gas									2
Sample QTY.	5	5	5	5	5	5	5	5	5

※The number of group is test sequence.

6. Measuring method of Contact Resistance



Contact Resistance = $R_{AB} - (\text{FPC 40mm Conductor Resistance}) - (\text{Test Board Conductor Resistance})$
 Fig.1 Contact Resistance

7. Handling of CABLINE-CAF connector

Refer to instruction manual : HIM-18016 for the handling of CABLINE-CAF.