



HARWIN

Test Report Summary

HT07302

Electrical, Mechanical & Environmental Testing
Gecko-SL Horizontal



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1. Introduction

1.1. Description and Purpose

The new Gecko-SL Horizontal connector combines the 1.25mm pitch Gecko signal connector system with horizontal through-board technology, allowing for lower board profiles to be achieved. Stainless steel jackscrews are available in both standard and reverse-fix, ensuring a secure connection. The following tests were carried out to specify and confirm the Component Specification requirements.

1.2. Conclusion

The following data has been collated from Harwin test reports 1987 & 1988. The tests indicate that the Gecko-SL horizontal range performs as required to the existing G125 Component Specifications.

2. Test Method and Requirements

2.1. Specification Parameters

Testing Standard	Description of Test	Section	Page No.
EIA-364-06C: 2006	Contact Resistance	3.1	2
EIA-364-70A: 1998	Power Rating	3.2	3
EIA-364-09C: 1999	Durability	3.3	3-4
EIA-364-05B: 1998	Contact Retention	3.4	5
EIA-364-35C: 2012	Insert Retention	3.5	5
EIA-364-28D: 1999 (BS EN 60068-2-6: 2008)	Vibration	3.6	5-6
EIA-364-27B: 1996 (BS EN 60068-2-27: 2009)	Mechanical Shock	3.7	6-7
EIA-364-20C: 2004	Withstand Voltage	3.8	7
EIA-364-21C: 2000	Insulation Resistance	3.9	8

2.2. List of Test Samples

- G125-MH1XX05M3P – Gecko-SL Horizontal Male Connector Assembly
- G125-MH1XX05M4P – Gecko-SL Horizontal Male Connector Assembly
- G125-224XX9600 – Gecko-SL Female Crimp Connector Assembly (no hardware)
- G125-224XX96F1 – Gecko-SL Female Crimp Connector Assembly

3. Test Results

3.1. Contact Resistance: EIA-364-06C: 2006

Methodology: Contacts on each connector were measured for resistance prior to any electrical, mechanical or environmental testing. The mated connector pairing was wired in series using G125-0010005 contacts. 200mm lengths of 26AWG wire with custom PCBs were used to complete the circuit. The total resistance of the complete circuit was measured; the resistance of the wires and PCB was then measured separately and subtracted from the results.

Specification: Contact Resistance (initial) = 20mΩ max per contact

Results:

Connector Assembly Part Numbers		Connector Resistance (mΩ)	
		Total	Per Contact
G125-MH10605MXP	G125-224069600	145.8	6.97
G125-MH12005MXP	G125-224209600	441.0	7.75

G125-MH15005MXP	G125-224509600	1,052.0	7.52
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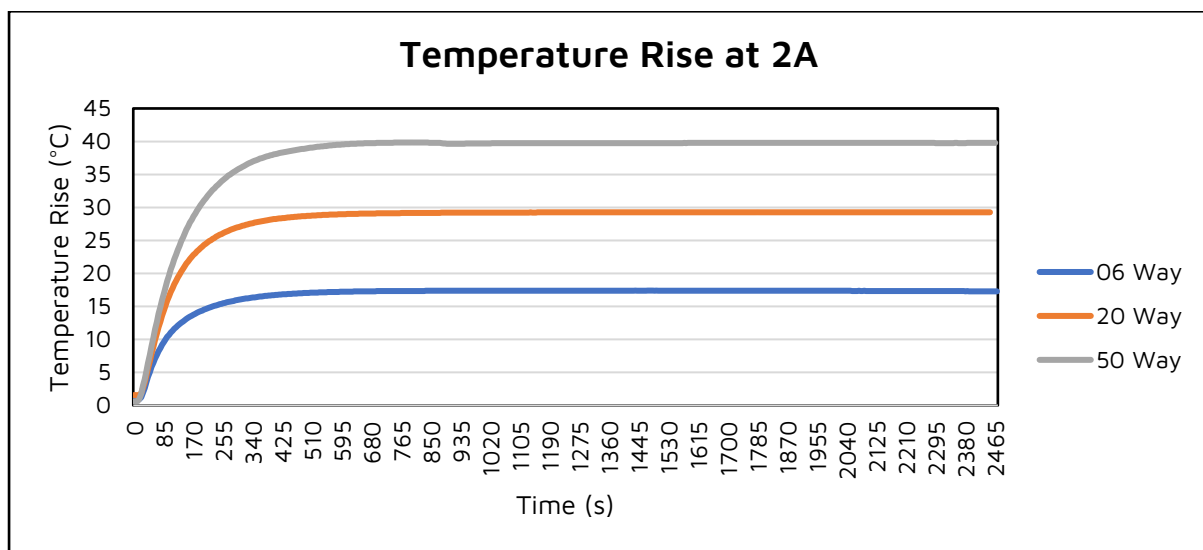
3.2. Power Rating (Current versus Temperature Rise): EIA-364-70A: 1998, Method 2

Methodology: The test demonstrates the current carrying capability of the Gecko-SL-Horizontal connector system. The mated connector pairing was wired in a series circuit. To complete the circuit 200mm lengths of 26AWG wire and custom PCBs were used. 2A was passed through the contacts and the temperature rise above ambient was recorded.

Specification: Current Rating (when all contacts are electrically loaded) = 2.0A max

Results:

Connector Assembly Part Numbers		Temperature Rise (°C)
G125-MH10605MXP	G125-224069600	17.3
G125-MH12005MXP	G125-224209600	29.3
G125-MH15005MXP	G125-224509600	39.8



3.3. Durability: EIA-364-09C: 1999

Methodology: For this test, fully-assembled connector pairs were mated at a speed of 25.4mm/min for 1,500 cycles. Post-conditioning samples were also cycled on the force gauge to compare the effect certain conditions have on insertion and withdrawal forces over 1500 cycles.

Specification:

- 2.8N maximum contact insertion force (using mating contact)
- 0.2N minimum contact withdrawal force (using mating contact)
- 1,000 Mechanical Operation cycles

Results: Connector forces displayed are averages taken from multiple samples in each test set-up.

Connector Part Numbers		Connector Insertion Force (N)			Contact Insertion Force (N)	
		Initial	Max	Final	Initial	Max
G125-MH10605M3P	G125-224069600	10.16	12.99	12.99	1.69	2.17
G125-MH10605M4P	G125-224069600	9.71	13.96	13.59	1.62	2.45
G125-MH11005M3P	G125-224109600	23.05	24.40	23.89	2.31	2.44
G125-MH11005M4P	G125-224109600	19.85	24.47	23.63	1.99	2.45
G125-MH11205M3P	G125-224129600	21.71	25.14	24.77	1.81	2.10
G125-MH11205M4P	G125-224129600	23.28	26.56	25.81	1.94	2.21
G125-MH11605M3P	G125-224169600	22.46	28.27	28.27	1.40	1.77
G125-MH11605M4P	G125-224169600	24.99	33.27	32.48	1.56	2.08
G125-MH12005M3P	G125-224209600	25.81	43.03	39.36	1.29	2.15
G125-MH12005M4P	G125-224209600	34.91	45.87	44.38	1.75	2.29
G125-MH12605M3P	G125-224269600	18.95	41.09	33.79	0.73	1.58
G125-MH12605M4P	G125-224269600	18.28	46.91	46.09	0.70	1.80
G125-MH13405M3P	G125-224349600	28.57	52.72	51.53	0.84	1.55
G125-MH13405M4P	G125-224349600	38.64	58.54	58.17	1.14	1.72
G125-MH15005M3P	G125-224509600	34.68	95.22	95.22	0.69	1.90
G125-MH15005M4P	G125-224509600	30.43	97.16	91.22	0.61	1.94
Average					1.38	2.04

Connector Part Numbers		Connector Withdrawal Force (N)			Contact Withdrawal Force (N)	
		Initial	Max	Final	Initial	Max
G125-MH10605M3P	G125-224069600	2.99	7.24	5.68	0.50	1.21
G125-MH10605M4P	G125-224069600	4.70	5.68	3.49	0.78	0.95
G125-MH11005M3P	G125-224109600	4.78	10.01	8.42	0.48	1.00
G125-MH11005M4P	G125-224109600	6.12	12.62	7.25	0.61	1.26
G125-MH11205M3P	G125-224129600	4.85	13.37	9.56	0.40	1.11
G125-MH11205M4P	G125-224129600	6.05	14.49	10.53	0.50	1.21
G125-MH11605M3P	G125-224169600	8.14	17.92	15.46	0.51	1.12
G125-MH11605M4P	G125-224169600	8.74	20.31	13.01	0.55	1.27
G125-MH12005M3P	G125-224209600	14.34	24.57	18.06	0.72	1.23
G125-MH12005M4P	G125-224209600	14.19	25.99	20.06	0.71	1.30
G125-MH12605M3P	G125-224269600	13.07	27.93	17.10	0.55	1.07
G125-MH12605M4P	G125-224269600	14.78	30.02	19.27	0.57	1.15
G125-MH13405M3P	G125-224349600	28.57	52.72	31.21	0.72	1.05
G125-MH13405M4P	G125-224349600	20.53	34.27	30.99	0.60	1.01
G125-MH15005M3P	G125-224509600	29.79	58.24	41.07	0.60	1.16
G125-MH15005M4P	G125-224509600	26.43	56.15	34.48	0.53	1.12
Average					0.58	1.14

3.4. Contact Retention: EIA-364-05B: 1998

Methodology: 6 contacts were removed from the assemblies using an automatic force gauge and forces measured.

Specification: Contact Retention in Housing = 6.0N min

Results:

Part Number	Contact Retention Force (N)		
	Max	Min	Average
G125-MH10605MXP	16.43	11.42	13.73
G125-MH11005MXP	14.18	10.75	12.45
G125-MH11205MXP	18.21	11.20	14.66
G125-MH11605MXP	14.18	8.66	11.41
G125-MH12005MXP	15.52	9.71	12.96
G125-MH12605MXP	13.96	8.66	11.08
G125-MH13405MXP	14.33	7.77	11.43
G125-MH15005MXP	14.33	8.44	11.78
Average			12.44

3.5. Insert Retention: EIA-364-35C: 2012

Methodology: Insert retention was tested for both pre and post conditioned samples. Samples were loaded into the automatic force gauge where an axial load of 20.0N was applied at a rate of 69kPa, this was held for 10 seconds. Samples were then visually inspected and given a pass or fail.

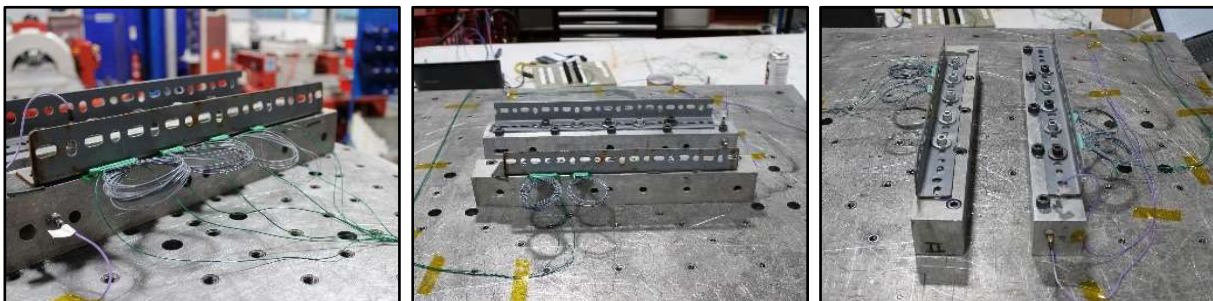
Specification: Insert retention = 20N

Results:

Part Number	Insert Retention (Pass/Fail)	
	G125-MH1XX05M3P	G125-MH1XX05M4P
G125-MH10605MXP	PASS	PASS
G125-MH11005MXP	PASS	PASS
G125-MH11205MXP	PASS	PASS
G125-MH11605MXP	PASS	PASS
G125-MH12005MXP	PASS	PASS
G125-MH12605MXP	PASS	PASS
G125-MH13405MXP	PASS	PASS
G125-MH15005MXP	PASS	PASS

3.6. Vibration: EIA-364-28D: 1999, Condition 4 / BS EN 60068-2-6: 2008, Test Fc

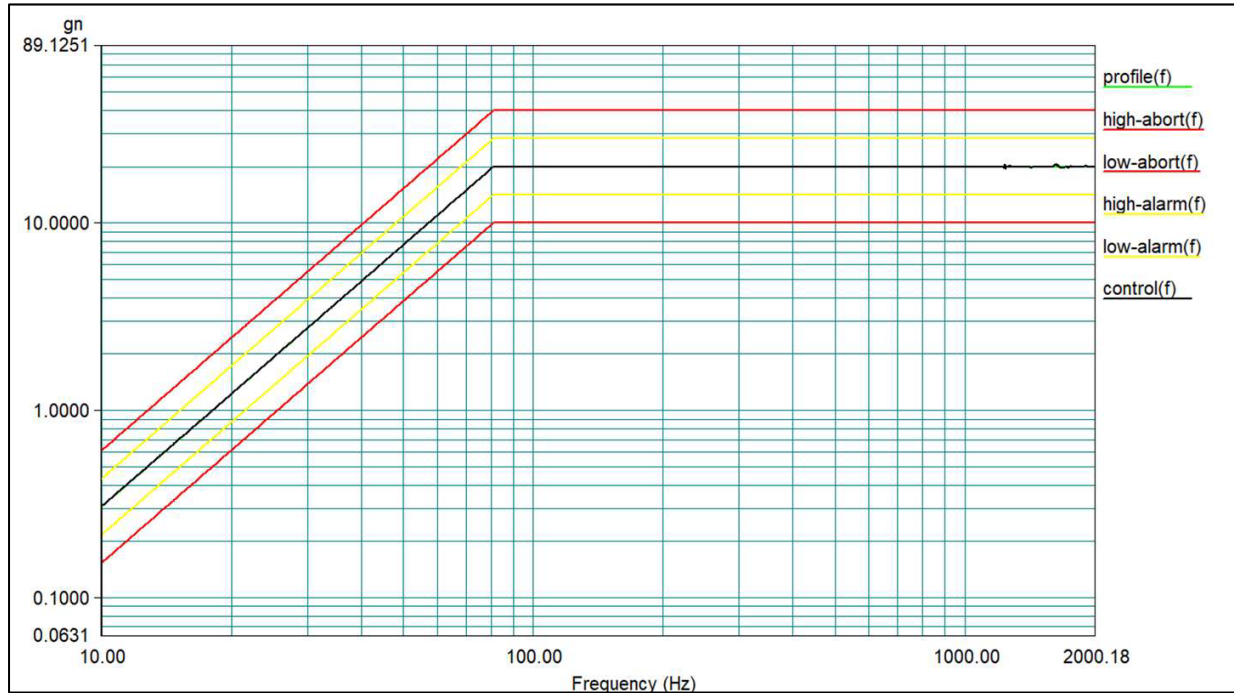
Methodology: The samples were subjected to a Swept Sine Test with continuous monitoring at ≥1 microsecond. Upon completion of testing the samples were visually inspected.



Samples mounted in the lateral, longitudinal and vertical axis

Specification: 10Hz to 2kHz, 20gn pk or 1.52mm peak to peak (whichever is less), 196.1m/s² (20G), 20 mins per sweep cycle, 12 sweeps per axis, 4 hours per axis.

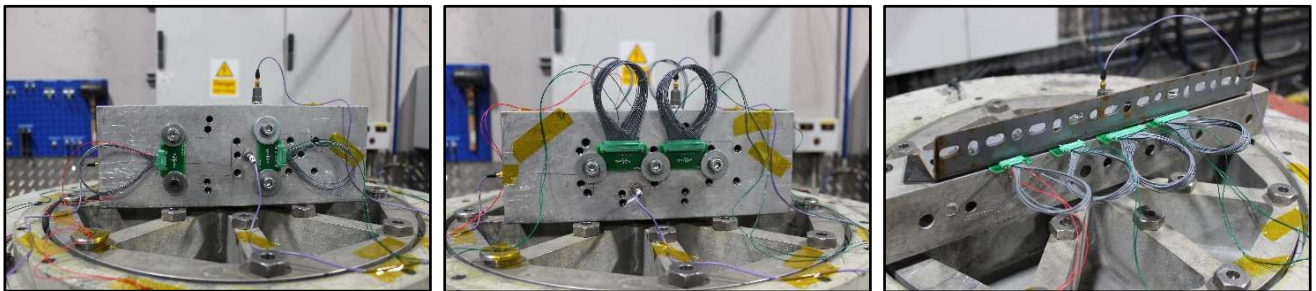
Results: No triggers were noted on any sample during the test process, no obvious changes to the samples were noted.



Sine sweep vibration response generated during sample testing

3.7. Mechanical Shock: EIA-364-27B: 1996 / BS EN 60068-2-27: 2009

Methodology: Samples were wired with two series circuits, one through the power contacts and the other through the signal. Shock Test Sequence was carried out on all samples. During the test, the samples were monitored continuously for discontinuities of ≥ 1 microsecond, using a constant current source of 100mA. No triggers were noted on any sample during the test process. Upon completion of testing the samples were visually inspected, no obvious changes to the samples were noted.

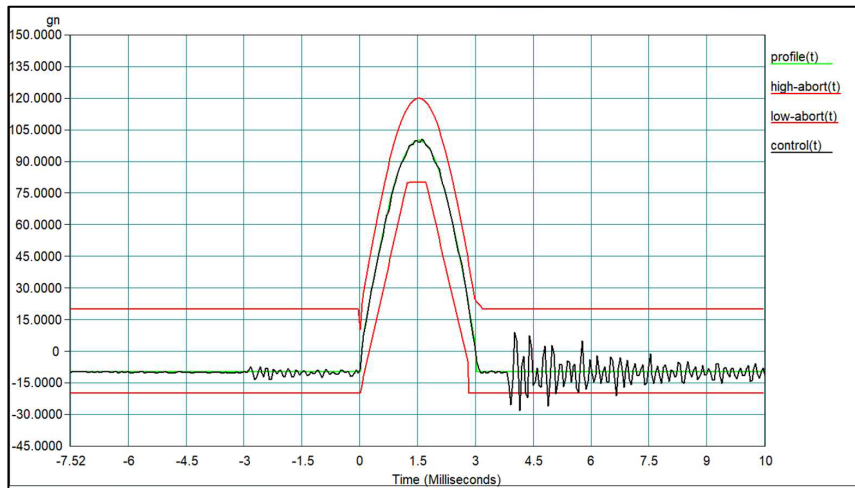


Samples mounted in the lateral, longitudinal and vertical axis

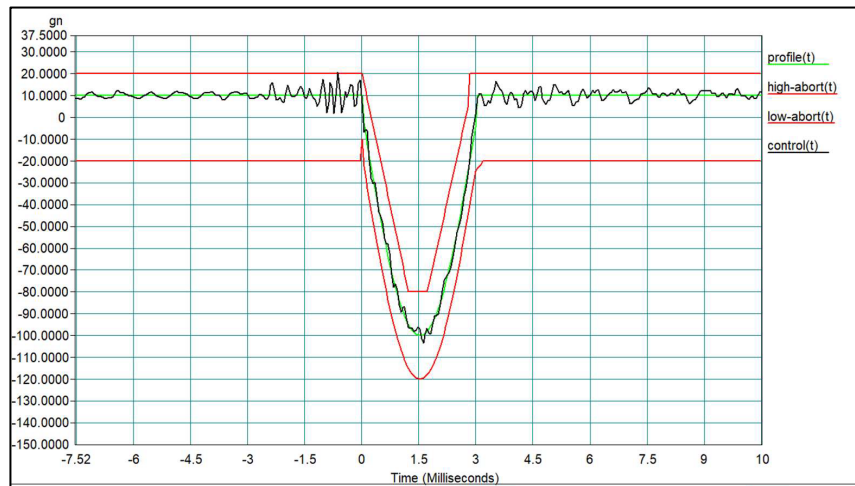
Specification:

- Acceleration = 100gn
- Shock Duration = 3ms
- Shock Shape = Half Sine Pulse, 3 shocks in each axis

Results: No triggers were noted on any sample during the test process, no obvious changes to the samples were noted.



Positive shock pulse plot generated during mechanical shock testing



Negative shock pulse plot generated during mechanical shock

3.8. Withstand Voltage: EIA-364-20C: 2004

Methodology: 600V DC was applied to connector pairs wired in two series circuits to determine whether breakdown or flashover occurred. Current leakage was measured during the test. Samples were visually inspected following the test.

Specification:

- Voltage Proof at sea level (ambient pressure) = 600V DC/AC for 60 seconds
- Voltage Proof at 70,000ft (simulated with reduced pressure) = 350V DC/AC for 60 seconds
- Current leakage: 5mA max

Results: No obvious changes to the samples were noted.

Connector Part Numbers		Voltage Breakdown
G125-MH10605MXP	G125-224069600	PASS
G125-MH11005MXP	G125-224109600	PASS
G125-MH11205MXP	G125-224129600	PASS
G125-MH11605MXP	G125-224169600	PASS
G125-MH12005MXP	G125-224209600	PASS
G125-MH12605MXP	G125-224269600	PASS
G125-MH13405MXP	G125-224349600	PASS
G125-MH15005MXP	G125-224509600	PASS



3.9. Insulation Resistance: EIA-364-21C: 2000

Methodology: 500V DC voltage was applied to connector pairs wired in two series for two minutes to determine whether the resistance satisfies the required specification values of >10GΩ. Samples were visually inspected following the test, with no obvious changes to the connectors occurring.

Specification:

- Insulation Resistance (initial) = 10GΩ min
- Insulation Resistance (post-conditioning excluding salt mist) = 1GΩ min

Connector Part Numbers		Insulation Resistance
G125-MH10605MXP	G125-224069600	PASS
G125-MH11005MXP	G125-224109600	PASS
G125-MH11205MXP	G125-224129600	PASS
G125-MH11605MXP	G125-224169600	PASS
G125-MH12005MXP	G125-224209600	PASS
G125-MH12605MXP	G125-224269600	PASS
G125-MH13405MXP	G125-224349600	PASS
G125-MH15005MXP	G125-224509600	PASS

