



HARWIN

Harwin Test Report Summary

HT03003

General Testing of Gecko (G125 Series) Connectors



Test Report for Gecko (G125 Series) – General Testing

1. Introduction.

1.1. Description and Purpose.

The Harwin Gecko (G125 Series) connector is a new range of 1.25mm pitch connector series, designed to be comparable to the Datamate (M80 Series) range, but taking up less PCB real estate. The following tests were carried out to establish the Component Specification criteria, as well as a performance comparison to the Datamate range.

1.2. Conclusion.

The following data has been collated from Harwin test reports 805, 806, 817, 904, 932 and 1020. The results were used to compile the Component Specification for the Gecko range, which can be downloaded here:

http://www.harwin.com/includes/pdfs/C125XX_G125_Gecko_Connectors.pdf.

The tests indicate that the Gecko connector performs on a comparable level to Datamate and exceeds the performance levels of commercial connectors on a similar pitch.

2. Test Method and Requirements.

2.1. Specification Parameters.

Tests were either carried out in general accordance with EIA 364 standards, or in the case of the comparative Datamate tests, to BS9520 (in accordance with BS9525 F0033). The list of tests covered in this summary are as follows:

Testing Standard	Description of Test	Page No.
EIA-364-06C: 2006	Initial Contact Resistance	3
EIA-364-20C: 2004	Withstand Voltage	4
EIA-364-21C: 2000	Insulation Resistance	4
EIA-364-70A: 1998	Temperature Rise versus Current & De-Rating Curves	5-8
EIA-364-32C: 2000	Thermal Shock (Temperature Cycling)	9
EIA-364-26B: 1999	Salt Spray	9-10
EIA-364-31B: 1999	96 hours and 56 Day Humidity	10-11
EIA-364-28D: 1999	Vibration	11-12
EIA-364-27B: 1996	Mechanical Shock	12
EIA-364-01A: 2000	Acceleration	12
BS9520: 1.2.6.2	Bump (to BS2011: Part 2.1 Eb: 1977)	13
BS9520: 1.2.6.3.1	Vibration (to BS2011: Part 2.1 Fc: 1977)	13
BS9520: 1.2.6.4	Shock (to BS2011: Part 2.1 Ea: 1977)	13
BS9520: 1.2.6.5	Acceleration (to BS2011: Part 2.1 Ga: 1977)	13
BS9520: 1.2.7.1	Mechanical Operations (50 operations)	13
N/A	Latch Integrity Testing (100 Operations)	14-16

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3. Individual Test Results.

3.1. Initial Contact Resistance to EIA-364-06C: 1999.

16-way connectors were tested in a variety of configurations, for initial contact resistance prior to the following tests.

Specification set at 20mΩ maximum.

Male connector	Female connector	Average (mΩ)	Maximum (mΩ)	Minimum (mΩ)
G125-MV11605L0 <i>Unlatched PC-Tail</i>	G125-FV11605L0 <i>Unlatched PC-Tail</i>	8.23	10.0	4.0
G125-MV11605L0 <i>Unlatched PC-Tail</i>	G125-FV11605L0 <i>Unlatched PC-Tail</i>	7.17	10.0	4.0
G125-3041696L0 & G125-1010005 <i>Crimp</i>	G125-2041696L0 & G125-0010005 <i>Crimp</i>	4.77	9.0	3.0
G125-3041696L0 & G125-1010005 <i>Crimp</i>	G125-FV11605L0 <i>Unlatched PC-Tail</i>	5.88	10.0	4.0

3.2. Withstand Voltage to EIA-364-20C: 2004.

12-way connectors were tested in a variety of configurations.

- Sea Level conditions were carried out at an ambient absolute pressure of 986mB.
- Altitude was carried out in a vacuum chamber reduced to an absolute pressure of 44mB, to represent an altitude of 21,336m (70,000ft).
- X-axis measurements taken from adjoining contact positions along the connectors.
- Y-axis measurements taken from adjoining contact positions across the connectors.

Specification set at:

- Working Voltage at sea level = 450V DC or AC_{peak}
- Voltage Proof at sea level = 600V DC or AC_{peak}
- Working Voltage at 21,336m (70,000ft) = 250V DC or AC_{peak}
- Voltage Proof at 21,336m (70,000ft) = 350V DC or AC_{peak}

See results table on next page.

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3.2. Withstand Voltage to EIA-364-20C: 2004 Cont'd.

Male connector	Female connector	Condition	Axis	Average (V)	Maximum (V)	Minimum (V)
G125-MV11605L0 <i>Unlatched PC-Tail</i>	G125-FV11605L0 <i>Unlatched PC-Tail</i>	Sea Level	X	1133	1200	1100
			Y	1033	1100	1000
		Altitude	X	650	700	600
			Y	617	650	600
G125-MV11605L0 <i>Unlatched PC-Tail</i>	G125-2041696L0 & G125-0010005 <i>Crimp</i>	Sea Level	X	900	1200	700
			Y	967	1000	900
		Altitude	X	467	500	450
			Y	450	450	450
G125-3041696L0 & G125-1010005 <i>Crimp</i>	G125-2041696L0 & G125-0010005 <i>Crimp</i>	Sea Level	X	1367	1900	1000
			Y	1333	1700	900
		Altitude	X	625	650	600
			Y	617	650	600
G125-3041696L0 & G125-1010005 <i>Crimp</i>	G125-FV11605L0 <i>Unlatched PC-Tail</i>	Sea Level	X	967	1100	900
			Y	1033	1200	800
		Altitude	X	483	500	450
			Y	500	550	450

3.3. Insulation Resistance to EIA-364-21C: 2000.

16-way connectors were tested for the Initial insulation resistance, and in a separate test 12-way connectors were tested for insulation resistance after conditioning, in a variety of configurations. Tests were carried out using a 500V DC voltage source.

- X-axis measurements taken from adjoining contact positions along the connectors.
- Y-axis measurements taken from adjoining contact positions across the connectors.

Specification set at:

- Insulation Resistance (initial) = 10G Ω minimum at 500V DC
- Insulation Resistance (after conditioning) = 1G Ω minimum at 500V DC

Male connector	Female connector	Condition	Axis	Average (G Ω)	Maximum (G Ω)	Minimum (G Ω)
G125-MV11605L0 <i>Unlatched PC-Tail</i>	G125-FV11605L0 <i>Unlatched PC-Tail</i>	Initial	Unspecified	>10	-	-
G125-MV11605L0 <i>Unlatched PC-Tail</i>	G125-2041696L0 & G125-0010005 <i>Crimp</i>	Initial	Unspecified	>10	-	-
		After conditioning	X	1.83	2	1
			Y	1.67	2	1
G125-3041696L0 & G125-1010005 <i>Crimp</i>	G125-2041696L0 & G125-0010005 <i>Crimp</i>	Initial	Unspecified	>10	-	-
		After conditioning	X	1	1	1
			Y	1	1	1
G125-3041696L0 & G125-1010005 <i>Crimp</i>	G125-FV11605L0 <i>Unlatched PC-Tail</i>	Initial	Unspecified	>10	-	-
		After conditioning	X	1.50	2	1
			Y	1.67	2	1

3.4. Temperature Rise versus Current to EIA-364-70A: 1998.

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12-way connectors were tested to see what current would achieve a 30°C temperature rise over ambient. Each combination was tested with 1, 2... up to 12 contacts all carrying the same current. This test was carried out beginning at ambient temperature averaging 25°C.

Specification set at:

- Current Rating (when only one contact is electrically loaded) = 2.8A max
- Current Rating (when all contacts are electrically loaded) = 2.0A max

Male connector	Female connector	No. of contacts electrically loaded (Amps)											
		1	2	3	4	5	6	7	8	9	10	11	12
G125-MV11605L0 <i>Unlatched PC-Tail</i>	G125-FV11605L0 <i>Unlatched PC-Tail</i>	5.60	4.80	4.10	3.60	3.25	3.30	2.95	3.00	2.85	3.00	2.85	2.73
G125-MV11605L0 <i>Unlatched PC-Tail</i>	G125-2041696L0 & G125-0010005 <i>Crimp</i>	5.00	5.30	5.20	5.00	4.90	4.70	4.70	4.70	4.60	4.30	4.30	4.30
G125-3041696L0 & G125-1010005 <i>Crimp</i>	G125-2041696L0 & G125-0010005 <i>Crimp</i>	5.30	5.00	4.80	4.50	3.90	3.90	3.50	3.60	3.45	3.15	3.00	3.05
G125-3041696L0 & G125-1010005 <i>Crimp</i>	G125-FV11605L0 <i>Unlatched PC-Tail</i>	2.00	5.00	4.80	4.80	4.90	4.70	4.60	4.80	4.70	4.40	4.60	4.57

3.4.1. Current & Temperature Capabiliy Testing.

The following data has been collected to demonstrate the current carrying capability of the 06, 10, 12, 16, 20, 26, 34 & 50 position G125 connectors at elevated ambient temperatures.

See next page for Test Method requirements and Results.

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Test Method, Requirements and Results.

List of test samples.

06 way connector	Sample 1	Sample 2
Parts Used	G125-MC10605L4-0150M	G125-MC10605L4-0150M
	G125-FV20605L0P	G125-FV20605L0P
Assembly Resistance (Ω)	0.071	0.072
10 way connector	Sample 1	Sample 2
Parts Used	G125-MC11005L4-0150L	G125-MC11005L4-0150L
	G125-FV21005L0P	G125-FV21005L0P
Assembly Resistance (Ω)	0.180	0.220
12 way connector	Sample 1	Sample 2
Parts Used	G125-MC11205L4-0150L	G125-MC11205L4-0150L
	G125-FV21205L0P	G125-FV21205L0P
Assembly Resistance (Ω)	0.260	0.265
16 way connector	Sample 1	Sample 2
Parts Used	G125-MC11605L4-0150L	G125-MC11605L4-0150L
	G125-FV21605L0P	G125-FV21605L0P
Assembly Resistance (Ω)	0.340	0.360
20 way connector	Sample 1	Sample 2
Parts Used	G125-MC12005L4-0150L	G125-MC12005L4-0150L
	G125-FV22005L0P	G125-FV22005L0P
Assembly Resistance (Ω)	0.465	0.450
26 way connector	Sample 1	Sample 2
Parts Used	G125-MC12605L4-0150L	G125-MC12605L4-0150L
	G125-FV22605L0P	G125-FV22605L0P
Assembly Resistance (Ω)	0.580	0.590
34 way connector	Sample 1	Sample 2
Parts Used	G125-MC13405L4-0150L	G125-MC13405L4-0150L
	G125-FV23405L0P	G125-FV23405L0P
Assembly Resistance (Ω)	0.780	0.770
50 way connector	Sample 1	Sample 2
Parts Used	G125-MC15005L4-0150M	G125-MC15005L4-0150M
	G125-FV25005L0P	G125-FV25005L0P
Assembly Resistance (Ω)	0.999	1.060

Test Method.

Gecko current carrying capability versus temperature testing carried out in accordance with EIA-364-70; test procedure method 2.

Using 2 samples each connector mated pair (06, 10, 12, 16, 20, 26, 34 & 50 position parts), pre-assembled Male cable assemblies and Female PC-tail through board connectors were wired up to create a circuit in series. Male cable assemblies had 150mm of wire attached to each contact creating a 300mm loop (series link) between contacts. A cable-to-board configuration was used to be representative of the whole range of G125-series connector options.

A 0.5 Amp current was applied and the temperature rise above ambient was recorded. The current was increased in 0.5Amp increments until a maximum operating temperature of 150°C was reached or marginally exceeded. The ambient temperature was also measured throughout test which averaged 21.5°C.

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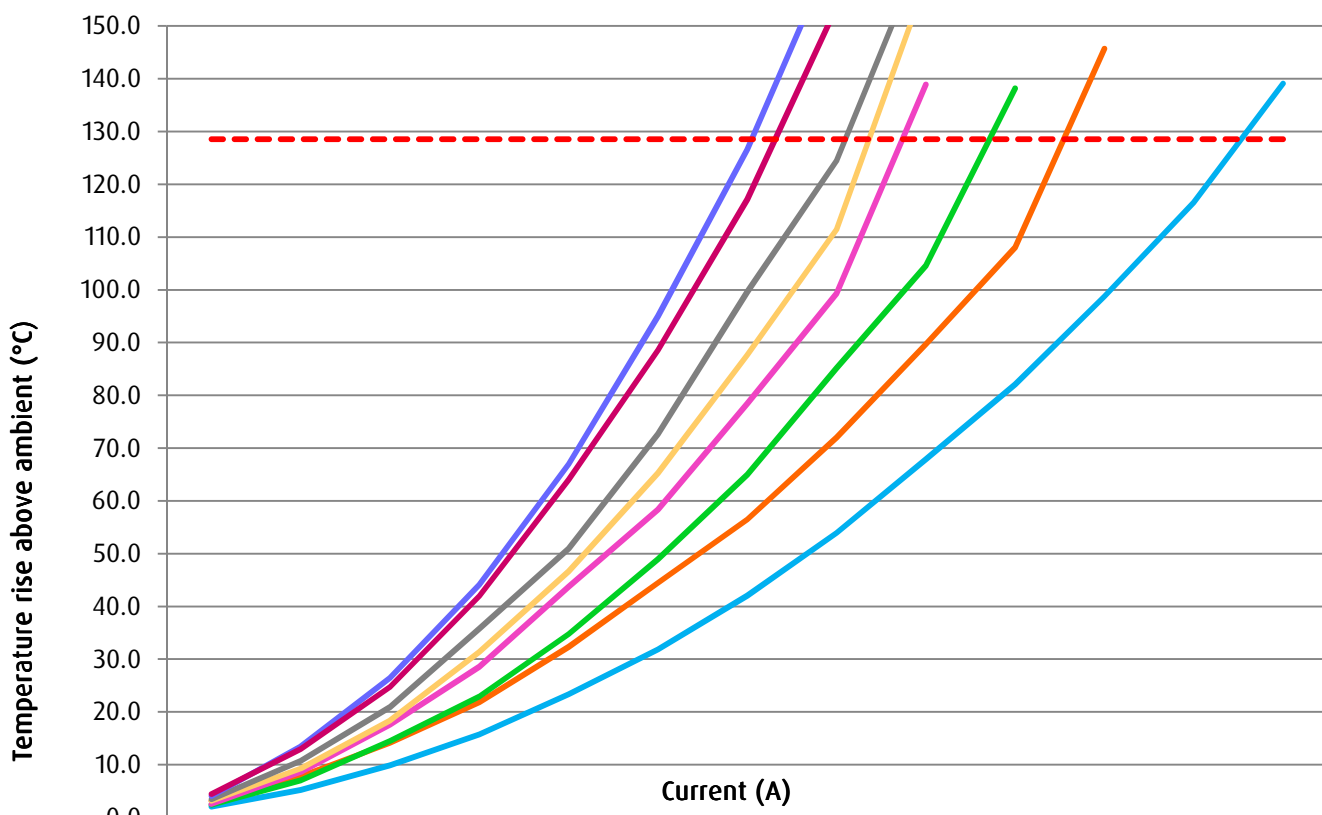
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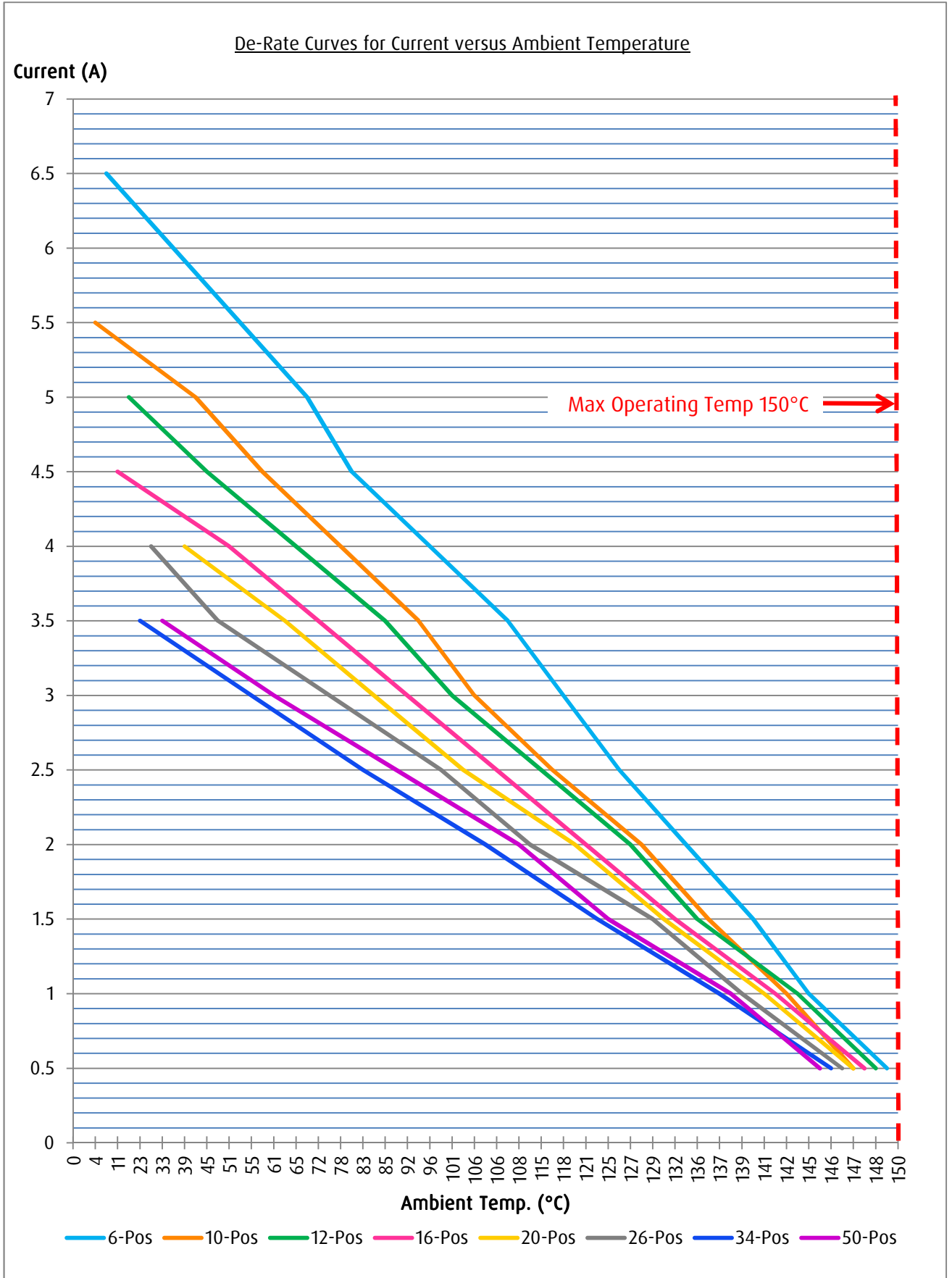
Results.

Temperature Rise versus Current



	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5
6-Pos	2.1	5.2	9.9	15.7	23.4	31.8	42.1	53.9	67.9	82.1	98.8	116.6	139.1
10-Pos	3.2	7.8	14.2	21.8	32.4	44.5	56.5	72.0	89.7	108.0	145.7		
12-Pos	2.4	7.0	14.5	22.9	34.8	48.9	65.0	85.2	104.6	138.2			
16-Pos	2.6	8.6	17.6	28.6	43.8	58.4	78.5	99.3	138.9				
20-Pos	3.2	9.3	18.4	31.4	46.7	65.3	87.7	111.4	158.5				
26-Pos	3.4	10.8	20.9	35.8	51.0	72.7	99.6	124.5	165.8				
34-Pos	4.1	13.5	26.5	44.1	67.0	95.0	126.6	165.6					
50-Pos	4.4	13.0	24.8	42.0	64.0	88.6	117.1	153.6					
- - - Limit	128.5	128.5	128.5	128.5	128.5	128.5	128.5	128.5	128.5	128.5	128.5	128.5	128.5

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3.5. Thermal Shock (Temperature Cycling) to EIA-364-32C: 2000.

16-way connectors were tested in a variety of configurations, and subjected to temperature extremes of -65°C to +150°C in 30 minute dwells for 5 cycles. Sets of connectors were subjected to this test in both mated and unmated conditions. The connectors were measured for contact resistance, insertion and withdrawal forces before and after testing, and visual inspection after testing.

Specification set at:

- Contact Resistance (initial) = 20mΩ maximum
- Contact Resistance (after conditioning) = 25mΩ maximum
- Insertion Force (per contact) = 2.8N maximum
- Withdrawal Force (per contact) = 0.2N minimum

Male connector	Female connector	Condition	Contact Resistance			Connector Insertion Force (N)	Connector Withdrawal Force (N)
			Ave (mΩ)	Max (mΩ)	Min (mΩ)		
G125-MV11605L0 <i>Unlatched PC-Tail</i>	G125-FV11605L0 <i>Unlatched PC-Tail</i>	Initial	8.88	10.0	6.0	15.96	12.68
		After conditioning	3.69	5.0	2.0	9.96	4.80
		After conditioning (unmated)	3.94	5.0	3.0	12.22	9.12
G125-MV11605L0 <i>Unlatched PC-Tail</i>	G125-2041696L0 & G125-0010005 <i>Crimp</i>	Initial	7.25	10.0	5.0	11.48	8.18
		After conditioning	3.69	5.0	2.0	8.52	7.10
		After conditioning (unmated)	3.06	5.0	2.0	13.88	11.62
G125-3041696L0 & G125-1010005 <i>Crimp</i>	G125-2041696L0 & G125-0010005 <i>Crimp</i>	Initial	6.44	9.0	3.0	15.36	8.26
		After conditioning	4.38	8.0	3.0	9.64	6.76
		After conditioning (unmated)	2.69	4.0	2.0	10.92	8.18
G125-3041696L0 & G125-1010005 <i>Crimp</i>	G125-FV11605L0 <i>Unlatched PC-Tail</i>	Initial	7.38	10.0	4.0	12.22	7.46
		After conditioning	3.88	6.0	2.0	8.84	5.70
		After conditioning (unmated)	3.31	5.0	2.0	15.64	6.72

No signs of damage or degradation were found on visual inspection.

3.6. Salt Spray to EIA-364-26B : 1999.

16-way connectors were tested in a variety of configurations: they were loaded into the salt mist chamber and subjected to the following conditions: 48 hours continuous exposure using 5% Sodium Chloride solution at +35°C. Sets of connectors were subjected to this test in both mated and unmated conditions. The connectors were measured for contact resistance before and after testing, and visual inspection after testing.

Specification set at:

- Contact Resistance (initial) = 20mΩ maximum
- Contact Resistance (after conditioning) = 25mΩ maximum

See results table on next page.

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3.6. Salt Spray to EIA-364-26B : 1999 Cont'd.

Male connector	Female connector	Condition	Contact Resistance		
			Average (mΩ)	Maximum (mΩ)	Minimum (mΩ)
G125-MV11605L0 <i>Unlatched PC-Tail</i>	G125-FV11605L0 <i>Unlatched PC-Tail</i>	Initial	9.19	10.0	7.0
		After conditioning	5.13	8.0	3.0
		After conditioning (unmated)	4.0	7.0	2.0
G125-MV11605L0 <i>Unlatched PC-Tail</i>	G125-2041696L0 & G125-0010005 <i>Crimp</i>	Initial	7.13	9.0	4.0
		After conditioning	4.63	10.0	2.0
		After conditioning (unmated)	2.82	5.0	2.0
G125-3041696L0 & G125-1010005 <i>Crimp</i>	G125-2041696L0 & G125-0010005 <i>Crimp</i>	Initial	3.94	6.0	3.0
		After conditioning	3.44	6.0	2.0
		After conditioning (unmated)	3.19	4.0	3.0
G125-3041696L0 & G125-1010005 <i>Crimp</i>	G125-FV11605L0 <i>Unlatched PC-Tail</i>	Initial	5.13	6.0	4.0
		After conditioning	4.19	5.0	2.0
		After conditioning (unmated)	3.25	7.0	2.0

No signs of damage or degradation were found on visual inspection.

3.7. Humidity to EIA-364-31B: 1999 (96 hours).

16-way connectors were tested in a variety of configurations. The connectors were subjected to 24 hours pre-conditioning at +50°C, followed by 96 hours at +40°C/93%RH, with a polarising voltage of +60V DC applied. Sets of connectors were subjected to this test in both mated and unmated conditions. The connectors were measured for contact resistance before and after testing, as well as a visual inspection after testing.

Specification set at:

- Contact Resistance (initial) = 20mΩ maximum
- Contact Resistance (after conditioning) = 25mΩ maximum

Male connector	Female connector	Condition	Contact Resistance		
			Average (mΩ)	Maximum (mΩ)	Minimum (mΩ)
G125-MV11605L0 <i>Unlatched PC-Tail</i>	G125-FV11605L0 <i>Unlatched PC-Tail</i>	Initial	6.63	9.0	4.0
		After conditioning	5.63	8.0	3.0
		After conditioning (unmated)	9.81	11.0	8.0
G125-MV11605L0 <i>Unlatched PC-Tail</i>	G125-2041696L0 & G125-0010005 <i>Crimp</i>	Initial	7.13	9.0	4.0
		After conditioning	5.81	9.0	3.0
		After conditioning (unmated)	9.94	12.0	7.0
G125-3041696L0 & G125-1010005 <i>Crimp</i>	G125-2041696L0 & G125-0010005 <i>Crimp</i>	Initial	3.94	6.0	3.0
		After conditioning	4.06	8.0	1.0
		After conditioning (unmated)	10.38	13.0	5.0
G125-3041696L0 & G125-1010005 <i>Crimp</i>	G125-FV11605L0 <i>Unlatched PC-Tail</i>	Initial	5.13	6.0	4.0
		After conditioning	7.81	11.0	3.0
		After conditioning (unmated)	11.63	13.0	6.0

No signs of damage or degradation were found on visual inspection.

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3.8. Humidity to EIA-364-31B: 1999 (56 days).

12-way connectors were tested in a variety of configurations. The connectors were subjected to 24 hours pre-conditioning at +50°C, followed by 56 days (1344 hours) at +40°C/93%RH, with a polarising voltage of +60V DC applied. Sets of connectors were subjected to this test in both mated and unmated conditions. The connectors were measured for contact resistance before and after testing, as well as a visual inspection after testing.

Specification set at:

- Contact Resistance (initial) = 20mΩ maximum
- Contact Resistance (after conditioning) = 25mΩ maximum

Male connector	Female connector	Condition	Contact Resistance		
			Average (mΩ)	Maximum (mΩ)	Minimum (mΩ)
G125-MV11205L0 <i>Unlatched PC-Tail</i>	G125-FV21205L0 <i>Unlatched PC-Tail</i>	Initial	9.6	16.0	3.0
		After conditioning	12.3	15.0	5.0
G125-MV21205L0 <i>Unlatched PC-Tail</i>	G125-FV21205L0 <i>Unlatched PC-Tail</i>	Initial (unmated)	-	-	-
		After conditioning	12.0	14.0	6.0
G125-MV11205L0 <i>Unlatched PC-Tail</i>	G125-2041296L0 & G125-0010005 <i>Crimp</i>	Initial	6.3	10.0	2.0
		After conditioning	6.3	10	3.0
G125-MV21205L0 <i>Unlatched PC-Tail</i>	G125-2041296L0 & G125-0010005 <i>Crimp</i>	Initial (unmated)	-	-	-
		After conditioning	3.8	8.0	2.0
G125-MV11205L0 <i>Unlatched PC-Tail</i>	G125-2041296L0 & G125-0010005 <i>Crimp</i>	Initial	6.8	12.0	4.0
		After conditioning	5.5	11.0	3.0
G125-3041296L0 & G125-1010005 <i>Crimp</i>	G125-2041296L0 & G125-0010005 <i>Crimp</i>	Initial (unmated)	-	-	-
		After conditioning	6.0	15.0	2.0
G125-3041296L0 & G125-1010005 <i>Crimp</i>	G125-FS11205L0 <i>Unlatched SMT Tail</i>	Initial	8.3	13.0	1.0
		After conditioning	5.4	11.0	2.0
-	2 x G125-FV11205L0 <i>Unlatched PC-Tail</i>	Initial (unmated)	-	-	-
		After conditioning	-	-	-

No signs of damage or degradation were found on visual inspection.

3.7. Vibration to EIA-364-28D: 1999.

12-way Male Crimp connectors with latches were mated to 12-way Female SMT connectors for this test. The connectors were subjected to the following conditions:

- Frequency range = 10 to 2,000Hz.
- Acceleration = 20G (196m/s²) or 1.52mm peak-to-peak (whichever is less).
- Number of sweep cycles = 12 per axis.
- Time for one sweep = 20 minutes.
- Male crimp attached to 15mm long cables, not 200mm as stated in EIA-364-28D.

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3.7. Vibration to EIA-364-28D: 1999 Cont'd.

During this test, the samples were monitored continuously for discontinuities of 1 millisecond or greater, using a constant current source of 100mA.

No discontinuities were found on any samples during any axis of the test, and a visual inspection revealed no distortion or bending to any components.

3.8. Mechanical Shock to EIA-364-27B: 1996.

12-way Male Crimp connectors with latches were mated to 12-way Female SMT connectors for this test.

Test condition E was applied to the axes across and along the connectors (transverse & longitudinal axes).

- Acceleration = 50G (490m/s²)
- Duration = 11ms
- Pulse shape = Terminal peak sawtooth
- Number of pulses = 3 in both directions on each axis
- Male crimp attached to 15mm long cables, not 200mm as stated in EIA-364-27B.

Test condition G was applied in the Vertical axis (across the mated pair).

- Acceleration = 100G (981m/s²)
- Duration = 3ms
- Pulse shape = Terminal peak sawtooth
- Number of pulses = 3 in both directions on each axis
- Male crimp attached to 15mm long cables, not 200mm as stated in EIA-364-27B.

During this test, the samples were monitored continuously for discontinuities of 1 millisecond or greater, using a constant current source of 100mA.

No discontinuities were found on any samples during any axis of the test, and a visual inspection revealed no distortion or bending to any components.

Further testing to 100G (981m/s²) with a 6ms Trapezoidal pulse, both directions of three axis, 18 shocks total to BS2011: Part 2.1 Ea: 1977 has since been passed – see section 3.11(c). No discontinuities were detected using a detector capable of measuring open circuits >250ns. Refer to HT036XX for full details of these results.

3.9. Acceleration to EIA-364-01A: 2000.

12-way Female Crimp connectors were mated to 12-way Male SMT connectors with latches for this test. The connectors were subjected to the following conditions:

- Acceleration = 50G (490m/s²).
- Duration = 30s in both directions of all 3 axes (6 total)

During this test, the samples were monitored continuously for discontinuities of 250 nanoseconds or greater.

No discontinuities were found on any samples during any axis of the test, and a visual inspection revealed no distortion or bending to any components.

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3.10. Environmental Performance to BS9525 F0033 Iss 1: Group CD6(i)(D).

These test requirements are the same performance requirements applied to the Datamate range – this testing is done to confirm that Gecko will perform to the same level. The following data has been collated from Harwin test report 817.

The Gecko connectors tested met the BS9525-F0033 specification for insertion, withdrawal and contact resistance initially and after multiple engagements and separations up to 50 operations. Further, the product met all the requirements for Vibration, Bump, Shock and Acceleration as required by the British Standard specification.

A calibrated detector capable of registering open circuits lasting longer than 250 nanoseconds was used during the Bump, Vibration, Shock and Acceleration tests to register electrical discontinuity.

- a) Bump to BS9520: 1.2.6.2, BS2011: Part 2.1 Eb
 Test Specification = 40G (390 m/s²), 6ms, 4000 Bumps, both directions of three axes, continuously monitoring of electrical continuity during the last 200 bumps.
 Result = Pass, no issues in electrical continuity or visual inspection.
- b) Vibration to BS9520: 1.2.6.3.1, BS2011: Part 2.1 Fc
 Test Specification = 10Hz to 2kHz, 0.75mm peak/10G (98m/s²), duration 6 hours total (2 hours per axis), continuous monitoring of electrical continuity during initial resonance search and the last two frequency sweeps.
 Result = Pass, no issues found in monitoring the vibration for resonance with a strobe light, no issues in electrical continuity or visual inspection after the test.
- c) Shock to BS9520: 1.2.6.4, BS2011: Part 2.1 Ea
 Test Specification = 100G (981 m/s²), 6ms Trapezoidal pulse, both directions of three axes, 18 shocks total, continuous monitoring of electrical continuity during application of shocks.
 Result = Pass, no issues in electrical continuity or visual inspection.
- d) Acceleration to BS9520: 1.2.6.5, BS2011: Part 2.1 Ga
 Test Specification = 50G (490 m/s²), 30 seconds, both directions of three axes, 6 tests total, continuous monitoring of electrical continuity during application of acceleration.
 Result = Pass, no issues found in monitoring the vibration for resonance with a strobe light, no issues in electrical continuity or visual inspection after the test.
- e) Mechanical Operation (Durability) to BS9520 1.2.7.1
 Test Specification = 50 operations, at 15 operations per minute maximum.
 Result = Pass, no issues found at the mating faces of the connectors.

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3.11. Introduction to Latch Integrity Testing.

Conclusion.

The tests indicate that the Gecko connector performs on a comparable level to Datamate despite being a much smaller connector system.

Pre-cycling Gecko latches achieved a minimum of 36.7N and L-Tek latches achieved a minimum of 40.9N. This was a difference of less than 11% which, if you factor in that the connector is 36% smaller is impressive.

Post cycling latch integrity is comparable on both connector systems. The Gecko latches achieved a minimum of 20.3N and the L-Tek latches are rated at 20N for 10 Seconds.

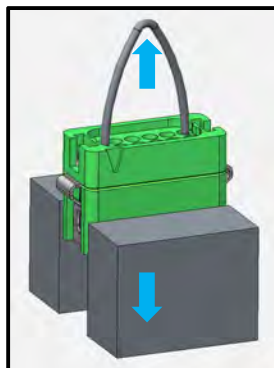
Test Method and Requirements.

Tests performed	
3.	Pull-apart destructive testing of an unpopulated 12-position Gecko mated pair. Connectors had not been cycled just engaged to determine a benchmark of latch performance.
4.	Pull-apart destructive testing of an unpopulated 12-position Gecko mated pair. Connectors had been cycled 100 times and de-latched by hand.
5.	Pull-apart destructive testing of an unpopulated 12-position Gecko mated pair. Connectors had been cycled 100 times and de-latched using Z125-9261200 tool.
6.	Pull-apart destructive testing of an unpopulated 12-position L-Tek mated pair. Connectors had not been cycled just engaged to determine a benchmark of latch performance.
7.	C005xx Reference for L-Tek latch performance after 100 Cycles.

Test Method and Requirements.

Pull-apart destructive testing on an unpopulated 12-position Gecko mated pair. Connectors had not been cycled just engaged to determine a benchmark of latch performance.

Male latched mouldings were secured in a machine vice and the female mouldings had a wire passed through contact position 1 and 12 to create a loop to apply a pull-apart force to. The Force applied was steadily increased until the point of failure and the results are shown on the next page.



Test Report for Gecko (G125 Series) – General Testing

Test Method and Requirements (cont'd).

Latch used for test: G125-4100046, Mouldings used for test: G125-3011296 & G125-2041296			
Results of 40 Test Samples			
39.6N	38.5N	37.9N	38.4N
38.3N	37.4N	37.5N	39.4N
37.7N	37.6N	37.7N	39.4N
38.2N	38.2N	37.2N	39.5N
37.9N	37.9N	38.0N	39.1N
37.3N	38.4N	37.0N	38.2N
38.1N	37.8N	38.9N	36.7N
36.7N	38.0N	38.6N	36.9N
39.4N	38.6N	37.9N	39.7N
37.4N	38.1N	37.3N	36.9N
Max = 39.7N	Min = 36.7N	Average = 38.1N	

The typical mode of failure was that the Latch locking feature broached through the plastic of the female moulding. The Male latch remained intact. One side failed before the other in all cases tested.

Test Method and Requirements.

Pull-apart destructive testing on an unpopulated 12-position Gecko mated pair. Connectors had been cycled 100 times and de-latched by hand.

Male latched mouldings were secured in a machine vice and the female mouldings had a wire passed through contact position 1 and 12 to create a loop to apply a pull-apart force to. The Force applied was steadily increased until the point of failure and the results are shown below.

Latch used for test: G125-4100046, Mouldings used for test: G125-3011296 & G125-2041296			
Results of 16 Test Samples			
34.0N	32.8N	25.0N	29.5N
29.3N	28.0N	25.8N	27.9N
27.3N	21.8N	30.5N	30.3N
34.8N	21.7N	22.3N	32.7N
Max = 34.8N	Min = 21.7N	Average = 28.4N	

The typical mode of failure was that the Latch locking feature broached through the plastic of the female moulding. The Male latch remained intact. One side failed before the other in all cases tested.

Test Report for Gecko (G125 Series) – General Testing

Test Method and Requirements.

Pull-apart destructive testing on an unpopulated 12-position Gecko mated pair. Connectors had been cycled 100 times and de-latched using Z125-9261200 tool

Male latched mouldings were secured in a machine vice and the female mouldings had a wire passed through contact position 1 and 12 to create a loop to apply a pull-apart force to. The Force applied was steadily increased until the point of failure and the results are shown below.

Latch used for test: G125-4100046, Mouldings used for test: G125-3011296 & G125-2041296			
Results of 16 Test Samples			
31.7N	30.8N	31.5N	22.4N
26.6N	21.7N	31.2 N	24.6N
31.1N	20.8N	34.1N	23.7N
21.7N	20.3N	27.1N	31.7N
Max = 34.1N	Min = 20.3N	Average = 26.9N	

The typical mode of failure was that the Latch locking feature broached through the plastic of the female moulding. The Male latch remained intact. One side failed before the other in all cases tested.

Test Method and Requirements.

Pull-apart destructive testing on an unpopulated 12-position L-Tek mated pair. Connectors had not been cycled just engaged to determine a benchmark of latch performance.

Male latched mouldings were secured in a machine vice and the female mouldings had a wire passed through contact position 1 and 12 to create a loop to apply a pull-apart force to. The Force applied was steadily increased until the point of failure and the results are shown below.

Latch used for test: M80-001, Mouldings used for test: M80-1021298 & M80-1031298		
Results of 6 Test Samples		
45.1N	40.9N	48.5N
46.0N	48.0N	49.0N
Max = 49.0N	Min = 40.9N	Average = 46.1N

The typical mode of failure was that the Latch locking feature breaking off, one side failed before the other in all cases tested. The female moulding remained intact.

Test Method and Requirements.

C005xx States that "*when an unloaded female connector moulding is mated with a latched male connector, and a force of 20N is applied for 10 seconds in the directions shown in Figure 3, there shall be no failure of any part of the latch mechanism.*"

