



TEST SUMMARY

Micro-Fit (3.0) Connector Systems Single and Dual Row – Wire to Board and Wire to Wire

1.0 SCOPE

This Test Summary covers the Micro-Fit 3.00 mm (.118 inch) centerline (pitch) connector series terminated with 18-30 AWG wire using crimp technology manufactured in multiple locations.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME, SERIES, AND PART NUMBER(S)

Micro-Fit (3.0) Receptacle Series: 43645, 43025
Micro-Fit (3.0) Plug Series: 43640, 43020
Micro-Fit (3.0) Header Series: 43650, 43045, 44067
Micro-Fit (3.0) Female Crimp Terminal Series: 43030
Micro-Fit (3.0) Male Crimp Terminal Series: 43031

2.1.1 CRIMP TERMINAL, HOUSING, AND MATING HEADER SERIES USED FOR TESTING:

Micro-Fit (3.0) Recept: 43645-0200, 43025-0400, 43025-0600, 43025-0800, 43025-1000
Micro-Fit (3.0) Plug: 43020-0601, 43020-1800, 43020-2400
Micro-Fit (3.0) Header: 43045-0424, 43045-0612, 43045-0613, 43045-0618, 43045-0711, 43045-1012
Micro-Fit (3.0) Female Crimp Terminal: 43030-0001, 43030-0002, 43030-0006
Micro-Fit (3.0) Male Crimp Terminal: 43031-0001, 43031-0002, 43031-0003, 43031-0006

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Refer to the appropriate sales drawings for information on dimensions, materials, plating, and markings.

2.3 PRODUCT SPECIFICATION TITLE AND DOCUMENT NUMBER

Product Specification: Micro-Fit (3.0) Single Row Document Number: PS-43650
Product Specification: Micro-Fit (3.0) Dual Row Document Number: PS-43045

3.0 TEST OBJECTIVE

This side-by-side screen testing was conducted to demonstrate the equivalent performance of product manufactured in the Molex Lincoln (designated as Existing) and Molex Shanghai (designated as New) facilities.

4.0 CONCLUSION

All completed testing demonstrates the performance of the same product manufactured in either location is equivalent.

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5.0 TESTING PROCEDURES

5.1 TERMINAL RETENTION FORCE IN HOUSING

Microfit 43030 and 43031 terminals were crimped to 20 awg wires and inserted into receptacle and plug housings, respectively. An axial pullout force was applied to each terminal by pulling on the wire at a rate of 1.0 inch per minute. The maximum force to dislodge each terminal from the housing was recorded. Microfit 43045 headers had an axial pushout force applied to each pin in the opposite direction of insertion at a rate of 1.0 inch per minute. The maximum force to dislodge each pin from the housing was recorded. (Reference EIA-364-29)

5.2 WIRE PULLOUT FORCE (WIRE FROM TERMINAL)

Microfit 43030 and 43031 terminals were crimped to 20 awg, 24 awg, 26 awg, and 28 awg wires. Terminals were clamped in a vise and the wire was forcibly removed from the crimp by applying an axial force on the wire at a rate of 1.0 inch per minute. The maximum force to remove the wire from the terminal was recorded. Samples were tested both with and without insulation crimp influence.

5.3 MATE AND UNMATE FORCE

Wire connectors were fully populated with female or male crimp terminals and PCB connectors were fully populated with header terminals. An axial force was applied in the mating and unmating direction at a rate of 1.0 inch per minute. The maximum force to mate and unmate the connectors was recorded for the first, fifth, and tenth mating cycle. This testing was conducted with the thumb latch disabled. (Reference EIA-364-13E)

5.4 THUMB LATCH TO RAMP YIELD STRENGTH

This testing was conducted without terminals inserted in the housing. Receptacles were mated to header housings. Header housings were secured to the base table and the receptacle housings were secured within a grip fixture attached to the load cell of a motorized force testing device. The crosshead of the device was then moved in the direction of unmating at a rate of 1.0 inch per minute until the latching geometry of either the receptacle or the header housing yielded. The maximum force to yield the latch was recorded.

5.5 PANEL MOUNT RETENTION

Panel mount plugs were inserted into a .055 and .100 inch thick panel. The panel was supported elevated above the base table and an axial load was applied to the plug in the opposite direction of insertion with the crosshead moving at a rate of 1.0 inch per minute until the plug released from the panel or a 50 lb force was achieved. The maximum force to yield the panel latches was recorded.

5.6 TEMPERATURE PROFILE

Samples were fully populated, electrically wired in series, and connected to a power supply. Thermocouples were attached to record temperature of the terminals. Ambient temperature was also recorded. An initial test current was applied to the specimens and they were allowed to thermally stabilize. Test current was then incremented to the next level. The current was increased successively in 0.5 amp steps after attaining thermal stability. Testing was terminated

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at 0.5 amps above rated current. Temperature rise is calculated as the temperature of the terminal less ambient temperature at the specified current. (Reference EIA-364-70)

5.7 TEMPERATURE RISE – 18 DAY STABILITY

Samples were powered with the rated current for 4 days steady, 10 days cycled (15 minutes off, 45 minutes on), and 4 days steady. Temperature rise was recorded at 10-minute intervals throughout testing. Samples which did not have current applied were used as ambient reference.

6.0 PERFORMANCE RESULTS

6.1 TERMINAL RETENTION FORCE

6.1.1 Crimp Terminal in Housing: All values in Newtons. Specification: 24.5 N MINIMUM

<i>Housing</i>	<i>Existing / New</i>	<i>Terminal</i>	<i>Existing / New</i>	<i>mean</i>	<i>min</i>	<i>max</i>
43025	Existing	43030 Sn	Existing	38.70	25.76	45.55
			New	36.39	32.74	38.30
		43030 Au	Existing	41.99	39.76	44.23
			New	38.79	32.21	39.59
	New	43030 Au	Existing	46.88	41.10	51.78
			New	37.90	35.02	43.48
43020	Existing	43031 Sn	Existing	38.80	35.88	42.32
			New	39.58	33.06	69.38
		43031 Au	Existing	65.70	55.98	72.83
			New	46.64	36.13	84.57
	New	43031 Au	Existing	50.84	49.06	52.18

6.1.2 Pin in Header: All values in Newtons. Specification: 13.7 N MINIMUM

<i>Header</i>	<i>Existing / New</i>	<i>mean</i>	<i>min</i>	<i>max</i>
43045-0612 TH, Reflow Sn	Existing	42.70	39.32	47.30
	New	45.85	38.64	58.16
43045-0711 TH, Matte Sn	Existing	51.70	43.13	60.21
	New	56.09	47.12	67.70
43045-0613 TH, Au	Existing	41.30	37.48	46.10
	New	38.31	24.65	47.95
43045-0618 SMT, Reflow Sn	Existing	53.69	48.13	58.45
	New	45.06	39.28	51.15
43045-0424 TH, Reflow Sn	Existing	25.62	20.55	41.19
	New	38.34	33.63	42.75

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6.2 WIRE PULLOUT FORCE (WIRE FROM TERMINAL)

All values in lbf. Specification as indicated.

<i>Terminal</i>	<i>AWG</i>	<i>With or Without Insulation Crimp</i>	<i>Existing / New</i>	<i>mean</i>	<i>min</i>	<i>max</i>	<i>Specification</i>
43030 Sn	20	With	Existing **	26.81	23.93	32.29	13.0
			New **	30.69	28.77	31.88	
	24	With	Existing **	12.87	12.46	13.58	5.0
			New **	12.94	11.04	14.19	
43030 Au	20	With	Existing **	30.39	29.84	30.78	13.0
			New **	30.77	30.35	31.48	
		Without	Existing **	25.88	23.63	28.33	
			New **	26.89	25.85	28.48	
	24	With	Existing *	12.27	11.20	12.81	5.0
			New *	12.94	11.83	13.52	
	26	With	Existing *	9.80	9.37	10.40	3.0
			New **	7.93	3.49 *	10.36	
	28	With	Existing *	7.87	6.84	8.17	2.0
			New **	8.34	8.00	8.65	
43031 Sn	20	Without	Existing *	28.69	23.16	29.63	13.0
			New *	29.27	26.73	30.21	
43031 Au	20	With	Existing *	30.14	28.56	31.57	13.0
			New *	31.58	31.01	32.43	
		Without	Existing *	28.87	28.46	29.29	
			New *	29.18	27.54	30.57	
	24	With	Existing *	12.14	11.40	12.87	5.0
			New *	12.17	11.50	12.71	
	26	With	Existing *	8.54	3.87	10.37	3.0
			New *	9.06	7.92	9.75	
	28	With	Existing **	7.86	7.76	8.12	2.0
			New **	7.91	7.72	8.06	

* Failure mode was broken conductor

** Failure mode was conductor pulled out or terminal broke

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6.3 MATE AND UNMATE FORCE

Mate Force: All values in Newtons. Specification: 8.0 N MAX per circuit (1st cycle only; cycles 5 and 10 are for reference only)

Terminal	Existing / New	Mating Part	Existing / New	Cycle	Connector Mate Force			Mate Force Per Circuit		
					mean	min	max	mean	min	max
43030 Sn	Existing	43045 10 circuit Reflow Sn	Existing	1	43.06	40.39	45.68	4.31	4.05	4.58
	New			1	37.32	35.72	38.92	3.74	3.56	3.91
	Existing	43045 6 circuit Reflow Sn	Existing	1	22.62	21.21	23.83	3.77	3.54	3.97
				5	28.03	26.90	29.68	4.67	4.48	4.95
	New	43045 6 circuit Reflow Sn	New	10	36.60	32.88	41.10	6.10	5.48	6.85
				1	21.14	18.57	25.96	3.52	3.10	4.33
				5	27.95	24.47	31.64	4.66	4.08	5.27
	Existing	43045 6 circuit Matte Sn	Existing	10	30.82	27.46	34.11	5.14	4.58	5.69
				1	25.00	24.02	26.16	4.17	4.00	4.36
				5	32.42	31.22	33.01	5.40	5.20	5.50
	New	43045 6 circuit Matte Sn	New	10	39.50	38.02	42.09	6.58	6.34	7.02
				1	23.53	21.86	25.99	3.92	3.64	4.33
5				33.51	31.93	36.33	5.59	5.32	6.06	
43030 Au	Existing	43045 6 circuit Au	Existing	10	35.70	32.49	37.47	5.95	5.42	6.25
				1	20.42	19.76	21.75	3.40	3.29	3.63
				5	18.50	17.80	19.09	3.08	2.97	3.18
	New	43045 6 circuit Au	New	10	20.04	19.26	20.59	3.34	3.21	3.43
				1	28.96	27.99	29.75	4.83	4.67	4.96
				5	25.31	23.60	27.28	4.22	3.93	4.55
43031 Sn	Existing	43025 6 circuit (43030 Sn)	Existing	10	27.99	26.30	30.25	4.67	4.38	5.04
				1	29.07	25.71	31.17	4.84	4.29	5.20
				5	16.10	14.23	17.59	2.68	2.37	2.93
	New	43025 6 circuit (43030 Sn)	New	10	17.28	15.65	19.79	2.88	2.61	3.30
				1	22.37	21.41	23.25	3.73	3.57	3.88
				5	22.85	21.30	24.88	3.81	3.55	4.15
43031 Au	Existing	43025 6 circuit (43030 Au)	Existing	10	21.06	19.65	21.96	3.51	3.28	3.66
				1	26.47	25.89	26.91	4.40	4.31	4.49
				5	29.63	28.78	31.09	4.94	4.80	5.20
	New	43025 6 circuit (43030 Au)	New	10	23.26	19.48	28.60	3.87	3.25	4.76
				1	25.74	23.14	28.86	4.29	3.86	4.81
				5	20.42	18.66	22.03	3.40	3.11	3.67
Existing	43025 6 circuit (43030 Au)	Existing	10	20.37	18.33	21.69	3.39	3.06	3.62	
			1	23.07	22.18	23.92	3.85	3.70	3.99	
			5	19.72	18.88	21.63	3.29	3.15	3.61	
New	43025 6 circuit (43030 Au)	New	10	22.62	21.05	25.05	3.77	3.51	4.18	

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Unmate Force: All values in Newtons. Specification: 2.4 N MIN per circuit (1st cycle only; cycles 5 and 10 for reference only)

Terminal	Existing / New	Mating Part	Existing / New	Cycle	Connector Unmate Force			Unmate Force Per Circuit		
					mean	min	max	mean	min	max
43030 Sn	Existing	43045 10 circuit Reflow Sn	Existing	1	31.49	28.87	34.12	3.16	2.89	3.43
	New			1	31.76	31.40	32.07	3.20	3.16	3.20
	Existing	43045 6 circuit Reflow Sn	Existing	1	20.12	18.54	21.69	3.53	3.09	3.62
				5	26.82	25.29	29.88	4.47	4.22	4.98
				10	38.07	36.06	41.07	6.35	6.01	6.85
	New	43045 6 circuit Reflow Sn	New	1	18.50	17.36	19.27	3.08	2.89	3.21
				5	28.98	27.85	30.25	4.83	4.64	5.04
				10	31.05	28.78	33.50	5.18	4.80	5.58
	Existing	43045 6 circuit Matte Sn	Existing	1	21.43	19.95	23.42	3.57	3.33	3.90
				5	24.47	23.05	25.50	4.08	3.84	4.25
				10	40.74	38.27	43.71	6.79	6.38	7.29
	New	43045 6 circuit Matte Sn	New	1	24.03	22.93	26.21	4.01	3.82	4.37
5				26.09	24.55	28.61	4.35	4.09	4.77	
10				34.57	32.43	36.98	5.76	5.41	6.16	
43030 Au	Existing	43045 6 circuit Au	Existing	1	16.84	16.35	17.47	2.81	2.73	2.91
				5	17.10	16.11	20.55	2.85	2.69	3.43
				10	17.44	17.17	17.83	2.91	2.86	2.97
	New	43045 6 circuit Au	New	1	21.49	20.88	22.01	3.58	3.48	3.67
				5	24.26	23.48	25.30	4.04	3.91	4.22
				10	26.89	25.78	28.36	4.48	4.30	4.73
43031 Sn	Existing	43025 6 circuit (43030 Sn)	Existing	1	19.29	18.39	20.26	3.22	3.07	3.38
				5	12.43	10.95	13.44	2.07	1.83	2.24
				10	14.30	13.25	16.41	2.38	2.21	2.74
	New	43025 6 circuit (43030 Sn)	New	1	19.49	19.14	20.03	3.25	3.19	3.34
				5	19.75	19.31	20.13	3.29	3.22	3.36
				10	19.28	18.64	20.26	3.21	3.11	3.38
43031 Au	Existing	43025 6 circuit (43030 Au)	Existing	1	25.18	24.24	26.82	4.18	4.05	4.49
	New		Existing	1	21.93	18.86	24.51	3.65	3.16	4.09
	Existing		New	1	18.33	17.88	18.64	3.07	2.98	3.11
	Existing	43025 6 circuit (43030 Au)	Existing	1	17.94	16.17	19.17	2.99	2.70	3.20
				5	18.57	17.22	20.25	3.09	2.87	3.38
				10	19.54	17.95	21.85	3.26	2.99	3.64
	New	43025 6 circuit (43030 Au)	New	1	17.02	16.14	18.26	2.84	2.69	3.04
				5	19.73	18.00	21.00	3.29	3.00	3.50
				10	22.87	20.39	25.03	3.81	3.40	4.17

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6.4 THUMB LATCH TO RAMP YIELD STRENGTH

All values in lbf. Specification: 13 lbf MINIMUM

<i>Housing</i>	<i>Existing / New</i>	<i>Mating Housing</i>	<i>Existing / New</i>	<i>mean</i>	<i>min</i>	<i>max</i>
43025-0800	Existing	43045	Existing	18.54	17.39	19.85
	New			15.90	15.35	16.63
43645-0200	Existing	43650	Existing	27.91	27.13	28.91
	New			19.54	18.86	20.58
43025-0400	Existing	43045	Existing	17.98	17.57	18.64
			New	16.65	15.62	17.74

6.5 PANEL MOUNT RETENTION

All values in lbf. Specification: 35 lbf MINIMUM

<i>Housing</i>	<i>Panel Thickness</i>	<i>Existing / New</i>	<i>min</i>	<i>max</i>
43020-1800	.055 inch	Existing	> 50	> 50
		New	> 50	> 50
	.100 inch	Existing	43.12	> 50
		New	> 50	> 50
43020-2400	.055 inch	Existing	46.36	49.71
		New	> 50	> 50
	.100 inch	Existing	42.64	> 50
		New	> 50	> 50

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6.6 TEMPERATURE RISE / TEMPERATURE RISE STABILITY

6.6.1 Wire-to-Wire

6-circuit parts with 20 Awg wire tested.					
Temp Rise Specification: Not exceed +30°C at Rated Current					
Terminal	43030	Existing	New	Existing	New
	43031	Existing	New	Existing	New
Plating Finish		Hot Tin Dip		Gold	
Rated Current (Amps)		5.0			
Temp Rise at Rated Current (°C)	Mean	22.34	22.63	21.38	22.76
	Min	19.79	20.83	19.53	21.01
	Max	24.61	26.57	24.18	24.95
18-Day Stability		Pass	Pass	Pass	Pass

6.6.2 Wire-to-Board

6-circuit parts with 20 Awg wire tested.							
Temp Rise Specification: Not exceed +30°C at Rated Current							
Crimp Terminal	43030	Existing	New	Existing	New	Existing	New
Header	43045	Existing	New	Existing	New	Existing	New
Plating Finish	43030	Hot Tin Dip				Gold	
	43045	Reflow Tin		Matte Tin		Gold	
Rated Current (Amps)		5.5					
Temp Rise at Rated Current (°C)	Mean	22.16	22.81	22.84	21.75	23.05	23.30
	Min	20.62	20.10	20.56	19.72	20.46	20.85
	Max	24.22	24.68	24.72	25.49	25.58	25.28
18-Day Stability		PASS	PASS	PASS	PASS	PASS	PASS

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