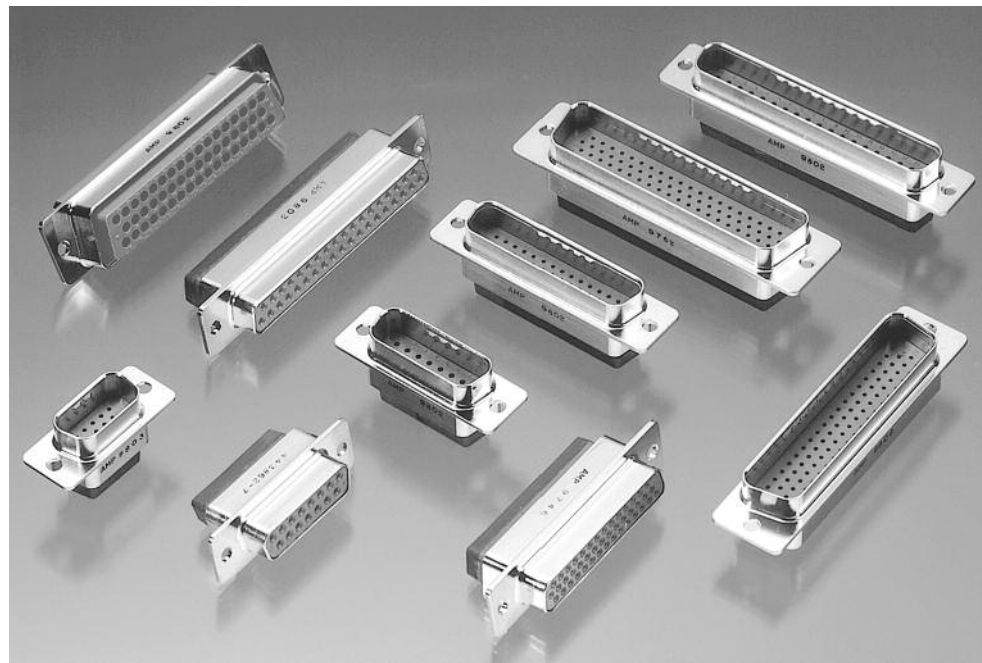


AMPLIMITE Connectors, ULTRA-LITE Connectors

Product Facts

- One-piece aluminum shells for light-weight and enhanced EMI performance
- Connectors are typically 15–20% lighter than brass counterparts
- Intermates/interchanges with existing designs
- Enhanced EMI performance over brass shells by 10–20 dB
- Series 109 Plugs & Receptacles shell size 1 through 5 (9–50 positions)
- Series 90 Plugs & Receptacles in shell size 1 through 6 (15–104 positions)
- Can be provided with or without grommet
- Plug shells include grounding indents
- Designed to meet NASA 311P
- Designed to meet MIL-DTL-24308D specification
- DSCC Drawings 99012 through 99015



Material and Finish

Housing Material — Polyphenylene Sulfide (PPS)

Shell Finish — .000050 [0.00127] min. gold plate over .00100–.00125 [0.0254–0.0318] nickel underplate

Shell Material — Aluminum alloy

Temperature Range — –67°F to 257°F [–55°C to 125°C]

Voltage Rating — 300 V

Current Rating — Contact current rating per MIL-C-39029

Size 20 — 7.5 amps in free air
Size 22 — 5.0 amps in free air (refer to MIL Spec. for cable specifications)

Low Level Termination Resistance

— 11 Ohm max. 109 Series, 17 milliohms only for 90 Series per MIL-C-39029

Performance Characteristics

Dielectric Withstanding Voltage — 1000 VAC between adjacent pos.

Insulation Resistance — Min. 1000 milliohm between adjacent pos.

Voltage Rating — 300 V

Durability — Up to 500 matings/cycle

Vibration — 3.13 G's RMS between 5–500 Hz 15 minutes per plane

Physical Shock — 18 drops, half-sine 30 G's at 11 millisecond

Temperature Range — –67°F to 257°F [–55°C to 125°C]

Thermal Shock — –67°F to 257°F [–55°C to 125°C]

Temperature-Humidity — 77°F to 149°F [+25°C to +65°C] at 95% relative humidity

Corrosion — Mixed flowing gas, class II

Product Specifications — 108-1834 (Design objectives)

Weight Comparisons for the AMPLIMITE Connector Series 90 (1) PC AL vs the (2) PC Brass NASA Grade Connector Assemblies

Receptacles

Shell Size	Connector Position	Aluminum Shell Assy. Without Grommet	Brass Shell Assy. Without Grommet	Brass to Aluminum % Difference Without Grommet
1	15	4	5.2	23.1%
2	26	6.2	7.5	17.3%
3	44	9	10.9	17.4%
4	62	12.4	15.3	19.0%
5	78	15.3	17.9	14.5%
6	104	17.2	20	14.0%

Note: All weight values are in grams.

Plugs

Shell Size	Connector Position	Aluminum Shell Assy. Without Grommet	Brass Shell Assy. Without Grommet	Brass to Aluminum % Difference Without Grommet
1	15	3.6	4.6	21.7%
2	26	5.3	6.2	14.5%
3	44	7.8	10.3	24.3%
4	62	10.9	14.1	22.7%
5	78	12.7	15.9	20.1%
6	104	14.3	17.5	18.3%

Note: All weight values are in grams.

AMPLIMITE Connectors, ULTRA-LITE Connectors (Continued)

ULTRA-LITE Connector Plugs and Receptacles, Series 109

Connector Material and Finish

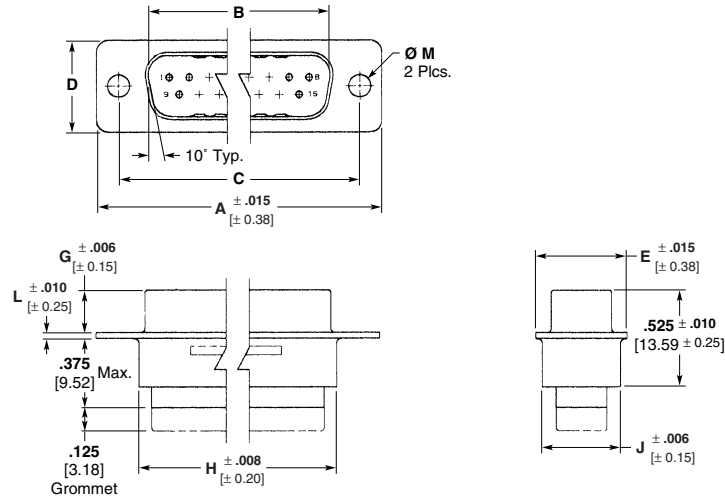
Shell — Aluminum alloy, gold plated per MIL-G-45204 over nickel per MIL-C-26074.

Insert — Blue diallyl phthalate per MIL-M-14 or black Polyphenylene Sulfide (PPS) per MIL-M-24519 or blue thermoplastic per MIL-M-24519

Retention Clips — Beryllium copper

Grommet — Silicon rubber per ZZ-R-765, color: red

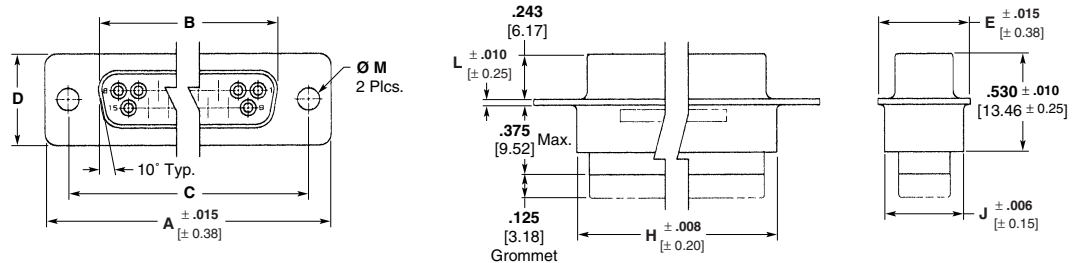
Contacts — Uses size 20 crimp or posted contacts, ref. pages 8-40 to 8-42.



Plugs

No. of Contact Pos. (Shell Size)	Dimensions									NASA ¹ Part Number for reference only	AMP RoHS Part Number	
	A	B	C	D	E	G	H	J	L		M = .120 [3.05]	M = .154 [3.91]
9 (1)	1.213 30.81	.666 16.92	.984 24.99	.329 8.36	.494 12.55	.235 5.97	.770 19.56	.438 11.13	.030 0.76	311P409-1P-B-15	1218234-1 1218234-6*	1883005-1
15 (2)	1.541 39.14	.994 25.25	1.312 33.32	.329 8.36	.494 12.55	.235 5.97	1.094 27.79	.438 11.13	.030 0.76	311P409-2P-B-15	1218234-2 1218234-7*	1883005-2
25 (3)	2.088 53.04	1.534 38.96	1.852 47.04	.329 8.36	.494 12.55	.230 5.84	1.636 41.55	.438 11.13	.039 0.99	311P409-3P-B-15	1218234-3 1218234-8*	1883005-3
37 (4)	2.729 69.32	2.182 55.42	2.500 63.50	.329 8.36	.494 12.55	.230 5.84	2.284 58.01	.438 11.13	.039 0.99	311P409-4P-B-15	1218234-4 1218234-9*	1883005-4
50 (5)	2.635 66.93	2.079 52.81	2.406 61.11	.441 11.20	.605 15.38	.230 5.84	2.189 55.60	.550 13.97	.039 0.99	311P409-5P-B-15	1218234-5 1-1218234-0*	1883005-5

*Rubber Grommet



Receptacles

No. of Contact Pos. (Shell Size)	Dimensions									NASA ¹ Part Number for reference only	AMP RoHS Part Number	
	A	B	C	D	E	H	J	L	M = .120 [3.05]		M = .154 [3.91]	
9 (1)	1.213 30.81	.643 16.33	.984 24.99	.311 7.90	.494 12.55	.770 19.56	.438 11.13	.030 0.76	311P409-1S-B-15	1218235-1 1218235-6*	1883006-1	
15 (2)	1.541 39.14	.971 24.66	1.312 33.32	.311 7.90	.494 12.55	1.094 27.79	.438 11.13	.030 0.76	311P409-2S-B-15	1218235-2 1218235-7*	1883006-2	
25 (3)	2.088 53.04	1.511 38.38	1.852 47.04	.311 7.90	.494 12.55	1.636 41.55	.438 11.13	.039 0.99	311P409-3S-B-15	1218235-3 1218235-8*	1883006-3	
37 (4)	2.729 69.32	2.159 54.84	2.500 63.50	.311 7.90	.494 12.55	2.284 58.01	.438 11.13	.039 0.99	311P409-4S-B-15	1218235-4 1218235-9*	1883006-4	
50 (5)	2.635 66.93	2.064 52.43	2.406 61.11	.423 10.74	.605 15.38	2.189 55.60	.550 13.97	.039 0.99	311P409-5S-B-15	1218235-5 1-1218235-0*	1883006-5	

*Rubber Grommet

¹Tyco Electronic part numbers are not NASA qualified parts but can replace referenced NASA part numbers.

AMPLIMITE Connectors, ULTRA-LITE Connectors (Continued)

ULTRA-LITE Connector Plugs and Receptacles, Series 90

Connector Material and Finish

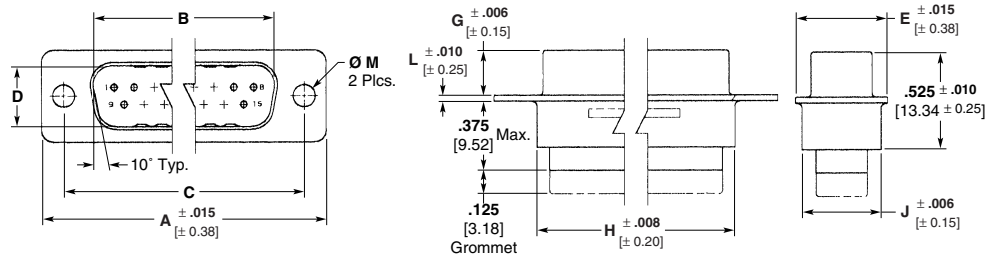
Shell — Aluminum alloy, gold plated per MIL-G-45204 over nickel per MIL-C-26074.

Insert — Blue diallyl phthalate per MIL-M-14 or black Polyphenylene Sulfide (PPS) per MIL-M-24519 or blue thermoplastic per MIL-M-24519

Retention Clips — Beryllium copper

Grommet — Silicon rubber per ZZ-R-765, color: red

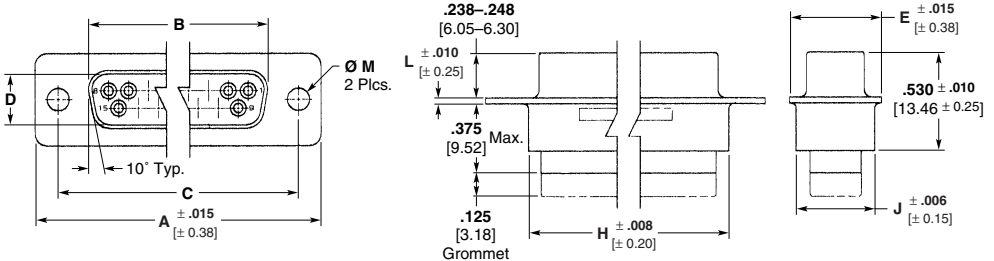
Contacts — Uses size 22 crimp and posted contacts, ref. pages 8-70 and 8-71.



Plugs

No. of Contact Pos. (Shell Size)	Dimensions									NASA ¹ Part Number for reference only	AMP RoHS Part Number	
	A	B	C	D	E	G	H	J	L		M = .120 [3.05]	M = .154 [3.91]
15 (1)	1.213 30.81	.666 16.92	.984 24.99	.329 8.36	.494 12.55	.235 5.97	.770 19.56	.438 11.13	.030 0.76	311P407-1P-B-15	1218232-1 1218232-7*	1883007-1
26 (2)	1.541 39.14	.994 25.25	1.312 33.32	.329 8.36	.494 12.55	.235 5.97	1.094 27.79	.438 11.13	.030 0.76	311P407-2P-B-15	1218232-2 1218232-8*	1883007-2
44 (3)	2.088 53.04	1.534 38.96	1.852 47.04	.329 8.36	.494 12.55	.230 5.84	1.636 41.55	.438 11.13	.039 0.99	311P407-3P-B-15	1218232-3 1218232-9*	1883007-3
62 (4)	2.729 69.32	2.182 55.42	2.500 63.50	.329 8.36	.494 12.55	.230 5.84	2.284 58.01	.438 11.13	.039 0.99	311P407-4P-B-15	1218232-4 1-1218232-0*	1883007-4
78 (5)	2.635 66.93	2.079 52.81	2.406 61.11	.441 11.20	.605 15.38	.230 5.84	2.189 55.60	.550 13.97	.039 0.99	311P407-5P-B-15	1218232-5 1-1218232-1*	1883007-5
104 (6)	2.729 69.32	2.212 56.18	2.500 63.50	.503 12.78	.668 16.97	.230 5.84	2.313 58.75	.608 15.44	.039 0.99	311P407-6P-B-15	1218232-6 1-1218232-2*	1883007-6

*Rubber Grommet



Receptacles

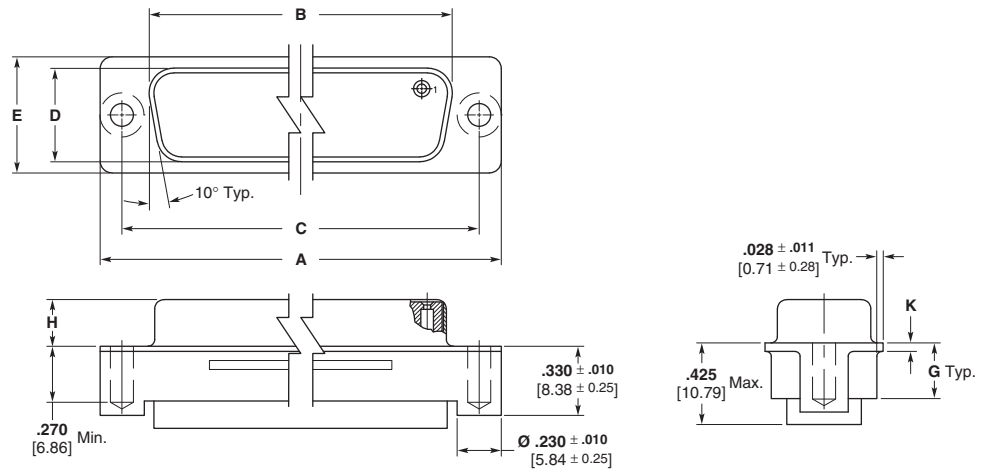
No. of Contact Pos. (Shell Size)	Dimensions								NASA ¹ Part Number for reference only	AMP RoHS Part Number	
	A	B	C	D	E	H	J	L		M = .120 [3.05]	M = .154 [3.91]
15 (1)	1.213 30.81	.644 16.36	.984 24.99	.311 7.90	.494 12.55	.770 19.56	.438 11.13	.030 0.76	311P407-1S-B-15	1218233-1 1218233-7*	-1
26 (2)	1.541 39.14	.972 24.69	1.312 33.32	.311 7.90	.494 12.55	1.094 27.79	.438 11.13	.030 0.76	311P407-2S-B-15	1218233-2 1218233-8*	1883008-2
44 (3)	2.088 53.04	1.512 38.40	1.852 47.04	.311 7.90	.494 12.55	1.636 41.55	.438 11.13	.039 0.99	311P407-3S-B-15	1218233-3 1218233-9*	1883008-3
62 (4)	2.729 69.32	2.160 54.86	2.500 63.50	.311 7.90	.494 12.55	2.284 58.01	.438 11.13	.039 0.99	311P407-4S-B-15	1218233-4 1-1218233-0*	1883008-4
78 (5)	2.635 66.93	2.065 52.45	2.406 61.11	.423 10.74	.605 15.38	2.189 55.60	.550 13.97	.039 0.99	311P407-5S-B-15	1218233-5 1-1218233-1*	1883008-5
104 (6)	2.729 69.32	2.190 55.63	2.500 63.50	.485 12.32	.668 16.97	2.313 58.75	.608 15.44	.039 0.99	311P407-6S-B-15	1218233-6 1-1218233-2*	1883008-6

*Rubber Grommet

¹Tyco Electronic part numbers are not NASA qualified parts but can replace referenced NASA part numbers.

AMPLIMITE Connectors, ULTRA-LITE Connectors (Continued)

**ULTRA-LITE Connector
Plugs and Receptacles,
Series 109, Crimp**
Meets EU Directive
2002/95/EC RoHS



Plugs

No. of Contact Pos. (Shell Size)	Dimensions								NASA ¹ Part Number for reference only	AMP Part Number
	A	B	C	D	E	G ± .010 [0.25]	H	K		
9 (1)	1.208/1.218 30.68/30.94	.661/.671 16.79/17.04	.979/.989 24.87/25.12	.324/.334 8.23/8.48	.489/.499 12.42/12.67	.294 7.47	.229/.241 5.82/6.12	.035 0.89	311P409-1P-B-440	1883053-1
15 (2)	1.536/1.546 39.01/39.27	.989/.999 25.12/25.37	1.307/1.317 33.20/33.45	.324/.334 8.23/8.48	.489/.499 12.42/12.67	.294 7.47	.229/.241 5.82/6.12	.035 0.89	311P409-2P-B-440	1883053-2
25 (3)	2.083/2.093 52.91/53.16	1.529/1.239 38.84/39.09	1.848/1.857 46.91/47.17	.324/.334 8.23/8.48	.489/.499 12.42/12.67	.299 7.59	.224/.236 5.69/5.99	.044 1.12	311P409-3P-B-440	1883053-3
37 (4)	2.724/2.734 69.20/69.44	2.177/2.187 55.30/55.55	2.495/2.505 63.37/63.63	.324/.334 8.23/8.48	.489/.499 12.42/12.67	.299 7.59	.224/.236 5.69/5.99	.044 1.12	311P409-4P-B-440	1883053-4
50 (5)	2.630/2.640 66.80/67.06	2.074/2.084 52.68/52.93	2.401/2.411 60.99/61.24	.436/.446 11.07/11.33	.500/.610 15.24/15.49	.299 7.59	.224/.236 5.69/5.99	.044 1.12	311P409-5P-B-440	1883053-5

Receptacles

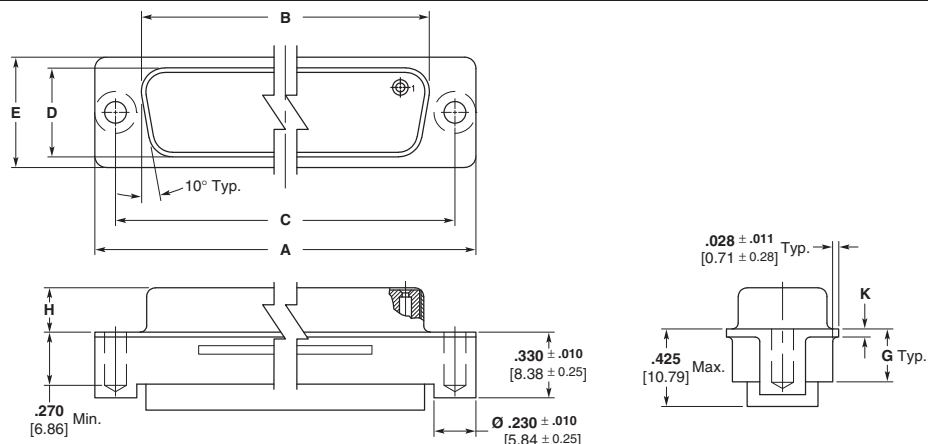
No. of Contact Pos. (Shell Size)	Dimensions								NASA ¹ Part Number for reference only	AMP Part Number
	A	B	C	D	E	G ± .010 [0.25]	H	K		
9 (1)	1.208/1.218 30.68/30.94	.638/.648 16.21/16.46	.979/.989 24.87/25.12	.306/.316 7.77/8.03	.489/.499 12.42/12.67	.290 7.37	.270 6.86	.035 0.89	311P409-1S-B-440	1883054-1
15 (2)	1.536/1.546 39.01/39.27	.966/.976 24.54/24.79	1.307/1.317 33.20/33.45	.306/.316 7.77/8.03	.489/.499 12.42/12.67	.290 7.37	.270 6.86	.035 0.89	311P409-2S-B-440	1883054-2
25 (3)	2.083/2.093 52.91/53.16	1.506/1.516 38.25/38.51	1.847/1.857 46.91/47.17	.306/.316 7.77/8.03	.489/.499 12.42/12.67	.290 7.37	.270 6.86	.044 1.12	311P409-3S-B-440	1883054-3
37 (4)	2.724/2.734 69.20/69.44	2.154/2.164 54.71/54.97	2.495/2.505 63.37/63.63	.306/.316 7.77/8.03	.489/.499 12.42/12.67	.290 7.37	.270 6.86	.044 1.12	311P409-4S-B-440	1883054-4
50 (5)	2.630/2.640 66.80/67.06	2.059/2.069 52.30/52.55	2.401/2.411 60.99/61.24	.418/.428 10.62/10.87	.600/.610 15.24/15.49	.290 7.37	.270 6.86	.044 1.12	311P409-5S-B-440	1883054-5

¹Tyco Electronic part numbers are not NASA qualified parts but can replace referenced NASA part numbers.

AMPLIMITE Connectors, ULTRA-LITE Connectors (Continued)

ULTRA-LITE Connector Plugs and Receptacles, Series 109, Crimp (Continued)

Meets EU Directive 2002/95/EC RoHS



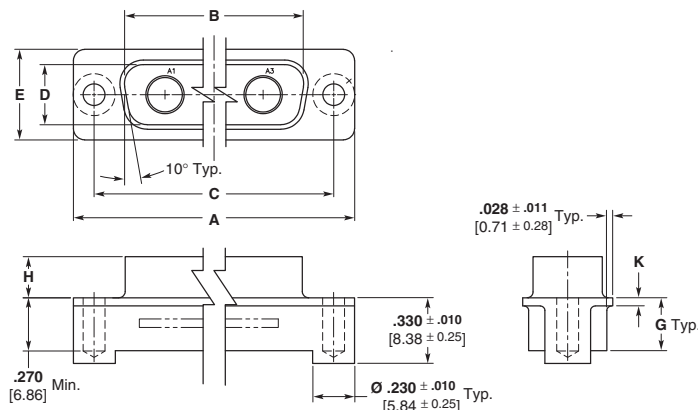
Plugs

No. of Contact Pos. (Shell Size)	Dimensions									NASA ¹ Part Number for reference only	AMP Part Number
	A	B	C	D	E	G ± .010 [0.25]	H	K			
15 (1)	1.208/1.218 30.68/30.94	.661/.671 16.79/17.04	.979/.989 24.87/25.12	.324/.334 8.23/8.48	.489/.499 12.42/12.67	.294 7.47	.229/.241 5.82/6.12	.035 0.89		311P407-1P-B-440	1883055-1
26 (2)	1.536/1.546 39.01/39.27	.989/.999 25.12/25.37	1.307/1.317 33.20/33.45	.324/.334 8.23/8.48	.489/.499 12.42/12.67	.294 7.47	.229/.241 5.82/6.12	.035 0.89		311P407-2P-B-440	1883055-2
44 (3)	2.083/2.093 52.91/53.16	1.529/1.539 38.84/39.09	1.847/1.857 46.91/47.17	.324/.334 8.23/8.48	.489/.499 12.42/12.67	.299 7.59	.224/.236 5.69/5.99	.044 1.12		311P407-3P-B-440	1883055-3
62 (4)	2.724/2.734 69.20/69.44	2.177/2.187 55.30/55.55	2.495/2.505 63.37/63.63	.324/.334 8.23/8.48	.489/.499 12.42/12.67	.299 7.59	.224/.236 5.69/5.99	.044 1.12		311P407-4P-B-440	1883055-4
78 (5)	2.630/2.640 66.80/67.06	2.074/2.084 52.68/52.93	2.401/2.411 60.99/61.24	.436/.446 11.07/11.33	.600/.610 15.24/15.49	.299 7.59	.224/.236 5.69/5.99	.044 1.12		311P407-5P-B-440	1883055-5

Receptacles

No. of Contact Pos. (Shell Size)	Dimensions									NASA ¹ Part Number for reference only	AMP Part Number
	A	B	C	D	E	G ± .010 [0.25]	H	K			
15 (1)	1.208/1.218 30.68/30.94	.638/.648 16.21/16.46	.979/.989 24.87/25.12	.306/.316 7.77/8.03	.489/.499 12.42/12.67	.290 7.37	.243 6.17	.035 0.89		311P407-1S-B-440	1883056-1
26 (2)	1.536/1.546 39.01/39.27	.966/.976 24.54/24.79	1.307/1.317 33.20/33.45	.306/.316 7.77/8.03	.489/.499 12.42/12.67	.290 7.37	.243 6.17	.035 0.89		311P407-2S-B-440	1883056-2
44 (3)	2.083/2.093 52.91/53.16	1.506/1.516 38.25/38.51	1.847/1.857 46.91/47.17	.306/.316 7.77/8.03	.489/.499 12.42/12.67	.290 7.37	.243 6.17	.044 1.12		311P407-3S-B-440	1883056-3
62 (4)	2.724/2.734 69.20/69.44	2.154/2.164 54.71/54.97	2.495/2.505 63.37/63.63	.306/.316 7.77/8.03	.489/.499 12.42/12.67	.290 7.37	.243 6.17	.044 1.12		311P407-4S-B-440	1883056-4
78 (5)	2.630/2.640 66.80/67.06	2.059/2.069 52.30/52.55	2.401/2.411 60.99/61.24	.418/.428 10.62/10.87	.600/.610 15.24/15.49	.290 7.37	.243 6.17	.044 1.12		311P407-5S-B-440	1883056-5

ULTRA-LITE Connector Plugs and Receptacles, Coax Mix



Insert Arrangement (Shell Size)	Dimensions									NASA Part Number	AMP Part Number
	A	B	C	D	E	G ± .010 [0.25]	H	K			
3C3 (2)	1.536/1.546 39.01/39.27	.989/.999 25.12/25.37	1.307/1.317 33.20/33.45	.324/.334 8.23/8.48	.489/.499 12.42/12.67	.294 7.47	.229/.241 5.82/6.12	.035 0.89		311P405-7P-B-440	1883057-1
3C3 (2)	1.536/1.546 39.01/39.27	.966/.976 24.54/24.79	1.307/1.317 33.20/33.45	.306/.316 7.77/8.03	.489/.499 12.42/12.67	.290 7.37	.243 6.17	.035 0.89		311P405-7S-B-440	1883058-1
5C5 (3)	2.083/2.093 52.91/53.16	1.529/1.539 38.84/39.09	1.847/1.857 46.91/47.17	.324/.334 8.23/8.48	.489/.499 12.42/12.67	.299 7.59	.224/.236 5.69/5.99	.044 1.12		311P405-10P-B-440	1883059-1
5C5 (3)	2.083/2.093 52.91/53.16	1.506/1.516 38.25/38.51	1.847/1.857 46.91/47.17	.306/.316 7.77/8.03	.489/.499 12.42/12.67	.290 7.37	.243 6.17	.044 1.12		311P405-10S-B-440	1883060-1

¹Tyco Electronic part numbers are not NASA qualified parts but can replace referenced NASA part numbers.

AMPLIMITE Connectors, ULTRA-LITE Connectors (Continued)

ULTRA-LITE AMPLIMITE Connector Part Numbers vs. NASA's 311P Part Numbers and DSCC Part Numbers

AMPLIMITE Connector Series 90 (High Density Sub "D"'s)

DSCC ¹ Part No. w/Grommet for reference only	DSCC ¹ Part No. w/out Grommet for reference only	NASA ¹ Part No. w/out Grommet for reference only	Plug / Receptacle	Shell Size	Position	ULTRA-LITE Connectors	
						Part No. w/out Grommet	Part No. with Grommet
99012SAFPRA-1	99012NAFPR-1	311P407-1P-B-12	Plug	1	15	1218232-1	1218232-7
99012SAFPRA-2	99012NAFPR-2	311P407-2P-B-12	Plug	2	26	1218232-2	1218232-8
99012SAFPRA-3	99012NAFPR-3	311P407-3P-B-12	Plug	3	44	1218232-3	1218232-9
99012SAFPRA-4	99012NAFPR-4	311P407-4P-B-12	Plug	4	62	1218232-4	1-1218232-0
99012SAFPRA-5	99012NAFPR-5	311P407-5P-B-12	Plug	5	78	1218232-5	1-1218232-1
99012SAFPRA-6	99012NAFPR-6	311P407-6P-B-12	Plug	6	104	1218232-6	1-1218232-2
99014SAESR-1	99014NAESR-1	311P407-1S-B-12	Receptacle	1	15	1218233-1	1218233-7
99014SAESR-2	99014NAESR-2	311P407-2S-B-12	Receptacle	2	26	1218233-2	1218233-8
99014SAESR-3	99014NAESR-3	311P407-3S-B-12	Receptacle	3	44	1218233-3	1218233-9
99014SAESR-4	99014NAESR-4	311P407-4S-B-12	Receptacle	4	62	1218233-4	1-1218233-0
99014SAESR-5	99014NAESR-5	311P407-5S-B-12	Receptacle	5	78	1218233-5	1-1218233-1
99014SAESR-6	99014NAESR-6	311P407-6S-B-12	Receptacle	6	104	1218233-6	1-1218233-2

AMPLIMITE Connector Series 109 (Standard Density Sub "D"'s)

DSCC ¹ Part No. w/Grommet for reference only	DSCC ¹ Part No. w/out Grommet for reference only	NASA ¹ Part No. w/out Grommet for reference only	Plug / Receptacle	Shell Size	Position	ULTRA-LITE Connectors	
						Part No. w/out Grommet	Part No. with Grommet
99013SAEPR-1	99013NAEPR-1	311P409-1P-B-12	Plug	1	9	1218234-1	1218234-7
99013SAEPR-2	99013NAEPR-2	311P409-2P-B-12	Plug	2	15	1218234-2	1218234-8
99013SAEPR-3	99013NAEPR-3	311P409-3P-B-12	Plug	3	25	1218234-3	1218234-9
99013SAEPR-4	99013NAEPR-4	311P409-4P-B-12	Plug	4	37	1218234-4	1-1218234-0
99013SAEPR-5	99013NAEPR-5	311P409-5P-B-12	Plug	5	50	1218234-5	1-1218234-1
99015SAESR-1	99015NAESR-1	311P409-1S-B-12	Receptacle	1	9	1218235-1	1218235-7
99015SAESR-2	99015NAESR-2	311P409-2S-B-12	Receptacle	2	15	1218235-2	1218235-8
99015SAESR-3	99015NAESR-3	311P409-3S-B-12	Receptacle	3	25	1218235-3	1218235-9
99015SAESR-4	99015NAESR-4	311P409-4S-B-12	Receptacle	4	37	1218235-4	1-1218235-0
99015SAESR-5	99015NAESR-5	311P409-5S-B-12	Receptacle	5	50	1218235-5	1-1218235-1

¹Tyco Electronic part numbers are not DSCC or NASA qualified parts but can replace referenced NASA part numbers.