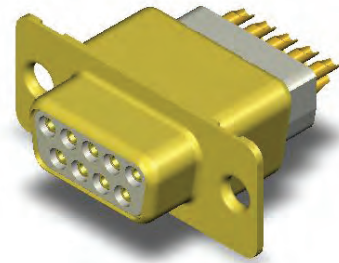


Features/Benefits

- **D*Sub**
- **Filtration 4000 to 12000 pf**
- **Direct filtration included inside the connectors**
- **Burning and LAT test included**
- **EPPL Listed connector**

Typical Applications

- **To be used where filtration is not set in the embedded electronic**



D*J Subminiature filter connectors for space applications
Compatible with other D Subminiature space connectors

Only one quality levels available:

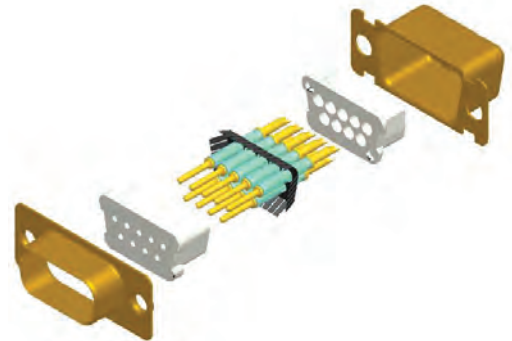
- Code FR165: Refers to the old ESA/ESCC specification 3405/001
Amended by the C&K Connector specification CS-FR165
Used for flight models

Filter type "II", medium frequency (code M)

Solder bucket terminations

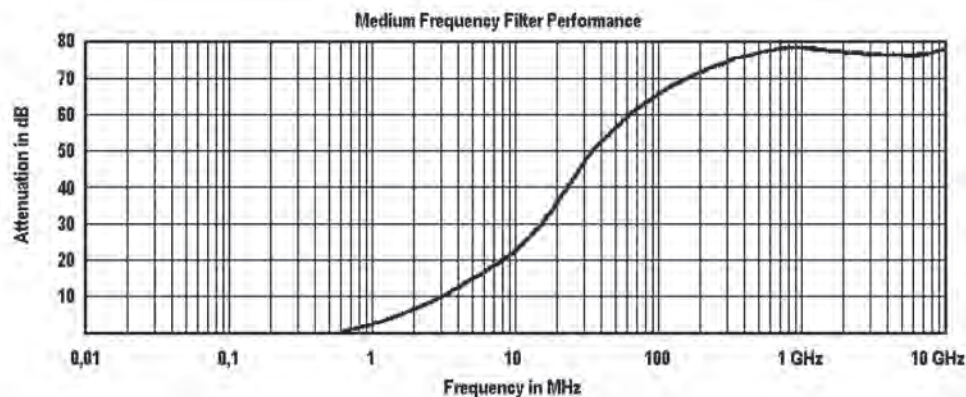
Printed Circuit Board terminations Straight or 90° bent (Without or With Plastic Bracket)

Packaging unit: 1 piece (plastic bag)



Specific Performance Specifications

Working Voltage	200 V DC
Rated Current	5.0 A
Insulation Resistance (100 V DC)	10000 MΩ min
Voltage Proof	500 V DC
Capacitance at 1 kHz	4000 pF min / 12000 pF max
Attenuation at 100 MHz	50 dB min



Residual Magnetism level: NM = 20000 Gamma

Filter Connectors / D*J

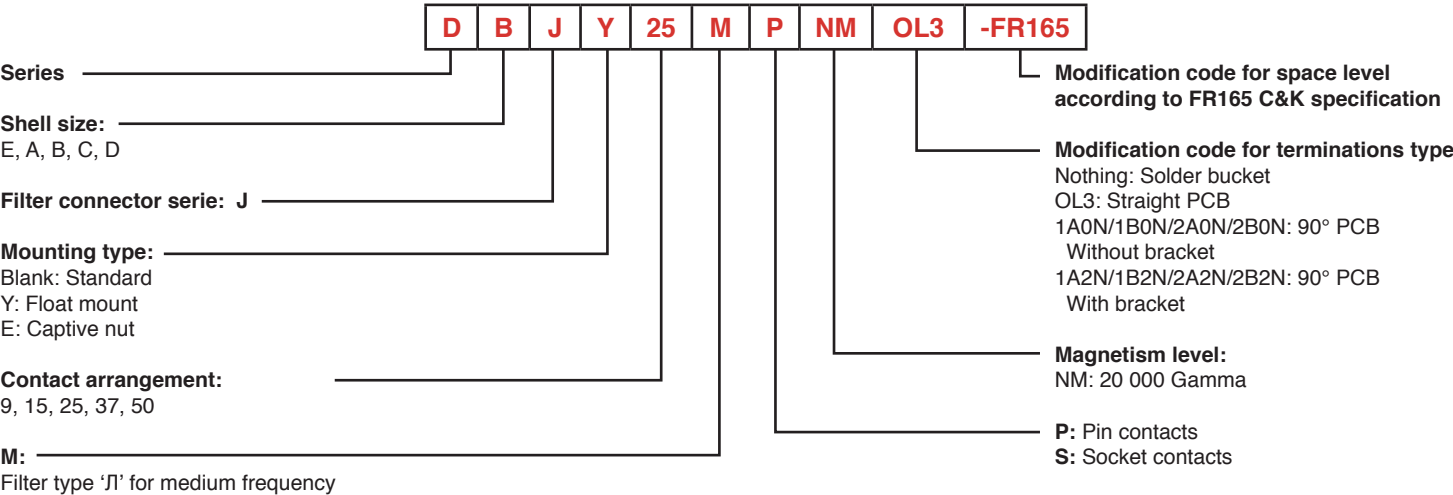
How to order

CONNECTORS:

Our easy build-a-connector concept allows you to mix and match options to create the D*J you need. To order, select desired option from each category and place it in the appropriate box.

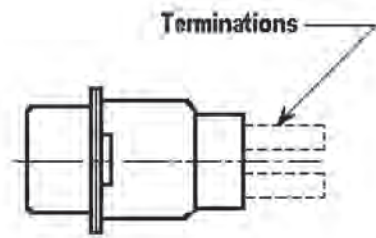
For any part number different from those listed above, please consult your local C&K components representative.

• Connectors D*J – FR165 (Flying and Engineering Models):



Dimensions are shown in mm (inch)
Dimensions subject to change

Specific Dimensions



Termination Types:

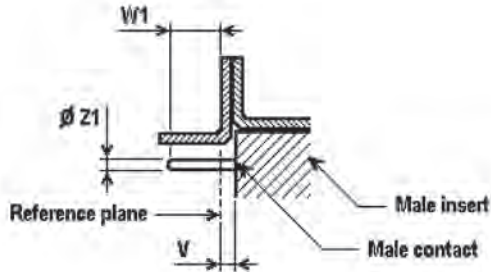
Solder Bucket

Straight PCB Solder

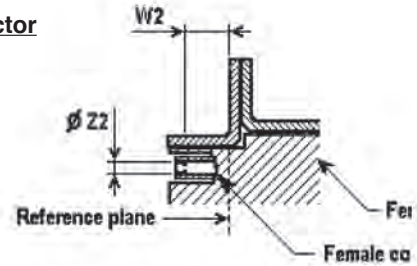
90° Bent PCB Solder / Without Bracket / European Footprint

90° Bent PCB Solder / With Brackets / European Footprint

Male connector

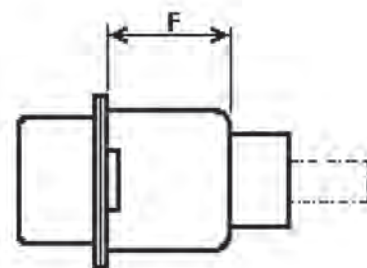
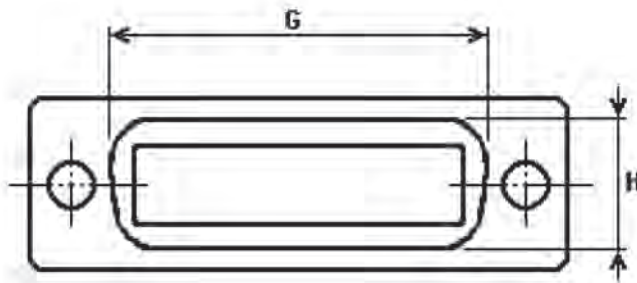


Female connector



ØZ2: to accommodate a 0,99 (.039) / 1,04 (.041) diameter pin

Shell Size	V max	W1 min (Full pin diameter)	W1 max (Full pin length)	ØZ1 min	ØZ1 max	W2 min (Square ended pin)
E	0,40 (.016)	4,47 (.176)	5,33 (.210)	0,99 (.039)	1,04 (.041)	4,36 (.172)
A	0,40 (.016)	4,47 (.176)	5,33 (.210)	0,99 (.039)	1,04 (.041)	4,36 (.172)
B	0,60 (.024)	4,47 (.176)	5,33 (.210)	0,99 (.039)	1,04 (.041)	4,36 (.172)
C	0,60 (.024)	4,47 (.176)	5,33 (.210)	0,99 (.039)	1,04 (.041)	4,36 (.172)
D	0,60 (.024)	4,47 (.176)	5,33 (.210)	0,99 (.039)	1,04 (.041)	4,36 (.172)



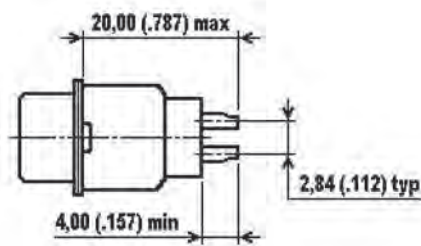
Shell Size	F min	F max	G min	G max	H min	H max
E	10,00 (.394)	10,20 (.402)	18,95 (.746)	19,55 (.770)	10,46 (.412)	11,15 (.439)
A	10,00 (.394)	10,20 (.402)	27,25 (1.073)	27,90 (1.098)	10,46 (.412)	11,15 (.439)
B	9,90 (.390)	10,10 (.398)	41,02 (1.615)	42,01 (1.654)	10,46 (.412)	11,53 (.454)
C	9,90 (.390)	10,10 (.398)	57,97 (2.282)	58,47 (2.302)	10,46 (.412)	11,53 (.454)
D	9,90 (.390)	10,10 (.398)	55,07 (2.168)	56,08 (2.208)	13,31 (.524)	14,32 (.564)

Filter Connectors / D*J

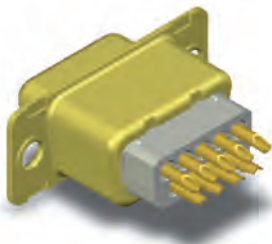
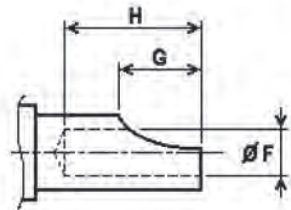
Solder Bucket Terminations:

Specific Dimensions

Sizes E, A, B, C, D



Termination



Contacts	Shell Size	ØF	G	H	Pitch
		+ 0,05(.002) / 0	± 0,15 (.006)	+0,2(.008) /-0,05(.002)	between contacts
Male	E	1,10 (.043)	2,00 (.079)	3,30 (.130)	2,74 (.108)
	A	1,10 (.043)	2,00 (.079)	3,30 (.130)	2,74 (.108)
	B	1,10 (.043)	2,00 (.079)	3,30 (.130)	2,76 (.109)
	C	1,10 (.043)	2,00 (.079)	3,30 (.130)	2,76 (.109)
	D	1,10 (.043)	2,00 (.079)	3,30 (.130)	2,76 (.109)
Female	E	1,10 (.043)	2,00 (.079)	3,30 (.130)	2,74 (.108)
	A	1,10 (.043)	2,00 (.079)	3,30 (.130)	2,74 (.108)
	B	1,10 (.043)	2,00 (.079)	3,30 (.130)	2,76 (.109)
	C	1,10 (.043)	2,00 (.079)	3,30 (.130)	2,76 (.109)
	D	1,10 (.043)	2,00 (.079)	3,30 (.130)	2,76 (.109)

Termination Modifier: Nothing

Weights

Max Weight (grams) with contacts	Shell Size	Weight (Grams)	
		Male	Female
For connector with mounting option, add the weight of the eventual accessories *	E	12.0	13.5
	A	18.5	20.5
	B	28.0	31.0
	C	38.5	42.0
	D	47.0	51.0

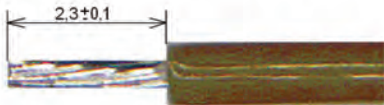
*For dual-float mount (Y) weight (if applicable), added 0,60 gr.

*For captive-nut (E) weight (if applicable), added 0,65 gr.

Recommended instruction for wire stripping:

- Cut wires to length and strip insulation per above illustration. Check for broken or frayed wires
- Accepted Wires Sizes: insulated AWG 20, AWG 22, AWG 24.

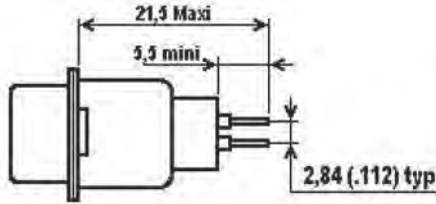
Recommended wire trim length



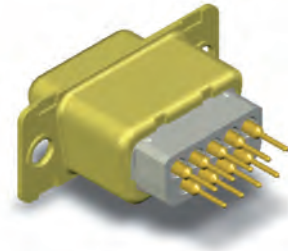
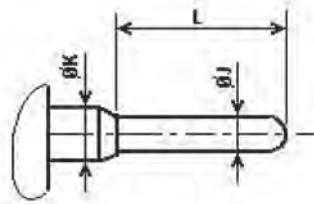
Straight PCB solder Terminations type OL3

Specific Dimensions

Sizes E, A, B, C, D



Termination



Contacts	Shell Size	Ø J ± 0,05 (.002)	Ø K max	L ± 0,05 (.002)	Pitch between contacts
Male	E	0,62 (.024)	1,50 (.059)	4,15 (.163)	2,74 (.108)
	A	0,62 (.024)	1,50 (.059)	4,15 (.163)	2,74 (.108)
	B	0,62 (.024)	1,50 (.059)	4,15 (.163)	2,76 (.109)
	C	0,62 (.024)	1,50 (.059)	4,15 (.163)	2,76 (.109)
	D	0,62 (.024)	1,50 (.059)	4,15 (.163)	2,76 (.109)
Female	E	0,62 (.024)	1,50 (.059)	4,15 (.163)	2,74 (.108)
	A	0,62 (.024)	1,50 (.059)	4,15 (.163)	2,74 (.108)
	B	0,62 (.024)	1,50 (.059)	4,15 (.163)	2,76 (.109)
	C	0,62 (.024)	1,50 (.059)	4,15 (.163)	2,76 (.109)
	D	0,62 (.024)	1,50 (.059)	4,15 (.163)	2,76 (.109)

Termination Modifier: OL3

For other termination modifier, consult factory

Weights

Max Weight (grams) with contacts	Shell Size	Weight (Grams)	
		Male	Female
For connector with mounting option, add the weight of the eventual accessories *	E	12.0	13.5
	A	18.5	20.5
	B	28.0	31.0
	C	38.5	42.0
	D	47.0	51.0

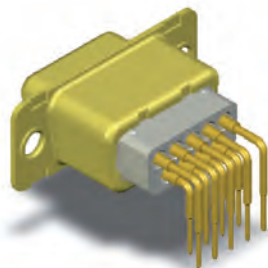
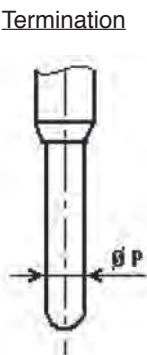
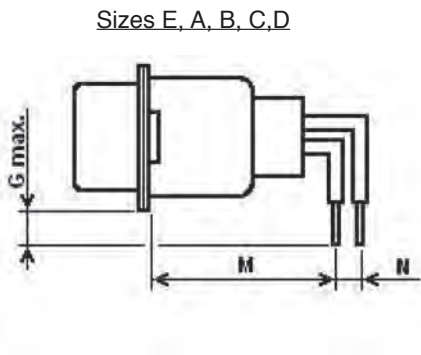
*For dual-float mount (Y) weight (if applicable), added 0,60 gr.

*For captive-nut (E) weight (if applicable), added 0,65 gr.

Filter Connectors / D*J

90° Bent PCB solder Terminations / Without Brackets / European Footprint type 1A0N – 1B0N – 2A0N – 2B0N

Specific Dimensions



Termination Modifier	Ø P ± 0,06 (.002)	N Typical
1A0N	0,59 (.023)	2,54 (.100)
1B0N	0,59 (.023)	2,84 (.112)
2A0N	0,75 (.029)	2,54 (.100)
2B0N	0,75 (.029)	2,84 (.112)

Contacts	Shell Size	M min	M max	G max	Pitch between contacts
Male	E	17,80 (.398)	18,20 (.406)	5,50 (.217)	2,74 (.108)
	A	17,80 (.398)	18,20 (.406)	5,50 (.217)	2,74 (.108)
	B	17,80 (.398)	18,20 (.406)	5,50 (.217)	2,76 (.109)
	C	17,80 (.398)	18,20 (.406)	5,50 (.217)	2,76 (.109)
	D	17,80 (.398)	18,20 (.406)	5,50 (.217)	2,76 (.109)
Female	E	17,80 (.398)	18,20 (.406)	5,50 (.217)	2,74 (.108)
	A	17,80 (.398)	18,20 (.406)	5,50 (.217)	2,74 (.108)
	B	17,80 (.398)	18,20 (.406)	5,50 (.217)	2,76 (.109)
	C	17,80 (.398)	18,20 (.406)	5,50 (.217)	2,76 (.109)
	D	17,80 (.398)	18,20 (.406)	5,50 (.217)	2,76 (.109)

Termination Modifier: 1A0N, 1B0N, 2A0N, 2B0N
For other termination modifier, consult factory

Weights

Max Weight (grams) with contacts	Shell Size	Weight (Grams)	
		Male	Female
For connector with mounting option, add the weight of the eventual accessories *	E	12.6	14.1
	A	19.5	21.5
	B	29.7	32.7
	C	41.1	44.6
	D	51.5	55.5

*For dual-float mount (Y) weight (if applicable), added 0,60 gr.
*For captive-nut (E) weight (if applicable), added 0,65 gr.

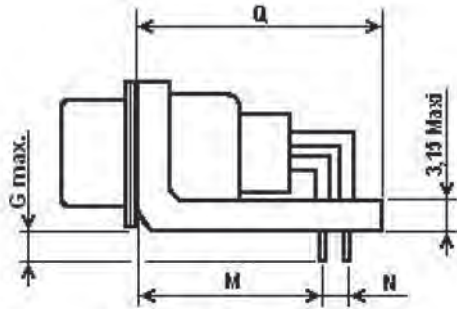


Dimensions are shown in mm (inch)
Dimensions subject to change

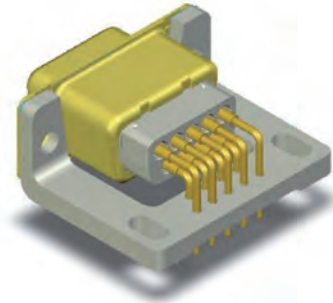
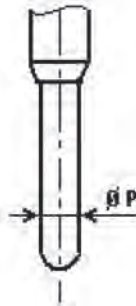
90° Bent PCB solder Terminations / With Brackets / European Footprint Type 1A2N – 1B2N – 2A2N– 2B2N

Specific Dimensions

Sizes E, A, B, C, D



Termination



Termination Modifier	Ø P ± 0,06 (.002)	N Typical
1A2N	0,59 (.023)	2,54 (.100)
1B2N	0,59 (.023)	2,84 (.112)
2A2N	0,75 (.029)	2,54 (.100)
2B2N	0,75 (.029)	2,84 (.112)

Contacts	Shell Size	M min	M max	Q min	Q max	G max	Pitch between contacts
Male	E	17,80 (.398)	18,20 (.406)	23,75 (.935)	24,25 (.955)	4,40 (.173)	2,74 (.108)
	A	17,80 (.398)	18,20 (.406)	23,75 (.935)	24,25 (.955)	4,40 (.173)	2,74 (.108)
	B	17,80 (.398)	18,20 (.406)	23,75 (.935)	24,25 (.955)	4,40 (.173)	2,76 (.109)
	C	17,80 (.398)	18,20 (.406)	23,75 (.935)	24,25 (.955)	4,40 (.173)	2,76 (.109)
	D	17,80 (.398)	18,20 (.406)	25,75 (1.014)	26,25 (1.033)	4,40 (.173)	2,76 (.109)
Female	E	17,80 (.398)	18,20 (.406)	23,75 (.935)	24,25 (.955)	4,40 (.173)	2,74 (.108)
	A	17,80 (.398)	18,20 (.406)	23,75 (.935)	24,25 (.955)	4,40 (.173)	2,74 (.108)
	B	17,80 (.398)	18,20 (.406)	23,75 (.935)	24,25 (.955)	4,40 (.173)	2,76 (.109)
	C	17,80 (.398)	18,20 (.406)	23,75 (.935)	24,25 (.955)	4,40 (.173)	2,76 (.109)
	D	17,80 (.398)	18,20 (.406)	25,75 (1.014)	26,25 (1.033)	4,40 (.173)	2,76 (.109)

Termination Modifier: 1A2N, 1B2N, 2A2N, 2B2N
For other termination modifier, consult factory

Weights

Max Weight (grams) with contacts and monobloc plastic bracket	Shell Size	Weight (Grams)	
		Male	Female
	E	14.1	15.6
	A	21.1	22.1
	B	31.6	34.6
	C	43.3	46.8
	D	54.0	58.0

Filter Connectors / D*J

D*J - CS FR165 Control Operations

Before and during assembling

100% contact retention test (socket contacts assembling)	According to para 4.3.3 ESCC 3405/001
100% visual control of piece parts (before assembling)	According to para 5.2.1 ESCC 3405
100% visual control X10 of filters (insertion on contacts and first spring assembling)	According to para 5.2.1 ESCC 3405
100% visual control X10 of filters (second spring assembling)	According to para 5.2.1 ESCC 3405
100% visual control X10 of filters (rear contact assembling + crimping operation)	According to para 5.2.1 ESCC 3405
Tensile strength > 23 N on contact crimp areas on 2 x 3 pieces (start/end of series)	
Dimension control on 2 x 3 pieces (start/end of series)	According to para 4.3.1 ESCC 3405/001 and 9.4 ESCC 3405
100% visual control X10 of filters (ground plane/front insulator assembling)	According to para 5.2.1 ESCC 3405
100% Capacitance measurement 4000 to 12000 pF and recording (shells assembling)	According to para 9.3.1.6 ESCC 3405
100% Voltage Proof control 500 V DC (shells assembling)	According to para 9.3.1.2 ESCC 3405
100% Insulation Resistance check (no recording) > 10000 Mohm/ 100 V DC (shells assembling)	According to para 9.3.1.1 ESCC 3405

Burn-in

168 hours storage at +125 °C, 200 V DC voltage applied	According to para 9.6.2 ESCC 3405
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After burn-in

100% Capacitance measurement 4000 to 12000 pF and recording	According to para 9.3.1.6 ESCC 3405
Capacitance drift control (no recording) < 20% of values	According to para 9.3.1.6 ESCC 3405 and Table 4 ESCC 3405/001
100% Insulation Resistance measurement > 10000 Mohm / 100 V DC	According to para 9.3.1.1 ESCC 3405
100% Voltage Proof control 500 V DC	According to para 9.3.1.2 ESCC 3405

Final assembling

100% visual control X10 of filters (final assembling)	According to para 5.2.1 ESCC 3405
Contact Resistance measurement < 8 mohm by sampling per CCTU 01-02 A (final assembling)	According to para 4.3.3 ESCC 3405/001
Sampling control on 3 pieces of the marking adherence	According to para 4 ESCC 24800
100% Insertion Loss measurement > 50 dB at 100 MHz and recording (final assembling)	According to para 9.3.1.7 ESCC 3405/001
100% visual control X10 (final assembling)	According to para 5.2.1 ESCC 3405
Dimensional control by sampling per CCTU 01-02 A (final assembling)	According to para 4.3.1 ESCC 3405/001 and 9.4 ESCC 3405
100% Capacitance measurement 4000 to 12000 pF and recording	According to para 9.3.1.6 ESCC 3405
100% Insulation Resistance check (no recording) > 10000 Mohm/ 100 V DC	According to para 9.3.1.1 ESCC 3405
100% Voltage Proof control 500 V DC	According to para 9.3.1.2 ESCC 3405

Note: Burn-in performed on assembled connectors (shell swaging not made), justifying the simplification of the test sequence.

D*J Filter Qualification Procedure

Filter qualification

Applicable to each lot of 5000 filters.

1) Life test

Performed on 75 filters assembled on connectors, through the standard procedure and including the burn-in.

- Life test: 2000 hours storage at +125 °C, 200 V DC voltage applied.
- Final requirement: No failure allowed.
- Intermediate controls after 500 and 1000 hours storage:
 - Capacitance measurement 4000 to 12000 pF and recording for drift calculation < 20%
 - Insulation Resistance control > 10000 Mohm at 100 V DC
 - Voltage Proof control 500 V DC
- Final controls after 2000 hours storage:
 - Capacitance measurement 4000 to 12000 pF and recording for drift calculation < 20%
 - Insulation Resistance control > 10000 Mohm at 100 V DC
 - Voltage Proof control 500 V DC

2) Humidity test

Performed on 25 filters (just assembled on connectors for handling purpose).

- Humidity test:
 - 240 hours storage at +85 °C, 85% relative humidity
 - Each contact is soldered to a 100 kOhm resistor
 - 1,5 V DC voltage applied between the shell and each 100 kOhm resistor
- Final requirement: No failure allowed.
- Final control: Insulation Resistance measurement > 10000 Mohm at 100 V DC.

Filter Connectors / D*J

D*J - LOT ACCEPTANCE TESTS

Lot Acceptance Test performed during assembly (part of the standard in process controls):

- LAT 3 (Lot Acceptance Tests, level 3): No tests or inspections are required for this level.

LAT 3

- 10 contacts:
 - Female contact capability (Skt contacts)
 - External visual inspection
- 2 connectors:
 - Mating verification
 - External visual inspection

Lot Acceptance Tests performed on customer specific request (invoiced separately) per the following sequence:

- LAT 2 (Lot Acceptance Tests, level 2)
- Life Test (1000 hours)

LAT 2

Performed on 2 connectors and 10 contacts, taken randomly from the ordered lot (destructive tests).

- 10 contacts:
 - External visual inspection
 - Socket contacts:
 - Contact insertion and withdrawal forces
 - Probe damage
 - Pin contacts:
 - Pin bending test (+ Controls for impact on filter):
Capacitance and Capacitance drift
Insulation Resistance
 - Contact Resistance
 - Gold plate thickness (2 contacts)
- 2 connectors:
 - External visual inspection
 - Thermal shock, followed by
 - External visual inspection
 - Capacitance
 - Voltage Proof
 - Contact retention (in insert)
 - Endurance, followed by:
 - External visual inspection
 - Mating / unmating forces
 - Capacitance
 - Contact Resistance drift
 - Insulation Resistance measurement
 - Voltage Proof
 - Insertion loss

Life Test

Performed on 60 filters assembled on connectors, through the standard procedure and including the burn-in.

- Life test: 1000 hours storage at +125 °C, 200 V DC voltage applied.
- Final requirement: No failure allowed.
- Initial controls, intermediate controls (500 hours) and final controls (1000 hours):
 - External visual inspection
 - Capacitance measurement 4000 to 12000 pF and record for drift calculation < 20%
 - Insulation Resistance control > 10000 Mohm at 100 V DC
 - Voltage Proof control 500 V DC
 - Insertion loss measurement > 50 dB at 100 MHz (final control only)



*Dimensions are shown in mm (inch)
Dimensions subject to change*

