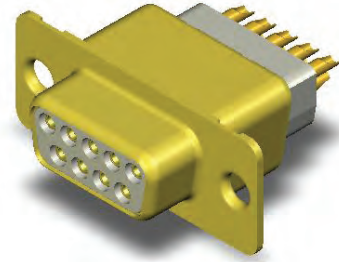


## Features/Benefits

- **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:

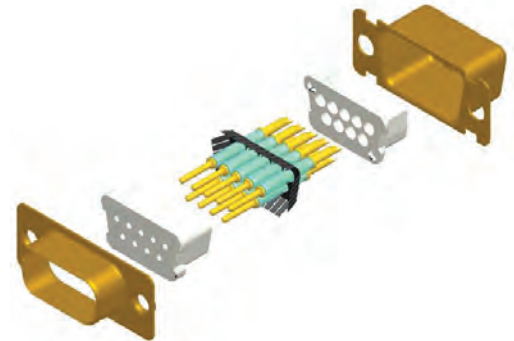
- Code FR165: Refers to the old ESA/ESCC specification 3405/001  
Amended by the C&K Connector specification CS-FR165  
Used for flight models

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

Solder bucket terminations

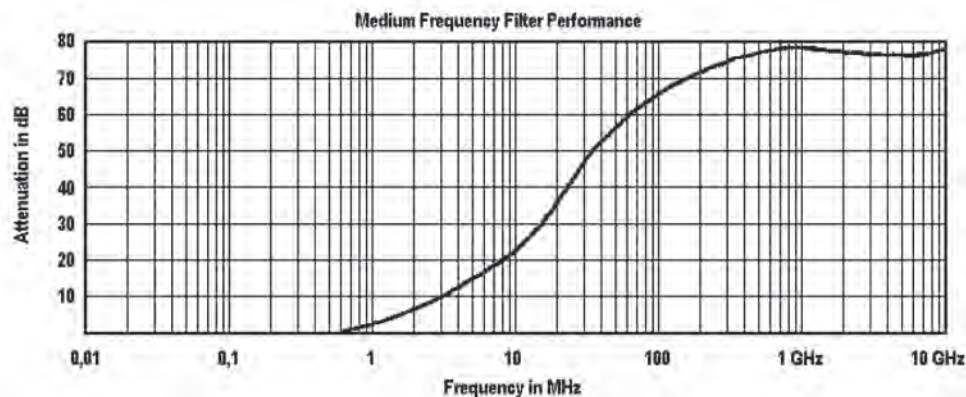
Printed Circuit Board terminations Straight or 90° bent (Without or With Plastic Bracket)

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

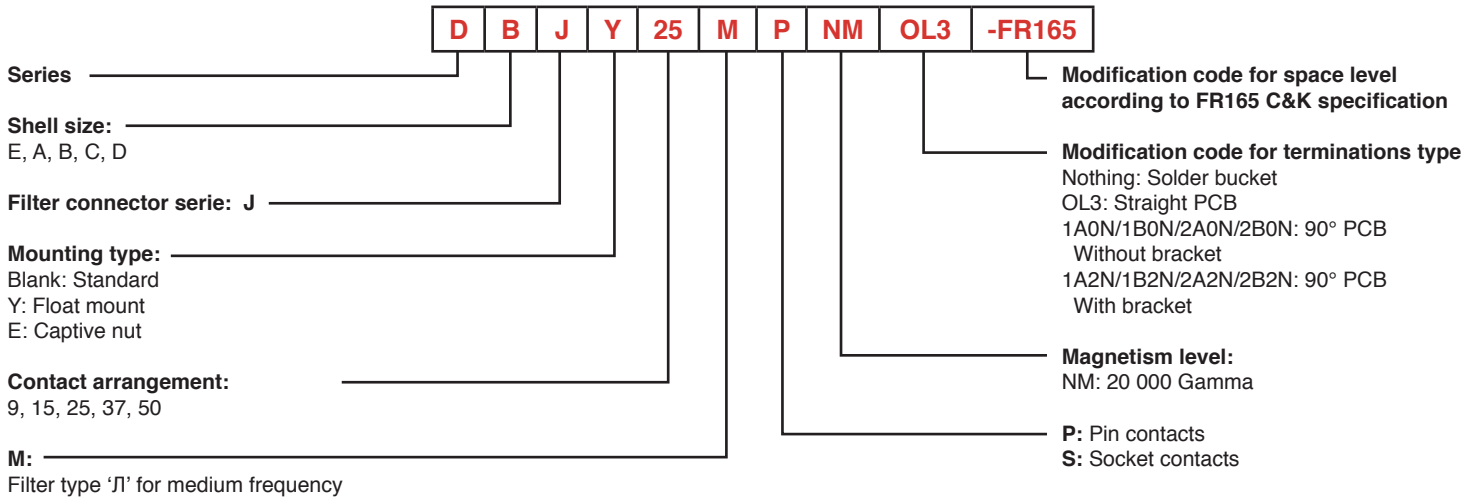
## How to order

### 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.

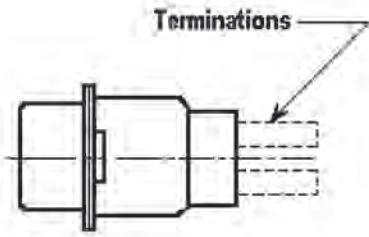
For any part number different from those listed above, please consult your local C&K components representative.

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



# Filter Connectors / D\*J

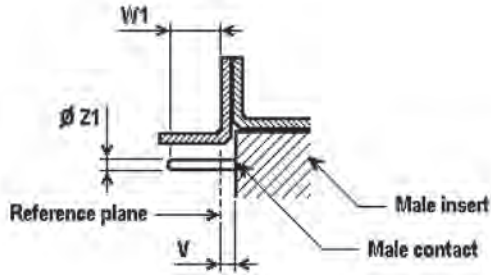
## Specific Dimensions



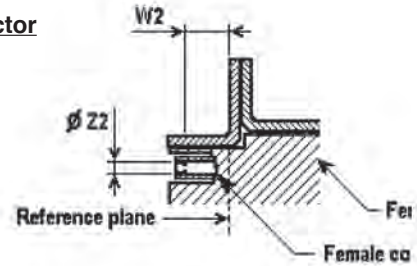
### Termination Types:

- Solder Bucket
- Straight PCB Solder
- 90° Bent PCB Solder / Without Bracket / European Footprint
- 90° Bent PCB Solder / With Brackets / European Footprint

### Male connector

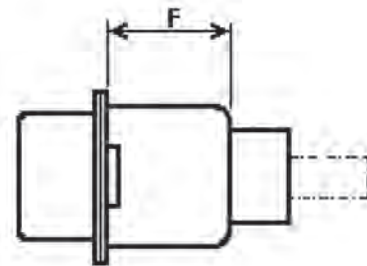
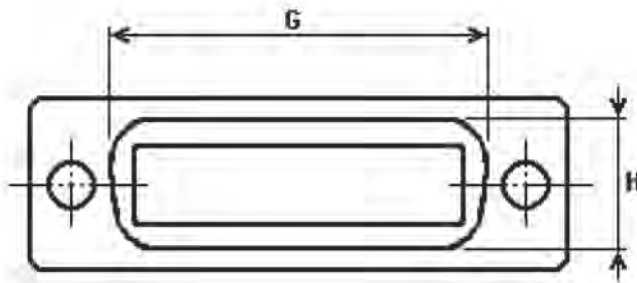


### Female connector



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)



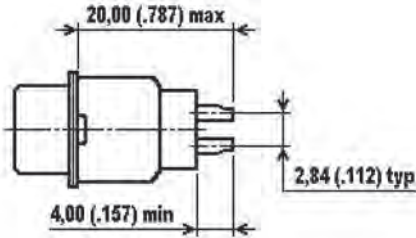
Shell Size	F min	F max	G min	G max	H min	H max
E	10,00 (.394)	10,20 (.402)	18,95 (.746)	19,55 (.770)	10,46 (.412)	11,15 (.439)
A	10,00 (.394)	10,20 (.402)	27,25 (1.073)	27,90 (1.098)	10,46 (.412)	11,15 (.439)
B	9,90 (.390)	10,10 (.398)	41,02 (1.615)	42,01 (1.654)	10,46 (.412)	11,53 (.454)
C	9,90 (.390)	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

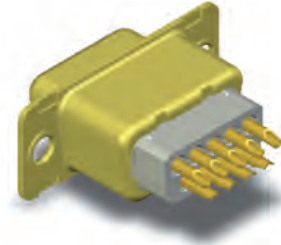
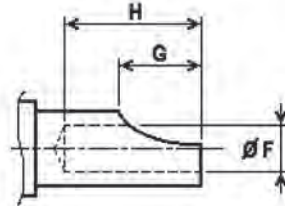
## Solder Bucket Terminations:

### Specific Dimensions

Sizes E, A, B, C, D



Termination



Contacts	Shell Size	ØF + 0,05(.002) / 0	G ± 0,15 (.006)	H +0,2(.008) /-0,05(.002)	Pitch 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

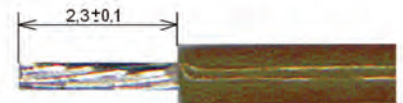
\*For dual-float mount (Y) weight (if applicable), added 0,60 gr.

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

### Recommended instruction for wire stripping:

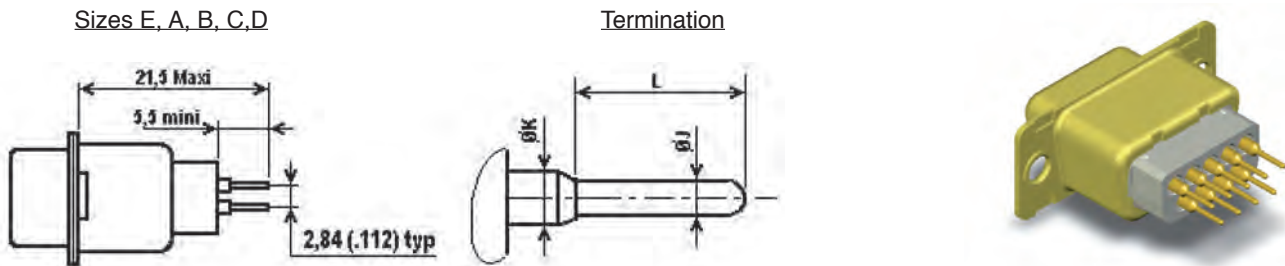
- Cut wires to length and strip insulation per above illustration. Check for broken or frayed wires
- Accepted Wires Sizes: insulated AWG 20, AWG 22, AWG 24.

### Recommended wire trim length



## Straight PCB solder Terminations type OL3

### Specific Dimensions



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

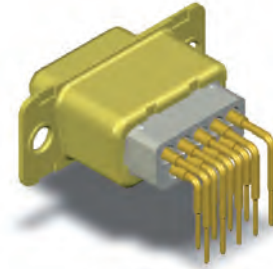
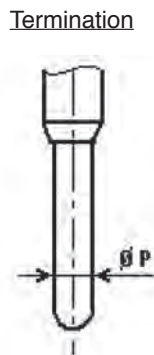
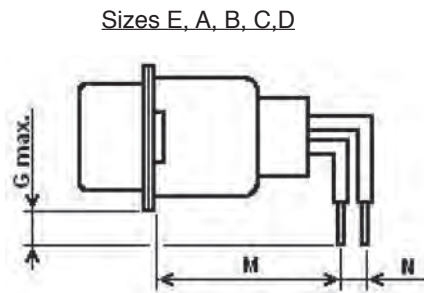
\*For dual-float mount (Y) weight (if applicable), added 0,60 gr.

\*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.

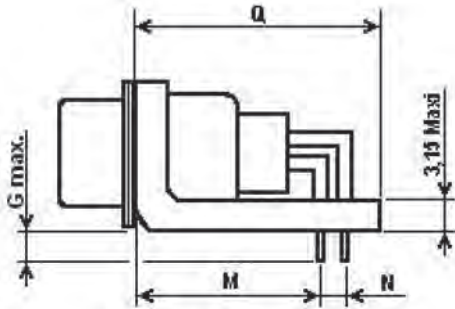
\*For captive-nut (E) weight (if applicable), added 0,65 gr.

# Filter Connectors / D\*J

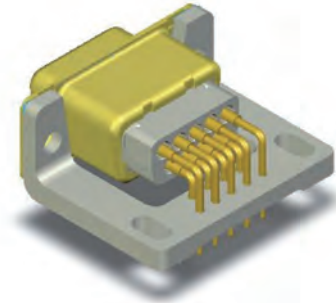
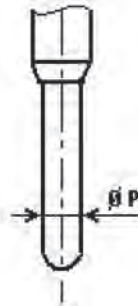
90° Bent PCB solder Terminations / With Brackets / European Footprint Type 1A2N – 1B2N – 2A2N– 2B2N

## 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

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## 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)	According to para 4.3.1 ESCC 3405/001 and 9.4 ESCC 3405
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

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## 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*



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