



## PRODUCTS

CIN::APSE  
MICROMINIATURE  
D-SUB

### Filter D

- Introduction
- Features
- **Technical Data**
- Part Numbering
- Filter Adapter
- Technical Information

IDC

Basic D

Military D

Accessories

### OTHER TECHNOLOGY



## FILTER D TECHNICAL DATA

|                                               |                                                                                                           |    |    |     |      |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------|----|----|-----|------|
| <b>Termination options</b>                    | Solder bucket, flow solder, Straight & 90°, Mini wrap.                                                    |    |    |     |      |
| <b>Number of contacts</b>                     | 9                                                                                                         | 15 | 25 | 27  | 50   |
| <b>Maximum insertion and extraction force</b> | 30                                                                                                        | 50 | 83 | 123 | 167N |
| <b>Performance level</b>                      | 1, 2 & 3                                                                                                  |    |    |     |      |
| <b>Wire accommodation</b>                     | ≤ 0.5mm (20AWG)                                                                                           |    |    |     |      |
| <b>Plug contact material</b>                  | Copper alloy                                                                                              |    |    |     |      |
| <b>Socket contact material</b>                | Copper alloy                                                                                              |    |    |     |      |
| <b>Current rating</b>                         | 5A                                                                                                        |    |    |     |      |
| <b>Capacitance</b>                            | 330pF Tol +50%-20%, 1000pF and 2000pF Tol +80%-20%                                                        |    |    |     |      |
| <b>Working voltage</b>                        | 200V d.c. or a.c. peak                                                                                    |    |    |     |      |
| <b>Contact resistance</b>                     | 5 X 10 <sup>-3</sup> ohm max.                                                                             |    |    |     |      |
| <b>Insulation resistance</b>                  | ≥ 5 X 10 <sup>9</sup> ohm                                                                                 |    |    |     |      |
| <b>Temperature range</b>                      | -25°C to +85°C                                                                                            |    |    |     |      |
| <b>Insulator materials</b>                    | High impact Epoxy & GF Polyester UL94V-0 rated                                                            |    |    |     |      |
| <b>Shell materials</b>                        | <b>Front:</b> Steel-Bright tin finish with grounding indents on plugs<br><b>Rear:</b> Electrolytic Nickel |    |    |     |      |

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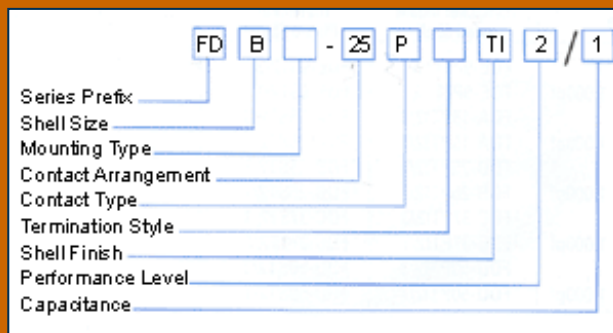
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## FILTER D PART NUMBERING



|                                                         |                                                                                       |                                                                                               |
|---------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <b>Series Prefix</b>                                    | FD                                                                                    | Filtered D (Standard Prefix)                                                                  |
| <b>Shell Size</b>                                       | E,A,B,C, or D (All standard)                                                          |                                                                                               |
| <b>Mounting Type</b>                                    | B                                                                                     | 4-40 rivnut for rear panel mounting (Standard)                                                |
|                                                         | P                                                                                     | M3 rivnut for rear panel mounting                                                             |
|                                                         | D                                                                                     | With female screw locks fitted                                                                |
|                                                         | E                                                                                     | 4-40 clinch-nut for rear panel mounting with locking feature for high vibration applications  |
|                                                         | Y                                                                                     | Universal float mount                                                                         |
|                                                         | No designation                                                                        | Ø3.05mm mounting hole (Standard) 90° Flow Solder versions are not available with float mounts |
| <b>Contact Arrangement</b>                              | 9, 15, 25, 37, or 50 (All standard)                                                   |                                                                                               |
| <b>Contact Type</b>                                     | P or S (Both Standard)                                                                |                                                                                               |
| <b>Termination Style</b>                                | 90° Flow Solder                                                                       |                                                                                               |
| <b>European Footprint</b>                               | 1A0N                                                                                  | Without brackets                                                                              |
|                                                         | 1A2N                                                                                  | With plastic brackets and keeper moulding*                                                    |
|                                                         | 1AEN                                                                                  | With earthing straps on plastic brackets (Standard) with keeper moulding*                     |
|                                                         | 1ASN                                                                                  | With board locks, earthing straps, plastic (Standard) brackets and keeper moulding*           |
|                                                         | * Please specify rivnuts or screw locks, mounting types B, P, or D (rivnuts Standard) |                                                                                               |
| <b>Straight Flow Solder</b>                             | OL2                                                                                   | Termination 0.6mm, 5.3mm long.                                                                |
|                                                         | BL2                                                                                   | As OL2 with vertical Board locks 4/40 threads.                                                |
| <b>Solder Bucket No designation required (Standard)</b> |                                                                                       |                                                                                               |
| <b>Shell Finish</b>                                     | T                                                                                     | Bright tin (Standard)                                                                         |
|                                                         |                                                                                       | Bright tin with grounding indents (plug only)                                                 |
|                                                         | TI                                                                                    | Nickel on rear shell (Standard)                                                               |
| <b>Performance Level</b>                                | 1                                                                                     | Exceeds Din Class 2                                                                           |
|                                                         | 2                                                                                     | Din Class 2 (Standard)                                                                        |
|                                                         | 3                                                                                     | Exceed DIN Class 3                                                                            |



|             |   |        |
|-------------|---|--------|
| Capacitance | 1 | 1000pF |
|             | 2 | 2000pF |
|             | 3 | 330pF  |

Custom of selectively loaded products available.  
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IDC

Basic D

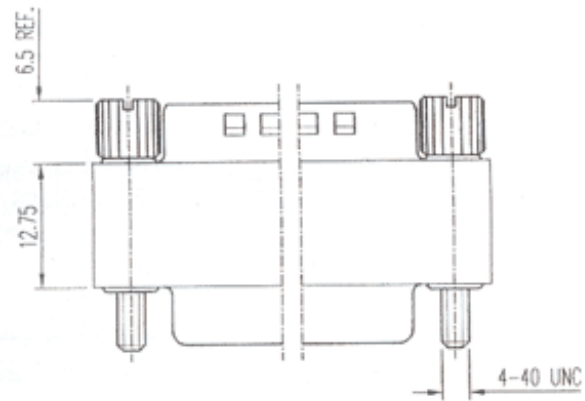
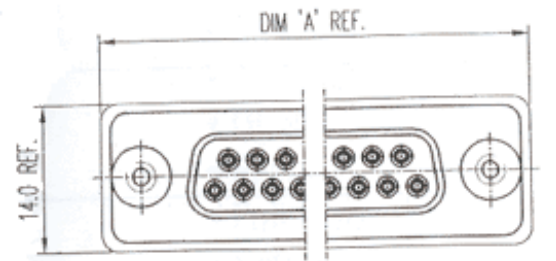
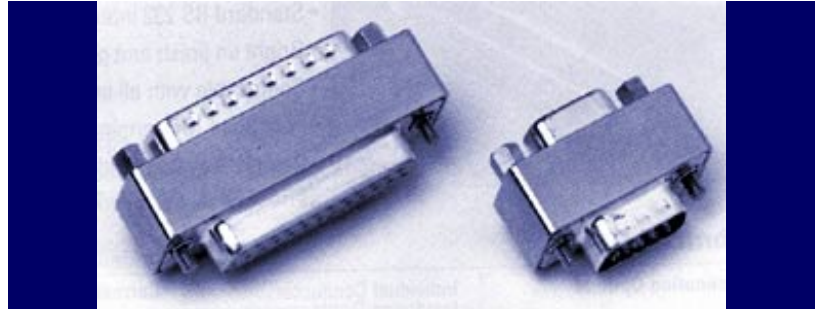
Military D

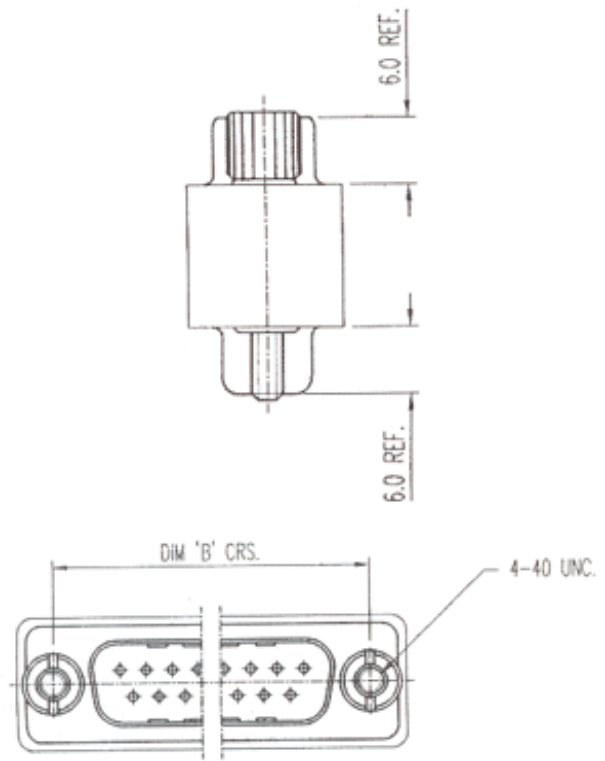
Accessories

OTHER TECHNOLOGY

## FILTER D FILTER ADAPTOR

Male / Female Filtering Adapter





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## FILTER D TECHNICAL INFORMATION

| Part Number | Working Voltage | Proof Voltage | Capacitance To Ground | Capacitance Tolerance | Temperature Range | DIM "A" REF. | DIM "B" REF. |
|-------------|-----------------|---------------|-----------------------|-----------------------|-------------------|--------------|--------------|
| FA9 PS/1    | 200V *          | 500V          | 1000pF                | +80% - 20%            | -25°C to +85°C    | 32.7         | 24.99        |
| FA9PS/3     |                 |               | 330pF                 | +50% - 20%            |                   |              |              |
| FA15 PS/1   | 200V *          | 500V          | 1000pF                | +80% - 20%            | -25°C to +85°C    | 41.0         | 33.32        |
| FA15 PS/3   |                 |               | 330pF                 | +50% - 20%            |                   |              |              |
| FA25 PS/1   | 200V *          | 500V          | 1000pF                | +80% - 20%            | -25°C to +85°C    | 54.9         | 47.04        |
| FA25 PS/3   |                 |               | 330pF                 | +50% - 20%            |                   |              |              |
| FA37 PS/1   | 200V *          | 500V          | 1000pF                | +80% - 20%            | -25°C to +85°C    | 71.2         | 63.50        |
| FA37 PS/3   |                 |               | 330pF                 | +50% - 20%            |                   |              |              |

\*DC or AC PEAK

**GENERAL SPECIFICATION** - MECHANICAL, ELECTRICAL & ENVIRONMENTAL PERFORMANCE IN LINE WITH REQUIREMENTS OF DIN CLASS 2

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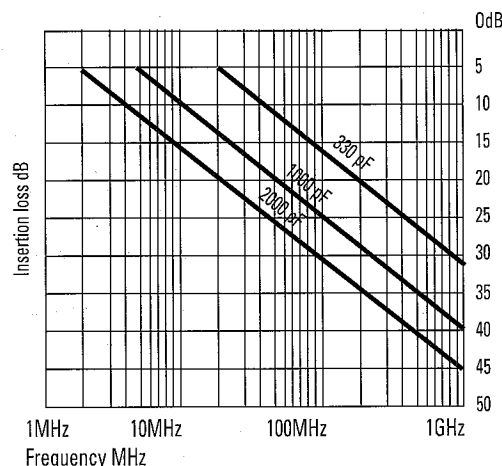


# FILTER D CONNECTORS

CINCH has been producing filter connectors for years and has acquired an in depth knowledge of EMC protection. CINCH offers fast delivery on a wide range of standard filtered connectors and will be your partner to design the product you need to meet European and FCC regulations.

## Features

- The Cinch Filter D Sub is a high quality turned pin contact connector.
- Tubular capacitors are individually inserted on each contact.
- The encapsulation of capacitors is made with epoxy for maximum resistance to hazardous environments.
- Cinch filter D Sub have the same size and footprint as standard D Sub connectors.
- Meets the relevant dimensional requirements of CECC 73301- 802, MIL-C 24308, DIN 41652, BS 9523 F0013, BT 217, HE501.
- Bright tin or nickel finish with grounding indent for EMI/RFI shielding.



Typical performance relates to 50  $\Omega$  system  
Mil -Std. - measured at 1 KHz 0.1 rms

1-1000 pF  
2-2000 pF  
3-330 pF

## Technical Data

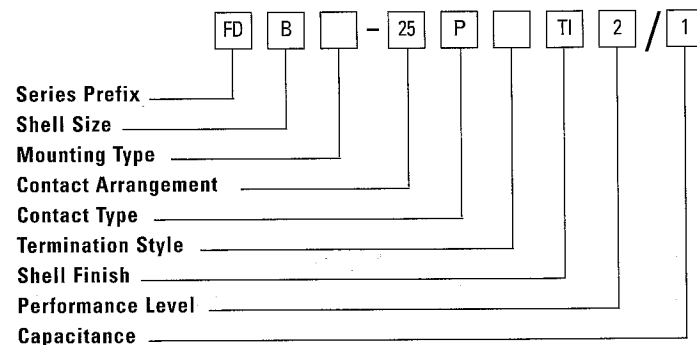
|                                        |                                                        |    |    |     |      |
|----------------------------------------|--------------------------------------------------------|----|----|-----|------|
| Termination options                    | Solder bucket, Flow solder, Straight & 90°, Mini wrap. |    |    |     |      |
| Number of contacts                     | 9                                                      | 15 | 25 | 27  | 50   |
| Maximum insertion and extraction force | 30                                                     | 50 | 83 | 123 | 167N |
| Performance level                      | 1,2 & 3                                                |    |    |     |      |
| Wire accomodation                      | $\leq 0,5 \text{ mm}^2$ (20 AWG)                       |    |    |     |      |
| Plug contact material                  | Copper alloy                                           |    |    |     |      |
| Socket contact material                | Copper alloy                                           |    |    |     |      |

|                       |                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------|
| Current rating        | 5A                                                                                          |
| Capacitance           | 330 pF Tol + 50% - 20%, 1000 pF and 2000pF Tol + 80% - 20%                                  |
| Working voltage       | 200 V d.c. or a.c. peak                                                                     |
| Contact resistance    | $5 \times 10^{-3} \Omega$ max                                                               |
| Insulation resistance | $\geq 5 \times 10^9 \Omega$                                                                 |
| Temperature range     | - 40° to + 125°C                                                                            |
| Insulator materials   | High impact Epoxy & GF Polyester UL94V-0 rated                                              |
| Shell materials       | Front: Steel-Bright tin finish with grounding indents on plugs<br>Rear: Electrolytic Nickel |

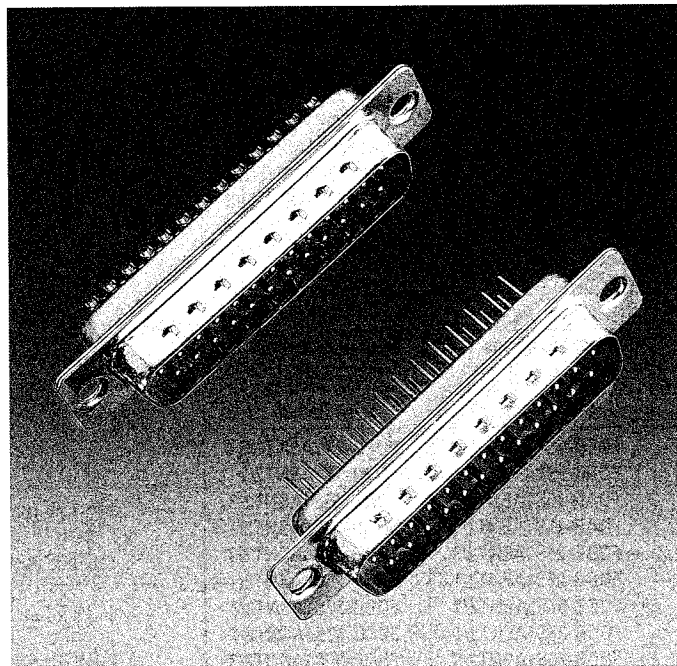
# FILTER D CONNECTORS



## Part Numbering



|                      |                                                                                      |                                                                                                                          |
|----------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Series Prefix        | FD                                                                                   | - Filtered D (Standard Prefix)                                                                                           |
| Shell Size           | E, A, B, C or D                                                                      | (All Standard)                                                                                                           |
| Mounting Type        | B                                                                                    | - 4-40 rivnut for rear panel mounting (Standard)                                                                         |
|                      | P                                                                                    | - M3 rivnut for rear panel mounting                                                                                      |
|                      | D                                                                                    | - With female screw locks fitted                                                                                         |
|                      | E                                                                                    | - 4-40 clinch-nut for rear panel mounting with locking feature for high vibration applications                           |
|                      | F                                                                                    | - Float mount for rear panel mounting                                                                                    |
|                      | Y                                                                                    | - Universal float mount                                                                                                  |
| No designation       |                                                                                      | - $\varnothing 3.05 \text{ mm}$ mounting hole (Standard)<br>90° Flow Solder versions are not available with float mounts |
| Contact Arrangement  | 9, 15, 25, 37 or 50                                                                  | (All Standard)                                                                                                           |
| Contact Type         | P or S                                                                               | (Both Standard)                                                                                                          |
| Termination Style    |                                                                                      |                                                                                                                          |
| 90° Flow Solder      |                                                                                      |                                                                                                                          |
| European Footprint   | 1A0N                                                                                 | - Without brackets (Standard)                                                                                            |
|                      | 1A2N                                                                                 | - With plastic brackets and keeper moulding                                                                              |
|                      | 1AEN                                                                                 | - With earthing straps on plastic brackets (Standard) with keeper moulding*                                              |
|                      | 1ASN                                                                                 | - With board locks, earthing straps, plastic (Standard) bracket and keeper moulding*                                     |
|                      | *Please specify rivnuts or screw locks, mounting types B, P, or D (rivnuts Standard) |                                                                                                                          |
| Straight Flow Solder | 0L2                                                                                  | - Termination 0.6 mm, 5.3 mm long (Standard)                                                                             |
|                      | BL2                                                                                  | - As 0L2 with vertical Boardlocks 4/40 threads                                                                           |
|                      | F179A                                                                                | - 0.61 mm square section pins for up to 3 wrap.                                                                          |
| Solder Bucket        | No designation                                                                       | required (Standard)                                                                                                      |
| Shell Finish         | T                                                                                    | - Bright tin (Standard)                                                                                                  |
|                      | TI                                                                                   | - Bright tin with grounding indents (plugs only)<br>- Nickel on rear shell                                               |
| (Standard)           |                                                                                      |                                                                                                                          |
| Performance Level    | 1                                                                                    | - Exceeds Din Class 2                                                                                                    |
|                      | 2                                                                                    | - Din Class 2 (Standard)                                                                                                 |
|                      | 3                                                                                    | - Exceeds DIN Class 3                                                                                                    |
| Capacitance          | 1                                                                                    | - 1000 pF                                                                                                                |
|                      | 2                                                                                    | - 2000 pF                                                                                                                |
|                      | 3                                                                                    | - 330 pF                                                                                                                 |
|                      | Custom or selectively loaded products available. Consult sales office.               |                                                                                                                          |





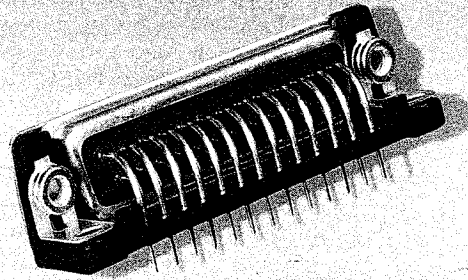
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## FILTERED D

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### Solder Bucket

| Number of Contacts | Performance Level | Capacitance Value |         | Plug                           | Socket                  |
|--------------------|-------------------|-------------------|---------|--------------------------------|-------------------------|
|                    |                   |                   |         | Tin/Nickel Indent Plated Shell | Tin/Nickel Plated Shell |
| 9                  | 2                 | 330pf             | 1,000pf | FDE-9PTI2/3                    | FDE-9ST2/3              |
|                    |                   |                   |         | FDE-9PTI2/1                    | FDE-9ST2/1              |
| 15                 | 2                 | 330pf             | 1,000pf | FDA-15PTI2/3                   | FDA-15ST2/3             |
|                    |                   |                   |         | FDA-15PTI2/1                   | FDA-15ST2/1             |
| 25                 | 2                 | 330pf             | 1,000pf | FDB-25PTI2/3                   | FDB-25ST2/3             |
|                    |                   |                   |         | FDB-25PTI2/1                   | FDB-25ST2/1             |
| 37                 | 2                 | 330pf             | 1,000pf | FDC-37PTI2/3                   | FDC-37ST2/3             |
|                    |                   |                   |         | FDC-37PTI2/1                   | FDC-37ST2/1             |
| 50                 | 2                 | 330pf             | 1,000pf | FDD-50PTI2/3                   | FDD-50ST2/3             |
|                    |                   |                   |         | FDD-50PTI2/1                   | FDD-50ST2/1             |



### Straight PCB Mount

| Number of Contacts | Performance Level | Capacitance Value |         | Plug                           | Vertical Boardlock      | Socket                  | Vertical Boardlock      |
|--------------------|-------------------|-------------------|---------|--------------------------------|-------------------------|-------------------------|-------------------------|
|                    |                   |                   |         | Tin/Nickel Indent Plated Shell | Tin/Nickel Plated Shell | Tin/Nickel Plated Shell | Tin/Nickel Plated Shell |
| 9                  | 2                 | 330pf             | 1,000pf | FDE-9POL2TI2/3                 | FDE-9PBL2TI2/3          | FDE-9SOL2T2/3           | FDE-9SBL2T2/3           |
|                    |                   |                   |         | FDE-9POL2TI2/1                 | FDE-9PBL2TI2/1          | FDE-9SOL2T2/1           | FDE-9SBL2T2/1           |
| 15                 | 2                 | 330pf             | 1,000pf | FDA-15POL2TI2/3                | FDA-15PBL2TI2/3         | FDA-15SOL2T2/3          | FDA-15SBL2T2/3          |
|                    |                   |                   |         | FDA-15POL2TI2/1                | FDA-15PBL2TI2/1         | FDA-15SOL2T2/1          | FDA-15SBL2T2/1          |
| 25                 | 2                 | 330pf             | 1,000pf | FDB-25POL2TI2/3                | FDB-25PBL2TI2/3         | FDB-25SOL2T2/3          | FDB-25SBL2T2/3          |
|                    |                   |                   |         | FDB-25POL2TI2/1                | FDB-25PBL2TI2/1         | FDB-25SOL2T2/1          | FDB-25SBL2T2/1          |
| 37                 | 2                 | 330pf             | 1,000pf | FDC-37POL2TI2/3                | FDC-37PBL2TI2/3         | FDC-37SOL2T2/3          | FDC-37SBL2T2/3          |
|                    |                   |                   |         | FDC-37POL2TI2/1                | FDC-37PBL2TI2/1         | FDC-37SOL2T2/1          | FDC-37SBL2T2/1          |
| 50                 | 2                 | 330pf             | 1,000pf | FDD-50POL2TI2/3                | FDD-50PBL2TI2/3         | FDD-50SOL2T2/3          | FDD-50SBL2T2/3          |
|                    |                   |                   |         | FDD-50POL2TI2/1                | FDD-50PBL2TI2/1         | FDD-50SOL2T2/1          | FDD-50SBL2T2/1          |

### 90° PCB - Plug

| Number of Contacts | Performance Level | Capacitance Value |         | Open Frame                     | Earthing Straps              | Snap In Boardlock            |
|--------------------|-------------------|-------------------|---------|--------------------------------|------------------------------|------------------------------|
|                    |                   |                   |         | Tin/Nickel Indent Plated Shell | Tin Indent Shell 4-40 Rivnut | Tin Indent Shell 4-40 Rivnut |
| 9                  | 2                 | 330pf             | 1,000pf | FDE-9P1AONTI2/3                | FDEB-9P1AENTI2/3             | FDEB-9P1ASNTI2/3             |
|                    |                   |                   |         | FDE-9P1AONTI2/1                | FDEB-9P1AENTI2/1             | FDEB-9P1ASNTI2/1             |
| 15                 | 2                 | 330pf             | 1,000pf | FDA-15P1AONTI2/3               | FDAB-15P1AENTI2/3            | FDAB-15P1ASNTI2/3            |
|                    |                   |                   |         | FDA-15P1AONTI2/1               | FDAB-15P1AENTI2/1            | FDAB-15P1ASNTI2/1            |
| 25                 | 2                 | 330pf             | 1,000pf | FDB-25P1AONTI2/3               | FDBB-25P1AENTI2/3            | FDBB-25P1ASNTI2/3            |
|                    |                   |                   |         | FDB-25P1AONTI2/1               | FDBB-25P1AENTI2/1            | FDBB-25P1ASNTI2/1            |
| 37                 | 2                 | 330pf             | 1,000pf | FDC-37P1AONTI2/3               | FDCB-37P1AENTI2/3            | FDCB-37P1ASNTI2/3            |
|                    |                   |                   |         | FDC-37P1AONTI2/1               | FDCB-37P1AENTI2/1            | FDCB-37P1ASNTI2/1            |
| 50                 | 2                 | 330pf             | 1,000pf | FDD-50P1AONTI2/3               | FDDB-50P1AENTI2/3            | FDDB-50P1ASNTI2/3            |
|                    |                   |                   |         | FDD-50P1AONTI2/1               | FDDB-50P1AENTI2/1            | FDDB-50P1ASNTI2/1            |

### 90° PCB - Socket

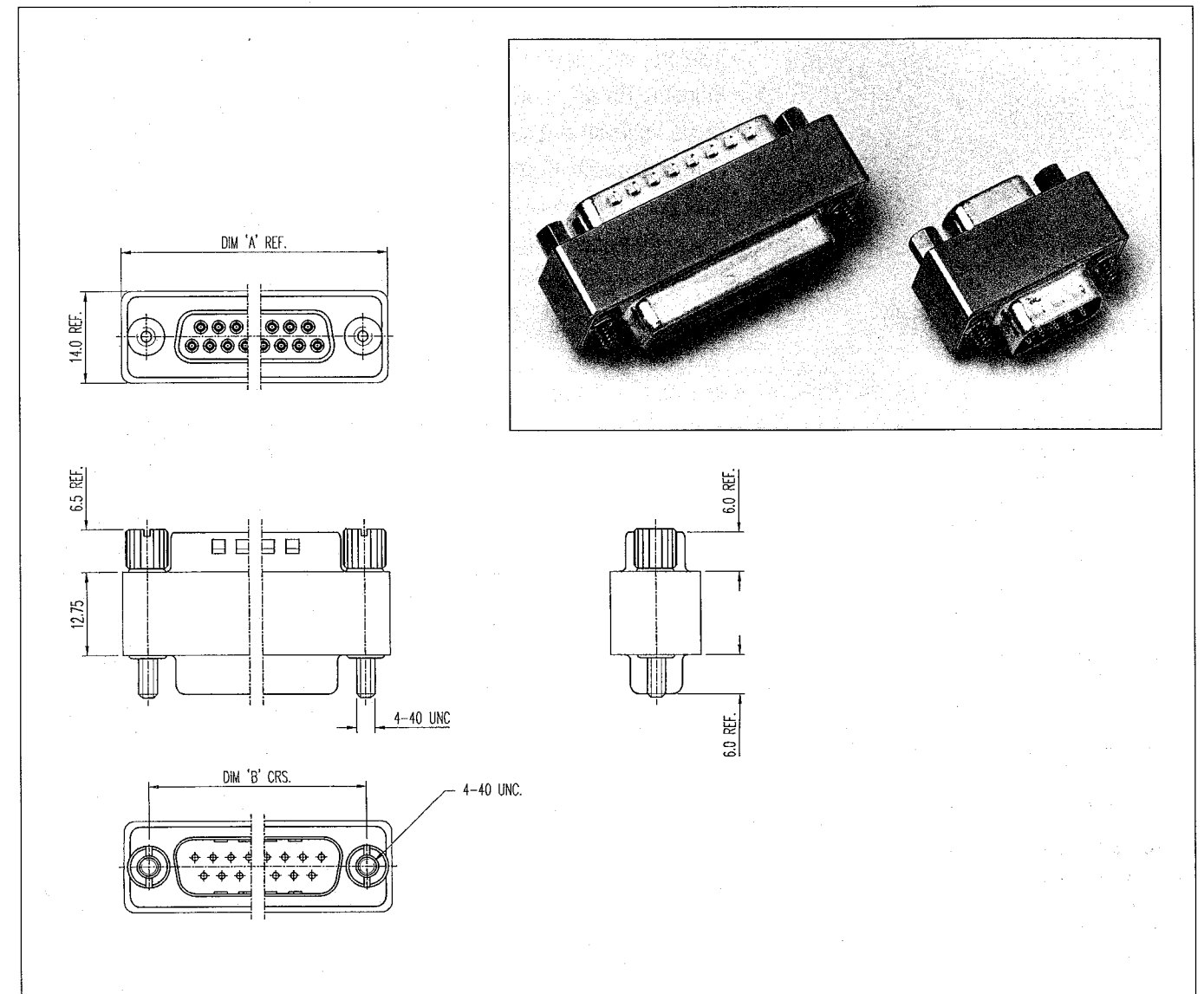
| Number of Contacts | Performance Level | Capacitance Value |         | Open Frame              | Earthing Straps       | Snap In Boardlock     |
|--------------------|-------------------|-------------------|---------|-------------------------|-----------------------|-----------------------|
|                    |                   |                   |         | Tin/Nickel Plated Shell | Tin Shell 4-40 Rivnut | Tin Shell 4-40 Rivnut |
| 9                  | 2                 | 330pf             | 1,000pf | FDE-9S1AONT2/3          | FDEB-9S1AENT2/3       | FDEB-9S1ASNT2/3       |
|                    |                   |                   |         | FDE-9S1AONT2/1          | FDEB-9S1AENT2/1       | FDEB-9S1ASNT2/1       |
| 15                 | 2                 | 330pf             | 1,000pf | FDA-15S1AONT2/3         | FDAB-15S1AENT2/3      | FDAB-15S1ASNT2/3      |
|                    |                   |                   |         | FDA-15S1AONT2/1         | FDAB-15S1AENT2/1      | FDAB-15S1ASNT2/1      |
| 25                 | 2                 | 330pf             | 1,000pf | FDB-25S1AONT2/3         | FDBB-25S1AENT2/3      | FDBB-25S1ASNT2/3      |
|                    |                   |                   |         | FDB-25S1AONT2/1         | FDBB-25S1AENT2/1      | FDBB-25S1ASNT2/1      |
| 37                 | 2                 | 330pf             | 1,000pf | FDC-37S1AONT2/3         | FDCB-37S1AENT2/3      | FDCB-37S1ASNT2/3      |
|                    |                   |                   |         | FDC-37S1AONT2/1         | FDCB-37S1AENT2/1      | FDCB-37S1ASNT2/1      |
| 50                 | 2                 | 330pf             | 1,000pf | FDD-50S1AONT2/3         | FDDB-50S1AENT2/3      | FDDB-50S1ASNT2/3      |
|                    |                   |                   |         | FDD-50S1AONT2/1         | FDDB-50S1AENT2/1      | FDDB-50S1ASNT2/1      |

## FILTER ADAPTOR



Edition 11/98

### Male / Female Filtering Adaptor



### Technical, Part Numbering Information

|            | Working Voltage    | Proof Voltage | Capacitance To Ground | Capacitance Tolerance | Temperature Range | DIM "A" REF. | DIM "B" REF. |
|------------|--------------------|---------------|-----------------------|-----------------------|-------------------|--------------|--------------|
| FA 9 PS/1  | 200V DC OR AC PEAK | 500V          | 1000 pF               | +80% - 20%            | - 40° +125°C      | 32.7         | 24.99        |
| FA 9 PS/3  |                    |               | 330 pF                | +50% - 20%            |                   |              |              |
| FA 15 PS/1 | 200V DC OR AC PEAK | 500V          | 1000 pF               | +80% - 20%            | - 40° +125°C      | 41.0         | 33.32        |
| FA 15 PS/3 |                    |               | 330 pF                | +50% - 20%            |                   |              |              |
| FA 25 PS/1 | 200V DC OR AC PEAK | 500V          | 1000 pF               | +80% - 20%            | - 40° +125°C      | 54.9         | 47.04        |
| FA 25 PS/3 |                    |               | 330 pF                | +50% - 20%            |                   |              |              |
| FA 37 PS/1 | 200V DC OR AC PEAK | 500V          | 1000 pF               | +80% - 20%            | - 40° +125°C      | 71.2         | 63.50        |
| FA 37 PS/3 |                    |               | 330 pF                | +50% - 20%            |                   |              |              |

GENERAL SPECIFICATION - MECHANICAL, ELECTRICAL & ENVIROMENTAL PERFORMANCE IN LINE WITH REQUIREMENTS OF DIN CLASS 2