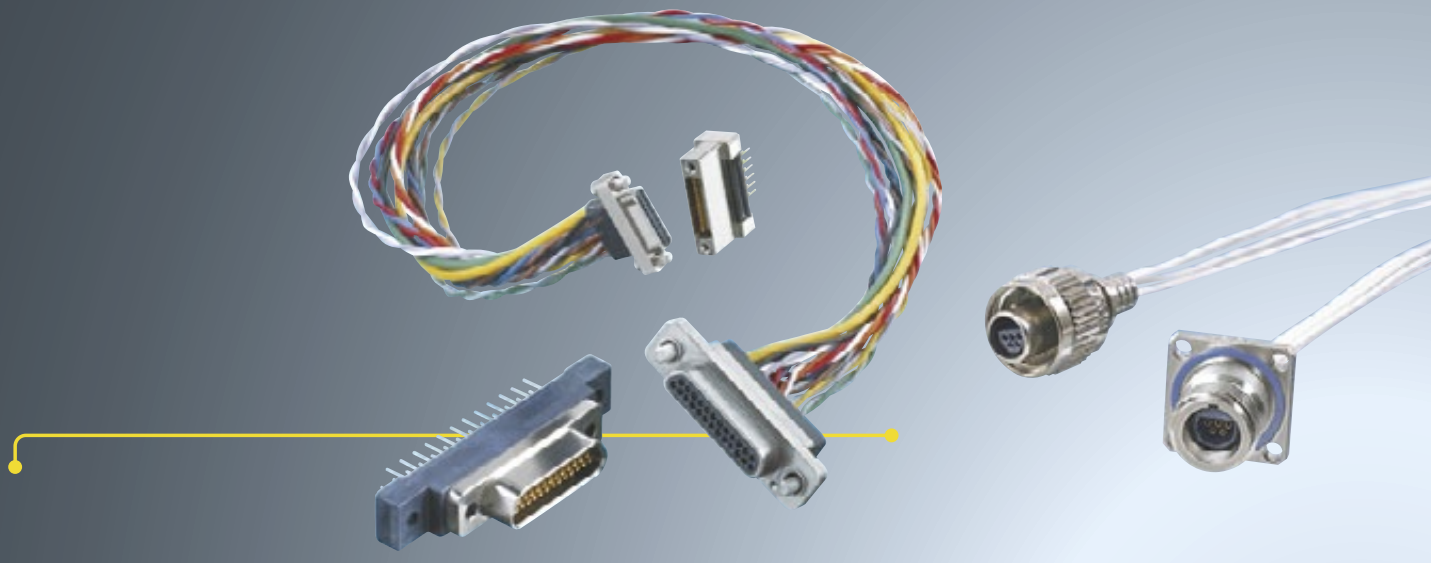
Miniature high performance twist pin connectors

Micro-D & Nano-D, Rectangular & Circular



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axon' cables & connectors

NANO-D CONNECTORS

NANO-D GENERAL INFORMATION

DUAL ROW NANO-D CONNECTORS

RECTANGULAR CONNECTORS FOR CABLES

PCB RECTANGULAR CONNECTORS

SINGLE ROW NANO-D CONNECTORS

RECTANGULAR CONNECTORS FOR CABLES

PCB RECTANGULAR CONNECTORS

HIGH DENSITY CONNECTORS

GENERAL INFORMATION

NANO-D CONNECTORS

0.635 mm (.025") CONTACT SPACING

In addition to the standard range of Micro-D connectors and assemblies, AXON' is able to offer Nano-D connectors and assemblies based on the highly reliable Twist Pin contact technology. Such solutions are ideal for applications including aerospace, military, industrial, medical or off-shore which require extreme miniaturisation, space or weight saving and reliability.
AXON' Nano-D connectors meet the requirements of MIL-DTL-32139.

Different configurations

AXON's range of Nano-D connectors is available in several different configurations:

- Nano-D rectangular connectors for cables.
- Nano-D rectangular connectors for PCBs.
- EMI versions.
- High density Micro-D connectors.

Characteristics

- 0.635 mm (.025") contact spacing (double the density of a Micro-D).
- Number of ways: 9, 15, 21, 25, 31, 37 and 51.
- Single or double row.
- High reliability twist pin contacts.
- Metal shell construction with captivated hardware.

AXON' has also developed custom designed Nano-D connectors:
- High density circular Nano-D connectors.
- Single row Nano-D strip connectors.

Special Nano-D connectors available on request.

REACH & RoHS COMPLIANCE

RoHS compliance

AXON' CABLE has been pro-actively implementing measures for many years to ensure compliance with the European Directive 2011/65/EU which came into force on 21st July 2011. The Directive prohibits the use of Hazardous Substances such as lead, mercury, hexavalent chromium, cadmium, bromine compounds (PBB and PBDE) and various phtalates. It relates to all components of products which are used in the manufacture of electrical and electronic equipment.

As a cable and connector manufacturer, AXON' has taken actions to ensure compliance with directive 2000/53/EC applicable since 21st October 2000.

COMPONENT SPECIFIC RoHS COMPLIANCE

COMPONENT	MATERIAL	FINISH	RoHS STATUS
PIN CONTACT (TWIST PIN)	PRECIOUS GOLD ALLOY	N/A	RoHS Compliant
SOCKET CONTACT	PRECIOUS GOLD ALLOY	N/A	RoHS Compliant
	BRASS	GOLD	
	COMERCIAL BRONZE	GOLD	
PLASTIC SHELL	LIQUID CRYSTAL POLYMER	N/A	RoHS Compliant
METAL SHELL	ALUMINIUM ALLOY TYPE 6061	ELECTROLESS NICKEL	RoHS Compliant
	STAINLESS STEEL 300 SERIES	PASSIVATION	RoHS Compliant
	TITANIUM	N/A	RoHS Compliant
PLASTIC INSERT / PCB TRAY	LIQUID CRYSTAL POLYMER	N/A	RoHS Compliant
HARDWARE	STAINLESS STEEL 300 SERIES	PASSIVATION	RoHS Compliant
PCB TERMINATION	COPPER BASE ALLOY	GOLD	RoHS Compliant
ENCAPSULANT	EPOXY RESIN 150°C VERSION	N/A	RoHS Compliant
	EPOXY RESIN 200°C VERSION	N/A	RoHS Compliant

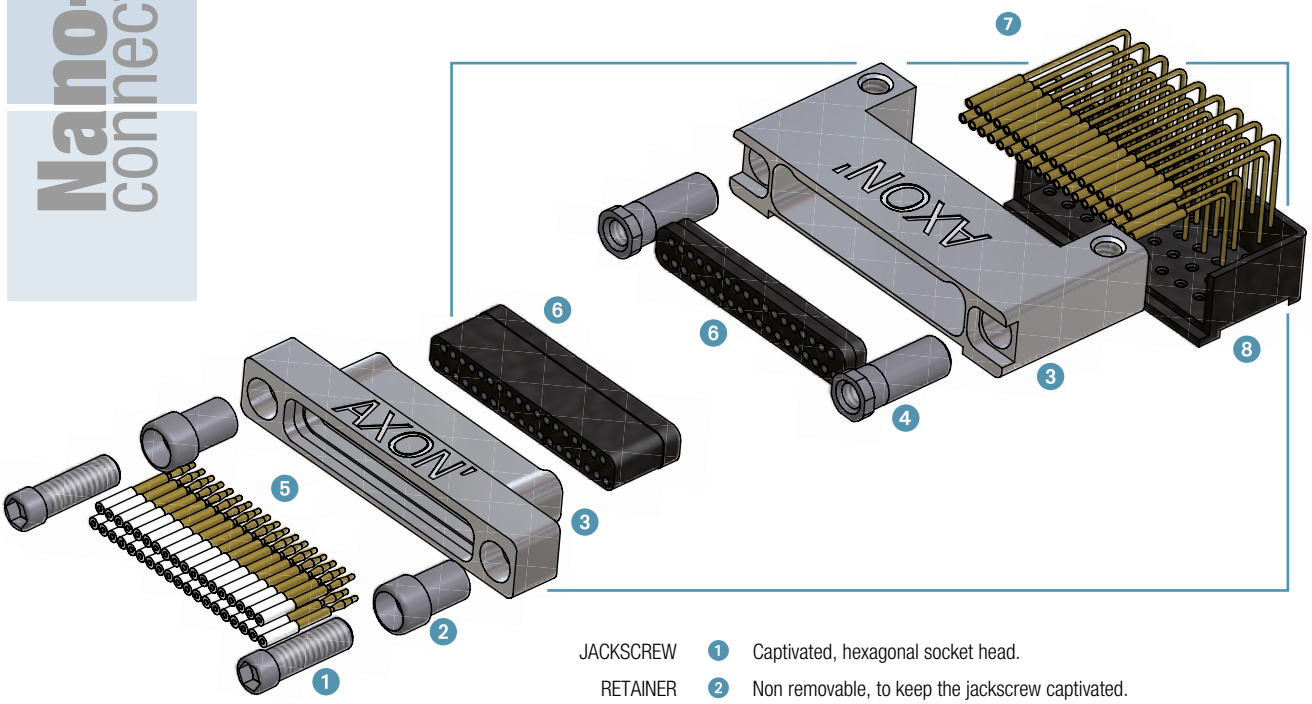
Application of REACH

The new EU regulation on the Registration, Evaluation, Authorisation and restriction of Chemicals (REACH) came into force in June 2007. The regulation concerns the authorised use of chemicals. It requires manufacturers and importers to register substances and their use with the European Chemical Agency (ECHA).

AXON' CABLE is known as a "downstream user" with respect to the REACH regulation, and a manufacturer of "Articles". AXON' CABLE products are not intended to release any undesired substance under normal and reasonable operations of use.

To this day AXON' CABLE have not identified any component containing any SVHC in their product range.

GLOSSARY OF TERMS



JACKSCREW	1	Captivated, hexagonal socket head.
RETAINER	2	Non removable, to keep the jackscrew captivated.
SHELL	3	Metal connector body.
THREADED INSERT	4	Non removable, mates with jackscrew.
TWIST PIN	5	Male contact, fitted to plug connector.
INSERT	6	Moulded insulation housing, separating each connection.
SOCKET	7	Female contact, fitted to socket connector (also known as socket).
TRAY	8	Junction box used for PCB connectors only.

Standard connector	Manufactured to the standard dimensions and specifications.
Special connector	A standard connector modified to meet specific requirements.
Custom made connector	Designed to meet specific customer requirements.
Connector saver	Used to reduce wear and tear on equipment and systems while testing.
CBR connector	Condensed Board Right Angle connector.
BS connector	Board Straight connector.
SMV connector	Surface Mount Vertical connector.
SMH connector	Surface Mount Horizontal connector.
Pigtail connector	Connector with insulated or uninsulated wires.
Cord	Cable harness with 2 connectors only.
Jumper/ Extension cord	Cord with 1 plug and 1 receptacle connector of the same number of ways.
Harness	Multi-branched cable assembly.
LCP	Liquid Crystal Polymer.
Potting	Epoxy compound used as an encapsulant.

GENERAL CHARACTERISTICS

per MIL-DTL-32139*

AXON's range of Nano-D connectors which is covered by the MIL-DTL-32139* standard, is ideally suited to equipment and applications where weight, miniaturisation and long term performance are required. It is available in 7 contact arrangements (9 to 51 contacts) for rectangular Nano-D connectors.

Electrical & mechanical characteristics

CHARACTERISTIC	SPECIFICATION	TEST METHOD
CURRENT RATING	1 A max.	EIA-364-70
CONTACT RESISTANCE	71 mΩ max.	EIA-364-06
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC	EIA-364-21
DIELECTRIC WITHSTANDING VOLTAGE - SEA LEVEL 0 m - ALTITUDE 21 km (70,000 ft)	 250 VAC 100 VAC	EIA-364-20
CONTACT ENGAGING AND SEPARATION FORCE	141 g max. (5 oz) 11 g min. (0.4 oz)	EIA-364-37
CONNECTOR MATING AND DE-MATING FORCE	198 g (7 oz) x number of contacts max.	EIA-364-13
CONTACT RETENTION	0.9 kg (2 lbs) for 5 seconds min.	EIA-364-29
DURABILITY	200 mating cycles min.	EIA-364-09
TEMPERATURE RANGES - STANDARD - HIGH TEMP	 -55°C / +150°C -55°C / +200°C	
VIBRATION	20 g's - No discontinuity >1µs	EIA-364-28 - TEST CONDITION IV
SHOCK	100 g's - No discontinuity >1µs	EIA-364-27 - TEST CONDITION G
SALT SPRAY	48 hours	EIA-364-26 - TEST CONDITION B
HUMIDITY	Insulation resistance > 1MΩ	EIA-364-31 - TEST CONDITION B (EXCLUDING STEPS 7A & 7B)**

Material & Finish

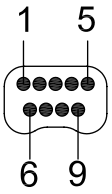
COMPONENT	MATERIAL	FINISH
MALE CONTACT (TWIST PIN)	PRECIOUS GOLD ALLOY IN ACCORDANCE WITH ASTM-B-477 OR 541 OR 562	NONE
FEMALE CONTACT	PRECIOUS GOLD ALLOY IN ACCORDANCE WITH ASTM-B-477 OR 541 OR 562	NONE
	COMMERCIAL BRONZE IN ACCORDANCE WITH ASTM-B-135, B-140/140M, B-372 OR B-587	GOLD PLATING IN ACCORDANCE WITH ASTM-B488, TYPE II, CLASS 1 (1.27µm MIN. (0.00005")), CODE C OVER NICKEL UNDERPLATE IN ACCORDANCE WITH SAE-AMS-QQ-N-290, CLASS 2 (1.27µm (0.00005") TO 3.81µm (0.00015"))
	BRASS IN ACCORDANCE WITH ASTM-B-453 OR 453M OR 16 OR 16M	
METAL SHELL	ALUMINIUM ALLOY, TYPE 6061 IN ACCORDANCE WITH SAE-AMS-QQ-A-200/8 OR ASTM-B-209	ELECTROLESS NICKEL PLATING IN ACCORDANCE WITH SAE-AMS-2404, CLASS 4.
	TITANIUM IN ACCORDANCE WITH SAE-AMS-T-9046	NONE
	STAINLESS STEEL IN ACCORDANCE WITH SAE-A-276 OR 581 OR 581M OR 582 OR 582M	PASSIVATION IN ACCORDANCE WITH SAE-AMS2700
INSERT/ PCB TRAY	LIQUID CRYSTAL POLYMER, 30% LOADED GLASS FIBRE POLYESTER 94VO, IN ACCORDANCE WITH MIL-M-24519 (200°C)	
HARDWARE	STAINLESS STEEL, 300 SERIES	PASSIVATION IN ACCORDANCE WITH SAE-AMS2700
ENCAPSULANT	EPOXY RESIN	
INSULATED WIRE	PTFE INSULATED SILVER PLATED COPPER IN ACCORDANCE WITH NEMA-HP3	
UNINSULATED WIRE	GOLD PLATED SOLID COPPER WIRE IN ACCORDANCE WITH A-A-59551 OR GOLD PLATED SOLID COPPER BASED ALLOY IN ACCORDANCE WITH ASTM-B-194	GOLD PLATING IN ACCORDANCE WITH ASTM-B488, TYPE II, CLASS 1 (1.27µm MIN. (0.00005")), CODE C OVER NICKEL UNDERPLATE IN ACCORDANCE WITH SAE-AMS-QQ-N-290, CLASS 2 (1.27µm (0.00005") TO 3.81µm (0.00015"))

*: ISSUE **A** AMENDMENT 4 AT THE TIME OF GOING TO PRESS
**: ACCORDING TO MIL-DTL-32139

CONTACT ARRANGEMENTS (DUAL ROW)

Mating face of male rectangular connector

- 0.635 mm (.025") contact spacing.
- 1.016 mm (.040") spacing between rows.



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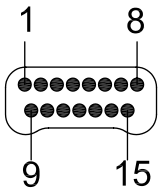

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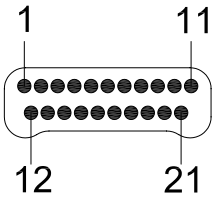

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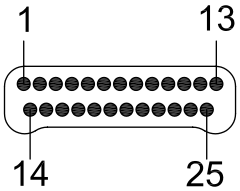

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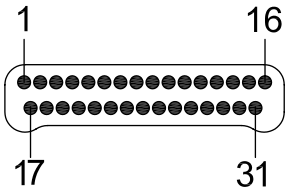

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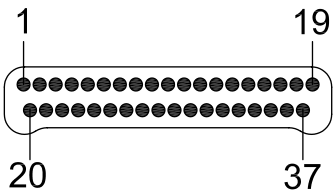

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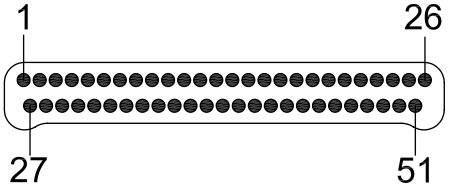


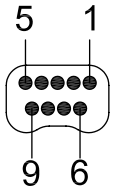
51 CONTACTS

OTHER CONTACT ARRANGEMENTS AVAILABLE ON REQUEST

CONTACT ARRANGEMENTS (DUAL ROW)

Mating face of female rectangular connector

- 0.635 mm (.025") contact spacing.
- 1.016 mm (.040") spacing between rows.



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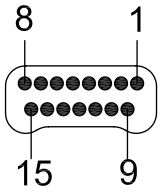

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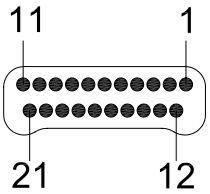

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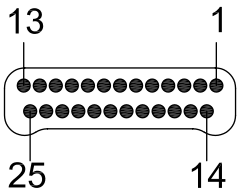

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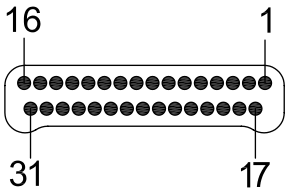

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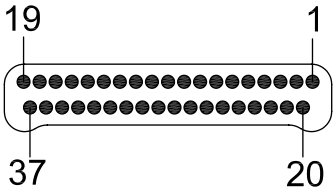

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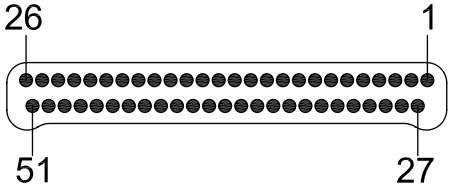


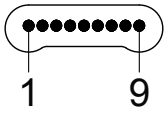
51 CONTACTS

OTHER CONTACT ARRANGEMENTS AVAILABLE ON REQUEST

CONTACT ARRANGEMENTS (SINGLE ROW)

Mating face of male rectangular connector

0.635 mm (.025") contact spacing.



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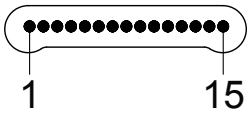

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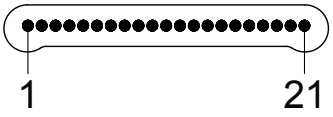

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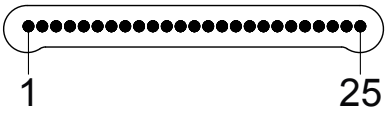

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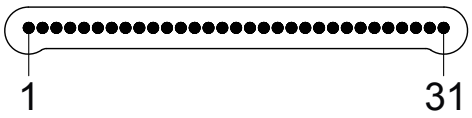

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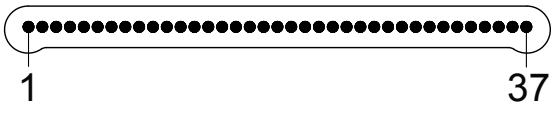

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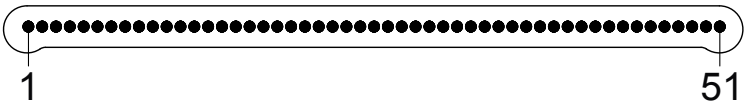


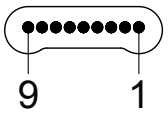
51 CONTACTS

OTHER CONTACT ARRANGEMENTS AVAILABLE ON REQUEST

CONTACT ARRANGEMENTS (SINGLE ROW)

Mating face of female rectangular connector

0.635 mm (.025") contact spacing.



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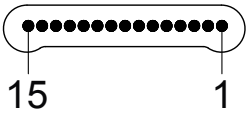

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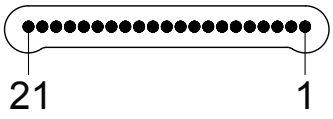

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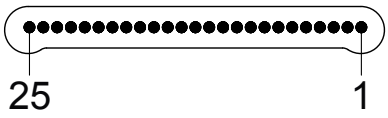

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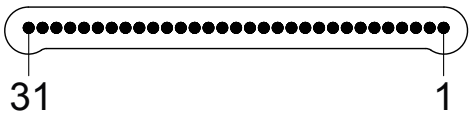

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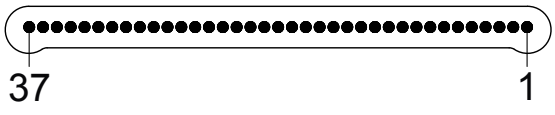

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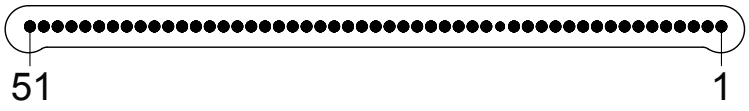


51 CONTACTS

OTHER CONTACT ARRANGEMENTS AVAILABLE ON REQUEST

WIRE CODES

Nominal dimensions are used throughout this chapter.

Solid uninsulated wires

WIRE CODE	WEIGHT (g/m)	MATERIAL	AWG	CONSTRUCTION mm (inch)	Ø mm (inch)	AREA mm² (sq in)	RESISTANCE Ω/100m (Ω/1000ft)
G	0.45	GOLD PLATED COPPER	30	1x0.254 1x0.010	0.254 .010	0.051 .00008	34.1 103.8
D	0.45	FLASH GOLD PLATED COPPER	30	1x0.254 1x0.010	0.254 .010	0.051 .00008	34.1 103.8

Insulated wires

WIRE CODE	WIRE DESIGNATION	WEIGHT (g/m)	CONDUCTOR						INSULATION		TEMPERATURE RATING	VOLTAGE RATING
			MATERIAL	AWG	CONSTRUCTION mm (inch)	Ø mm (inch)	AREA mm² (sq in)	RESISTANCE Ω/100m (Ω/1000ft)	MATERIAL	Ø mm (inch)		
1	ET 3007 (ONLY FOR ND1A & ND2A SERIES)	1.50	SPC*	30	7x0.102 7x.0040	0.304 .012	0.057 .000882	31 94.5	EXTRUDED PTFE	0.62 .024	-90°C/+200°C	250 VAC
1	UT 3007 (ONLY FOR MDHDA SERIES)	0.85	SPC*	30	7x0.102 7x.0040	0.304 .012	0.057 .000882	31 94.5	EXTRUDED PTFE	0.50 .020	-90°C/+200°C	160 VAC
2	ET 3207	1.20	SPC*	32	7x0.079 7x.0031	0.237 .009	0.034 .00005	52 158.5	EXTRUDED PTFE	0.57 .022	-90°C/+200°C	250 VAC
3	ET 3407	1.00	SPC*	34	7x0.063 7x.0025	0.189 .007	0.022 .00003	95 289.6	EXTRUDED PTFE	0.50 .020	-90°C/+200°C	250 VAC
4	ET 3607	0.80	SPC*	36	7x0.050 7x.0020	0.150 .006	0.014 .00006	150 457	EXTRUDED PTFE	0.48 .019	-90°C/+200°C	250 VAC

*: SILVER PLATED COPPER

OTHER WIRE TYPES AVAILABLE ON REQUEST - OTHER GAUGES ON SPECIAL REQUEST

COLOUR CODES

Colour codes F and L

All the wires have the same colour.
Available with all wire types.

COLOUR CODE	COLOUR
F	YELLOW
L	WHITE

Other colours available on request.

Colour code W

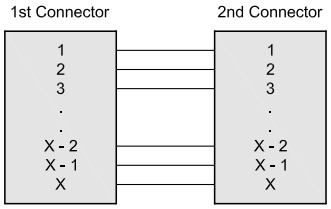
Also called 10 colour repeat (10 colours repeated in sequence) as per MIL-DTL-32139. Available with all wire types.

PIN NUMBER	MIL-STD-681 NUMBER	COLOUR
1	0	BLACK
2	1	BROWN
3	2	RED
4	3	ORANGE
5	4	YELLOW
6	5	GREEN
7	6	BLUE
8	7	VIOLET
9	8	GREY
10	9	WHITE
11	0	BLACK
12	1	BROWN
13	2	RED
14	3	ORANGE
15	4	YELLOW
16	5	GREEN
17	6	BLUE
18	7	VIOLET
19	8	GREY
20	9	WHITE
21	0	BLACK

JUMPER WIRING (DUAL ROW)

▲ NANO-D - JUMPER

DIRECT WIRING



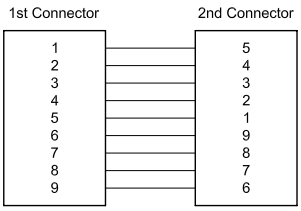
DIRECT WIRING

Direct Wiring is where every pin number is connected to the same pin number at the other end, e.g. pin 1 to pin 1, pin 2 to pin 2, and so on. If the two connectors are not of the same gender (i.e. one male, one female) this will result in physically straight or flat wiring with no crossovers. This is therefore the normal convention with opposing gender connectors.

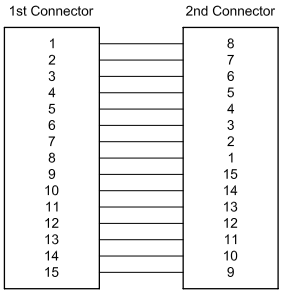
INDIRECT WIRING

Indirect Wiring is usually requested where both connectors on the jumper are of the same gender (i.e. both male or both female).
In this case, if Direct Wiring was chosen it would result in many physical cross-overs of the wires (crossing from the leftmost pin on the top row to the rightmost, and the same on the bottom row). Indirect Wiring ensures that the physical position of the wires remains straight or flat, i.e. the leftmost pin on the top row of connector 1 will go to the leftmost pin on the top row of connector 2, and so on.

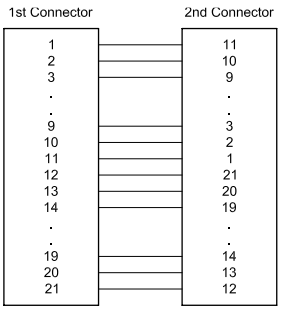
9 WAY INDIRECT WIRING



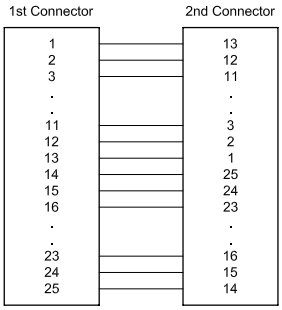
15 WAY INDIRECT WIRING



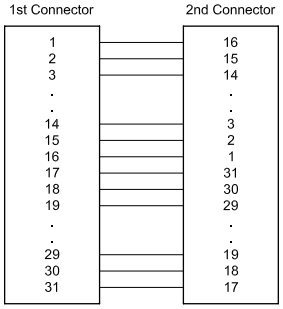
21 WAY INDIRECT WIRING



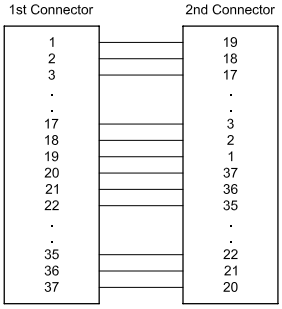
25 WAY INDIRECT WIRING



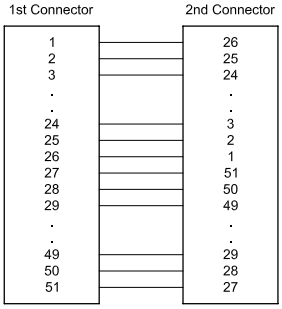
31 WAY INDIRECT WIRING



37 WAY INDIRECT WIRING

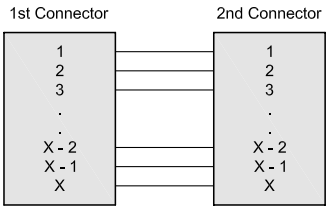


51 WAY INDIRECT WIRING



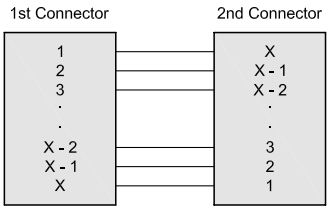
JUMPER WIRING (SINGLE ROW)

DIRECT WIRING



Direct Wiring is where every pin number is connected to the same pin number at the other end, e.g. pin 1 to pin 1, pin 2 to pin 2, and so on. If the two connectors are not of the same gender (i.e. one male, one female) this will result in physically straight or flat wiring with no cross-overs. This is therefore the normal convention with opposing gender connectors.

INDIRECT WIRING



Indirect Wiring is usually requested where both connectors on the jumper are of the same gender (i.e. both male or both female).
Indirect Wiring ensures that the physical position of the wires remains straight or flat, i.e. the leftmost pin of connector 1 will go to the leftmost pin of connector 2, and so on.

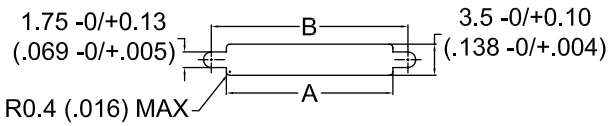
PANEL CUTOUTS

Dual row Rear Mount Nano-D connectors

Panel mount receptacle connector only (type M).

9 TO 51 CONTACTS

FIGURE 1
REAR MOUNT

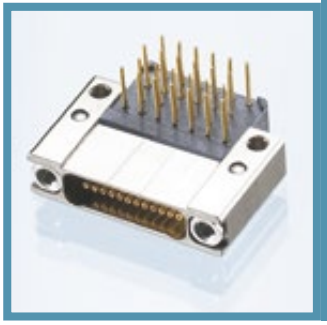


Dimensions

Dimensions are in millimetres (inches).

LAYOUTS	A -0/ +0.1 (-0 /+.004)	B -0/ +0.1 (-0 /+.004)
9	9.90 .390	13.30 .523
15	11.80 .465	15.20 .598
21	13.71 .540	17.11 .673
25	14.98 .590	18.38 .723
31	16.88 .665	20.28 .800
37	18.79 .740	22.19 .873
51	23.23 .915	26.63 1.048

DUAL ROW NANO-D CONNECTORS



RECTANGULAR CONNECTORS FOR CABLES

PCB RECTANGULAR CONNECTORS

RECTANGULAR CONNECTORS FOR CABLES

DUAL ROW PIGTAIL & JUMPER

- Reliability for micro-miniature operating systems.
- High performance metal connector and PTFE wire.
- Panel mount available for receptacle connector.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND2A	2	15	P	S	D	1	L	50	R	P

SERIES
ND2A: Nano-D 2-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**. **Other versions available on request.**

1st CONNECTOR TYPE
P: Plug connector.
S: Receptacle connector.
M: Panel mount receptacle connector.

2nd CONNECTOR TYPE
P: Plug connector.
M: Panel mount receptacle connector.
S: Receptacle connector.
W: No second connector - free wires.

CONNECTIONS (see jumper wiring on page 216)
D: Direct pin 1 to pin 1.
I: Indirect (usual for plug-plug jumper).
X: Pigtail.

WIRE CODE
1: ET 3007, AWG 30, 7 strands, 250 V.
2: ET 3207, AWG 32, 7 strands, 250 V.
3: ET 3407, AWG 34, 7 strands, 250 V.
4: ET 3607, AWG 36, 7 strands, 250 V.
Other versions available on request.

COLOUR CODE
L: White.
F: Yellow.
W: 10 colour repeat.
See page 215 for colour code

WIRE LENGTH (in cm)
Attention! Wire length in centimetres - (1cm = 10 mm = .394").

L in cm (inches)	2 ≤ L ≤10 0.79≤ L ≤ 3.940	10 < L ≤ 100 3.940 < L ≤ 39.40	L > 100 39.40
TOLERANCE in cm (inches)	-0 / +0.5 -0 / +0.200	-0 / +3 -0 / +1.180	-0 / +5 -0 / +1.970

HARDWARE 1st CONNECTOR
P: Threaded hole #0-80 UNF
(non removable jackposts, recommended for receptacles).
R: Retractable short hex socket head jackscrews #0-80 UNF
(semi-captivated, recommended for plugs).
L: Short hex socket head jackscrews #0-80 UNF (captivated).
B: No hardware.

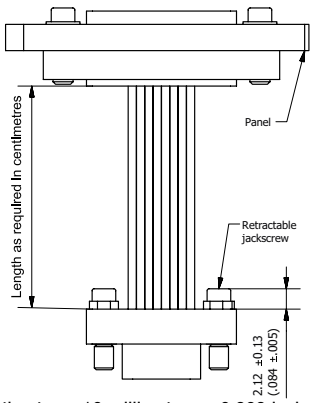
HARDWARE 2nd CONNECTOR
See above.
X: Pigtail.

IN BOLD: FACTORY STANDARD

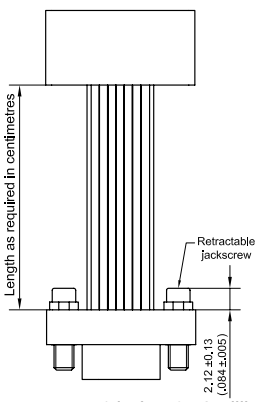
DIMENSIONS

Dimensions are in millimetres (inches).

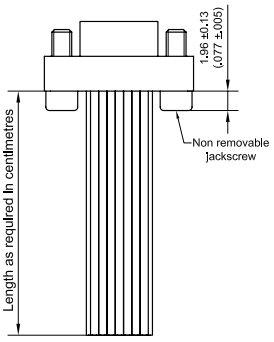
ND2A 2 15 M P D 2 L 20 PR



ND2A 2 15 S P D 2 L 20 PR



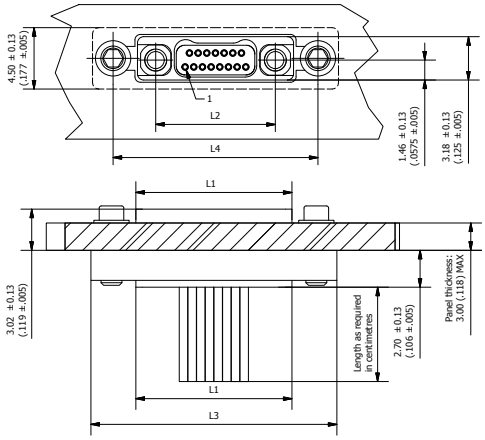
ND2A 2 15 P W X 2 L 20 PR



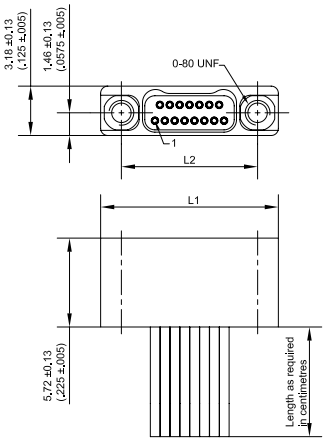
1 centimetre = 10 millimetres = 0.393 inch

1 inch = 25.4 millimetres = 2.54 centimetres

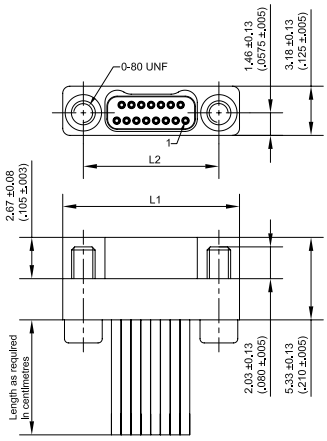
PANEL MOUNT RECEPTACLE



RECEPTACLE

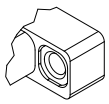


PLUG

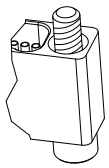


SPECIFIC HARDWARE CONFIGURATION

Treaded holes #0-80 UNF for plug shell (code: P)



Jackscrew #0-80 UNF for socket shell (code: R/L)



SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 P / 9 S	9.53 .375	6.86 .270	16.10 .634	13.10 .516
15 P / 15 S	11.43 .450	8.76 .345	18.00 .709	15.00 .591
21 P / 21 S	13.34 .525	10.67 .420	19.91 .784	16.91 .666
25 P / 25 S	14.61 .575	11.94 .470	21.18 .834	18.18 .716
31 P / 31 S	16.51 .650	13.84 .545	23.09 .909	20.08 .791
37 P / 37 S	18.42 .725	15.75 .620	24.99 .984	21.99 .866
51 P / 51 S	22.86 .900	20.19 .795	29.43 1.159	26.43 1.041

SUMMARY OF CHARACTERISTICS

ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

MATERIAL & FINISH	
SHELL	Aluminium Alloy 6061 or 300 series stainless steel or titanium alloy, see page 209 for finish
MOULDED INSULATOR	Liquid Crystal Polymer (LCP)
PIN CONTACT	Precious gold alloy
SOCKET CONTACT	Precious gold alloy
ENCAPSULANT	Epoxy resin
HARDWARE	300 series stainless steel, passivated

SEE PAGE 209 FOR MORE INFORMATION

EMI RANGE

SHIELDED DUAL ROW PIGTAIL & JUMPER

- Reliability for micro-miniature operating systems.
- High performance metal connector and PTFE wire.
- Panel mount available for receptacle connector.
- For ultra miniature EMI requirements.
- 360° screen termination.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND2A	2	15	P	S	EMI1	D	1	L	50	R	P

SERIES
ND2A: Nano-D 2-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**. **Other versions available on request.**

1st CONNECTOR TYPE
P: Plug connector.
S: Receptacle connector.
M: Panel mount receptacle connector.

2nd CONNECTOR TYPE
P: Plug connector.
M: Panel mount receptacle connector.
S: Receptacle connector.
W: No second connector - free wires.

EMI FAMILY
EMI1: Shielded pigtail or harness, shield soldered to the backshell

CONNECTIONS (see jumper wiring on page 216)
D: Direct pin 1 to pin 1.
I: Indirect (usual for plug-plug jumper).
X: Pigtail.

WIRE CODE
1: ET 3007, AWG 30, 7 strands, 250 V.
2: ET 3207, AWG 32, 7 strands, 250 V.
3: ET 3407, AWG 34, 7 strands, 250 V.
4: ET 3607, AWG 36, 7 strands, 250 V.
Other versions available on request.

COLOUR CODE
L: White.
F: Yellow.
W: 10 colour repeat.
See page 215 for colour code.

WIRE LENGTH (in cm)
Attention! Wire length in centimetres - (1cm = 10 mm = .394").

L in cm (inches)	5 ≤ L ≤10 1.97≤ L ≤ 3.940	10 < L ≤ 100 3.940 < L ≤ 39.40	L > 100 39.40
TOLERANCE in cm (inches)	-0 / +0.5 -0 / +0.200	-0 / +3 -0 / +1.180	-0 / +5 -0 / +1.970

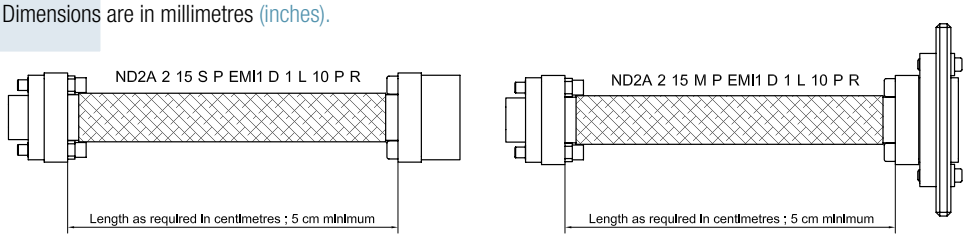
HARDWARE 1st CONNECTOR
P: Threaded hole #0-80 UNF (non removable jackposts).
R: Retractable short hex socket head jackscrews #0-80 UNF (semi-captivated).

HARDWARE 2nd CONNECTOR
See above.
X: Pigtail.

IN BOLD: FACTORY STANDARD

DIMENSIONS

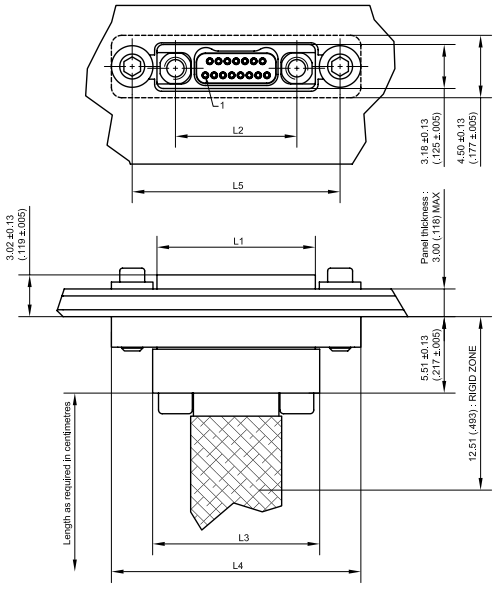
Dimensions are in millimetres (inches).



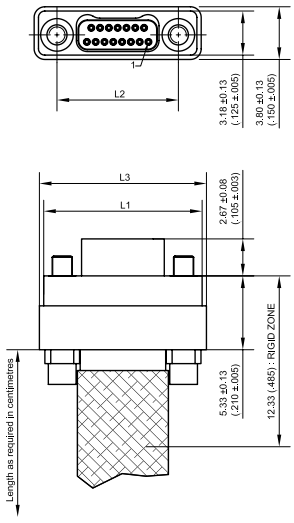
1 centimetre = 10 millimetres = 0,393 inch

1 inch = 25,4 millimetres = 2,54 centimetres

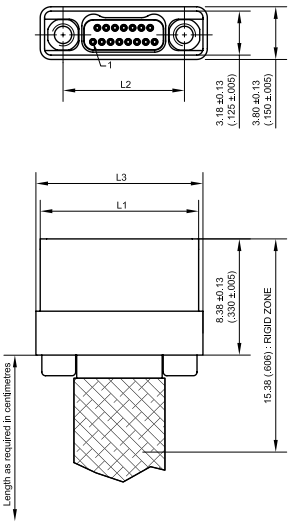
PANEL MOUNT RECEPTACLE



PLUG



RECEPTACLE



SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)	L5 ±0.13 (±.005)
9 P / 9 S	9.53 .375	6.86 .270	10.16 .400	16.10 .634	13.10 .516
15 P / 15 S	11.43 .450	8.76 .345	12.06 .475	18.00 .709	15.00 .591
21 P / 21 S	13.34 .525	10.67 .420	13.97 .550	19.91 .784	16.91 .666
25 P / 25 S	14.61 .575	11.94 .470	15.24 .600	21.18 .834	18.18 .716
31 P / 31 S	16.51 .650	13.84 .545	17.14 .675	23.09 .909	20.08 .791
37 P / 37 S	18.42 .725	15.75 .620	19.05 .750	24.99 .984	21.99 .866
51 P / 51 S	22.86 .900	20.19 .795)	23.49 .925	29.43 1.159	26.43 1.041

SUMMARY OF CHARACTERISTICS

ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see page 209 for finish
BACKSHELL	Aluminium alloy 6061 with nickel plating
MOULDED INSULATOR	Liquid Crystal Polymer (LCP)
PIN CONTACT	Precious gold alloy
SOCKET CONTACT	Precious gold alloy
ENCAPSULANT	Epoxy resin
HARDWARE	300 series stainless steel, passivated

SEE PAGE 209 FOR MORE INFORMATION

PCB RECTANGULAR CONNECTORS

BS TYPE

DUAL ROW VERTICAL PCB RECEPTACLE

0.050" PITCH

- Reliability for micro-miniature operating systems.
- Several tail lengths available.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND2A	2	15	S	BS	P	G	1

SERIES
ND2A: Nano-D 2-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
S: Receptacle connector.

FAMILY
BS: AXON' Vertical PCB connector.

HARDWARE
P: Threaded hole #0-80 UNF (non removable jackposts).
Other versions available on request.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

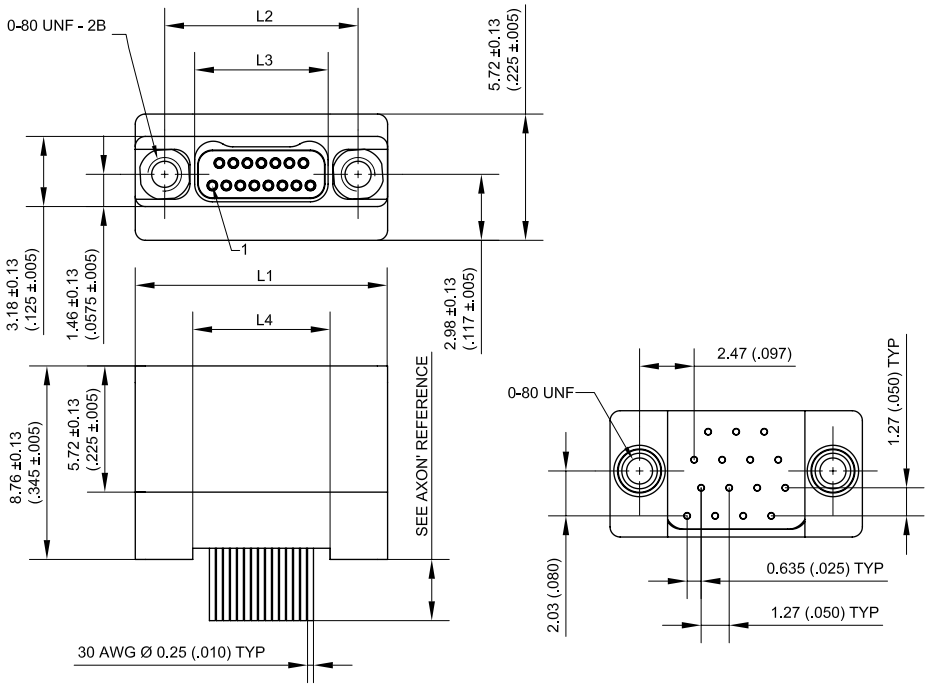
TAIL LENGTH
1: 2.77 mm (0.109").
2: 3.56 mm (0.140").
3: 4.37 mm (0.172").
4: 2.29 mm (0.090").
Tolerance: ± 0.25 mm (0.010").

Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).



SEE CONTACT LAYOUT ON PCB PAGES 240

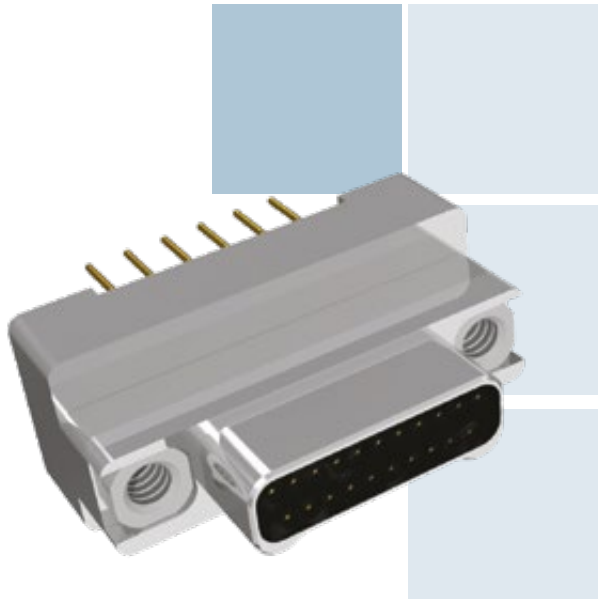
SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 S	9.53 .375	6.86 .270	4.14 .163	4.32 .170
15 S	11.43 .450	8.76 .345	6.05 .238	6.22 .245
21 S	13.34 .525	10.67 .420	7.95 .313	8.13 .320
25 S	14.61 .575	11.94 .470	9.22 .363	9.40 .370
31 S	16.51 .650	13.84 .545	11.12 .438	11.30 .445
37 S	18.42 .725	15.75 .620	13.03 .513	13.21 .520
51 S	22.86 .900	20.19 .795	17.48 .688	17.65 .695

SUMMARY OF CHARACTERISTICS

ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
MOULDED INSULATOR	Liquid Crystal Polymer (LCP)
CONTACT	Copper alloy, gold over nickel plating
ENCAPSULANT	Epoxy Resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated

SEE PAGE 209 FOR MORE INFORMATION



PCB RECTANGULAR CONNECTORS

BS TYPE

DUAL ROW VERTICAL PCB PLUG

0.050" PITCH

- Reliability for micro-miniature operating systems.
- Several tail lengths available.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND2A	2	15	P	BS	P	G	1

SERIES
ND2A: Nano-D 2-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
P: Plug connector.

FAMILY
BS: AXON' Vertical PCB connector.

HARDWARE
P: Threaded hole #0-80 UNF (non removable jackposts).
Other versions available on request.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

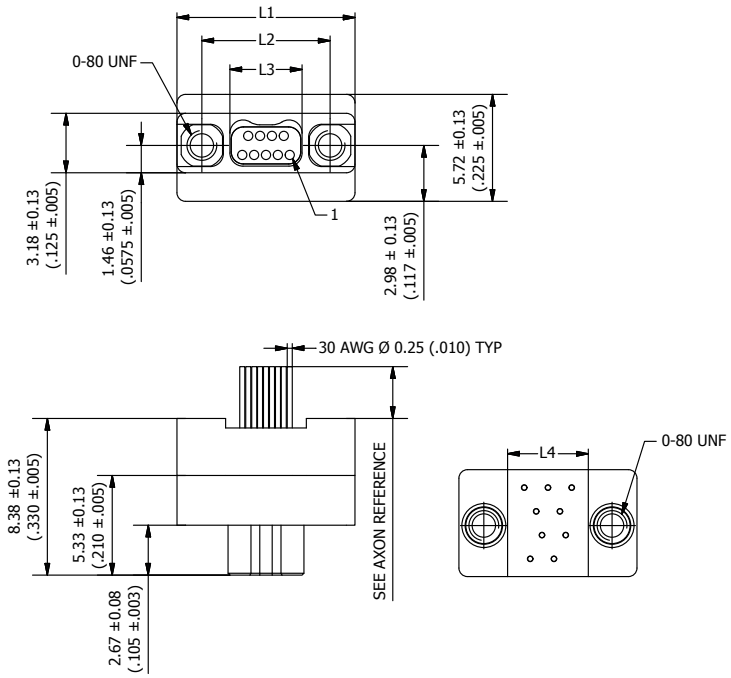
TAIL LENGTH
1: 2.77 mm (0.109").
2: 3.56 mm (0.140").
3: 4.37 mm (0.172").
4: 2.29 mm (0.090").
Tolerance: ± 0.25 mm (0.010").

Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).



SEE CONTACT LAYOUT ON PCB PAGE 241

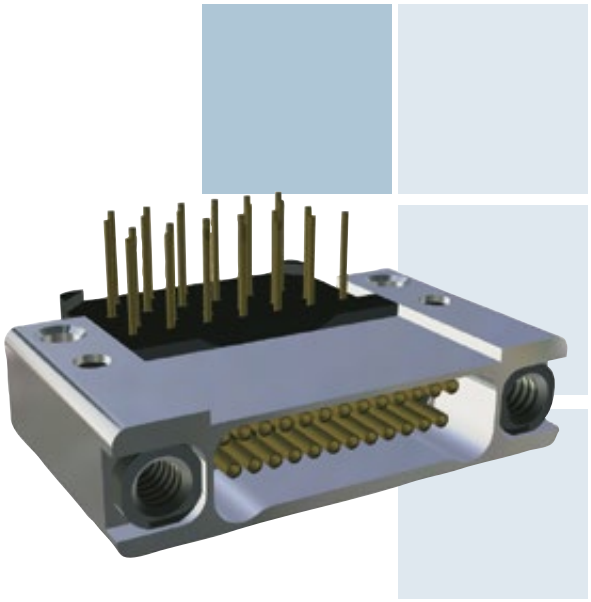
SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 P	9.53 .375	6.86 .270	4.06 .160	4.32 .170
15 P	11.43 .450	8.76 .345	5.97 .235	6.22 .245
21 P	13.34 .525	10.67 .420	7.87 .310	8.13 .320
25 P	14.61 .575	11.94 .470	9.14 .360	9.40 .370
31 P	16.51 .650	13.84 .545	11.05 .435	11.30 .445
37 P	18.42 .725	15.75 .620	12.95 .510	13.21 .520
51 P	22.86 .900	20.19 .795	17.40 .685	17.65 .695

SUMMARY OF CHARACTERISTICS

ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
MOULDED INSULATOR	Liquid Crystal Polymer (LCP)
CONTACT	Precious gold alloy
ENCAPSULANT	Epoxy Resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated

SEE PAGE 209 FOR MORE INFORMATION



PCB RECTANGULAR CONNECTORS

CBR TYPE

DUAL ROW RIGHT ANGLE PCB RECEPTACLE

0.050" PITCH

- Reliability for micro-miniature operating systems.
- Several tail lengths available.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND2A	2	15	S	CBR	P	G	1

SERIES
ND2A: Nano-D 2-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
S: Receptacle connector.

FAMILY
CBR: AXON' Right Angle PCB connector.

HARDWARE
P: Threaded hole #0-80 UNF (non removable jackposts).
B: None.
Other versions available on request.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

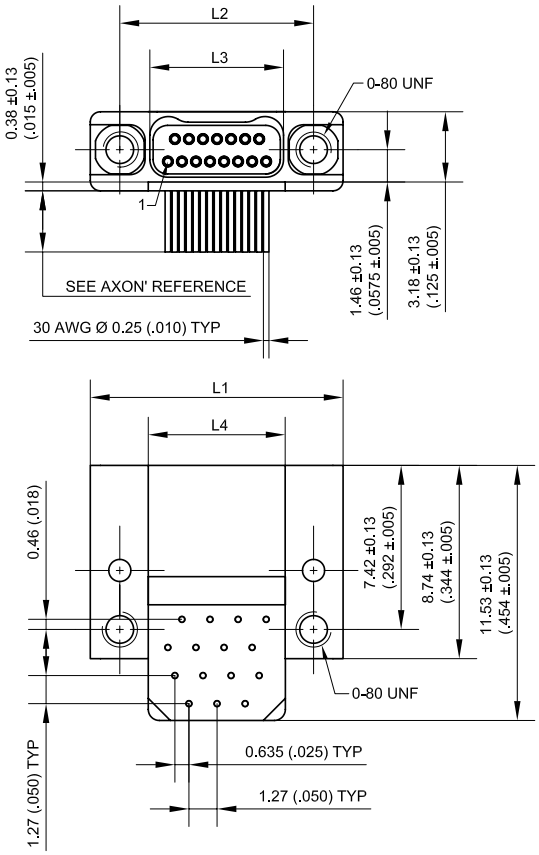
TAIL LENGTH
1: 2.77 mm (0.109").
2: 3.56 mm (0.140").
3: 4.37 mm (0.172").
4: 2.29 mm (0.090").
Tolerance: ± 0.25 mm (0.010").

Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).



SEE CONTACT LAYOUT ON PCB PAGE 242

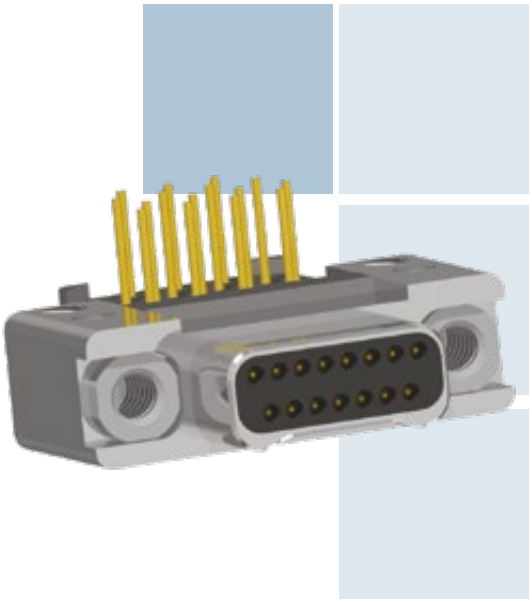
SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 S	9.53 .375	6.86 .270	4.14 .163	4.32 .170
15 S	11.43 .450	8.76 .345	6.05 .238	6.22 .245
21 S	13.34 .525	10.67 .420	7.95 .313	8.13 .320
25 S	14.61 .575	11.94 .470	9.22 .363	9.40 .370
31 S	16.51 .650	13.84 .545	11.12 .438	11.30 .445
37 S	18.42 .725	15.75 .620	13.03 .513	13.21 .520
51 S	22.86 .900	20.19 .795	17.48 .688	17.65 .695

SUMMARY OF CHARACTERISTICS

ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
MOULDED INSULATOR	Liquid Crystal Polymer (LCP)
CONTACT	Copper alloy, gold over nickel plating
ENCAPSULANT	Epoxy Resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated

SEE PAGE 209 FOR MORE INFORMATION



PCB RECTANGULAR CONNECTORS

CBR TYPE

DUAL ROW RIGHT ANGLE PCB PLUG

0.050" PITCH

- Reliability for micro-miniature operating systems.
- Several tail lengths available.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND2A	2	15	P	CBR	P	G	1

SERIES
ND2A: Nano-D 2-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
P: Plug connector.

FAMILY
CBR: AXON' Right Angle PCB connector.

HARDWARE
P: Threaded hole #0-80 UNF (non removable jackposts).
B: None.
Other versions available on request.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

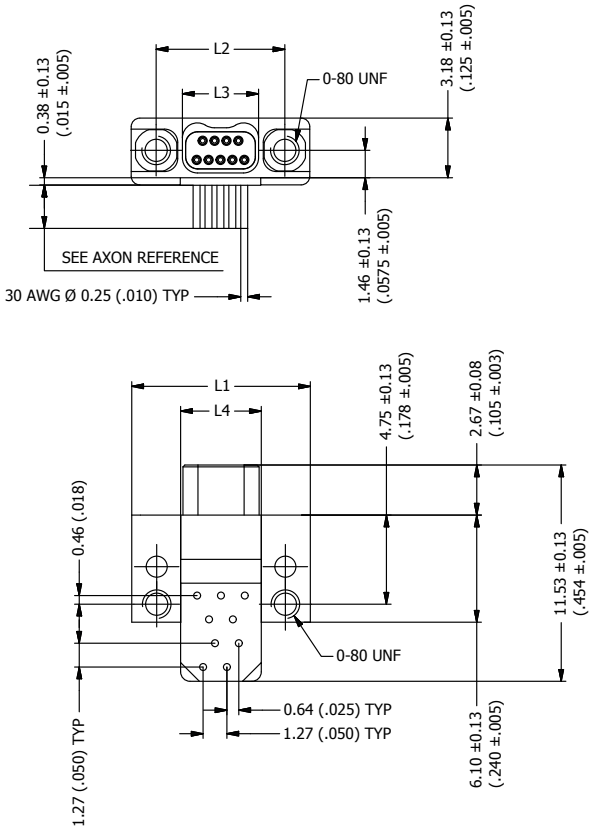
TAIL LENGTH
1: 2.77 mm (0.109").
2: 3.56 mm (0.140").
3: 4.37 mm (0.172").
4: 2.29 mm (0.090").
Tolerance: ± 0.25 mm (0.010").

Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).



SEE CONTACT LAYOUT ON PCB PAGE 243

SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 P	9.53 .375	6.86 .270	4.06 .160	4.32 .170
15 P	11.43 .450	8.76 .345	5.97 .235	6.22 .245
21 P	13.34 .525	10.67 .420	7.87 .310	8.13 .320
25 P	14.61 .575	11.94 .470	9.14 .360	9.40 .370
31 P	16.51 .650	13.84 .545	11.05 .435	11.30 .445
37 P	18.42 .725	15.75 .620	12.95 .510	13.21 .520
51 P	22.86 .900	20.19 .795	17.40 .685	17.65 .695

SUMMARY OF CHARACTERISTICS

ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

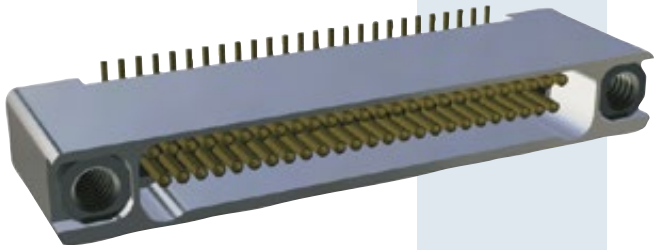
MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
MOULDED INSULATOR	Liquid Crystal Polymer (LCP)
CONTACT	Precious gold alloy
ENCAPSULANT	Epoxy Resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated

SEE PAGE 209 FOR MORE INFORMATION

SMV TYPE

DUAL ROW VERTICAL SURFACE MOUNT PCB RECEPTACLE

0.025" PITCH



- Reliability for micro-miniature operating systems.
- Surface Mount.
- Several tail lengths available.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND2A	2	15	S	SMV	P	G	1

SERIES
ND2A: Nano-D 2-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
S: Receptacle connector.

FAMILY
SMV: AXON' Vertical surface mount PCB connector.

HARDWARE
P: Threaded holes #0-80 UNF (non removable jackposts).
Other versions available on request.
B: None.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

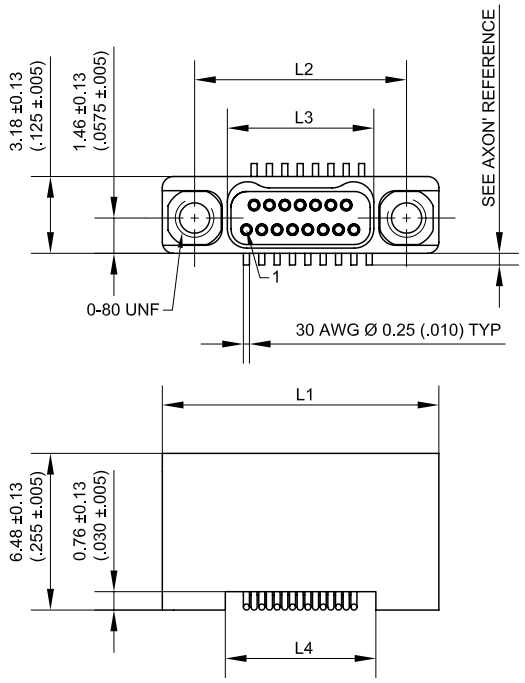
TAIL LENGTH
1: 0.51 mm (0.020").
2: 1.02 mm (0.040").
Tolerance: ± 0.25 mm (0.010").

Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).



SEE CONTACT LAYOUT ON PCB PAGES 244 & 245

SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 S	9.53 .375	6.86 .270	4.14 .163	4.32 .170
15 S	11.43 .450	8.76 .345	6.05 .238	6.22 .245
21 S	13.34 .525	10.67 .420	7.95 .313	8.13 .320
25 S	14.61 .575	11.94 .470	9.22 .363	9.40 .370
31 S	16.51 .650	13.84 .545	11.12 .438	11.30 .445
37 S	18.42 .725	15.75 .620	13.03 .513	13.21 .520
51 S	22.86 .900	20.19 .795	17.48 .688	17.65 .695

SUMMARY OF CHARACTERISTICS

ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

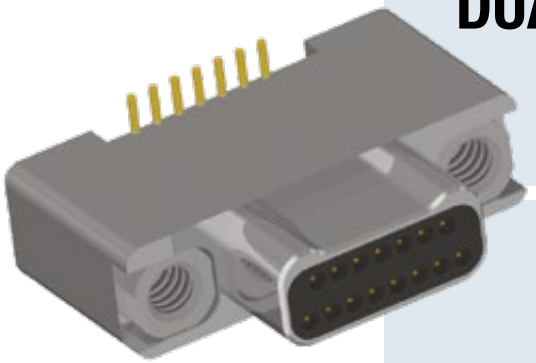
MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
MOULDED INSULATOR	Liquid Crystal Polymer (LCP)
CONTACT	Copper alloy, gold over nickel plating
ENCAPSULANT	Epoxy Resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated

SEE PAGE 209 FOR MORE INFORMATION

SMV TYPE

DUAL ROW VERTICAL SURFACE MOUNT PCB PLUG

0.025" PITCH



- Reliability for micro-miniature operating systems.
- Surface Mount.
- Several tail lengths available.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND2A	2	15	P	SMV	P	G	1

SERIES
ND2A: Nano-D 2-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
P: Plug connector.

FAMILY
SMV: AXON' Vertical surface mount PCB connector.

HARDWARE
P: Threaded holes #0-80 UNF (non removable jackposts).
Other versions available on request.
B: None.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

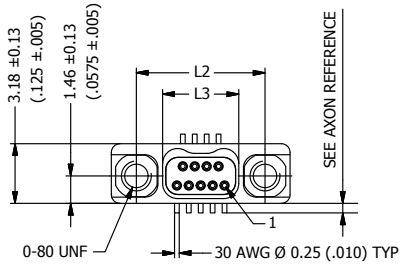
TAIL LENGTH
1: 0.51 mm (0.020").
2: 1.02 mm (0.040").
Tolerance: ± 0.25 mm (0.010").

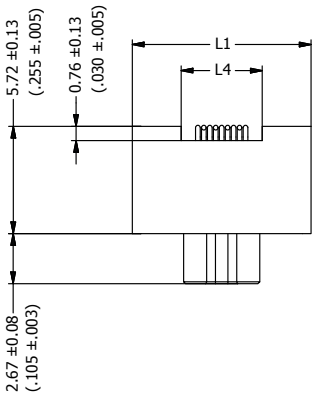
Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).





SEE CONTACT LAYOUT ON PCB PAGES 246 & 247

SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 P	9.53 .375	6.86 .270	4.06 .160	4.32 .170
15 P	11.43 .450	8.76 .345	5.97 .235	6.22 .245
21 P	13.34 .525	10.67 .420	7.87 .310	8.13 .320
25 P	14.61 .575	11.94 .470	9.14 .360	9.40 .370
31 P	16.51 .650	13.84 .545	11.05 .435	11.30 .445
37 P	18.42 .725	15.75 .620	12.95 .510	13.21 .520
51 P	22.86 .900	20.19 .795	17.40 .685	17.65 .695

SUMMARY OF CHARACTERISTICS

ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

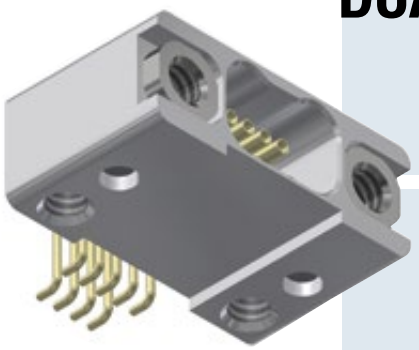
MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
MOULDED INSULATOR	Liquid Crystal Polymer (LCP)
CONTACT	Precious gold alloy
ENCAPSULANT	Epoxy Resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated

SEE PAGE 209 FOR MORE INFORMATION

SMH TYPE

DUAL ROW HORIZONTAL SURFACE MOUNT PCB RECEPTACLE

0.025" PITCH



- Reliability for micro-miniature operating systems.
- Surface Mount.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND2A	2	15	S	SMH	P	G	1

SERIES
ND2A: Nano-D 2-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
S: Receptacle connector.

FAMILY
SMH: AXON' Horizontal surface mount PCB connector.

HARDWARE
P: Threaded holes #0-80 UNF (non removable jackposts).
Other versions available on request.
B: None.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

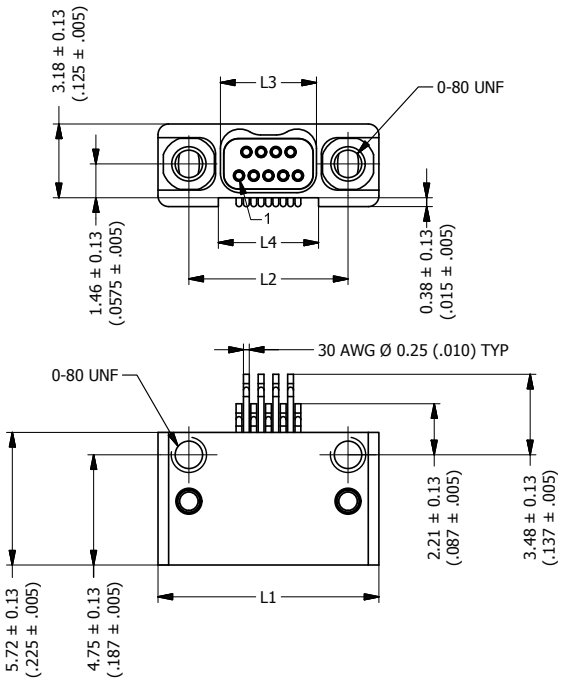
TAIL LENGTH
1: Standard ***(see page 237 for dimensions).***

Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).



SEE CONTACT LAYOUT ON PCB PAGES 248 & 249

SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 S	9.53 .375	6.86 .270	4.14 .163	4.32 .170
15 S	11.43 .450	8.76 .345	6.05 .238	6.22 .245
21 S	13.34 .525	10.67 .420	7.95 .313	8.13 .320
25 S	14.61 .575	11.94 .470	9.22 .363	9.40 .370
31 S	16.51 .650	13.84 .545	11.12 .438	11.30 .445
37 S	18.42 .725	15.75 .620	13.03 .513	13.21 .520
51 S	22.86 .900	20.19 .795	17.48 .688	17.65 .695

SUMMARY OF CHARACTERISTICS

ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

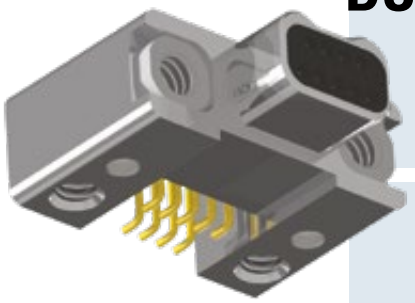
MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
MOULDED INSULATOR	Liquid Crystal Polymer (LCP)
CONTACT	Precious gold alloy
ENCAPSULANT	Epoxy resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated

SEE PAGE 209 FOR MORE INFORMATION

SMH TYPE

DUAL ROW HORIZONTAL SURFACE MOUNT PCB PLUG

0.025" PITCH



- Reliability for micro-miniature operating systems.
- Surface Mount.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND2A	2	15	P	SMH	P	G	1

SERIES
ND2A: Nano-D 2-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
P: Plug connector.

FAMILY
SMH: AXON' Horizontal surface mount PCB connector.

HARDWARE
P: Threaded holes #0-80 UNF (non removable jackposts).
Other versions available on request.
B: None.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

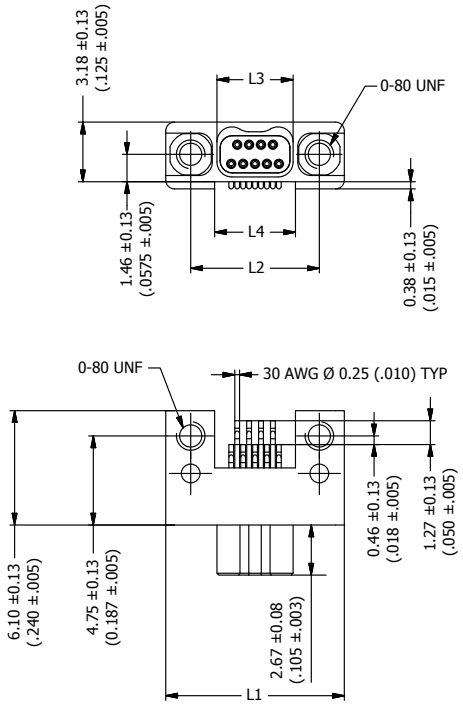
TAIL LENGTH
1: Standard ***(see page 239 for dimensions).***

Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).



SEE CONTACT LAYOUT ON PCB PAGE 250 & 251

SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 P	9.53 .375	6.86 .270	4.06 .160	4.32 .170
15 P	11.43 .450	8.76 .345	5.97 .235	6.22 .245
21 P	13.34 .525	10.67 .420	7.87 .310	8.13 .320
25 P	14.61 .575	11.94 .470	9.14 .360	9.40 .370
31 P	16.51 .650	13.84 .545	11.05 .435	11.30 .445
37 P	18.42 .725	15.75 .620	12.95 .510	13.21 .520
51 P	22.86 .900	20.19 .795	17.40 .685	17.65 .695

SUMMARY OF CHARACTERISTICS

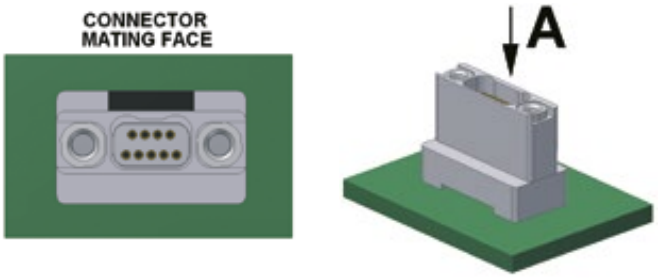
ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
MOULDED INSULATOR	Liquid Crystal Polymer (LCP)
CONTACT	Precious gold alloy
ENCAPSULANT	Epoxy resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated

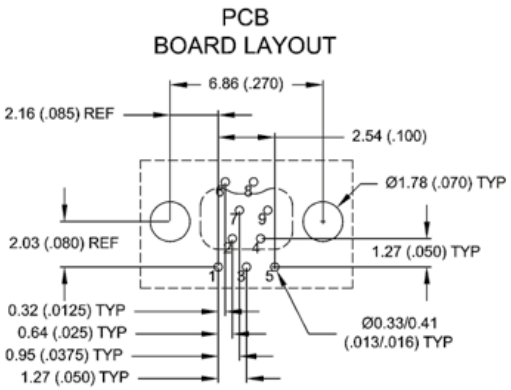
SEE PAGE 209 FOR MORE INFORMATION

PCB LAYOUT FOR BS TYPE
0.050" PITCH - FEMALE CONNECTORS

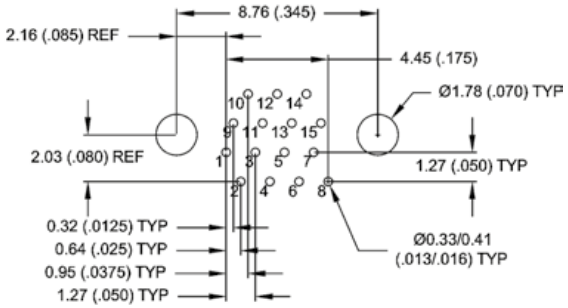
VIEW A



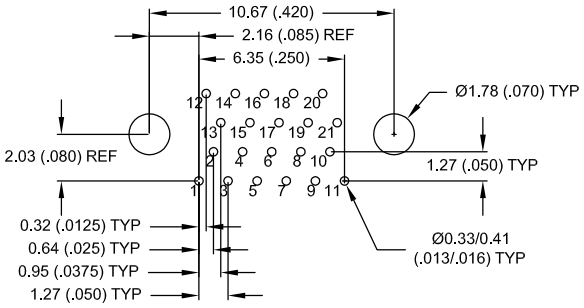
9 CONTACTS - VIEW A



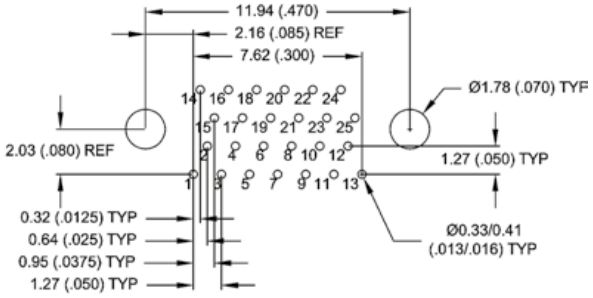
15 CONTACTS - VIEW A



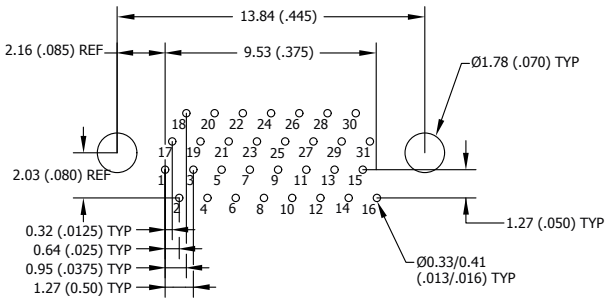
21 CONTACTS - VIEW A



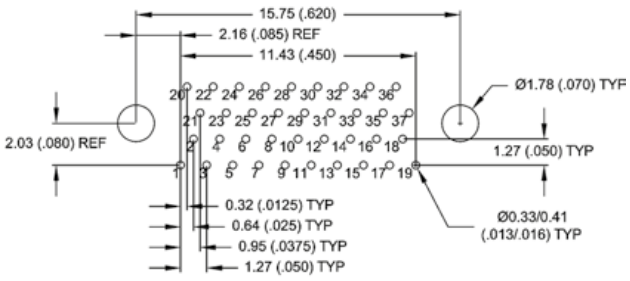
25 CONTACTS - VIEW A



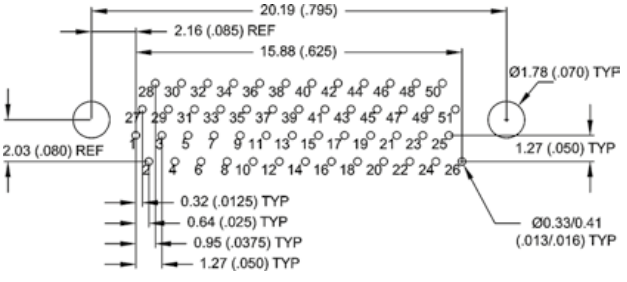
31 CONTACTS - VIEW A



37 CONTACTS - VIEW A



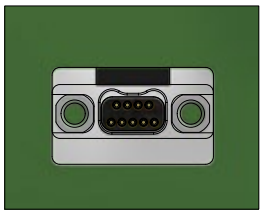
51 CONTACTS - VIEW A

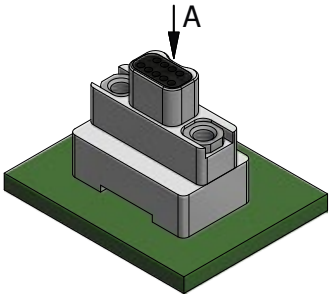


1.27 mm (0.05") contact spacing - 1.27 mm (0.05") spacing between rows - contact diameter: AWG 30

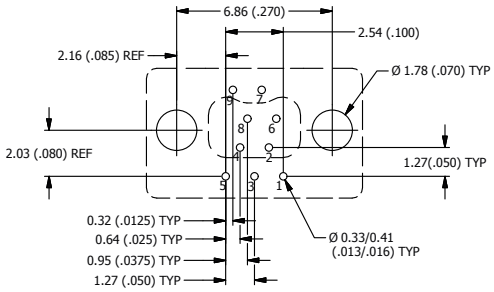
PCB LAYOUT FOR BS TYPE
0.050" PITCH - MALE CONNECTORS

VIEW A

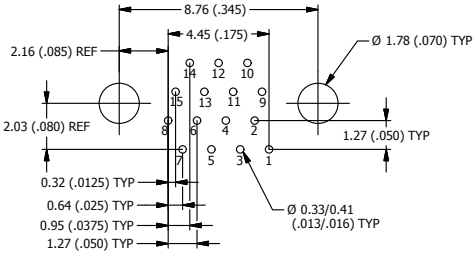




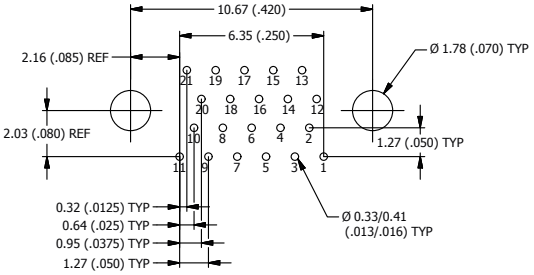
9 CONTACTS - VIEW A



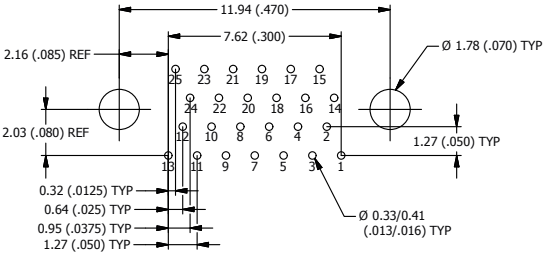
15 CONTACTS - VIEW A



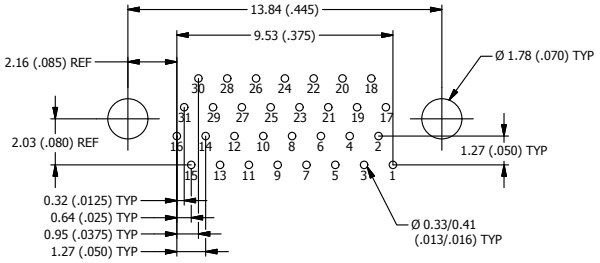
21 CONTACTS - VIEW A



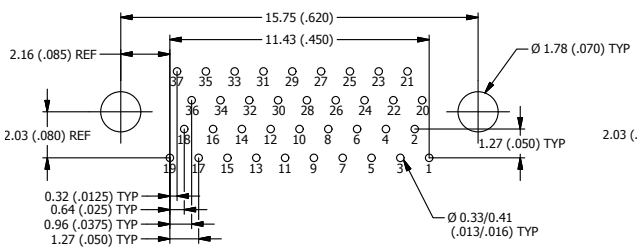
25 CONTACTS - VIEW A



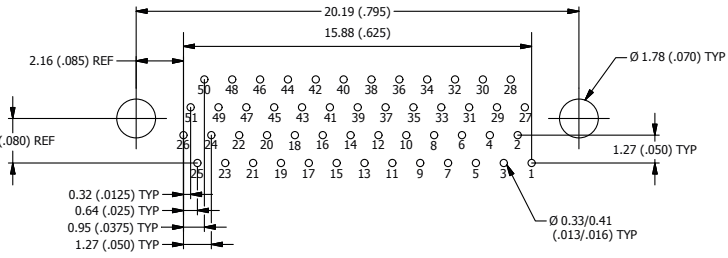
31 CONTACTS - VIEW A



37 CONTACTS - VIEW A

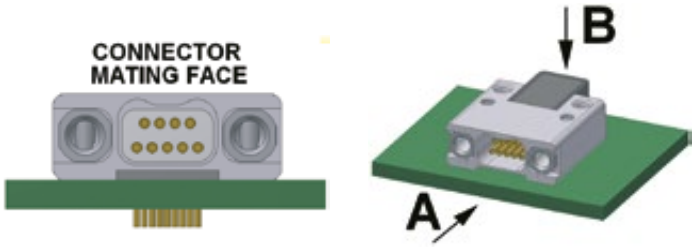


51 CONTACTS - VIEW A

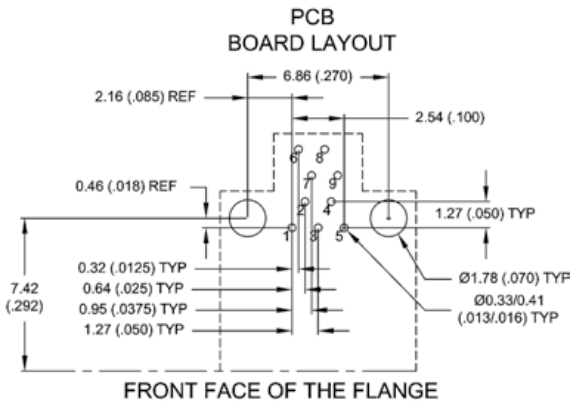


PCB LAYOUT FOR CBR TYPE 0.050" PITCH - FEMALE CONNECTORS

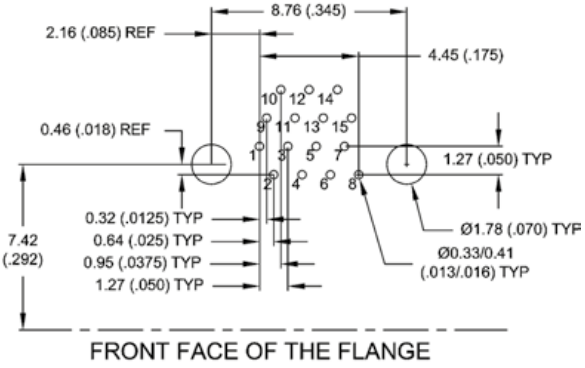
VIEW A



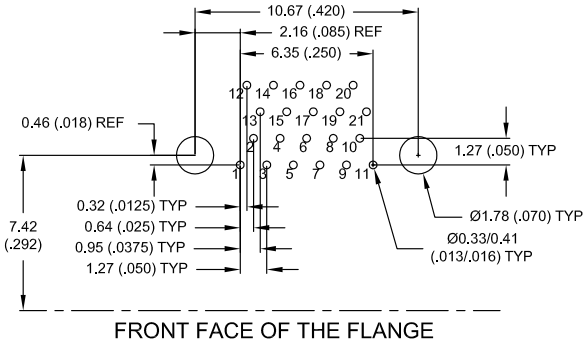
9 CONTACTS - VIEW B



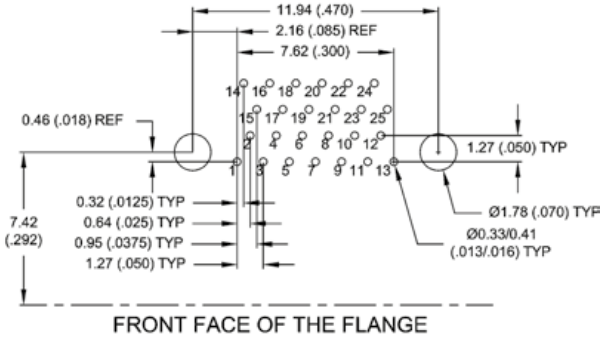
15 CONTACTS - VIEW B



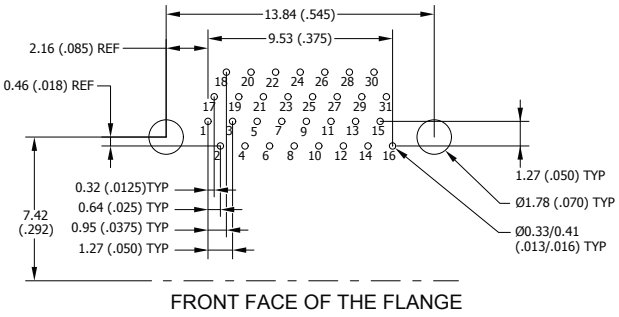
21 CONTACTS - VIEW B



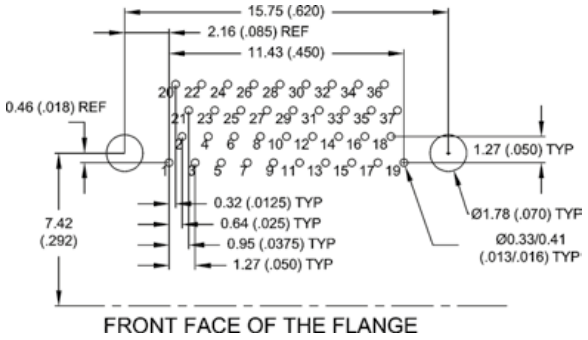
25 CONTACTS - VIEW B



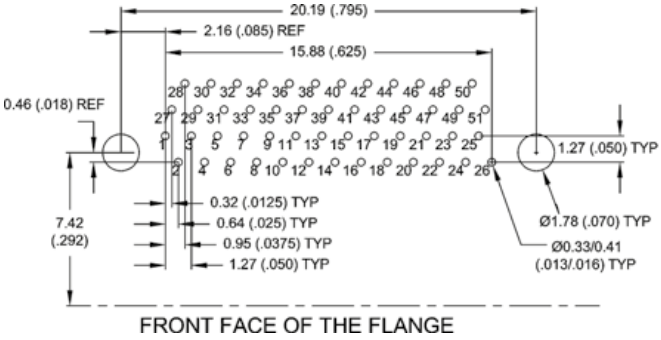
31 CONTACTS - VIEW B



37 CONTACTS - VIEW B



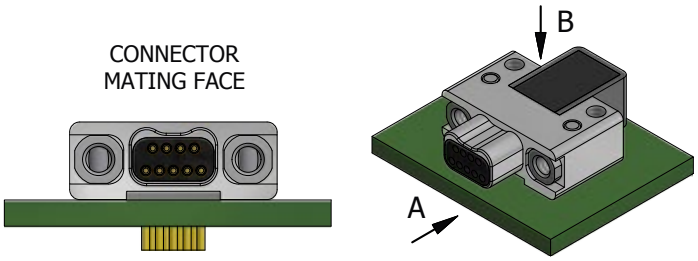
51 CONTACTS - VIEW B



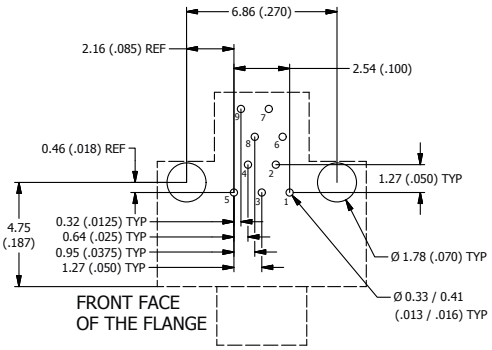
1.27 mm (0.05") contact spacing - 1.27 mm (0.05") spacing between rows - contact diameter: AWG 30

PCB LAYOUT FOR CBR TYPE
0.050" PITCH - MALE CONNECTORS

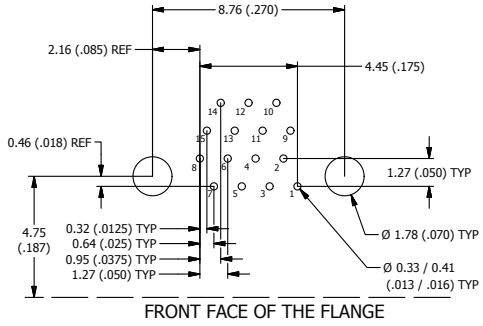
VIEW A



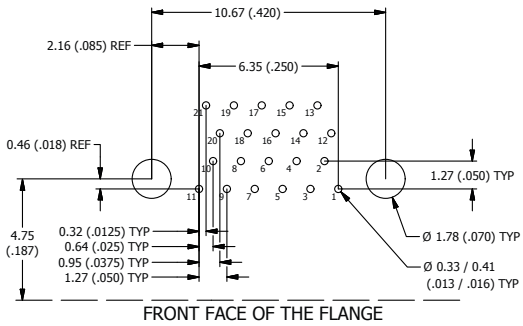
9 CONTACTS - VIEW B



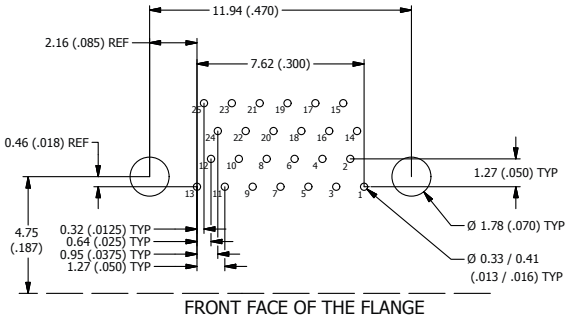
15 CONTACTS - VIEW B



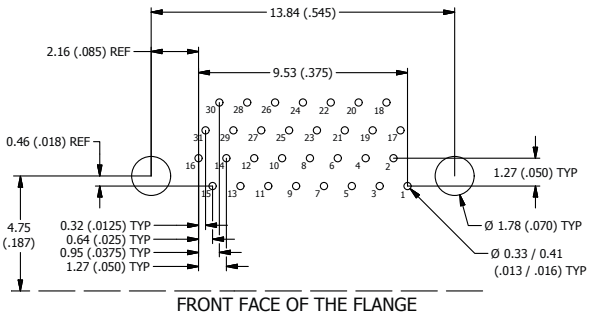
21 CONTACTS - VIEW B



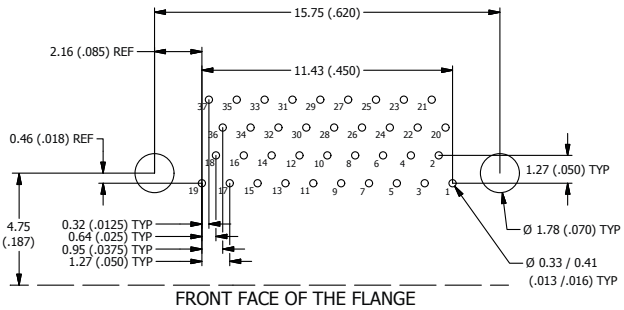
25 CONTACTS - VIEW B



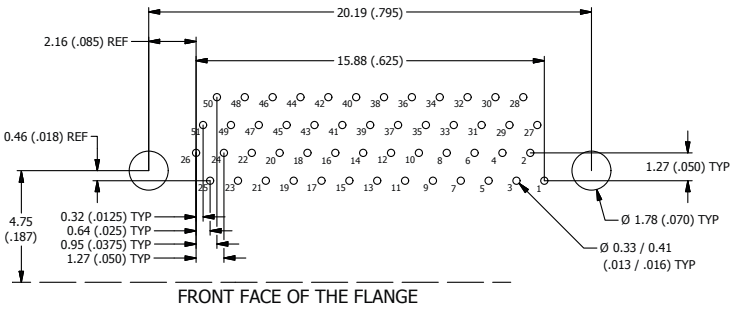
31 CONTACTS - VIEW B



37 CONTACTS - VIEW B

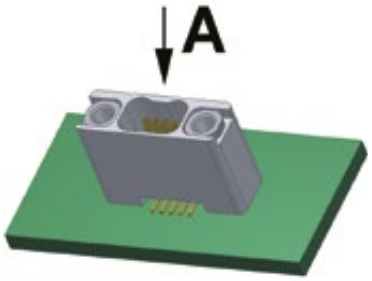


51 CONTACTS - VIEW B

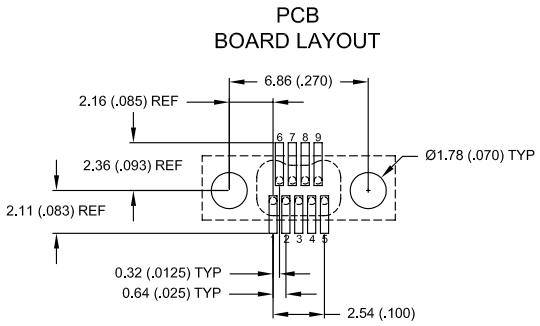


PCB LAYOUT FOR SMV TYPE 0.025" PITCH - FEMALE CONNECTORS

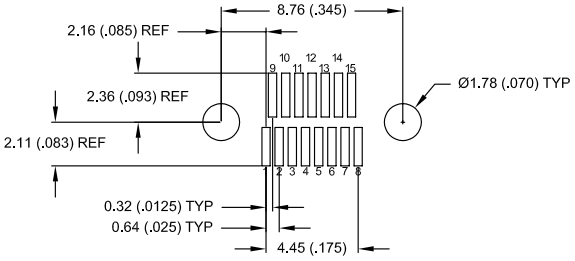
VIEW A



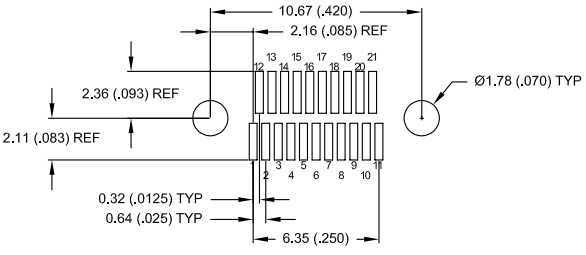
9 CONTACTS - VIEW A



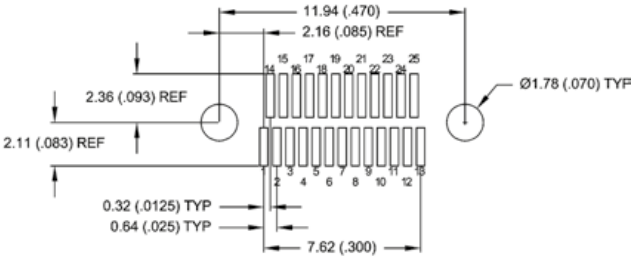
15 CONTACTS - VIEW A



21 CONTACTS - VIEW A



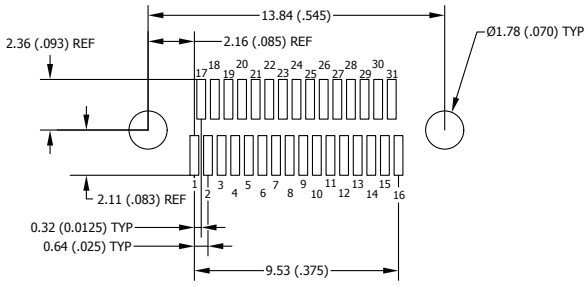
25 CONTACTS - VIEW A



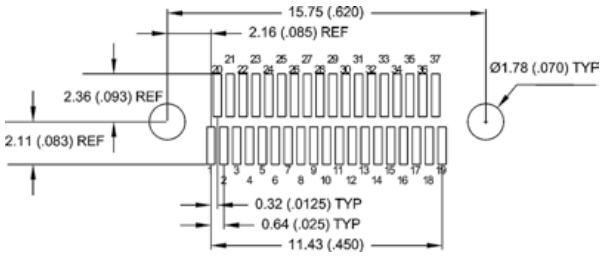
0.635 mm (0.25") pad - contact diameter: AWG 30

PCB LAYOUT FOR SMV TYPE 0.025" PITCH - FEMALE CONNECTORS

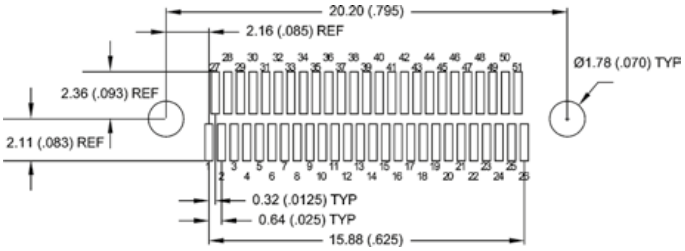
31 CONTACTS - VIEW A



37 CONTACTS - VIEW A

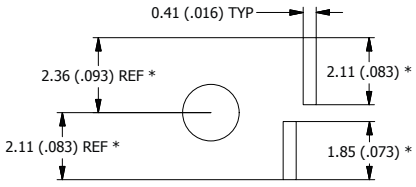


51 CONTACTS - VIEW A



LAYOUT

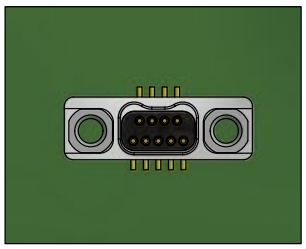
Suggested PAD configuration

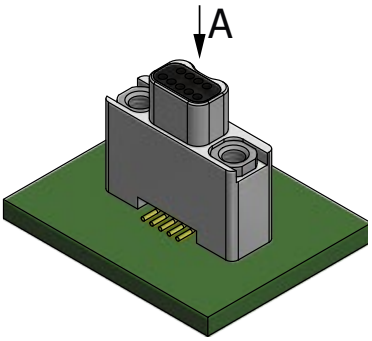


*: For .040" tail length, add .020" to noted dimensions

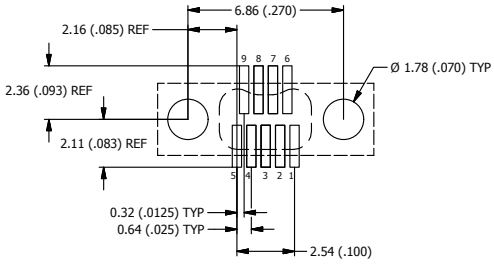
PCB LAYOUT FOR SMV TYPE 0.025" PITCH - MALE CONNECTORS

VIEW A

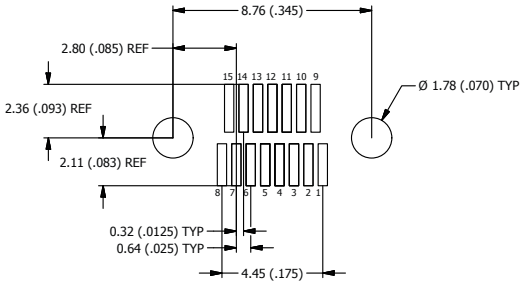




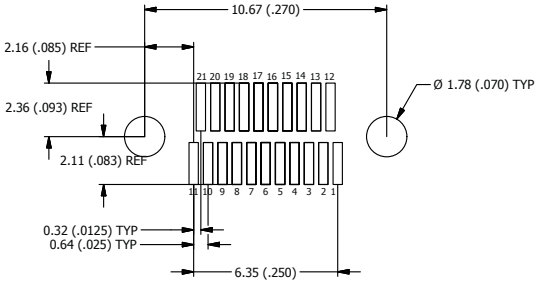
9 CONTACTS - VIEW A



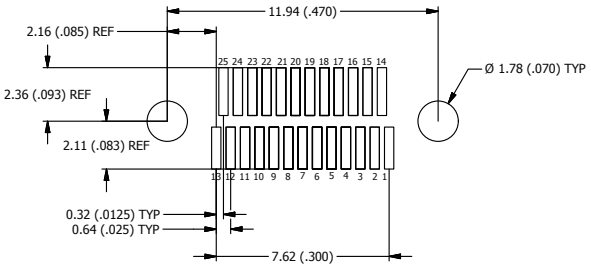
15 CONTACTS - VIEW A



21 CONTACTS - VIEW A



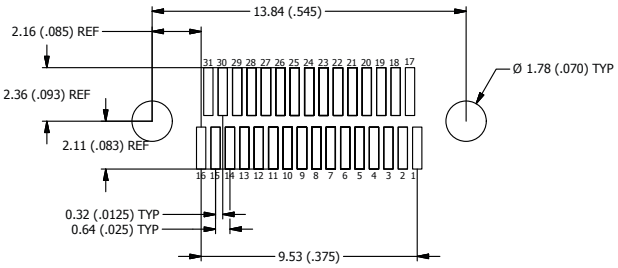
25 CONTACTS - VIEW A



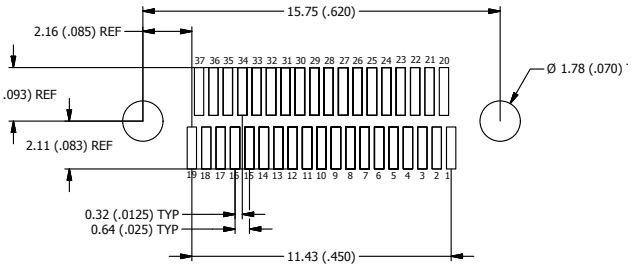
0.635 mm (0.25") pad - contact diameter: AWG 30

PCB LAYOUT FOR SMV TYPE 0.025" PITCH - MALE CONNECTORS

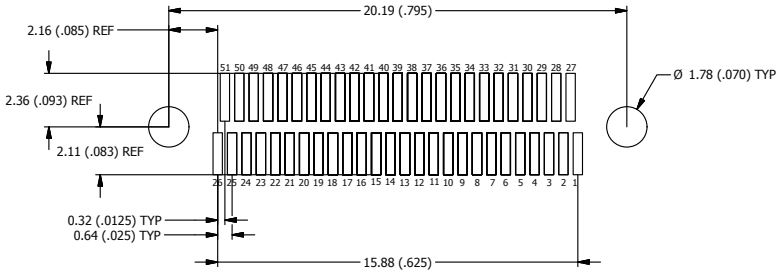
31 CONTACTS - VIEW A



37 CONTACTS - VIEW A

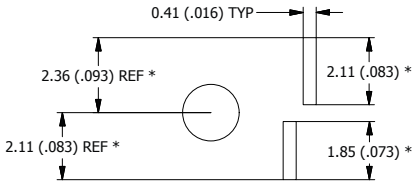


51 CONTACTS - VIEW A



LAYOUT

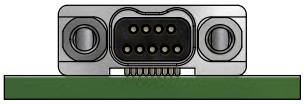
Suggested PAD configuration

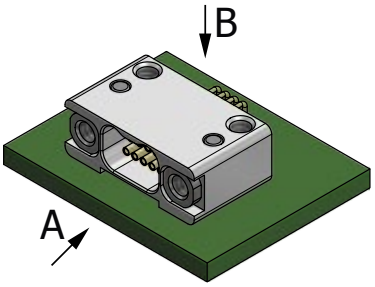


*: For .040" tail length, add .020" to noted dimensions

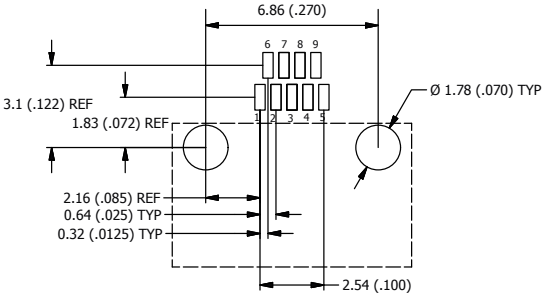
PCB LAYOUT FOR SMH TYPE 0.025" PITCH - FEMALE CONNECTORS

VIEW A

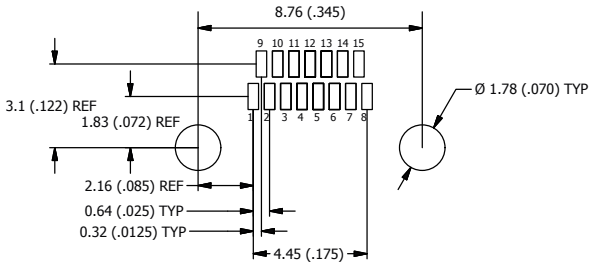




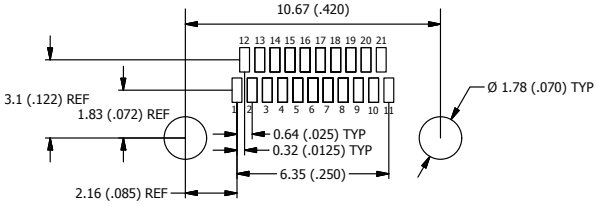
9 CONTACTS - VIEW A



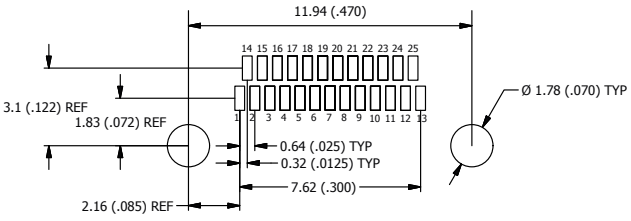
15 CONTACTS - VIEW A



21 CONTACTS - VIEW A



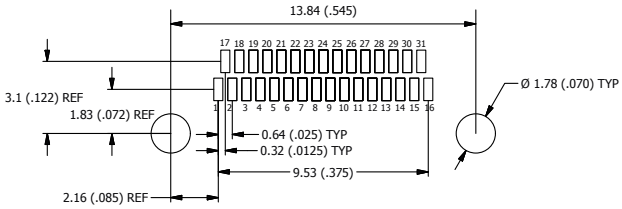
25 CONTACTS - VIEW A



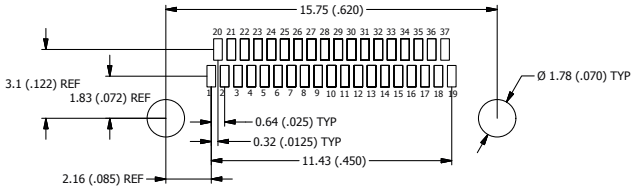
0.635 mm (0.25") pad - contact diameter: AWG 30

PCB LAYOUT FOR SMH TYPE
0.025" PITCH - FEMALE CONNECTORS

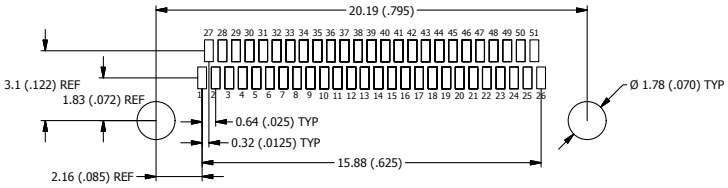
31 CONTACTS - VIEW A



37 CONTACTS - VIEW A

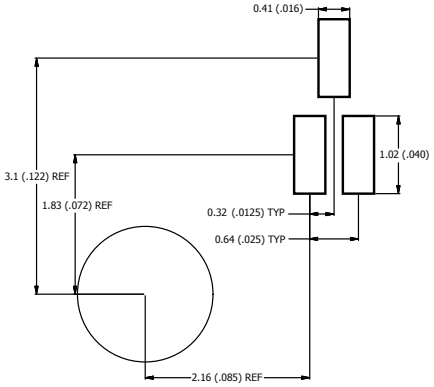


51 CONTACTS - VIEW A



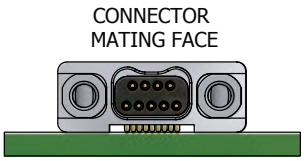
LAYOUT

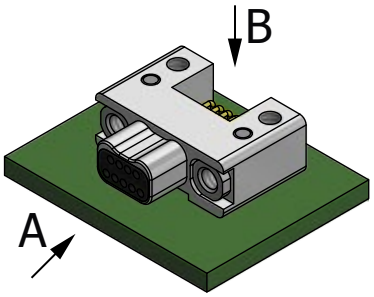
Suggested PAD configuration



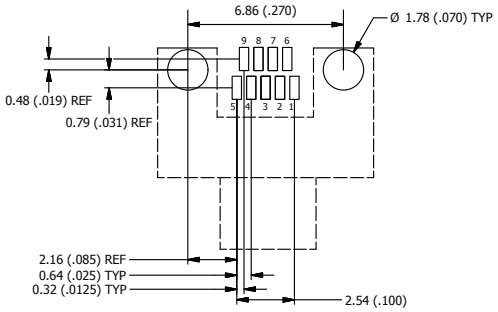
PCB LAYOUT FOR SMH TYPE 0.025" PITCH - MALE CONNECTORS

VIEW A

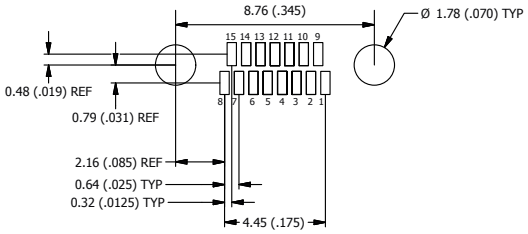




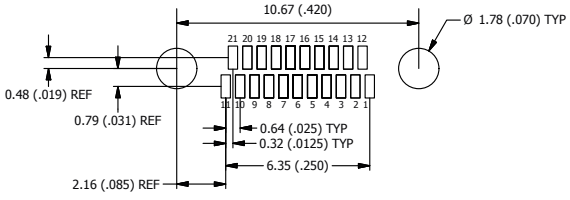
9 CONTACTS - VIEW A



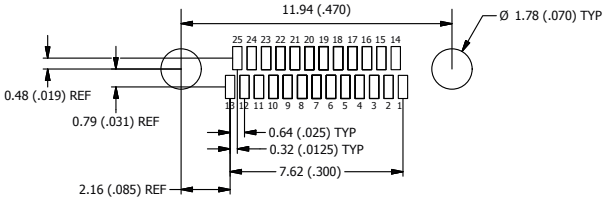
15 CONTACTS - VIEW A



21 CONTACTS - VIEW A



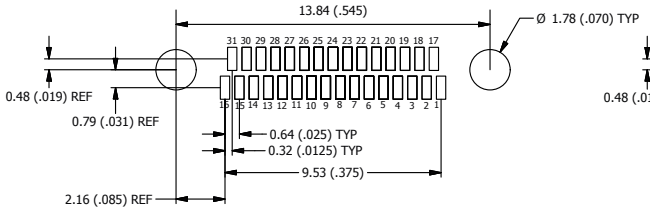
25 CONTACTS - VIEW A



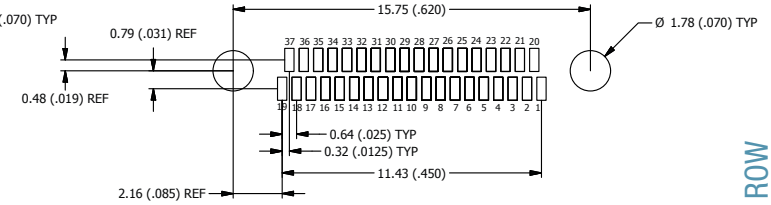
0.635 mm (0.25") pad - contact diameter: AWG 30

PCB LAYOUT FOR SMH TYPE 0.025" PITCH - MALE CONNECTORS

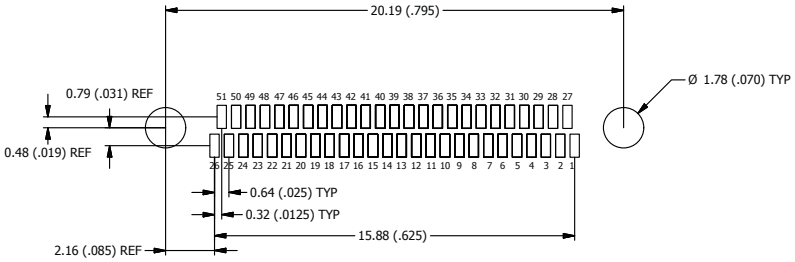
31 CONTACTS - VIEW A



37 CONTACTS - VIEW A

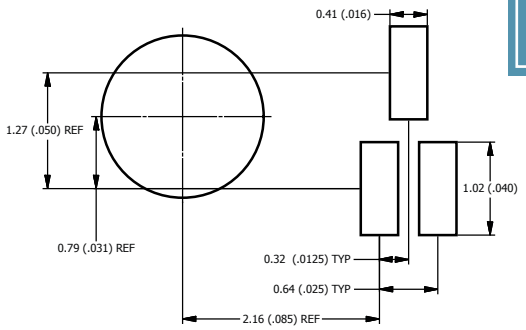


51 CONTACTS - VIEW A

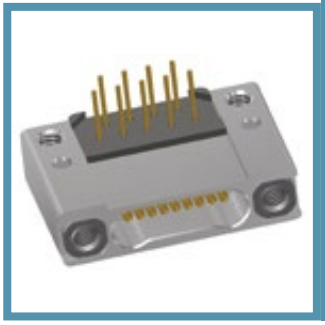


LAYOUT

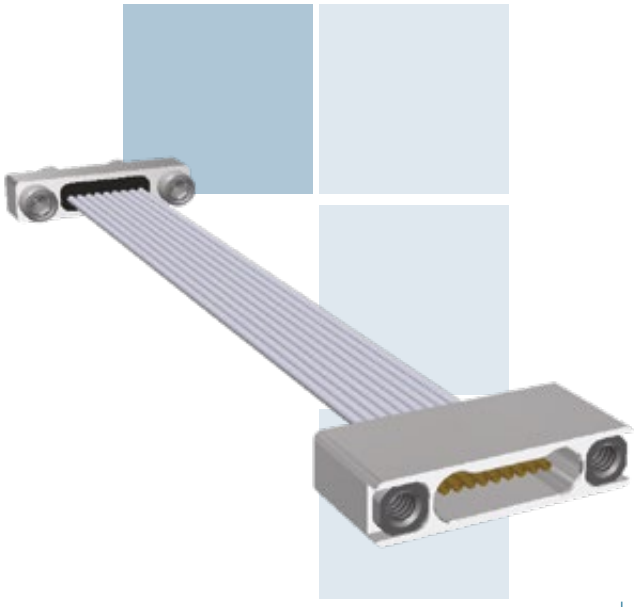
Suggested PAD configuration



SINGLE ROW NANO-D CONNECTORS



SINGLE ROW PIGTAIL & JUMPER



- Reliability for micro-miniature operating systems.
- High performance metal connector and PTFE wire.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND1A	2	15	P	S	D	1	L	50	R	P

SERIES
ND1A: Nano-D 1-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request. (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**. **Other versions available on request.**

1st CONNECTOR TYPE
P: Plug connector.
S: Receptacle connector.

2nd CONNECTOR TYPE
P: Plug connector.
S: Receptacle connector.
W: No second connector - free wires.

CONNECTIONS (see jumper wiring on page 217)
D: Direct pin 1 to pin 1.
I: Indirect (usual for plug-plug jumper).
X: Pigtail.

WIRE CODE
1: ET 3007, AWG 30, 7 strands, 250 V.
2: ET 3207, AWG 32, 7 strands, 250 V.
3: ET 3407, AWG 34, 7 strands, 250 V.
4: ET 3607, AWG 36, 7 strands, 250 V.
Other versions available on request.

COLOUR CODE
L: White
F: Yellow.
W: 10 colour repeat.
See page 215 for colour code.

WIRE LENGTH (cm)
Attention! Wire length in centimetres - (1cm = 10 mm = .394").

L	2 ≤ L ≤10	10 < L ≤ 100	L > 100
in cm (inches)	0.79≤ L ≤ 3.940	3.940 < L ≤ 39.40	39.40
TOLERANCE	-0 / +0.5	-0 / +3	-0 / +5
in cm (inches)	-0 / +0.200	-0 / +1.180	-0 / +1.970

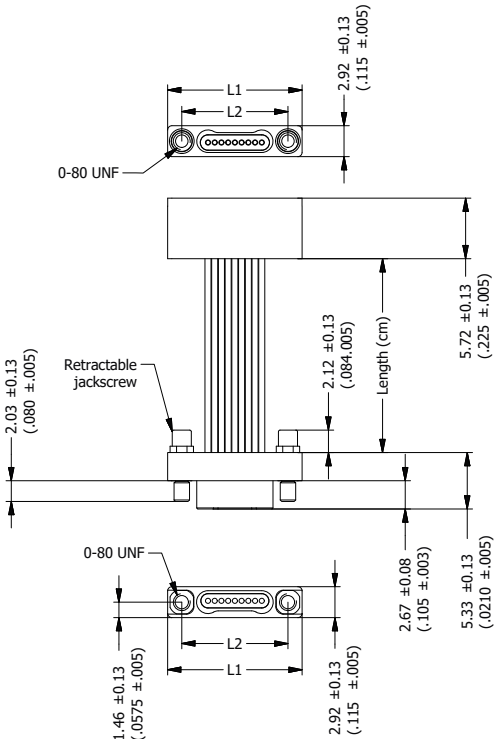
HARDWARE 1st CONNECTOR
P: Threaded hole #0-80 UNF
(non removable jackposts, recommended for receptacles).
R: Retractable short hex socket head jackscrews #0-80 UNF
(recommended for plugs).
L: Short hex socket head jackscrews #0-80 UNF (captivated).
B: No hardware.

HARDWARE 2nd CONNECTOR
See above.
X: Pigtail.

IN BOLD: FACTORY STANDARD

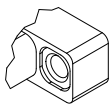
DIMENSIONS

Dimensions are in millimetres (inches).

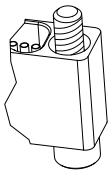


SPECIFIC HARDWARE CONFIGURATION

Treaded holes
#0-80 UNF
for plug shell
(code: P)



Jackscrew
#0-80 UNF
for socket shell
(code: R/L)

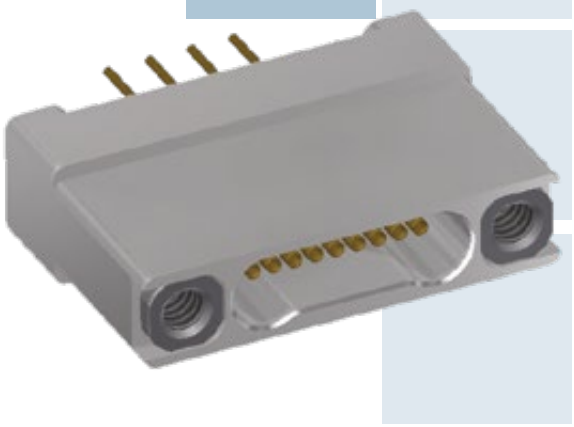


SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)
9 S / 9 P	12.70 .500	10.03 .395
15 S / 15 P	16.51 .650	13.84 .545
21 S / 21 P	20.32 .800	17.65 .695
25 S / 25 P	22.86 .900	20.19 .795
31 S / 31 P	26.67 1.050	24.00 .945
37 S / 37 P	30.48 1.200	27.81 1.095
51 S / 51 P	39.37 1.550	36.70 1.445

SUMMARY OF CHARACTERISTICS

ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
INSULATOR	Liquid Crystal Polymer (LCP) or PEEK
CONTACT	Precious gold alloy
ENCAPSULANT	Epoxy Resin
HARDWARE	300 series stainless steel, passivated



PCB RECTANGULAR CONNECTORS

BS TYPE

SINGLE ROW VERTICAL PCB RECEPTACLE

0.050" PITCH

- Reliability for micro-miniature operating systems.
- Several tail lengths available.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND1A	2	09	S	BS	P	G	1

SERIES
ND1A: Nano-D 1-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request. (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
S: Receptacle connector.

FAMILY
BS: AXON' Vertical PCB connector.

HARDWARE
P: Threaded hole #0-80 UNF (non removable jackposts).
Other versions available on request.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

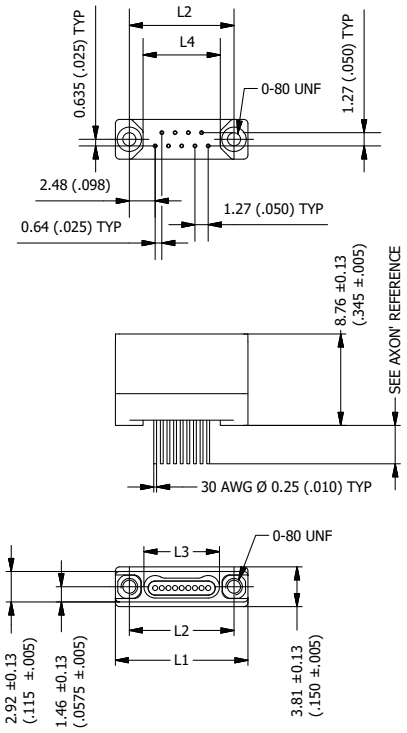
TAIL LENGTH
1: 2.77 mm (0.109").
2: 3.56 mm (0.140").
3: 4.37 mm (0.172").
4: 2.29 mm (0.090").
Tolerance: ± 0.25 mm (0.010").

Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).



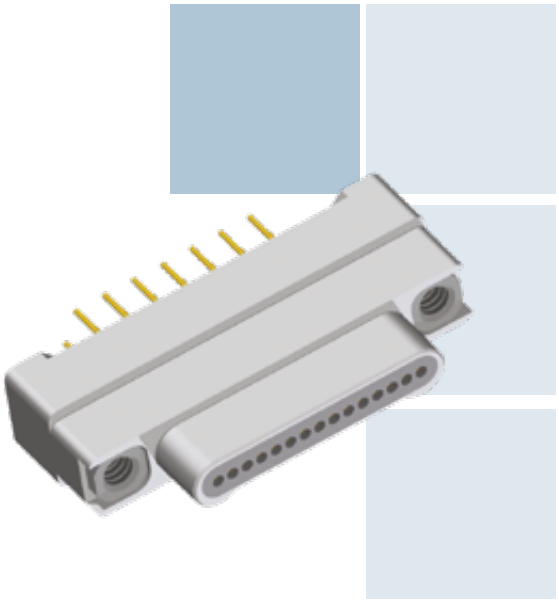
SEE CONTACT LAYOUT ON PCB PAGE 272

SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 S	12.70 .500	10.03 .395	7.24 .285	7.37 .290
15 S	16.51 .650	13.84 .545	11.05 .435	11.18 .440
21 S	20.32 .800	17.65 .695	14.86 .585	14.99 .590
25 S	22.86 .900	20.19 .795	17.40 .685	17.53 .690
31 S	26.67 1.050	24.00 .945	21.21 .835	21.34 .840
37 S	30.48 1.200	27.81 1.095	25.02 .985	25.15 .990
51 S	39.37 1.550	36.70 1.445	33.91 1.335	34.04 1.340

SUMMARY OF CHARACTERISTICS

ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
INSULATOR	Liquid Crystal Polymer (LCP) or PEEK
CONTACT	Copper alloy, gold over nickel plating
ENCAPSULANT	Epoxy Resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated



PCB RECTANGULAR CONNECTORS

BS TYPE

SINGLE ROW VERTICAL PCB PLUG

0.050" PITCH

- Reliability for micro-miniature operating systems.
- Several tail lengths available.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND1A	2	15	P	BS	P	G	1

SERIES
ND1A: Nano-D 1-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request. (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
P: Plug connector.

FAMILY
BS: AXON' Vertical PCB connector.

HARDWARE
P: Threaded hole #0-80 UNF (non removable jackposts).
Other versions available on request.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

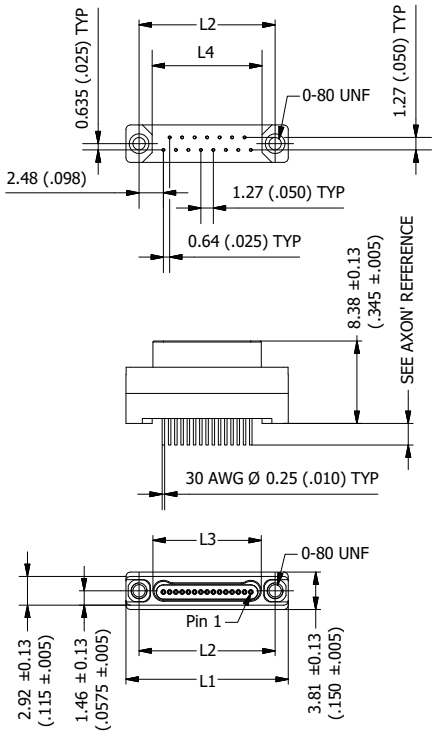
TAIL LENGTH
1: 2.77 mm (0.109").
2: 3.56 mm (0.140").
3: 4.37 mm (0.172").
4: 2.29 mm (0.090").
Tolerance: ± 0.25 mm (0.010").

Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).



SEE CONTACT LAYOUT ON PCB PAGE 273

SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 P	12.70 .500	10.03 .395	7.21 .284	7.37 .290
15 P	16.51 .650	13.84 .545	11.02 .434	11.18 .440
21 P	20.32 .800	17.65 .695	14.83 .584	14.99 .590
25 P	22.86 .900	20.19 .795	17.37 .684	17.53 .690
31 P	26.67 1.050	24.00 .945	21.18 .834	21.34 .840
37 P	30.48 1.200	27.81 1.095	24.99 .984	25.15 .990
51 P	39.37 1.550	36.70 1.445	33.88 1.334	34.04 1.340

SUMMARY OF CHARACTERISTICS

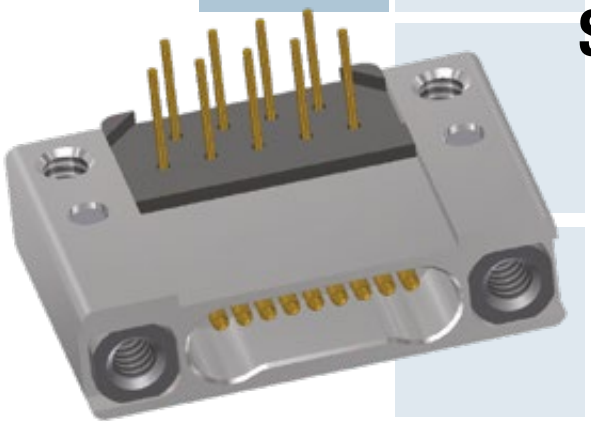
ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
INSULATOR	Liquid Crystal Polymer (LCP) or PEEK
CONTACT	Precious gold alloy
ENCAPSULANT	Epoxy Resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated

CBR TYPE

SINGLE ROW RIGHT ANGLE PCB RECEPTACLE

0.050" PITCH



- Reliability for micro-miniature operating systems.
- Several tail lengths available.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND1A	2	09	S	CBR	P	G	1

SERIES
ND1A: Nano-D 1-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request. (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
S: Receptacle connector.

FAMILY
CBR: AXON' Right Angle PCB connector.

HARDWARE
P: Threaded hole #0-80 UNF (non removable jackposts).
B: None.
Other versions available on request.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

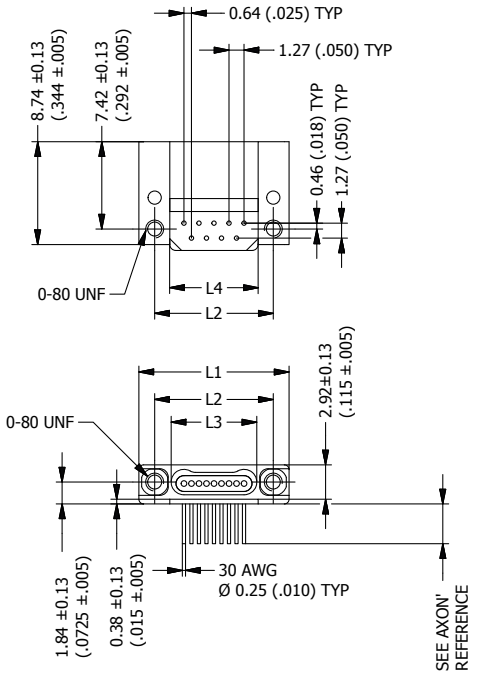
TAIL LENGTH
1: 2.77 mm (0.109").
2: 3.56 mm (0.140").
3: 4.37 mm (0.172").
4: 2.29 mm (0.090").
Tolerance: ± 0.25 mm (0.010").

Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).



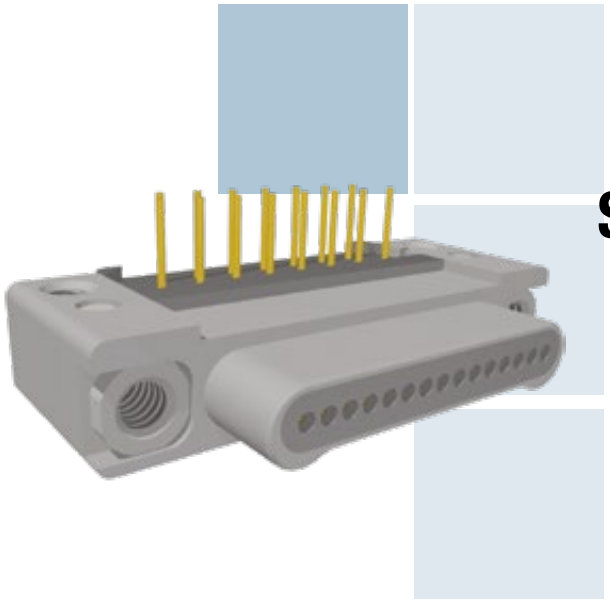
SEE CONTACT LAYOUT ON PCB PAGE 274

SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 S	12.70 .500	10.03 .395	7.24 .285	7.37 .290
15 S	16.51 .650	13.84 .545	11.05 .435	11.18 .440
21 S	20.32 .800	17.65 .695	14.86 .585	14.99 .590
25 S	22.86 .900	20.19 .795	17.40 .685	17.53 .690
31 S	26.67 1.050	24.00 .945	21.21 .835	21.34 .840
37 S	30.48 1.200	27.81 1.095	25.02 .985	25.15 .990
51 S	39.37 1.550	36.70 1.445	33.91 1.335	34.04 1.340

SUMMARY OF CHARACTERISTICS

ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
INSULATOR	Liquid Crystal Polymer (LCP) or PEEK
CONTACT	Copper alloy, gold over nickel plating
ENCAPSULANT	Epoxy Resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated



CBR TYPE

SINGLE ROW RIGHT ANGLE PCB PLUG

0.050" PITCH

- Reliability for micro-miniature operating systems.
- Several tail lengths available.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND1A	2	15	P	CBR	P	G	1

SERIES
ND1A: Nano-D 1-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request. (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
P: Plug connector.

FAMILY
CBR: AXON' Right Angle PCB connector.

HARDWARE
P: Threaded hole #0-80 UNF (non removable jackposts).
B: None.
Other versions available on request.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

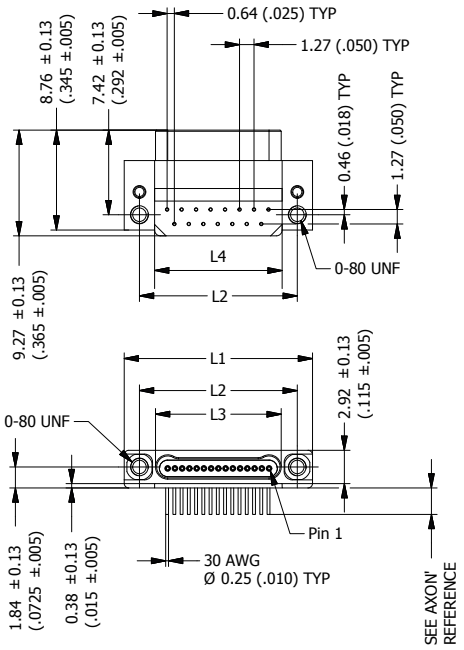
TAIL LENGTH
1: 2.77 mm (0.109").
2: 3.56 mm (0.140").
3: 4.37 mm (0.172").
4: 2.29 mm (0.090").
Tolerance: ± 0.25 mm (0.010").

Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).



SEE CONTACT LAYOUT ON PCB PAGE 275

SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 P	12.70 .500	10.03 .395	7.21 .284	7.37 .290
15 P	16.51 .650	13.84 .545	11.02 .434	11.18 .440
21 P	20.32 .800	17.65 .695	14.83 .584	14.99 .590
25 P	22.86 .900	20.19 .795	17.37 .684	17.53 .690
31 P	26.67 1.050	24.00 .945	21.18 .834	21.34 .840
37 P	30.48 1.200	27.81 1.095	24.99 .984	25.15 .990
51 P	39.37 1.550	36.70 1.445	33.88 1.334	34.04 1.340

SUMMARY OF CHARACTERISTICS

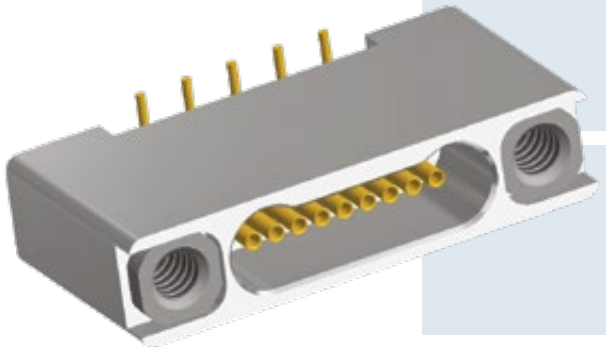
ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
INSULATOR	Liquid Crystal Polymer (LCP) or PEEK
CONTACT	Precious gold alloy
ENCAPSULANT	Epoxy Resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated

SMV TYPE

SINGLE ROW VERTICAL SURFACE MOUNT PCB RECEPTACLE

0.025" PITCH



- Reliability for micro-miniature operating systems.
- Surface Mount.
- Several tail lengths available.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND1A	2	09	S	SMV	P	G	1

SERIES
ND1A: Nano-D 1-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request. (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
S: Receptacle connector.

FAMILY
SMV: AXON' Vertical surface mount PCB connector.

HARDWARE
P: Threaded holes #0-80 UNF (non removable jackposts).
Other versions available on request.
B: None.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

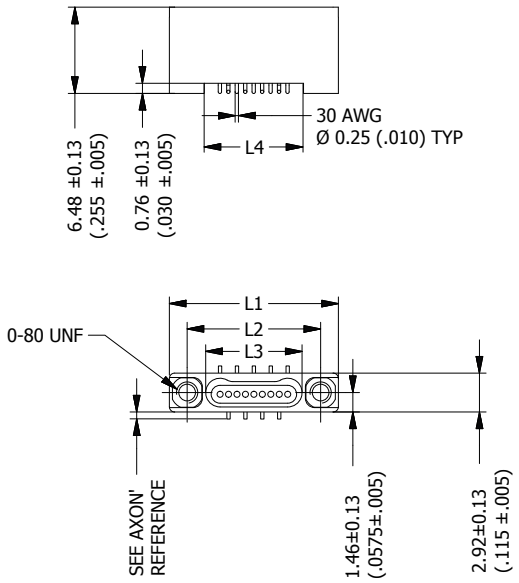
TAIL LENGTH
1: 0.51 mm (0.020").
2: 1.02 mm (0.040").
Tolerance: ± 0.25 mm (0.010").

Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).



SEE CONTACT LAYOUT ON PCB PAGE 276

SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 S	12.70 .500	10.03 .395	7.24 .285	7.37 .290
15 S	16.51 .650	13.84 .545	11.05 .435	11.18 .440
21 S	20.32 .800	17.65 .695	14.86 .585	14.99 .590
25 S	22.86 .900	20.19 .795	17.40 .685	17.53 .690
31 S	26.67 1.050	24.00 .945	21.21 .835	21.34 .840
37 S	30.48 1.200	27.81 1.095	25.02 .985	25.15 .990
51 S	39.37 1.550	36.70 1.445	33.91 1.335	34.04 1.340

SUMMARY OF CHARACTERISTICS

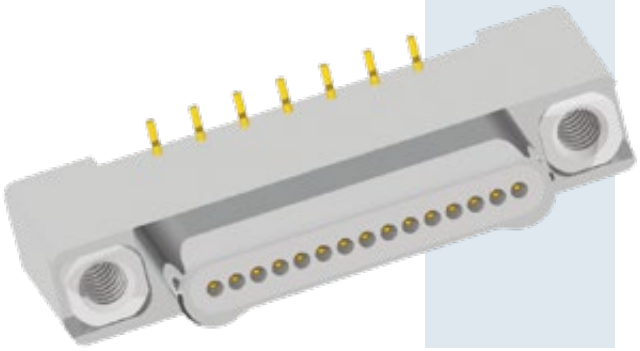
ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
INSULATOR	Liquid Crystal Polymer (LCP) or PEEK
CONTACT	Copper alloy, gold over nickel plating
ENCAPSULANT	Epoxy Resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated

SMV TYPE

SINGLE ROW VERTICAL SURFACE MOUNT PCB PLUG

0.025" PITCH



- Reliability for micro-miniature operating systems.
- Surface Mount.
- Several tail lengths available.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND1A	2	15	P	SMV	P	G	1

SERIES
ND1A: Nano-D 1-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request. (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
P: Plug connector.

FAMILY
SMV: AXON' Vertical surface mount PCB connector.

HARDWARE
P: Threaded holes #0-80 UNF (non removable jackposts).
Other versions available on request.
B: None.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

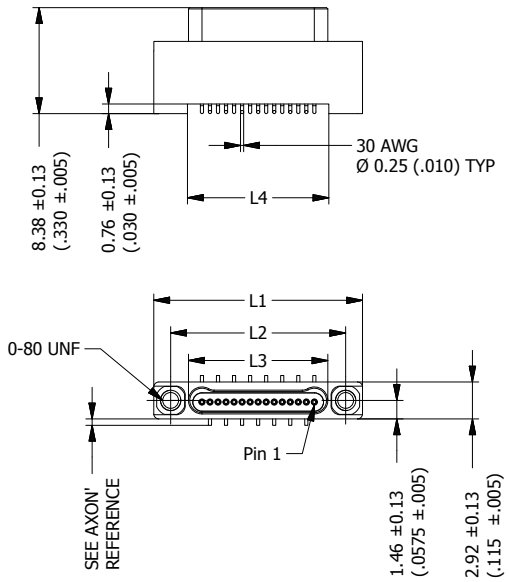
TAIL LENGTH
1: 0.51 mm (0.020").
2: 1.02 mm (0.040").
Tolerance: ± 0.25 mm (0.010").

Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).



SEE CONTACT LAYOUT ON PCB PAGE 277

SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 P	12.70 .500	10.03 .395	7.21 .284	7.37 .290
15 P	16.51 .650	13.84 .545	11.02 .434	11.18 .440
21 P	20.32 .800	17.65 .695	14.83 .584	14.99 .590
25 P	22.86 .900	20.19 .795	17.37 .684	17.53 .690
31 P	26.67 1.050	24.00 .945	21.18 .834	21.34 .840
37 P	30.48 1.200	27.81 1.095	24.99 .984	25.15 .990
51 P	39.37 1.550	36.70 1.445	33.88 1.334	34.04 1.340

SUMMARY OF CHARACTERISTICS

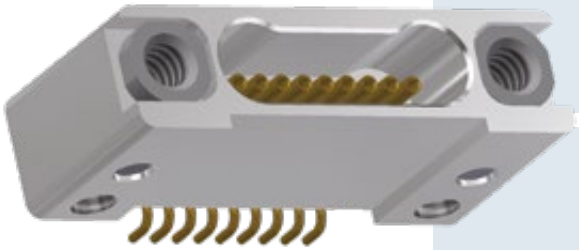
ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
INSULATOR	Liquid Crystal Polymer (LCP) or PEEK
CONTACT	Precious gold alloy
ENCAPSULANT	Epoxy Resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated

SMH TYPE

SINGLE ROW HORIZONTAL SURFACE MOUNT PCB RECEPTACLE

0.025" PITCH



- Reliability for micro-miniature operating systems.
- Surface Mount.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND1A	2	09	S	SMH	P	G	1

SERIES
ND1A: Nano-D 1-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request. (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
S: Receptacle connector.

FAMILY
SMH: AXON' Horizontal surface mount PCB connector.

HARDWARE
P: Threaded holes #0-80 UNF (non removable jackposts).
Other versions available on request.
B: None.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

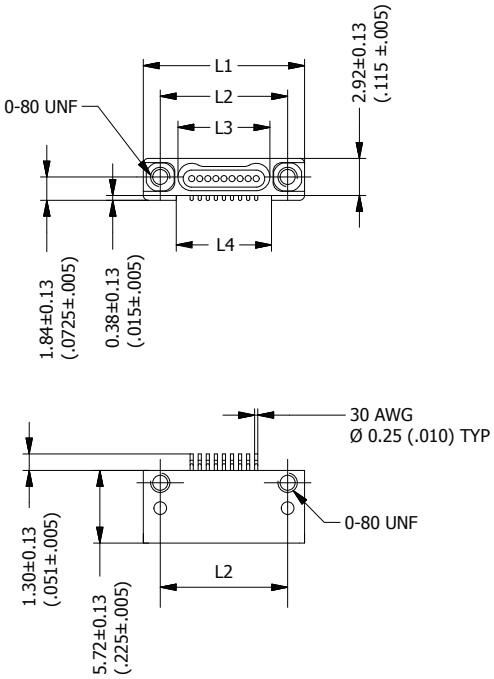
TAIL LENGTH
1: Standard.

Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).



SEE CONTACT LAYOUT ON PCB PAGE 278

SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 S	12.70 .500	10.03 .395	7.24 .285	7.37 .290
15 S	16.51 .650	13.84 .545	11.05 .435	11.18 .440
21 S	20.32 .800	17.65 .695	14.86 .585	14.99 .590
25 S	22.86 .900	20.19 .795	17.40 .685	17.53 .690
31 S	26.67 1.050	24.00 .945	21.21 .835	21.34 .840
37 S	30.48 1.200	27.81 1.095	25.02 .985	25.15 .990
51 S	39.37 1.550	36.70 1.445	33.91 1.335	34.04 1.340

SUMMARY OF CHARACTERISTICS

ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
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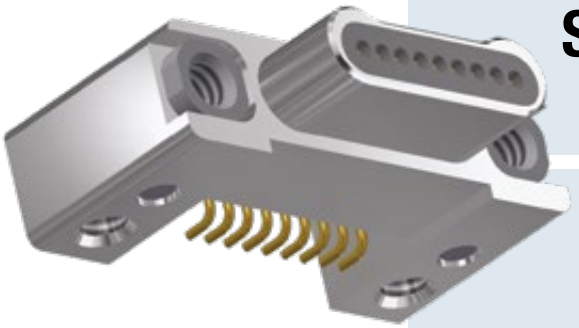
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
INSULATOR	Liquid Crystal Polymer (LCP) or PEEK
CONTACT	Precious gold alloy
ENCAPSULANT	Epoxy Resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated

SMH TYPE

SINGLE ROW HORIZONTAL SURFACE MOUNT PCB PLUG

0.025" PITCH



- Reliability for micro-miniature operating systems.
- Surface Mount.
- Operating temperature: 150°C or 200°C.
- 7 contact arrangements (9 to 51 contacts).

IDENTIFICATION CODE

ND1A	2	09	P	SMH	P	G	1

SERIES
ND1A: Nano-D 1-row AXON'.

CONNECTOR TYPE
2: Aluminium with electroless nickel plating and epoxy 150°C.
3: Aluminium with electroless nickel plating and epoxy 200°C.
Other materials available on request. (eg Titanium, Stainless Steel).

NUMBER OF CONTACTS
09, **15**, **21**, **25**, **31**, **37**, **51**.
Other versions available on request.

CONNECTOR TYPE
P: Plug connector.

FAMILY
SMH: AXON' Horizontal surface mount PCB connector.

HARDWARE
P: Threaded holes #0-80 UNF (non removable jackposts).
Other versions available on request.
B: None.

TAIL PLATING
G: Gold, AWG30.
D: Flash gold plated solid conductor AWG30.
Other tail plating available on request.

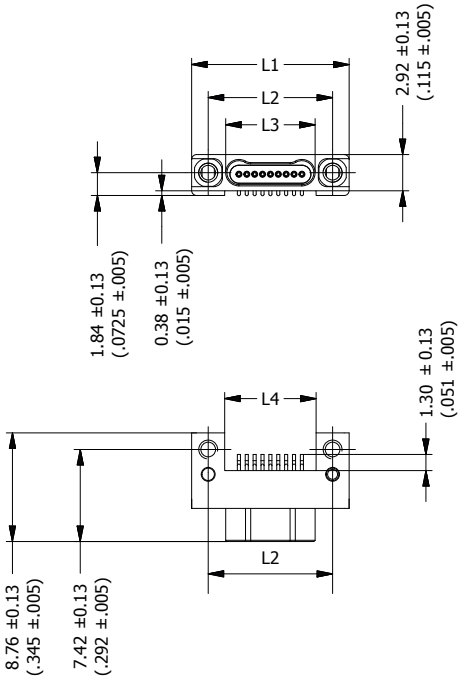
TAIL LENGTH
1: Standard.

Connectors are supplied with
#0-80 UNF screws 1/4" long (for PCB mounting).

IN BOLD: FACTORY STANDARD

DIMENSIONS

Dimensions are in millimetres (inches).



SEE CONTACT LAYOUT ON PCB PAGE 279

SHELL SIZE	L1 ±0.13 (±.005)	L2 ±0.13 (±.005)	L3 ±0.13 (±.005)	L4 ±0.13 (±.005)
9 P	12.70 .500	10.03 .395	7.21 .284	7.37 .290
15 P	16.51 .650	13.84 .545	11.02 .434	11.18 .440
21 P	20.32 .800	17.65 .695	14.83 .584	14.99 .590
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31 P	26.67 1.050	24.00 .945	21.18 .834	21.34 .840
37 P	30.48 1.200	27.81 1.095	24.99 .984	25.15 .990
51 P	39.37 1.550	36.70 1.445	33.88 1.334	34.04 1.340

SUMMARY OF CHARACTERISTICS

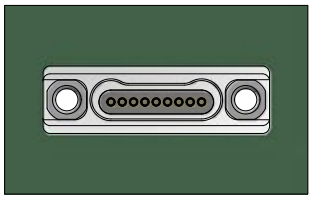
ELECTRICAL & MECHANICAL PERFORMANCE	
CURRENT RATING	1 A max.
CONTACT RESISTANCE	71 mΩ max.
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC
DIELECTRIC WITHSTANDING VOLTAGE	Sea level: 250 VAC
	Altitude 21 km (70,000 ft): 100 VAC
CONTACT ENGAGING FORCE	141 g max. (5 oz)
CONTACT SEPARATING FORCE	11 g min. (0.4 oz)
CONTACT RETENTION	0.9 kg (2 lbs)
DURABILITY	200 mating cycles min.
VIBRATION	20g's – No discontinuity > 1 µs
SHOCK	100g's – No discontinuity > 1 µs

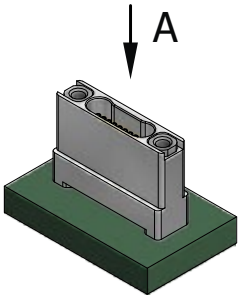
MATERIAL & FINISH	
SHELL	Aluminium alloy 6061 or 300 series stainless steel or titanium alloy, see ordering for plating options
INSULATOR	Liquid Crystal Polymer (LCP) or PEEK
CONTACT	Precious gold alloy
ENCAPSULANT	Epoxy Resin
PCB TERMINALS	Gold plated solid copper alloy wire
HARDWARE	300 series stainless steel, passivated

PCB LAYOUT FOR BS TYPE 0.050" PITCH - FEMALE CONNECTORS

VIEW A

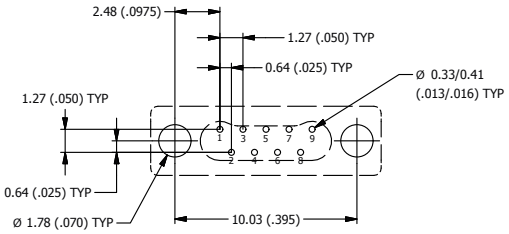
CONNECTOR MATING FACE



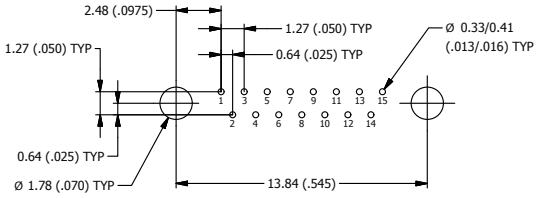


9 CONTACTS - VIEW A

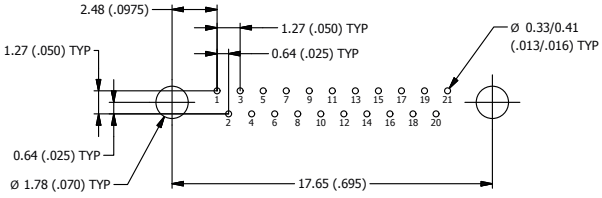
PCB BOARD LAYOUT



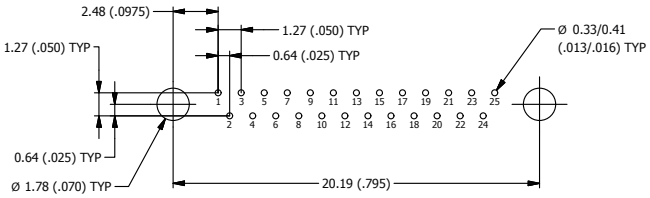
15 CONTACTS - VIEW A



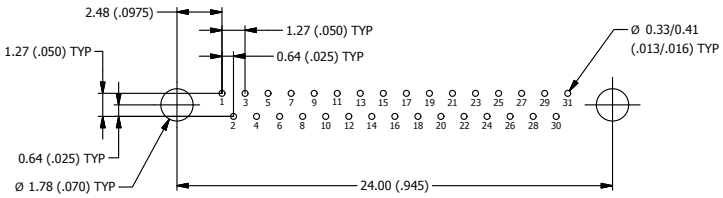
21 CONTACTS - VIEW A



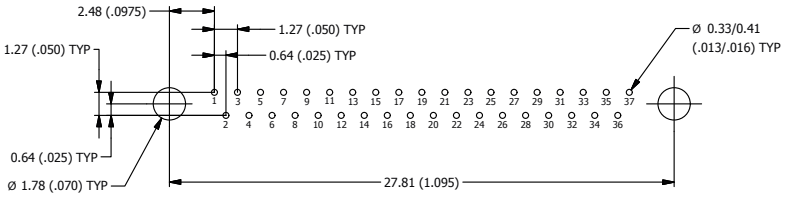
25 CONTACTS - VIEW A



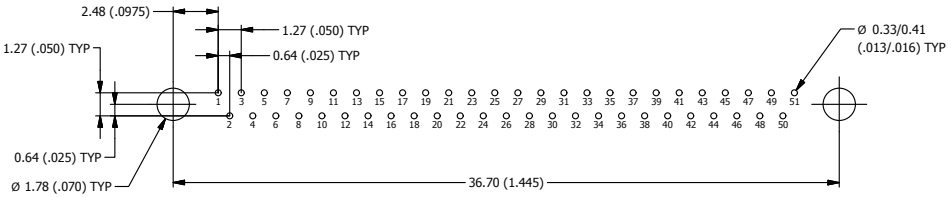
31 CONTACTS - VIEW A



37 CONTACTS - VIEW A



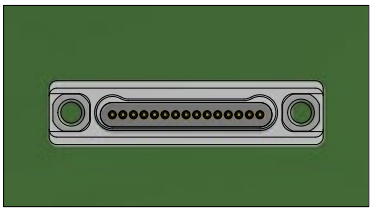
51 CONTACTS - VIEW A

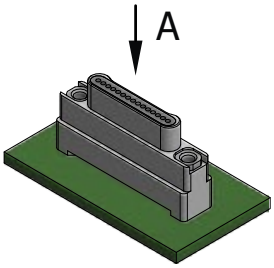


PCB LAYOUT FOR BS TYPE 0.050" PITCH - MALE CONNECTORS

VIEW A

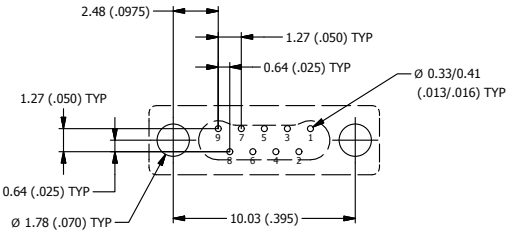
CONNECTOR MATING FACE



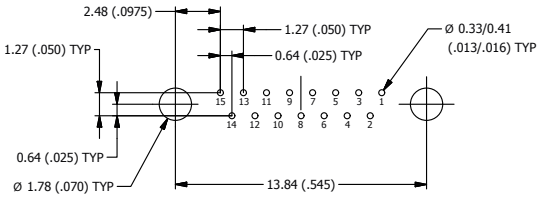


9 CONTACTS - VIEW A

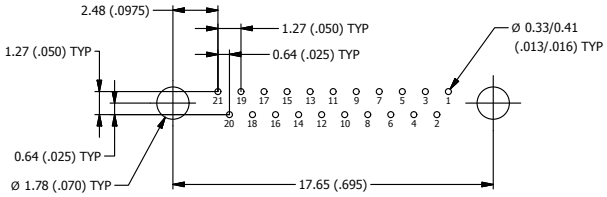
PCB BOARD LAYOUT



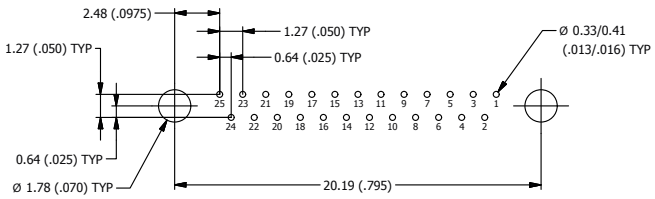
15 CONTACTS - VIEW A



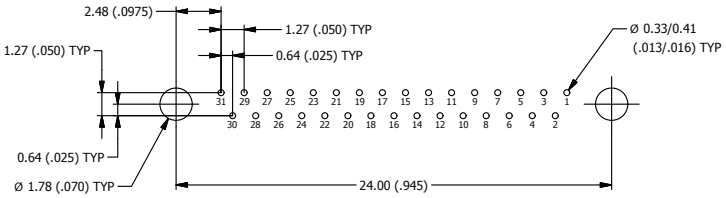
21 CONTACTS - VIEW A



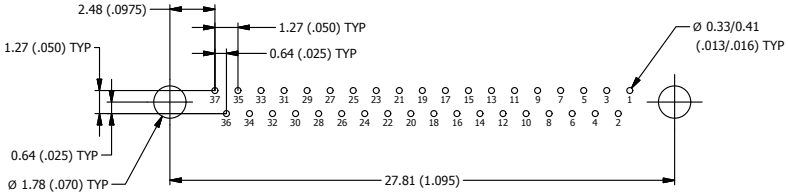
25 CONTACTS - VIEW A



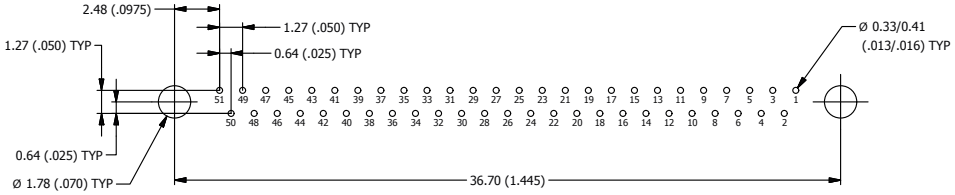
31 CONTACTS - VIEW A



37 CONTACTS - VIEW A

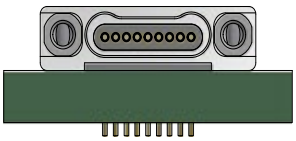


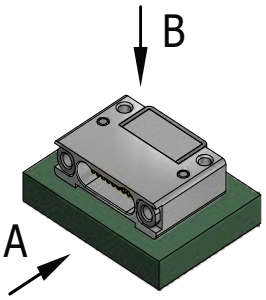
51 CONTACTS - VIEW A



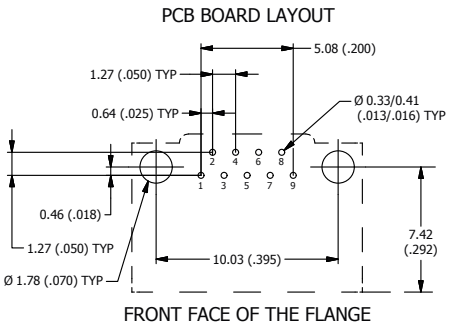
PCB LAYOUT FOR CBR TYPE 0.050" PITCH - FEMALE CONNECTORS

VIEW A

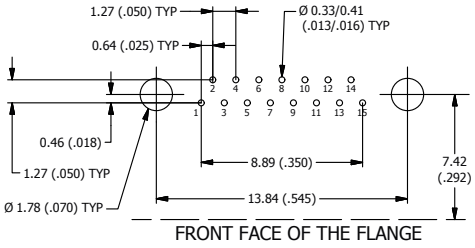




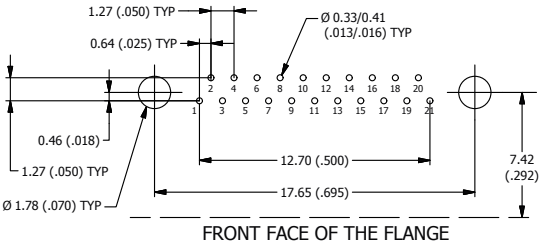
9 CONTACTS - VIEW A



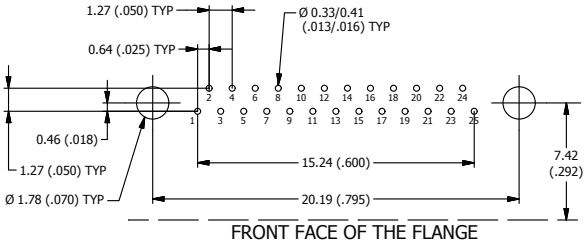
15 CONTACTS - VIEW A



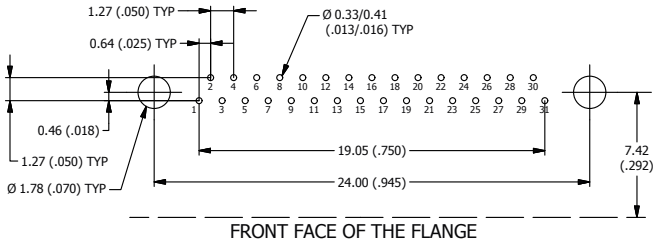
21 CONTACTS - VIEW A



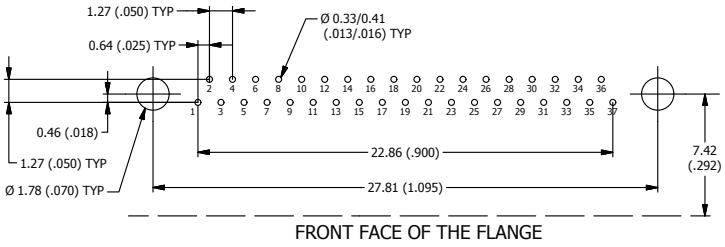
25 CONTACTS - VIEW A



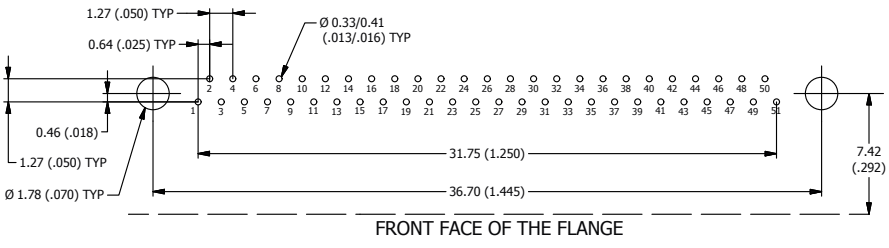
31 CONTACTS - VIEW A



37 CONTACTS - VIEW A



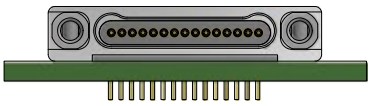
51 CONTACTS - VIEW A

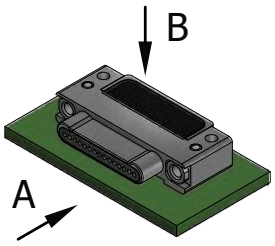


PCB LAYOUT FOR CBR TYPE 0.050" PITCH - MALE CONNECTORS

VIEW A

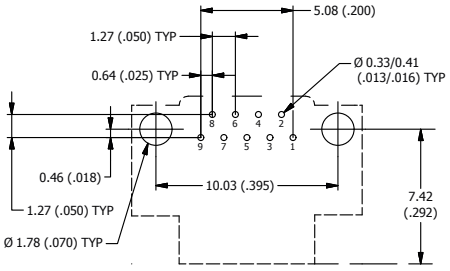
CONNECTOR MATING FACE



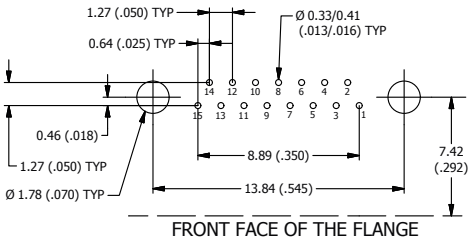


9 CONTACTS - VIEW A

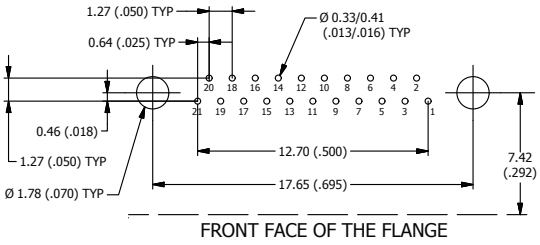
PCB BOARD LAYOUT



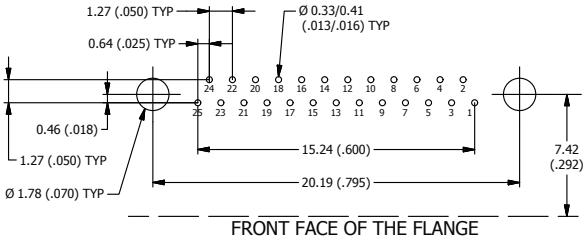
15 CONTACTS - VIEW A



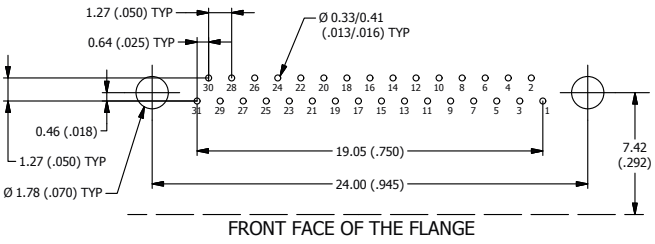
21 CONTACTS - VIEW A



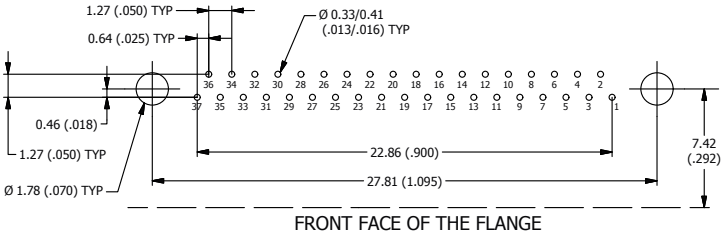
25 CONTACTS - VIEW A



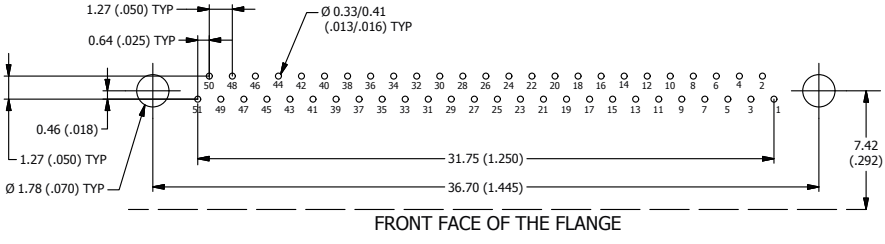
31 CONTACTS - VIEW A



37 CONTACTS - VIEW A

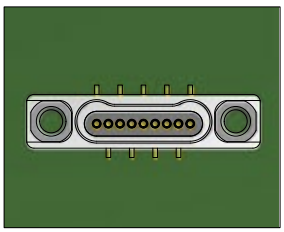


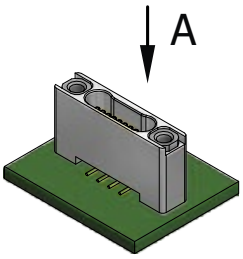
51 CONTACTS - VIEW A



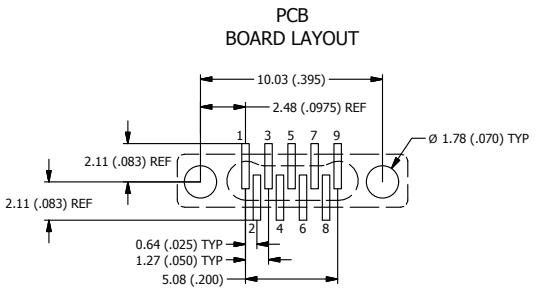
PCB LAYOUT FOR SMV TYPE 0.025" PITCH - FEMALE CONNECTORS

VIEW A

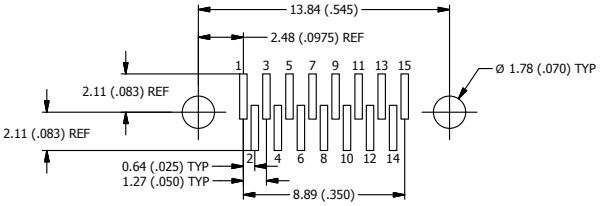




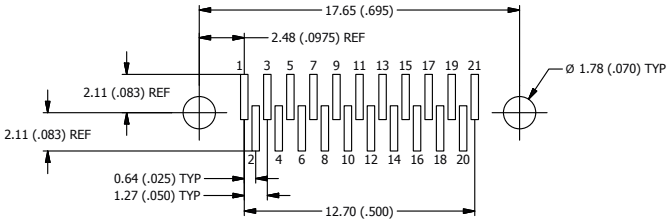
9 CONTACTS - VIEW A



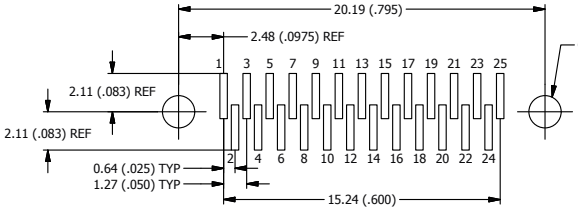
15 CONTACTS - VIEW A



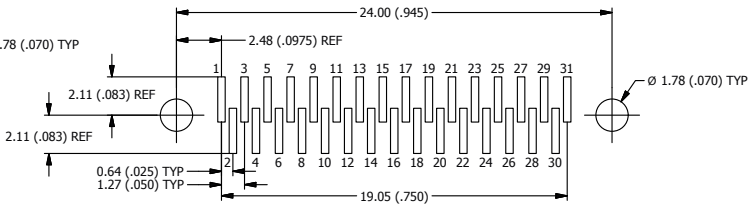
21 CONTACTS - VIEW A



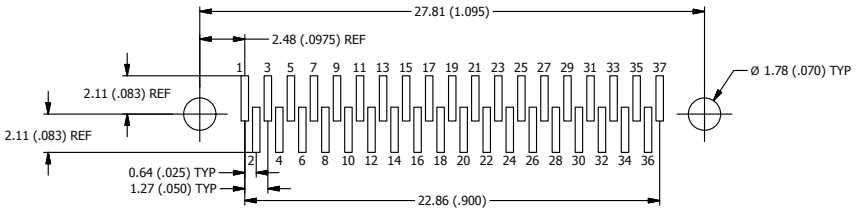
25 CONTACTS - VIEW A



31 CONTACTS - VIEW A

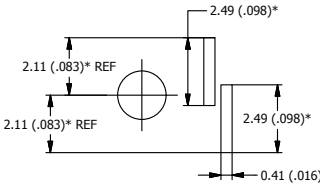


37 CONTACTS - VIEW A



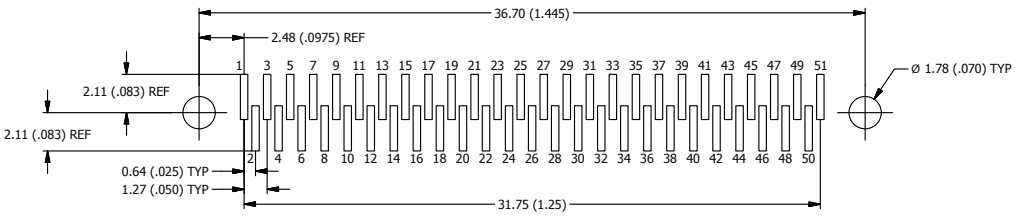
LAYOUT

FOOTPRINT/PAD configuration



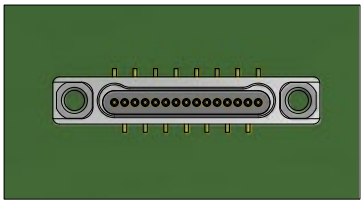
*: For .040" tail length, add .020" to noted dimensions

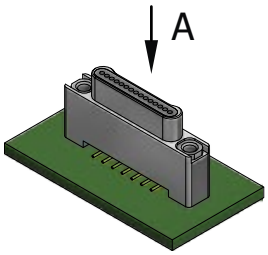
51 CONTACTS - VIEW A



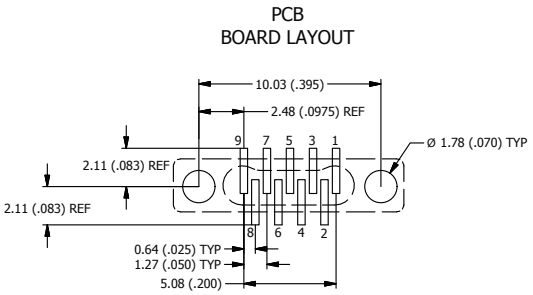
PCB LAYOUT FOR SMV TYPE 0.025" PITCH - MALE CONNECTORS

VIEW A

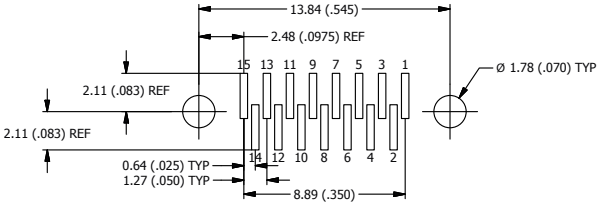




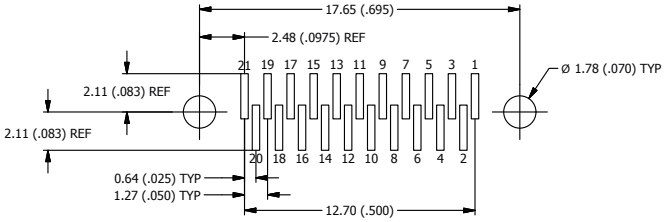
9 CONTACTS - VIEW A



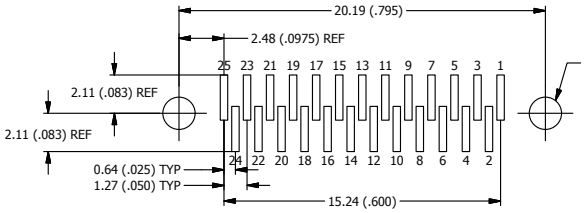
15 CONTACTS - VIEW A



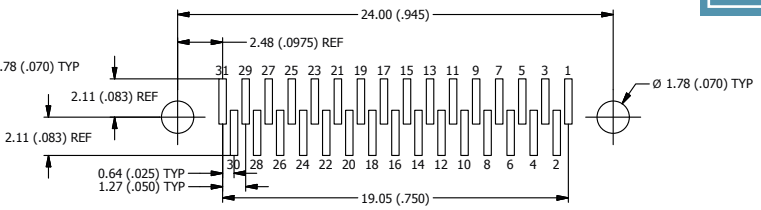
21 CONTACTS - VIEW A



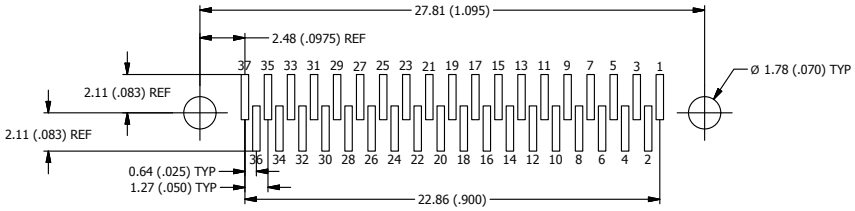
25 CONTACTS - VIEW A



31 CONTACTS - VIEW A

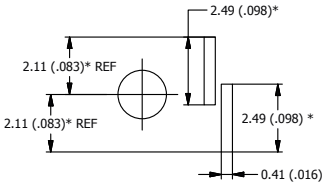


37 CONTACTS - VIEW A



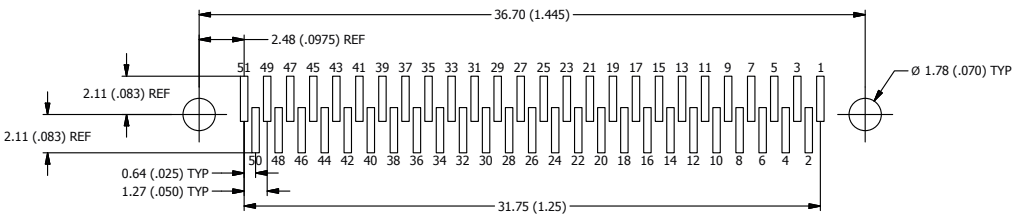
LAYOUT

FOOTPRINT/PAD configuration



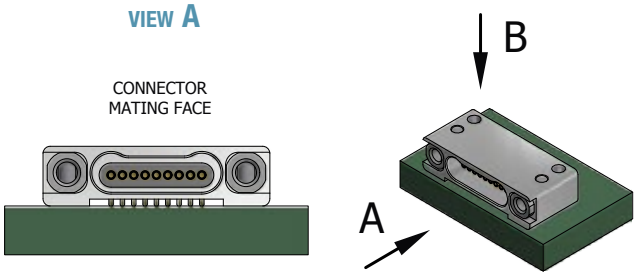
*: For .040" tail length, add .020" to noted dimensions

51 CONTACTS - VIEW A

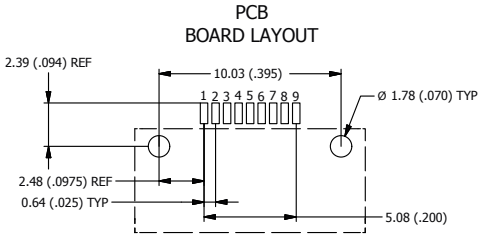


PCB LAYOUT FOR SMH TYPE 0.025" PITCH - FEMALE CONNECTORS

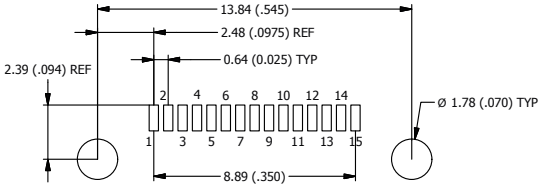
VIEW A



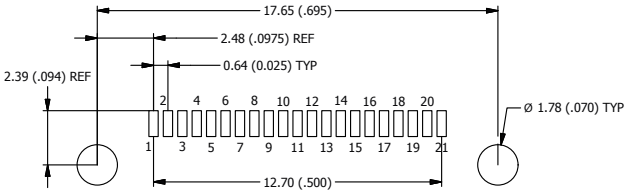
9 CONTACTS - VIEW A



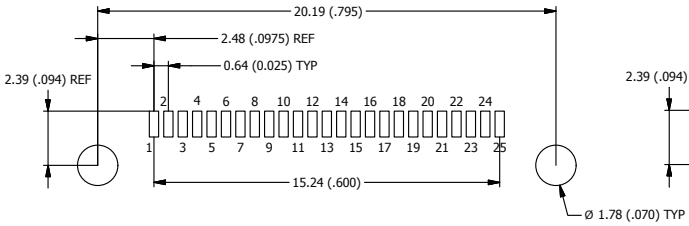
15 CONTACTS - VIEW A



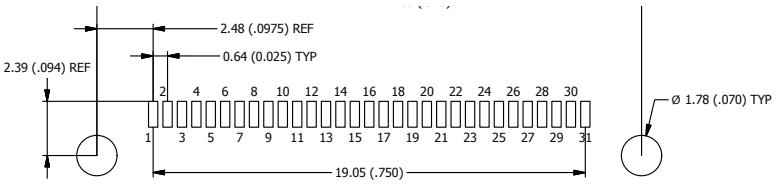
21 CONTACTS - VIEW A



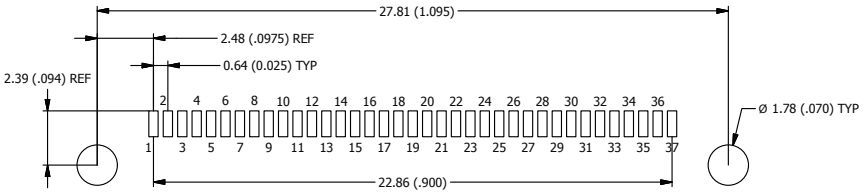
25 CONTACTS - VIEW A



31 CONTACTS - VIEW A

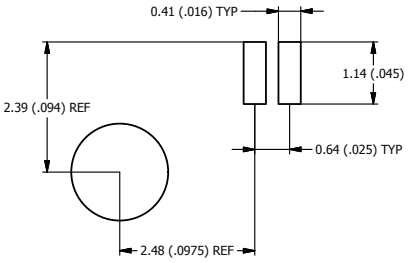


37 CONTACTS - VIEW A

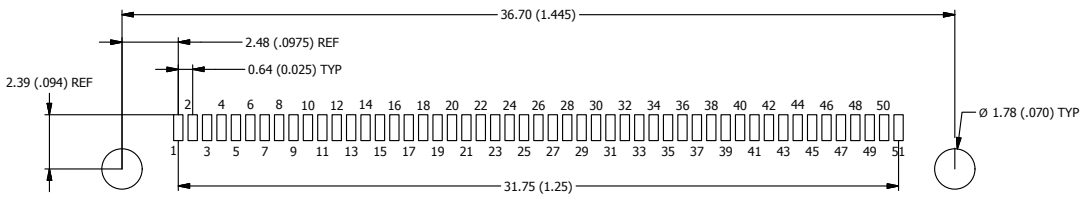


LAYOUT

Suggested PAD configuration

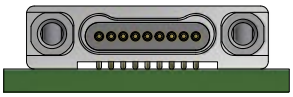


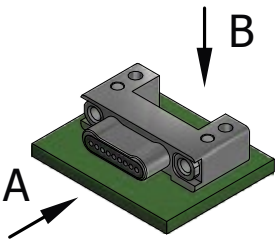
51 CONTACTS - VIEW A



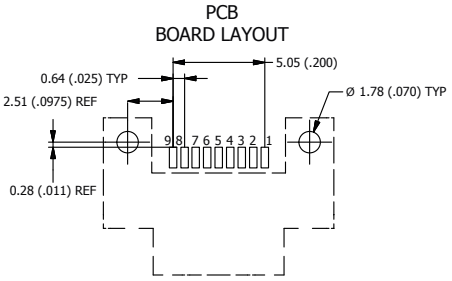
PCB LAYOUT FOR SMH TYPE 0.025" PITCH - MALE CONNECTORS

VIEW A

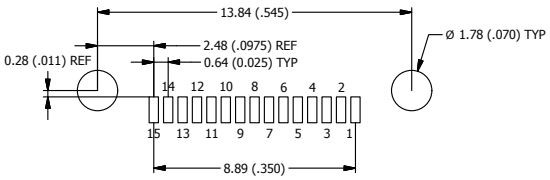




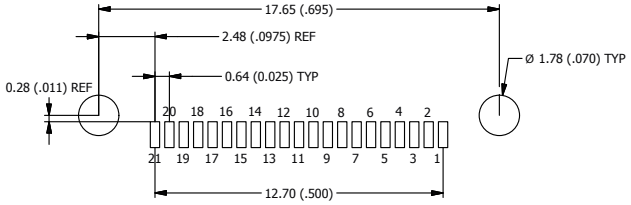
9 CONTACTS - VIEW A



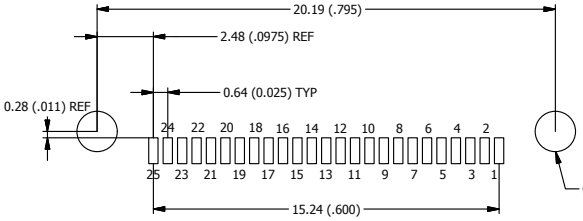
15 CONTACTS - VIEW A



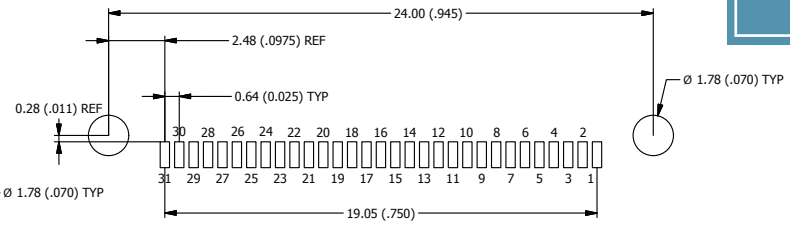
21 CONTACTS - VIEW A



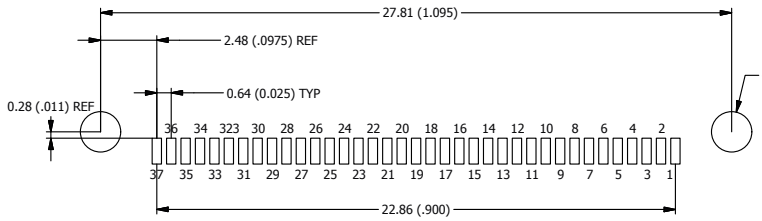
25 CONTACTS - VIEW A



31 CONTACTS - VIEW A

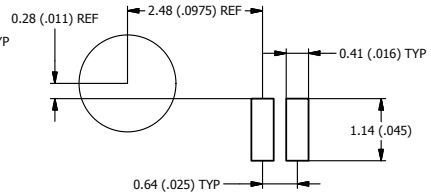


37 CONTACTS - VIEW A

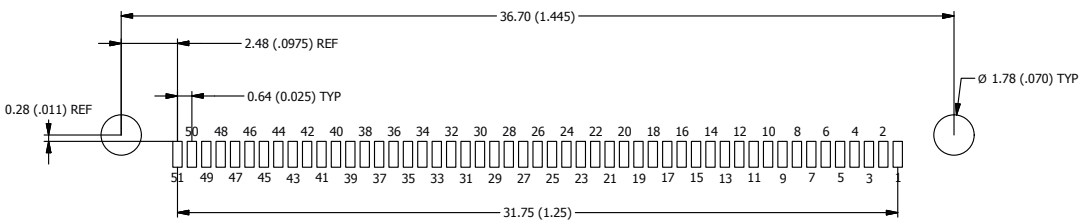


LAYOUT

Suggested PAD configuration



51 CONTACTS - VIEW A



HIGH DENSITY CONNECTORS

HIGH DENSITY CONNECTORS

NANO-D PITCH

As the need for increased miniaturisation is becoming even greater, AXON' has developed an ultra-high density solution within the existing micro connector size. By putting nano contacts and nano pitch spacing into an existing micro shell, extremely compact connectors with very high pin counts can be produced in circular, rectangular, plastic and metal forms.

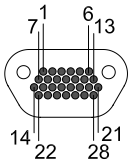
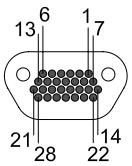
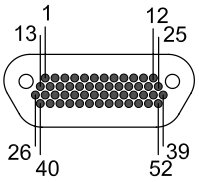
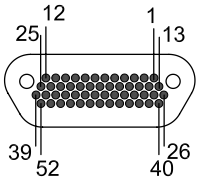
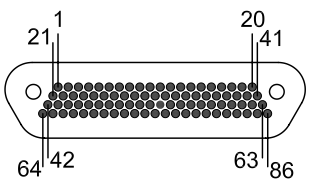
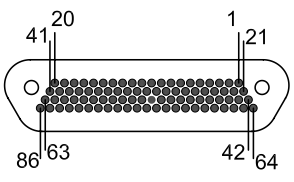
Optimal cabling density is achieved in a rectangular ultra high density connector made with Nano-D contacts and spacing inside a standard Micro-D shell size. Such a connector can accommodate a very large amount of pins while retaining excellent Micro-D reliability.

Most electrical and environmental performances are comparable to those of standard Nano-D connectors (250 VAC, 200°C), combined with the robustness and shielding efficiency of the Micro-D metal shell which is compatible with all the hardware types available for Micro-D pigtails.

This same process can be applied to most of the standard and special Micro-D range, making it possible to have ultra high density versions of PCB connectors, wide flange versions, circular, rectangular and combo style versions with a mix of Micro-D and Nano-D contacts.

▲ RECTANGULAR HIGH DENSITY MICRO-D CONNECTORS

Contact arrangements

MATING FACE OF MALE CONNECTOR	MATING FACE OF FEMALE CONNECTOR
	
28 NANO WAYS IN A 9 WAY MICRO INSERT	
	
52 NANO WAYS IN A 15 WAY MICRO INSERT	
	
86 NANO WAYS IN A 25 WAY MICRO INSERT	

GENERAL CHARACTERISTICS

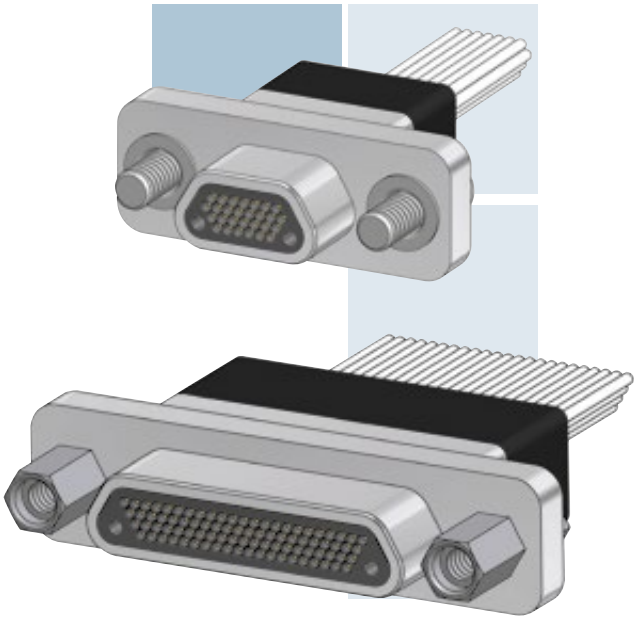
Electrical & mechanical characteristics

CHARACTERISTIC	SPECIFICATION	TEST METHOD
CURRENT RATING	1 A max.	EIA-364-70
SIGNAL CONTACT RESISTANCE	71 mΩ max.	EIA-364-06
INSULATION RESISTANCE	5000 MΩ min. @ 100 VDC	EIA-364-21
DIELECTRIC WITHSTANDING VOLTAGE - SEA LEVEL 0 m - ALTITUDE 21 km (70,000 ft)	 250 VAC 100 VAC	EIA-364-20
CONTACT ENGAGING AND SEPARATION FORCE	141 g max. (5 oz) 11 g min. (0.4 oz)	EIA-364-37
CONNECTOR MATING AND DE-MATING FORCE	198 g (7 oz) x number of contacts max.	EIA-364-13
CONTACT RETENTION	0.9 kg (2 lbs) for 5 seconds min.	EIA-364-29
DURABILITY	200 mating cycles min.	EIA-364-09
TEMPERATURE RANGES - STANDARD - HIGH TEMP	 -55°C / +150°C -55°C / +200°C	
VIBRATION	20 g's - No discontinuity >1µs	EIA-364-28 - TEST CONDITION IV
SHOCK	100 g's - No discontinuity >1µs	EIA-364-27 - TEST CONDITION G
SALT SPRAY	48 hours	EIA-364-26 - TEST CONDITION B
HUMIDITY	Insulation resistance > 1MΩ	EIA-364-31 - TEST CONDITION B (EXCLUDING STEPS 7A & 7B)*

Material & Finish

COMPONENT	MATERIAL	FINISH
MALE CONTACT (TWIST PIN)	PRECIOUS GOLD ALLOY IN ACCORDANCE WITH ASTM-B-477 OR 541 OR 562	NONE
FEMALE CONTACT	PRECIOUS GOLD ALLOY IN ACCORDANCE WITH ASTM-B-477 OR 541 OR 562	NONE
	COMMERCIAL BRONZE IN ACCORDANCE WITH ASTM-B-135, B-140/140M, B-372 OR B-587	GOLD PLATING IN ACCORDANCE WITH ASTM-B488, TYPE II, CLASS 1 (1.27µm MIN. (0.00005")), CODE C OVER NICKEL UNDERPLATE IN ACCORDANCE WITH SAE-AMS-QQ-N-290, CLASS 2 (1.27µm (0.00005") TO 3.81µm (0.00015"))
	BRASS IN ACCORDANCE WITH ASTM-B-453 OR 453M OR 16 OR 16M	
METAL SHELL	ALUMINIUM ALLOY, TYPE 6061	ELECTROLESS NICKEL PLATING IN ACCORDANCE WITH SAE-AMS-2404, CLASS 4. BLACK ZINC NICKEL OVER NICKEL UNDERPLATE
	STAINLESS STEEL 300 SERIES	PASSIVATION IN ACCORDANCE WITH SAE-AMS2700
INSERT/ PCB TRAY	LIQUID CRYSTAL POLYMER, 30% LOADED GLASS FIBRE POLYESTER 94V0, IN ACCORDANCE WITH MIL-M-24519 (200°C) OR PEEK	
HARDWARE	STAINLESS STEEL, 300 SERIES	PASSIVATION IN ACCORDANCE WITH SAE-AMS2700
ENCAPSULANT	EPOXY RESIN	
INSULATED WIRE	PTFE INSULATED SILVER PLATED COPPER IN ACCORDANCE WITH NEMA-HP3	
UNINSULATED WIRE	GOLD PLATED SOLID COPPER WIRE IN ACCORDANCE WITH A-A-59551 OR GOLD PLATED SOLID COPPER BASED ALLOY IN ACCORDANCE WITH ASTM-B-194	GOLD PLATING IN ACCORDANCE WITH ASTM-B488, TYPE II, CLASS 1 (1.27µm MIN. (0.00005")), CODE C OVER NICKEL UNDERPLATE IN ACCORDANCE WITH SAE-AMS-QQ-N-290, CLASS 2 (1.27µm (0.00005") TO 3.81µm (0.00015"))

** ACCORDING TO MIL-DTL-32139



PIGTAIL CONNECTOR

METAL SHELL

- High performance metal connector and PTFE wires
- Operating temperature: 150°C or 200°C
- 28 to 86 contacts

IDENTIFICATION CODE

MDHDA	2	52	P	1	L	050	L

SERIES

MDHDA: Micro-D High Density AXON'.

CONNECTOR TYPE

1: Cadmium al. shell / **Z**: Black zinc nickel aluminium shell + potting 150°C.
2: Nickel aluminum shell + potting 150°C.
3: Nickel aluminum shell + potting 200°C.
S: Passivated stainless steel shell + potting 200°C.

NUMBER OF CONTACTS

28, **52**, **86**.
See page 282 for contact arrangements.

CONNECTOR GENDER

P: Male (pin contacts).
S: Female (socket contacts).

WIRE TYPE

1: UT3007, AWG 30, 7 strands, 160V.
2: ET3207, AWG 32, 7 strands, 250V.
3: ET3407, AWG 34, 7 strands, 250V.
4: ET3607, AWG 36, 7 strands, 250V.

COLOUR CODE

L: All white.
F: All yellow.
W: 10 colour repeat.
See page 215 for colour code.

WIRE LENGTH (in cm)

Attention! Wire length in centimetres - (1cm = 10mm = 0.394").

L	L ≤ 10	10 < L ≤ 100	L >100
in cm (inches)	L ≤ 3.940	3.940 < L ≤ 39.40	L > 39.40
TOLERANCE	-0 / +0.5	-0 / +3	-0 / +5
in cm (inches)	-0 / +0.200	-0 / +1.180	-0 / +1.970

HARDWARE

B: No hardware.
C: U-clips with low profile hex socket head jackscrews (removable).
D: U-clips with low profile slot head jackscrews (removable).
M: Low profile socket hex head jackscrews (removable).
N: High profile socket hex head jackscrews (removable).
S: Low profile slot head jackscrews (removable).
T: High profile slot head jackscrews (removable).
P: Jackposts (removable).
Px (x: 1 to 5): Panel mount jackposts.
K: High profile slot head jackscrews (non removable).
L: Low profile socket hex head jackscrews (non removable).
F: Float mount (non removable).
FR: Float mount, rear panel mount (non removable).
See pages 190 to 200 for hardware description.

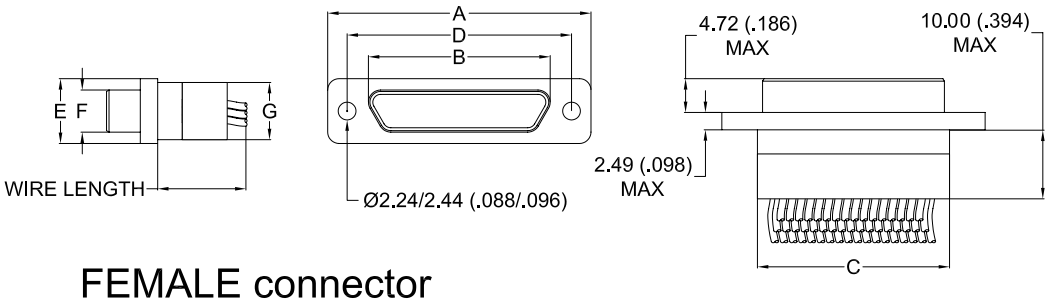
DIMENSIONS

Dimensions are in millimetres (inches).

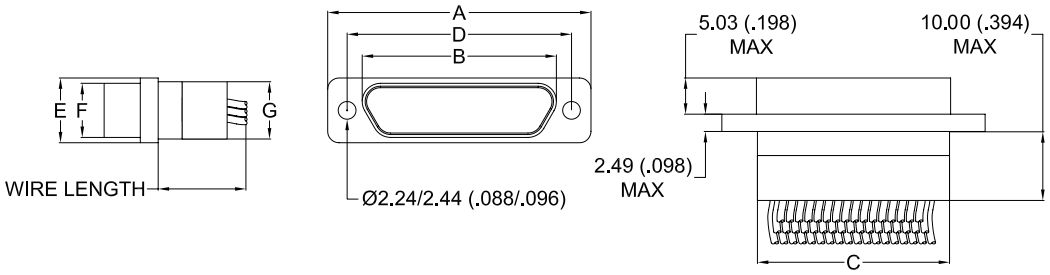
▲ PIGTAIL 28 WAY PLUG

▲ PIGTAIL 52 WAY RECEPTACLE

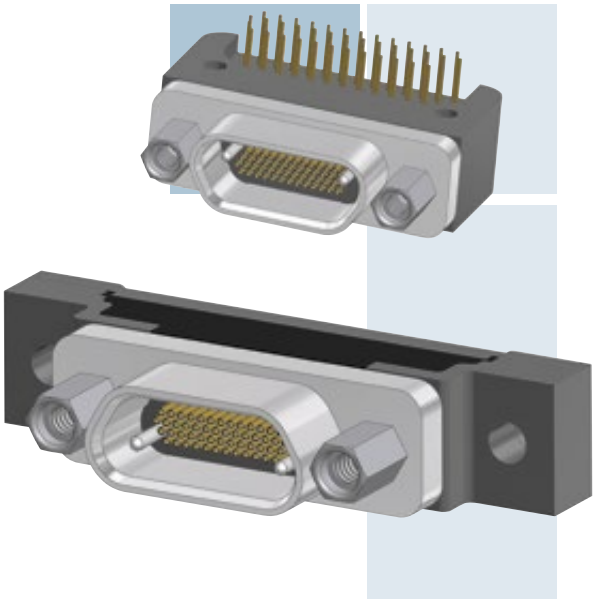
MALE connector



FEMALE connector



	A ±0.25 (±.010)	B max.		C - 0.46/+0.25 (-.018/+.010)	D ±0.13 (±.005)	E ±0.25 (±.010)	F max.		G max.
		Male	Female				Male	Female	
28 P / 28 S	19.69 .775	8.48 .334	10.16 .400	9.91 .390	14.35 .565	7.57 .298	4.69 .185	6.35 .250	6.86 .270
52 P / 52 S	23.50 .925	12.29 .484	14.00 .551	13.72 .540	18.16 .715	7.57 .298	4.69 .185	6.35 .250	6.86 .270
86 P / 86 S	29.85 1.175	18.64 .734	20.35 .801	20.07 .790	24.51 .965	7.57 .298	4.69 .185	6.35 .250	6.86 .270



PCB CONNECTOR

0.050" PITCH

METAL SHELL

-Board Straight connector and Board Right angle connector for flexible and rigid printed circuit board
- Operating temperature: 150°C or 200°C
- Several tail lengths available

IDENTIFICATION CODE

MDHDA	2	52	S	BS	W	G	1

SERIES

MDHDA: Micro-D High Density AXON'.

CONNECTOR TYPE

1: Cadmium aluminum shell / **Z**: Black zinc nickel shell + potting 150°C.
2: Nickel aluminum shell + potting 150°C.
3: Nickel aluminum shell + potting 200°C.

NUMBER OF CONTACTS

28, **52**, **86**.
See page 282 for contact arrangements.

CONNECTOR GENDER

P: Male (pin contacts).
S: Female (socket contacts).

PCB VERSION

BS: Board Straight connector 0.050" pitch.
CBR: Condensed Board Right Angle connector 0.050" pitch.

HARDWARE

B: M2 threaded holes for hardware.
P: Jackposts (non removable).
Px (x: 1 to 5): Panel mount jackposts.
T: Threaded inserts installed.
W: Jackpost and threaded inserts installed.
Wx (x: 1 to 5): Panel mount jackposts and threaded inserts installed.
See pages 190 to 200 for hardware description.

CONDUCTOR TYPE

G: Gold plated solid conductor AWG30.
D: Flash gold plated solid conductor AWG30.

TAIL LENGTH

1: 2.80mm (0.110").
2: 3.80mm (0.150").
3: 4.80mm (0.190").
Tolerance: ± 0.25 mm (0.010").

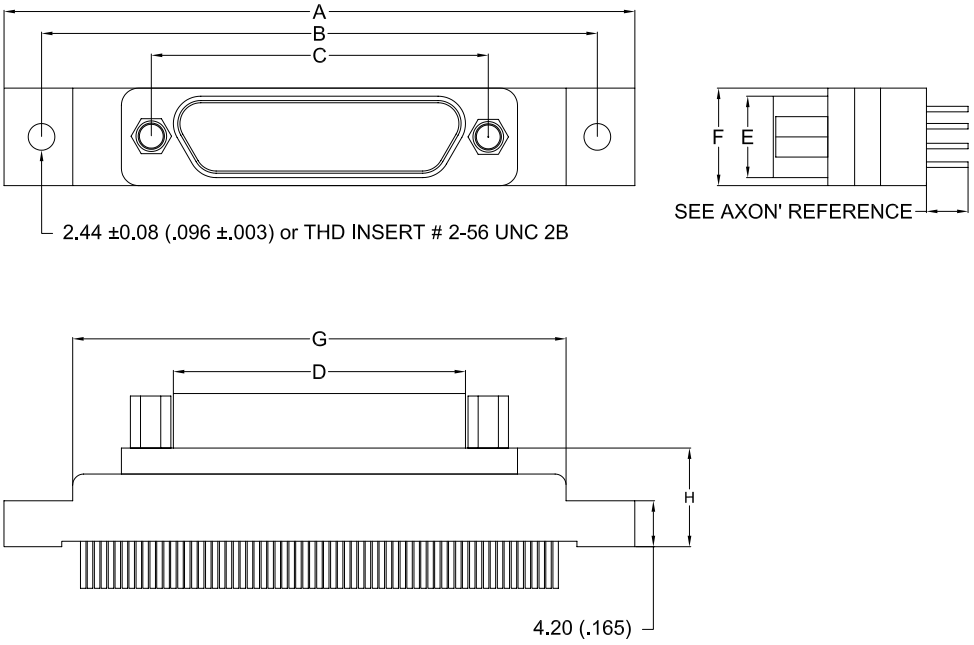
BOARD STRAIGHT TYPE (BS) 0.050" PITCH

▲ BS 0.050" 28 WAY RECEPTACLE

▲ BS 0.050" 86 WAY RECEPTACLE

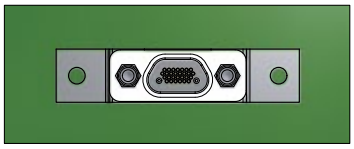
DIMENSIONS

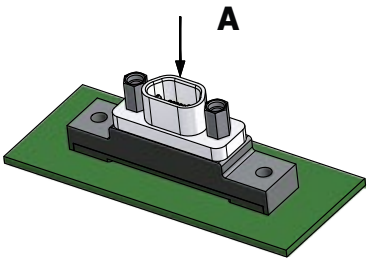
Dimensions are in millimetres (inches).



	A max.	B ±0.18 (±.007)	C ±0.13 (±.005)	D max.		E max.		F max.	G max.	H max.
				Male	Female	Male	Female			
28 P / 28 S	35.31 1.390	29.21 1.150	14.35 .565	8.48 .334	10.16 .400	4.69 .185	6.35 .250	7.82 .308	19.94 .785	9.02 .355
52 P / 52 S	35.31 1.390	29.21 1.150	18.16 .715	12.29 .484	14.00 .551	4.69 .185	6.35 .250	7.82 .308	24.00 .945	9.02 .355
86 P / 86 S	44.20 1.740	38.10 1.500	24.51 .965	18.64 .734	20.35 .801	4.69 .185	6.35 .250	7.82 .308	32.39 1.275	9.02 .355

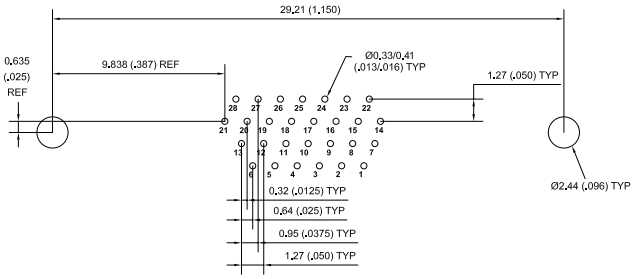
PCB LAYOUT FOR HIGH DENSITY BS TYPE 0.050" PITCH CONNECTORS



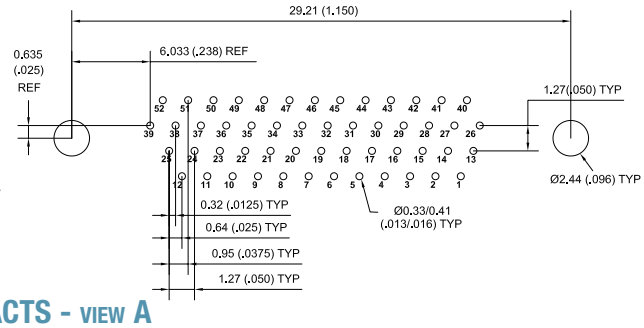


MALE CONNECTORS

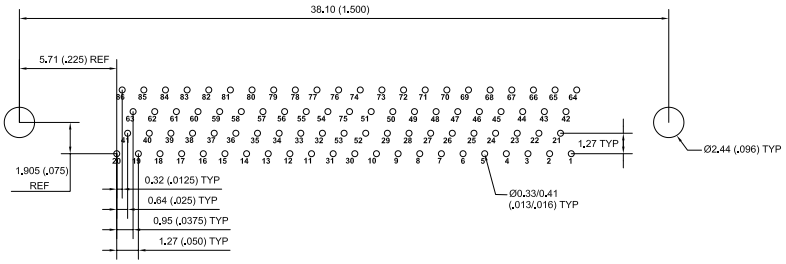
28 CONTACTS - VIEW A



52 CONTACTS - VIEW A

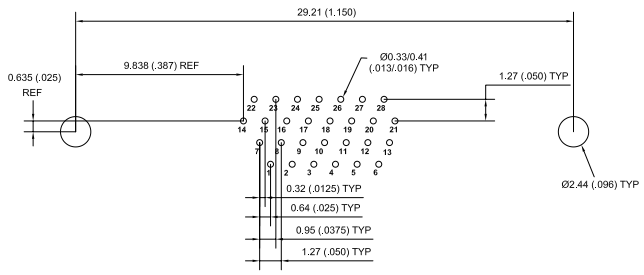


86 CONTACTS - VIEW A

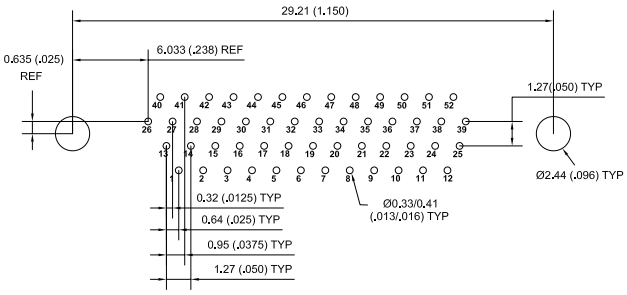


FEMALE CONNECTORS

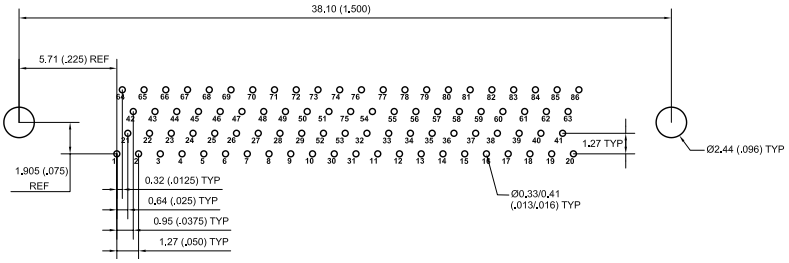
28 CONTACTS - VIEW A



52 CONTACTS - VIEW A



86 CONTACTS - VIEW A



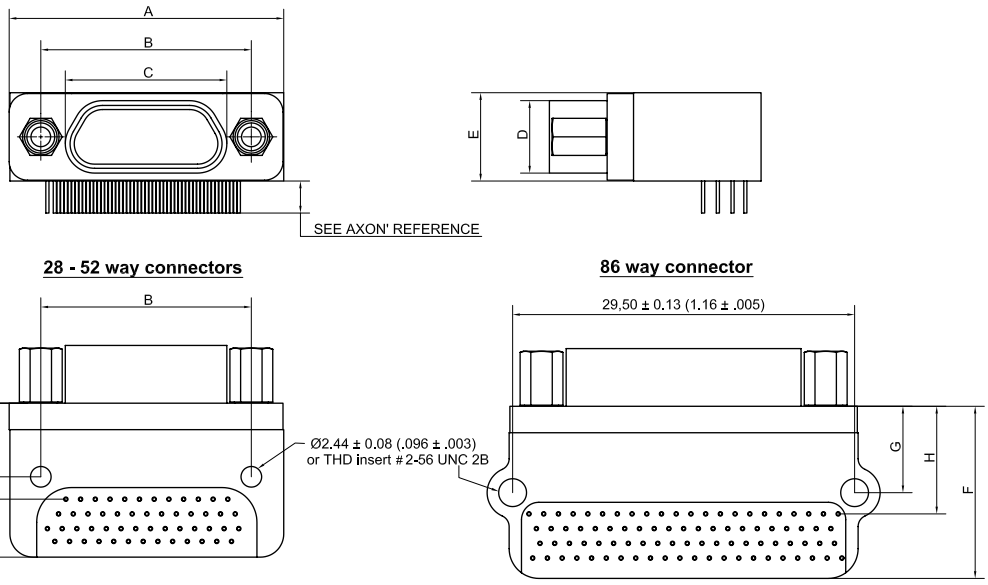
CONDENSED BOARD RIGHT (CBR) 0.050" PITCH

▲ CBR 0.050" 52 WAY RECEPTACLE

▲ CBR 0.050" 86 WAY RECEPTACLE

DIMENSIONS

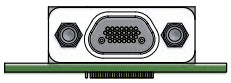
Dimensions are in millimetres (inches).

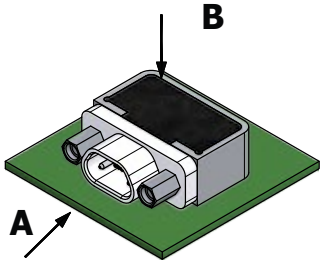


	A max.	B ±0.13 (±.005)	C max.		D max.		E max.	F max.	G ±0.25 (±.010)	H ±0.25 (±.010)
			Male	Female	Male	Female				
28 P / 28 S	19.94 .785	14.35 .565	8.48 .334	10.16 .400	4.69 .185	6.35 .250	7.82 .308	13.50 .532	6.35 .250	7.81 .308
52 P / 52 S	23.75 .935	18.16 .715	12.29 .484	14.00 .551	4.69 .185	6.35 .250	7.82 .308	13.50 .532	6.35 .250	8.28 .326
86 P / 86 S	30.10 1.185	24.51 .965	18.64 .734	20.35 .801	4.69 .185	6.35 .250	7.82 .308	15.00 .590	7.45 .293	9.28 .365

PCB LAYOUT FOR HIGH DENSITY CBR TYPE 0.050" PITCH CONNECTORS

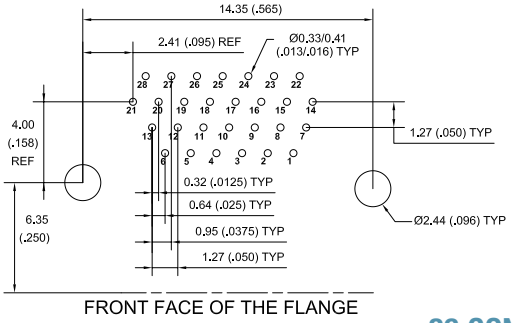
VIEW A



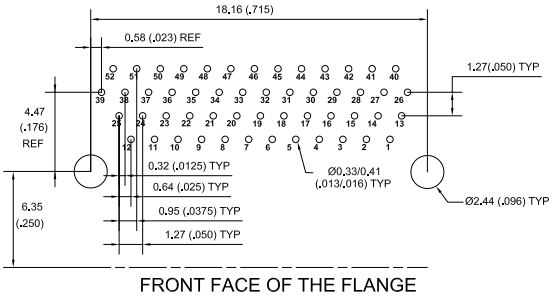


MALE CONNECTORS

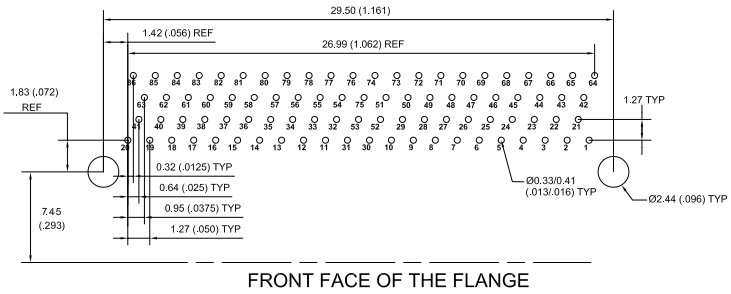
28 CONTACTS - VIEW B



52 CONTACTS - VIEW B

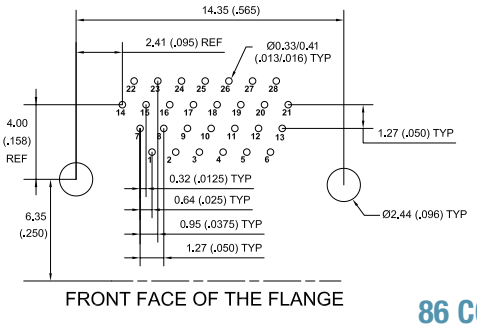


86 CONTACTS - VIEW B

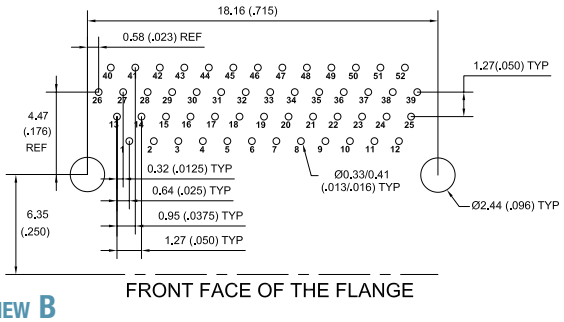


FEMALE CONNECTORS

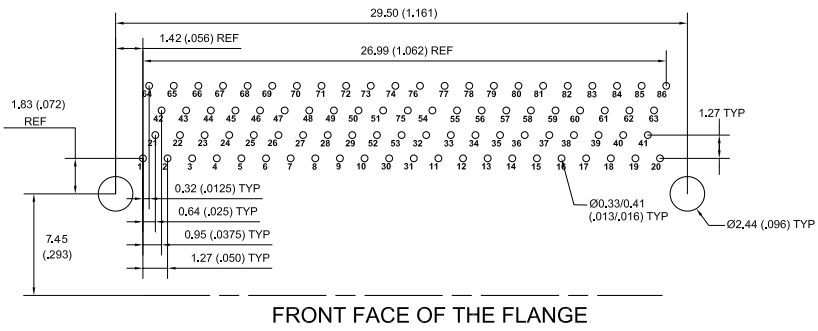
28 CONTACTS - VIEW B



52 CONTACTS - VIEW B



86 CONTACTS - VIEW B



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