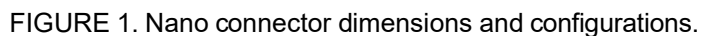


MIL-DTL-32139/15
8 June 2023

CONNECTORS, ELECTRICAL, RECTANGULAR,
NANOMINIATURE, DUAL ROW, PLUG, POLARIZED SHELL,
PIN CONTACTS, VERTICAL PCB SURFACE MOUNT SHELL TYPE

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-DTL-32139.



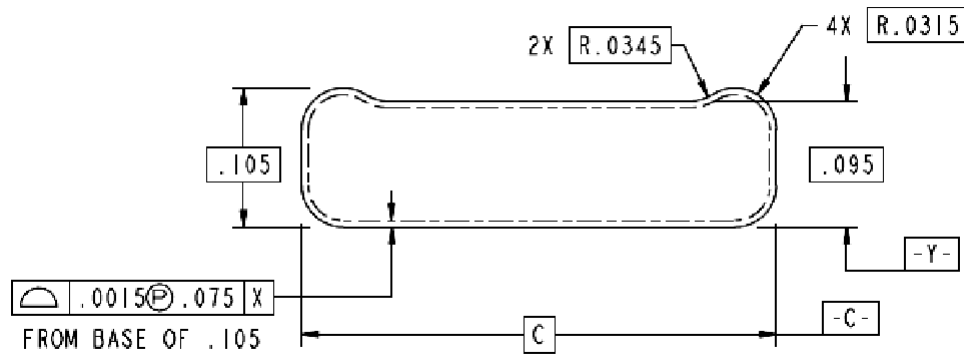
Size	A	B BSC	C BSC	D BSC	E	F THREAD	G MAX
9	.375 (9.53)	.270 (6.86)	.160 (4.06)	.0575 (1.46)	.125 (3.18)	#0-80 UNF	.175 (4.45)
15	.450 (11.43)	.345 (8.76)	.235 (5.97)	.0575 (1.46)	.125 (3.18)	#0-80 UNF	.250 (6.35)
21	.525 (13.34)	.420 (10.67)	.310 (7.87)	.0575 (1.46)	.125 (3.18)	#0-80 UNF	.325 (8.26)
25	.575 (14.61)	.470 (11.94)	.360 (9.14)	.0575 (1.46)	.125 (3.18)	#0-80 UNF	.375 (9.53)
31	.650 (16.51)	.545 (13.84)	.435 (11.05)	.0575 (1.46)	.125 (3.18)	#0-80 UNF	.450 (11.43)
37	.725 (18.42)	.620 (15.75)	.510 (12.95)	.0575 (1.46)	.125 (3.18)	#0-80 UNF	.525 (13.34)
51	.900 (22.86)	.795 (20.19)	.685 (17.40)	.0575 (1.46)	.125 (3.18)	#0-80 UNF	.700 (17.78)
65	1.075 (27.31)	.970 (24.64)	.860 (21.84)	.0575 (1.46)	.125 (3.18)	#0-80 UNF	.875 (22.23)
69	1.125 (28.58)	1.020 (25.91)	.910 (23.11)	.0575 (1.46)	.125 (3.18)	#0-80 UNF	.925 (23.50)
85	1.375 (34.93)	1.245 (31.62)	1.110 (28.19)	.0700 (1.78)	.150 (3.81)	#2-56 UNC	1.120 (28.45)

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Unless otherwise specified tolerances are $\pm .005$ inch (0.13 mm) angular tolerance $\pm 2^\circ$.
4. Shell shall be flush to insulator within $\pm .004$ inch (0.10 mm)
5. Recommend the connector leads to be co-planar within .004 above to .001 below mounting surface.
Tolerances outside the recommended co-planar that are mounted to the PCB, the connector shall meet form, fit, and function.
6. Tail finish is tin/lead or gold.
7. G MAX tolerance of $\pm .010$.

Inches	mm	Inches	mm
.003	0.08	.020	0.51
.004	0.10	.025	0.64
.005	0.13	.035	0.89
.007	0.18	.040	1.02
.012	0.30	.105	2.67
.0125	0.32	.330	8.38
.018	0.46		

FIGURE 1. Nano connector dimensions and configurations - Continued.

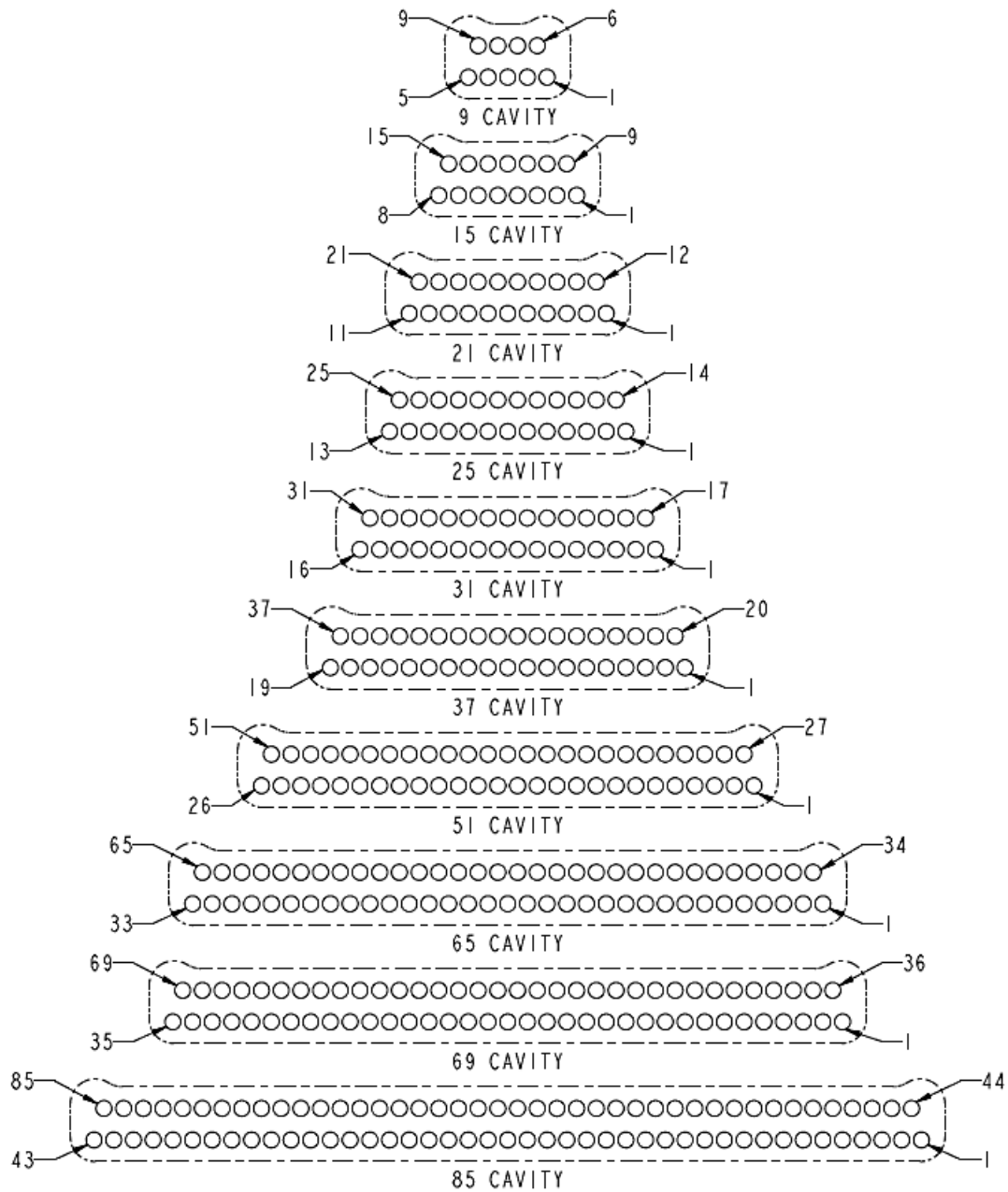


Inches	mm
.0015	0.038
.0315	0.800
.0345	0.876
.075	1.91
.095	2.41
.105	2.67

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Unless otherwise specified tolerances are $\pm .005$ inch (0.13 mm).

FIGURE 2. Nano Connector Interface.

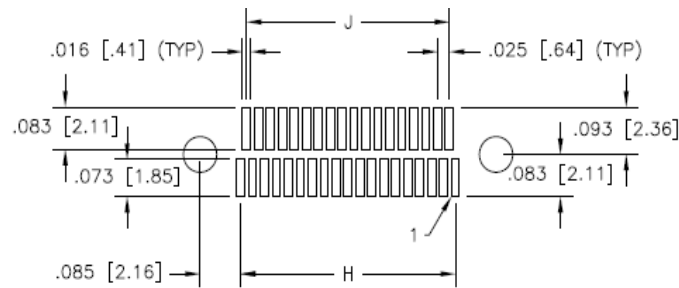


NOTES:

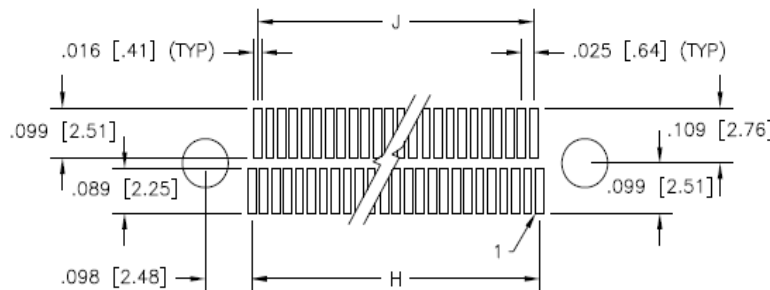
1. Engaging face of insert shown.
2. Cavity identification numbers are for reference only and do not appear on the part.

FIGURE 3. Nano Connector Insert Arrangement.

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RECOMMENDED PC BOARD LAYOUT
FOR SIZE 9 THROUGH 69
(COMPONENT SIDE)



RECOMMENDED PC BOARD LAYOUT
FOR SIZE 85
(COMPONENT SIDE)

Size	H	J
9	.100 (2.54)	.075 (1.91)
15	.175 (4.45)	.150 (3.81)
21	.250 (6.35)	.225 (5.72)
25	.300 (7.62)	.275 (6.99)
31	.375 (9.53)	.350 (8.89)
37	.450 (11.43)	.425 (10.80)
51	.625 (15.88)	.600 (15.24)
65	.800 (20.32)	.775 (19.69)
69	.850 (21.59)	.825 (20.96)
85	1.050 (26.367)	1.025 (26.04)

Inches	mm
.016	0.41
.025	0.64
.073	1.85
.083	2.11
.085	2.16
.089	2.26
.093	2.36
.098	2.49
.099	2.51

Figure 4. Recommended PC Board Layout (Component Side).

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Unless otherwise specified tolerances are $\pm .005$ inch (0.13 mm).

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REQUIREMENTS:

Dimensions and configuration see figures 1, 2, and 3.

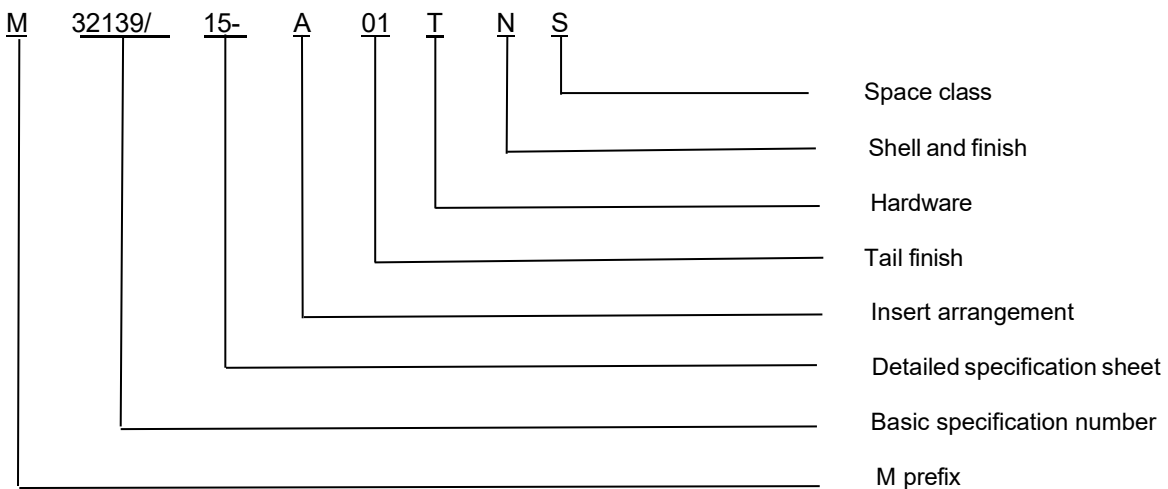
This specification sheet describes the pin side of a rectangular connector. This connector uses reverse gender contacts, i.e., the live pin recessed in the insulator with the static socket protruding from a shrouded interface.

Contact connection: The pin contact, which is recessed in the insulator, is normally connected to the live side of the circuit.

Pins are terminated to a printed circuit board (PCB) as specified on figure 4.

Mating receptacle: Shall be in accordance with MIL-DTL-32139/4, MIL-DTL-32139/12, MIL-DTL 32139/14, and MIL-DTL-32139/16.

Part or Identifying Number (PIN):



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<u>Insert arrangement</u>	<u>Tail finish</u>	<u>Hardware</u>
A = 9	01 = Tin/Lead	T = Threaded hole ^{2/}
B = 15	02 = Gold	
C = 21		
D = 25		
E = 31		
F = 37		
G = 51		
H = 65		
J = 69		
K = 85		

Shell finish

C = Aluminum shell, cadmium finish
N = Aluminum shell, electroless nickel finish ^{1/}
S = Passivated stainless steel shell
T = Titanium shell
A = Pure Electrodeposited Aluminum
F = Nickel Fluorocarbon Polymer
Z = Zinc Nickel

Space class

Blank = non-space class
S = Space class

- ^{1/} When aluminum shells are required for space applications, electroless nickel finish shall be used. Cadmium finish is not acceptable (see MIL-DTL-32139).
- ^{2/} The aluminum shell may require additional thread component which may affect the minimum and maximum mounting screw length. Check with manufacturer for recommended mounting screw length.

Alternate shell finishes:

Pure Electrodeposited Aluminum. Pure dense electrodeposited aluminum shall be in accordance with MIL-DTL-83488, type II shall withstand 48 hour salt spray. Color shall be non-reflective and shall meet the requirements as specified herein.

Nickel Fluorocarbon Polymer. High phosphate nickel with fluorocarbon polymer additive over a suitable underplate shall withstand 48 hour salt spray. Color shall be non-reflective and shall meet the requirements as specified herein.

Zinc Nickel. Zinc Nickel Alloy in accordance with ASTM B841, over a suitable underplate shall withstand 48 hour salt spray. Color shall be non-reflective and shall meet the requirements as specified herein.

Referenced documents. In addition to MIL-DTL-32139, this document references the following:

MIL-DTL-32139/4
MIL-DTL-32139/12
MIL-DTL-32139/14
MIL-DTL-32139/16
MIL-DTL-83488
ASTM B841

MIL-DTL-32139/15

CONCLUDING MATERIAL

Custodians:

Army - CR
Navy - EC
Air Force - 85
DLA - CC

Preparing activity:

DLA - CC

(Project 5935-2023-013)

Review activities:

Army - AV, MI
Navy - AS

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.