

CABLE DRAWING: **CAB-0XXX (SALEM CODE)**

DRAWING TITLE:
Temperature Monitoring Cable

DRAWING NO.: MWACAB-0016	DRAWN BY: DRC	DATE: 16-Dec-09	REV: A
		SHEET: 1 of 2	

Cable Detail:

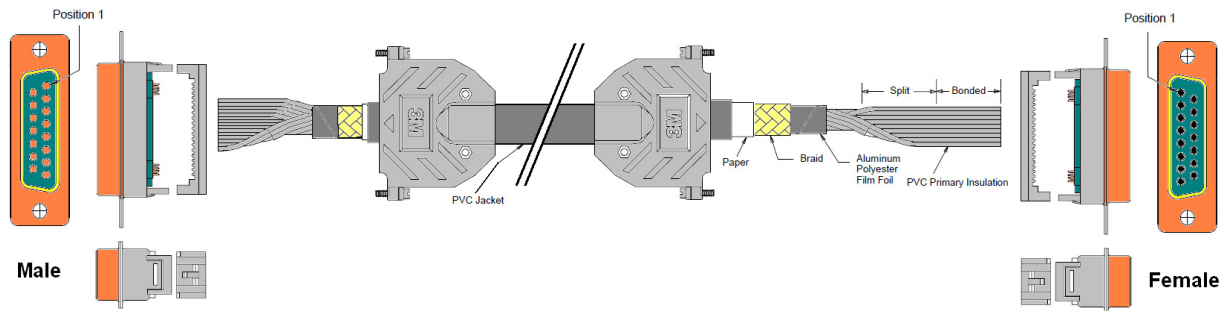
Connectors:	Description	Parts (Qty)
TempMon	DA15 Male IDC	See Note1 Below(1)
SBC	DA15 Female IDC	See Note2 Below(1)
Conductors:		
Cable	Ribbon Cable, Rnd/Flat, 15Way	See Note3 Below(??)
Misc:		
Backshell	For Connectors	See Note4 Below(2)

Overall Length ??+/-5mm

Notes:

1. DA15 Male IDC connector can be supplied from Farnell #469-385. Any equivalent will be OK refer to data sheets supplied with this drawing.
2. DA15 Female IDC connector can be supplied from Farnell #469-427. Any equivalent will be OK refer to data sheets supplied with this drawing.
3. The ribbon cable can be supplied from Farnell #297-562. Any equivalent will be OK refer to data sheets supplied with this drawing.
4. The connector backshells can be supplied from Farnell #167-2005. Any equivalent will be OK refer to data sheets supplied with this drawing

Typical Drawing:



REVISION

Date	Rev	Remarks
16/12/09	A	Draft

CABLE DRAWING: **CAB-0XXX (SALEM CODE)**

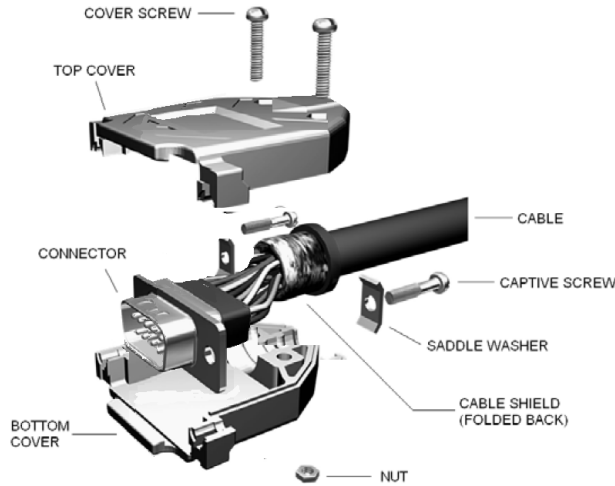
DRAWING TITLE:
Temperature Monitoring Cable

DRAWING NO.: MWACAB-0016	DRAWN BY: DRC	DATE: 16-Dec-09	REV: A
		SHEET: 2 of 2	

Pinouts Table:

TempMon Pins(15)		SBC-TempMon Pins(15)
1	Sense1	1
2	Sense2	2
3	Sense3	3
4	Sense4	4
5	Sense5	5
6	Sense6	6
7	Sense7	7
8	Sense8	8
9	0V	9
10	0V	10
11	0V	11
12	0V	12
13	0V	13
14	0V	14
15	0V	15

Assembly Details:



Connection Detail:

From: (TempMon) Various Front Panel TempMon Connector
 To: (SBC) SBC Front Panel TempMon Connector

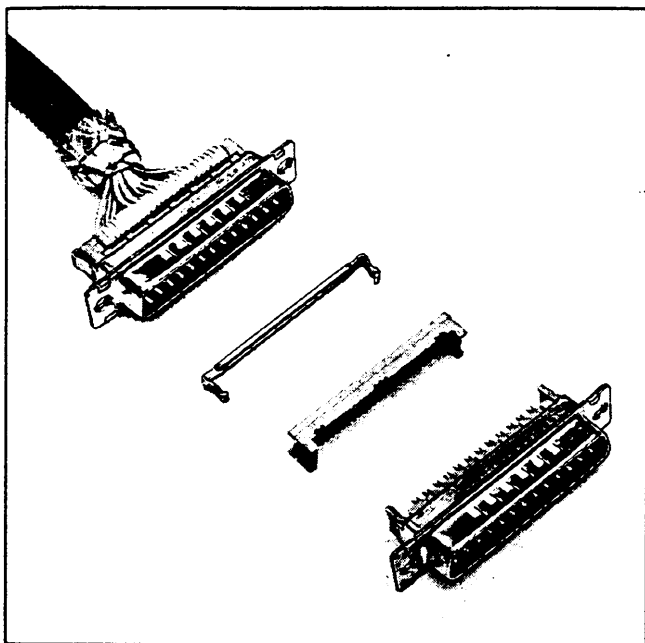
REVISION

Date	Rev	Remarks
16/12/09	A	Draft

D Sub

Plug Connector

8200 Series



- Available in either pre-assembled or two piece covers
- Available in either open or closed end cover
- Available with dimples to aid in EMI/ESD protection
- Improved metal strain relief hooks directly to metal shell
- Low profile
- Four mounting options

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Sheet 1 of 3

Physical

Insulation

Material: Glass Filled Polyester (PBT)
 Flammability: UL 94V-0
 Color: Gray

Contact

Material: Beryllium Copper
 Plating
 Underplate: 50 μ " (1.27 μ m) Nickel — QQ-N-290, Class 2
 Wiping Area: 30 μ " (0.76 μ m) Gold — MIL-G-45204, Type II, Grade C

Shell

Material: Steel
 Plating: 197-394 μ " (5-10 μ m) 90/10 Tin Lead Over Copper
 Strain Relief Material: Stainless Steel .016 (0.40) Thick
 Wire Accommodation: 26 & 28 AWG Solid or Stranded
 Marking: 3M Logo & Contact Position Numbers

Electrical

Current Rating: 1 A
 Insulation Resistance: $> 1 \times 10^9 \Omega$ at 500 VDC
 Withstanding Voltage: 1000 Vrms at Sea Level

Environmental

Temperature Rating: -55° to $+105^\circ$

UL File No.: E68080
 CSA File No.: LR 40971

3M Electronic Products Division

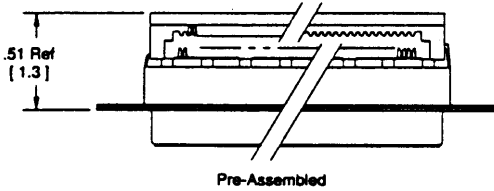
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D Sub Plug Connector

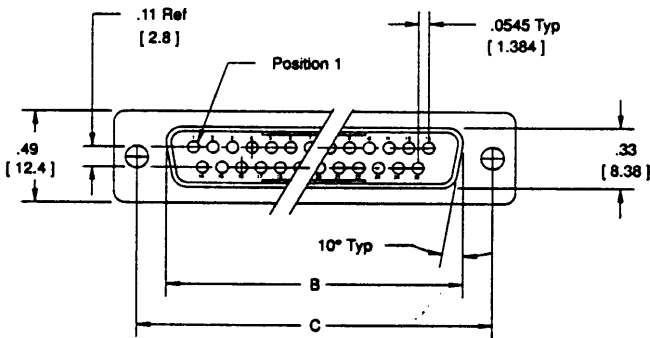
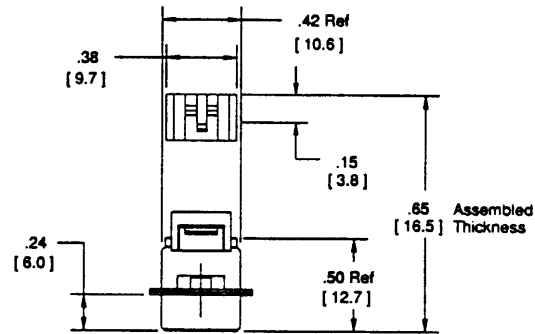
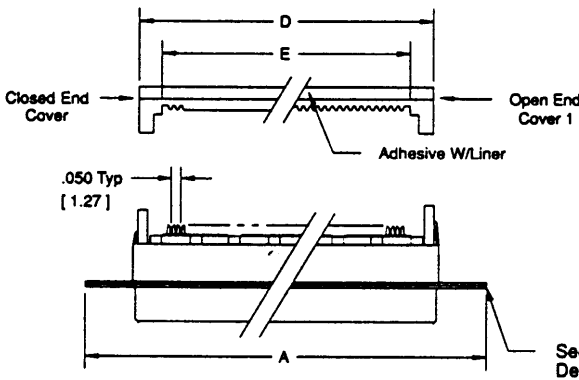
8200 Series

Sheet 2 of 3

Contact Quantity	Dim A	Dim B	Dim C	Dim D	Dim E	Dim F
09	1.21 [30.7]	.67 [17.0]	.98 [25.0]	.66 [16.7]	.49 [12.5]	.70 [17.8]
15	1.54 [39.1]	1.00 [25.4]	1.31 [33.3]	.99 [25.2]	.79 [20.1]	1.03 [26.1]
25	2.09 [53.1]	1.54 [39.1]	1.85 [47.0]	1.53 [39.0]	1.29 [32.8]	1.57 [39.8]
37	2.73 [69.3]	2.18 [55.4]	2.50 [63.5]	2.18 [55.4]	1.89 [48.0]	2.22 [56.3]



Note: Preassembled closed cover on Pin 1 side of connector.



Inch [mm]		
Tolerance Unless Noted		
	.0	.00
	.00	.000
Inch	±.1	±.01 ±.005

[] Dimensions for Reference Only

TS-0234-11

Ordering Information

Connector
82XX-X0XX

Strain Relief
3448-8DXXA

Contact Quantity

Cover Style:

- 6 = Open Cover
- 7 = Closed Cover
- 8 = Open Cover, W/O Adhesive, Preassembled
- 9 = Closed Cover, W/O Adhesive, Preassembled

Strain Relief Option:

- 0 = Tin Lead, Dimples, W/O Strain Relief
- 6 = Tin Lead, Dimples, with Strain Relief

Mounting Style:

- 0 = Standard
- 3 = English
- 4 = Metric

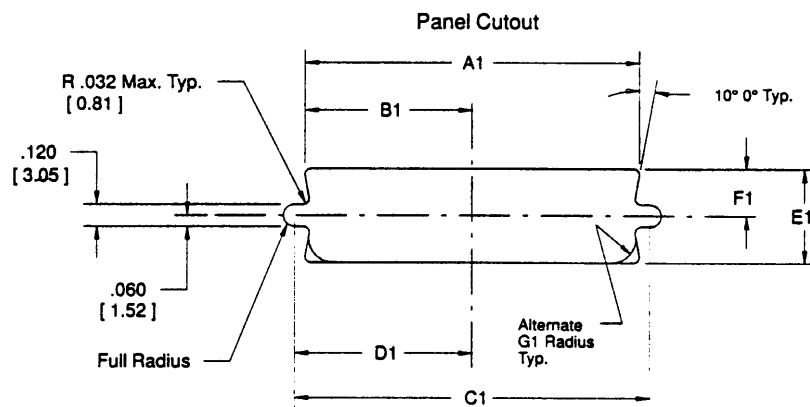
- 09 = 9 Position
- 15 = 15 Position
- 25 = 25 Position
- 37 = 37 Position

D Sub Plug Connector

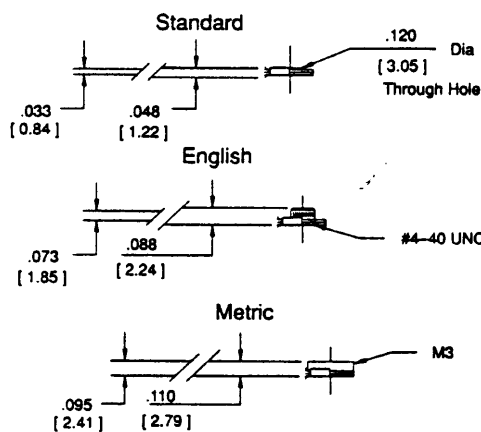
8200 Series

Mounting Method	Contact Quantity	Dim A1	Dim B1	Dim C1	Dim D1	Dim E1	Dim F1	Dim G1
Front	9	.874 [22.20]	.437 [11.10]	.984 [24.99]	.492 [12.50]	.513 [13.03]	.257 [6.53]	.120 [3.05]
	15	1.202 [30.53]	.601 [15.27]	1.312 [33.32]	.656 [16.66]	.513 [13.03]		
	25	1.744 [44.30]	.872 [22.15]	1.852 [47.04]	.926 [23.52]	.513 [13.03]		
	37	2.392 [60.76]	1.196 [30.38]	2.500 [63.50]	1.250 [31.75]	.513 [13.03]		
Rear	9	.806 [20.47]	.403 [10.24]	.984 [24.99]	.492 [12.50]	.449 [11.40]	.225 [5.70]	.120 [3.05]
	15	1.134 [28.80]	.567 [14.40]	1.312 [33.32]	.656 [16.66]	.449 [11.40]		
	25	1.674 [42.52]	.837 [21.26]	1.852 [47.04]	.926 [23.52]	.449 [11.40]		
	37	2.326 [59.08]	1.163 [29.54]	2.500 [63.50]	1.250 [31.75]	.449 [11.40]		

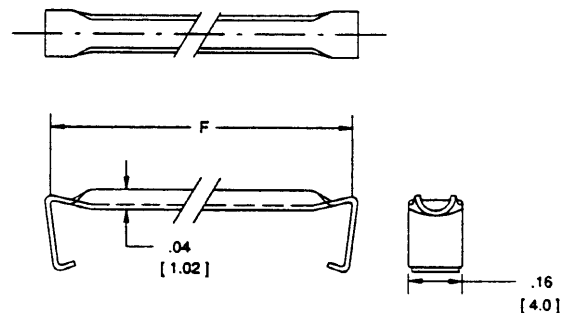
*Front Mount – The connector is mounted in front of the panel.
Rear Mount – The connector is mounted behind the panel.



Mounting Styles



Strain Relief (Order Separately or with Connector)



Sheet 3 of 3

TS-0234-11

D Sub

Socket Connector

8300 Series



- Available in either preassembled or two piece covers
- Available in either open or closed end cover
- Improved metal strain relief — hooks directly to metal shell
- Low profile
- Four mounting options

Date Modified: September 29, 1999

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Sheet 1 of 3

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Physical

Insulation

Material: Glass Filled Polyester (PBT)
Flammability: UL 94V-0
Color: Gray

Contact

Material: Copper Alloy
Plating
Underplate: 100 μ " (1.27 μ m) Nickel — QQ-N-290, Class 2
Wiping Area: 30 μ " (0.76 μ m) Gold — MIL-G-45204, Type II, Grade C

Shell

Material: Steel
Plating: Tin

Strain Relief Material: Stainless Steel .016 (0.40) Thick

Wire Accommodation: 26 & 28 AWG Solid or Stranded

Marking: 3M Logo & Contact Position Numbers

Electrical

Current Rating: 1 A

Insulation Resistance: $> 1 \times 10^9 \Omega$ at 500 VDC

Withstanding Voltage: 1000 Vrms at Sea Level

Environmental

Temperature Rating: -55° to $+105^\circ$

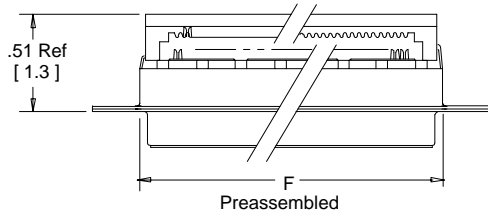
UL File No.: E68080

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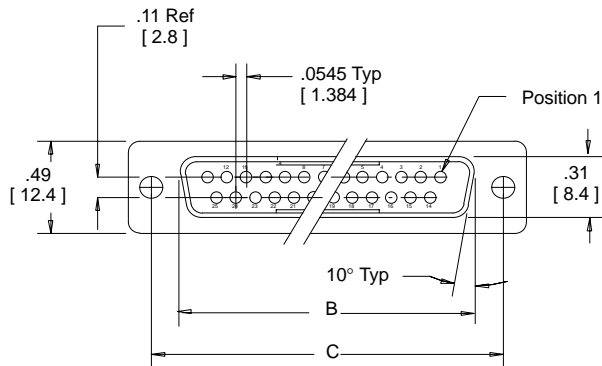
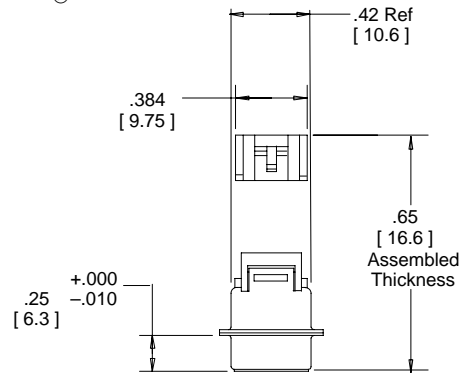
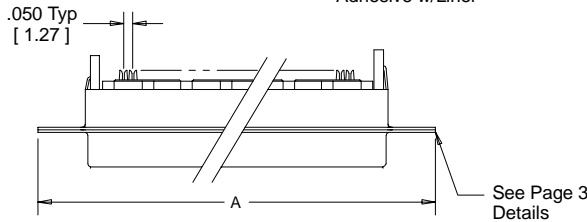
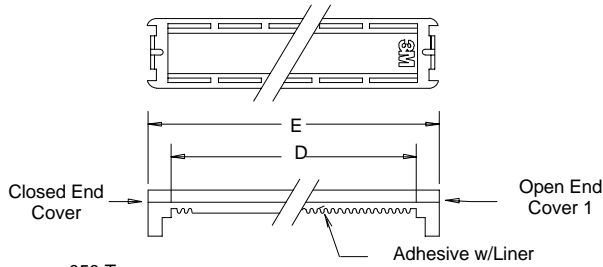
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Contact Quantity	Dimensions					
	A	B	C	D	E	F ± .008
09	1.23 [31.2]	.64 [16.3]	.98 [24.9]	.46 [11.7]	.67 [17.0]	.70 [17.7]
15	1.56 [39.6]	.97 [25.6]	1.31 [33.3]	.76 [19.3]	.99 [25.2]	1.03 [26.2]
25	2.10 [53.3]	1.51 [38.4]	1.85 [47.0]	1.27 [32.3]	1.54 [39.1]	1.57 [39.9]
37	2.74 [69.6]	2.16 [54.9]	2.50 [63.5]	1.87 [47.5]	2.19 [55.6]	2.22 [56.4]



Note: Preassembled closed cover on Pin 1 side of connector.



Inch
[mm]

Tolerance Unless Noted			
	.0	.00	.000
Inch	± .1	± .01	± .005

[] Dimensions for Reference only

Ordering Information

Connector 83XX-X00X

Contact Quantity

- Cover Style:
 6 = Open Cover
 7 = Closed Cover
 8 = Open Cover, w/o Adhesive, Preassembled
 9 = Closed Cover, w/o Adhesive, Preassembled

- Mounting Style:
 0 = ∅ .120 [3.05]
 3 = 4-40 UNC
 4 = M3

Strain Relief (Order Separately) 3448-8DXXA

- 09 = 9 Position
 15 = 15 Position
 25 = 25 Position
 37 = 37 Position

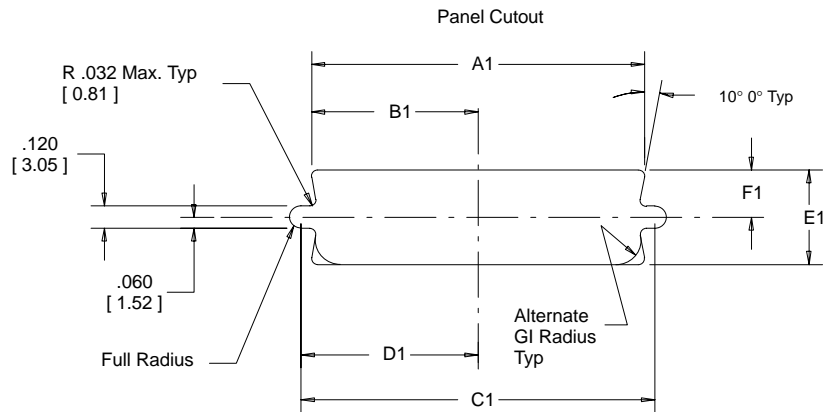
TS-0235-17
Sheet 2 of 3

D Sub Socket Connector

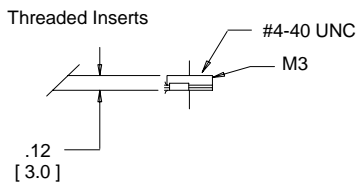
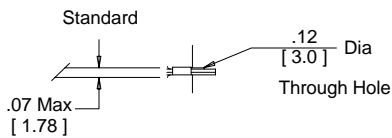
8300 Series

Mounting Method*	Contact Quantity	Dimensions						
		A1	B1	C1	D1	E1	F1	G1
Front	9	.87 [22.0]	.44 [11.2]	.98 [24.9]	.49 [12.5]	.51 [13.0]	.26 [6.6]	.12 [3.1]
	15	1.20 [30.5]	.60 [15.2]	1.31 [33.3]	.66 [16.8]			
	25	1.74 [44.2]	.87 [22.1]	1.85 [47.0]	.93 [23.6]			
	37	2.39 [60.7]	1.20 [30.5]	2.50 [63.5]	1.25 [31.8]			
Rear	9	0.81 [20.6]	.40 [10.2]	.98 [25.0]	.49 [12.5]	0.45 [11.4]	0.22 [5.8]	.12 [3.1]
	15	1.13 [28.7]	.57 [14.5]	1.31 [33.3]	.66 [16.8]			
	25	1.67 [42.4]	.84 [21.3]	1.85 [47.0]	.93 [23.6]			
	37	2.33 [59.2]	1.16 [29.5]	2.50 [63.5]	1.25 [31.8]			

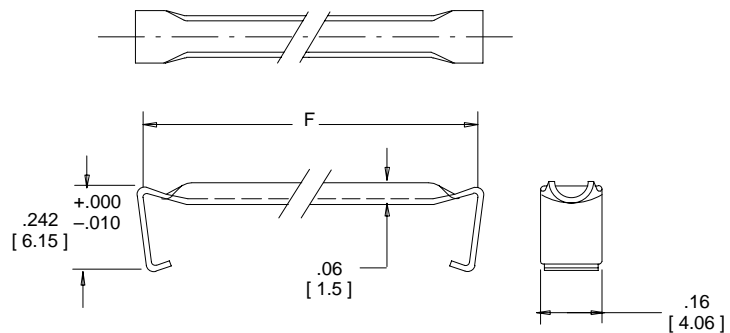
* Front Mount—The connector is mounted in front of the panel.
Rear Mount—The connector is mounted behind the panel.



Mounting Styles



Strain Relief (Order Separately or with Connector)



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Sheet 3 of 3

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For technical, sales or ordering information call
800-225-5373

.050" Round, Shielded/Jacketed, Flat Cable

28 AWG Stranded, Mass-Term, PVC/PVC

3659 Series



- Round construction permits easier routing
- 28 AWG wire on .050 inch pitch permits mass termination to broad line of IDC connectors
- Continuous split/bond repeat allows for mass termination on 2.4 inch centers (approximate)
- Primary cable is zippable for branching or discrete terminations
- Meets external wiring requirements of National Electrical Code, Article 725 (CL2)
- UL listed for USA and Canadian markets
- Dual shielding provides 35 db average shielding effectiveness

Date Modified: July 29, 1999

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Physical

Jacket


Material: Polyvinyl Chloride (PVC)

Color: Black

Primary Material: PVC

Color: Gray

Marking

Standard: (UL) CL2 75C 28 AWG or AWM 20267 3M NU  AWM IIA/B 80C 300V FT1
EU <50V

Conductors: 28 AWG 7 × 36 [7 × 0.127] Tinned Stranded Copper

Shielding: .001 [0.03] Thick Aluminum/Polyester Film Foil and 90% Coverage Tinned Copper Braid

Electrical

Voltage Rating: USA: N.E.C. 725, CL2 or AWM; 300V Canada: 300V EU: <50V

Insulation Resistance: $> 1 \times 10^{10} \Omega/10 \text{ ft. [3m]}$

	Unbalanced	Balanced
Characteristic Impedance	62 Ω	106 Ω
Capacitance	27.7 pF/ft. [90.88 pF/m]	15.2 pF/ft. [49.9 pF/m]
Inductance	.13 $\mu\text{H/ft. [0.43 } \mu\text{H/m]}$.20 $\mu\text{H/ft. [0.66 } \mu\text{H/m]}$
Propagation Delay	1.72 ns/ft. [5.64 ns/m]	1.62 ns/ft. [5.32 ns/m]
Velocity of Propagation	59%	62%

Note: Unbalanced is measured between ground-signal-ground conductors with shield grounded. Balanced is measured between signal conductors within a pair, with the shield floating.

Environmental

Temperature Rating: USA: CL2; 75°C Max or AWM; -20°C to +80°C Canada: 80°C

Flammability Rating: USA: N.E.C. 725, CL2 Canada: FTI

UL File No.: E118773, Power Limited Circuit Cable: CL2 (or AWM Style 20267)

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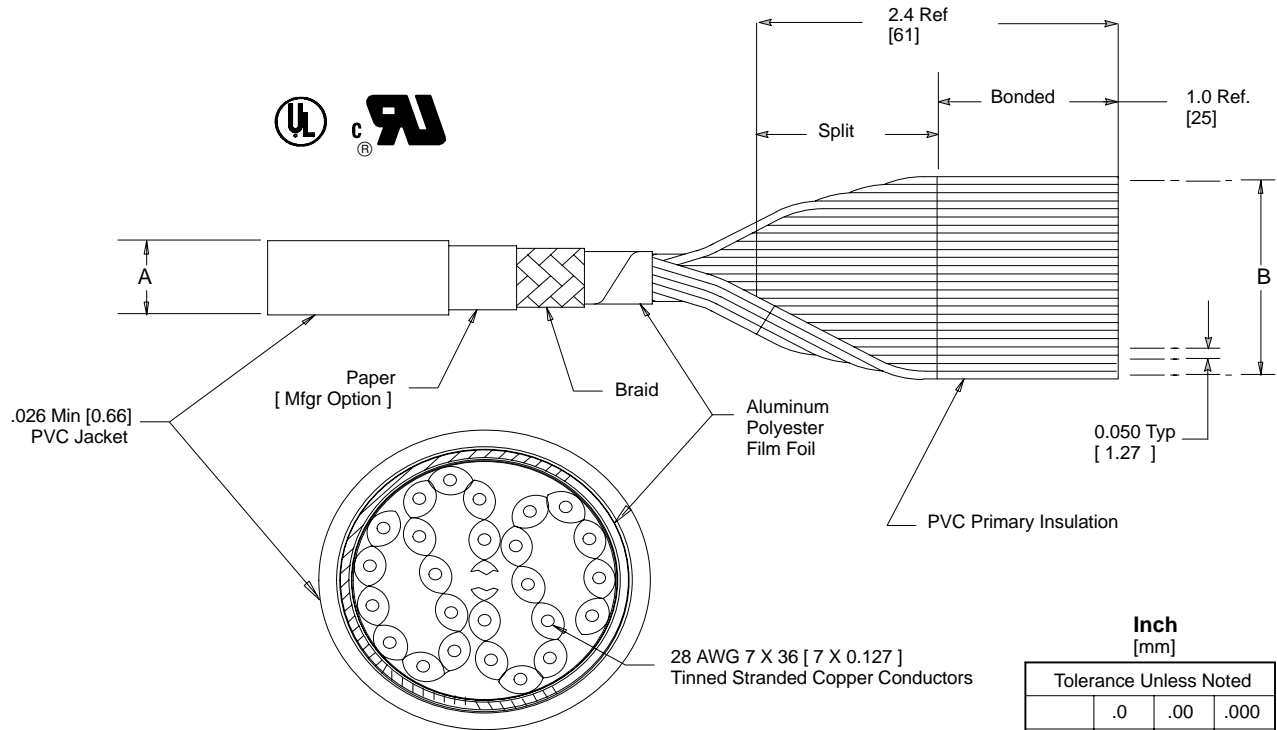
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.050" Round, Shielded/Jacket, Flat Cable

28 AWG Stranded, Mass-Term, PVC/PVC

3659 Series

Number of Conductors	3M Part Number	Dimension A ± .03	Dimension B Ref (See Note 2)
09	3659/09	0.27 [6.9]	0.40 [10.2]
10	3659/10	0.27 [6.9]	0.45 [11.4]
14	3659/14	0.31 [7.9]	0.65 [16.5]
15	3659/15	0.31 [7.9]	0.70 [17.8]
16	3659/16	0.31 [7.9]	0.75 [19.1]
20	3659/20	0.34 [8.6]	0.95 [24.1]
24	3659/24	0.37 [9.4]	1.15 [29.2]
25	3659/25	0.37 [9.4]	1.20 [30.5]
26	3659/26	0.37 [9.4]	1.25 [31.8]
34	3659/34	0.41 [10.4]	1.65 [41.9]
36	3659/36	0.43 [10.9]	1.75 [44.5]
37	3659/37	0.43 [10.9]	1.80 [45.7]
40	3659/40	0.43 [10.9]	1.95 [49.5]
50	3659/50	0.48 [12.2]	2.45 [62.2]
60	3659/60	0.51 [13.0]	2.95 [74.9]
64	3659/64	0.54 [13.7]	3.15 [80.0]



Inch [mm]			
Tolerance Unless Noted			
	.0	.00	.000
Inch	± .1	± .05	± .010

[] Dimensions for Reference only

Notes:

- Red marking on one edge of primary cable designates wire #1.
- Dimension B pertains to bonded area only.

Ordering Information

3659X/XX

Jacket Color Options
 Blank = "Standard" Black Jacket
 C = "Special" Cream Jacket
 G = "Special" Gray Jacket
 L = "Special" Light Olive Jacket

Number of Conductors
 (See Table)

Note: Available in standard length of 100 or 300 ft/roll, please specify when ordering.

TS-0083-14
 Sheet 2 of 2

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For technical, sales or ordering information call
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3M™ D Sub EMI Junction Shell

Metalized Plastic



- Protection from EMI/ESD
- Easy assembly reduces time and labor for low cost
- Light weight and a compact design
- Strain Relief compensates for multiple cable diameters
- Jack screws provide positive retention
- RoHS* compliant

Date Modified: January 15, 2007

TS-2132-02
Sheet 1 of 3

Physical

Shell and Hardware

Shell Material: ABS

Shell Plating: Nickel Over Copper

Hardware: (2) Jackscrews #4-40 × .438"

(2) Saddle Washers #4

(2) Nuts #4-40

(2) Screws #4-40 × .450"

Material: Steel

Plating: Bright Zinc

Compression Insert:

Material: Thermo Plastic Elastomer

Flammability: UL 94HB

Durometer: 75 + / -5

Mounting Hardware: See Specification Sheet TS-0142

Environmental

Temperature Rating: 0°C to +75°C

"RoHS compliant" means that the product or part does not contain any of the following substances in excess of the following maximum concentration values in any homogeneous material, unless the substance is in an application that is exempt under RoHS: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers; or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M's knowledge and belief based upon information provided by third party suppliers to 3M.

3M™ D Sub EMI Junction Shell

Metalized Plastic

Inch		[mm]	
Tolerance Unless Noted			
	.0	.00	.000
inch	±.1	±.01	±.005

[] Dimensions for Reference Only

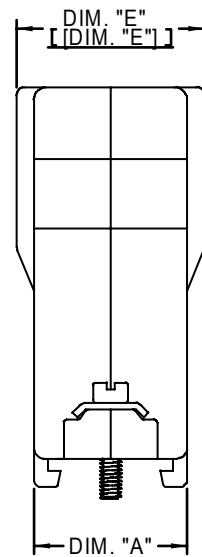
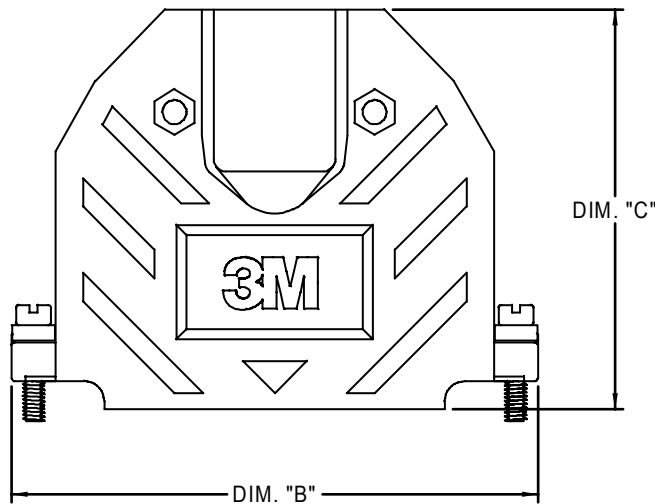
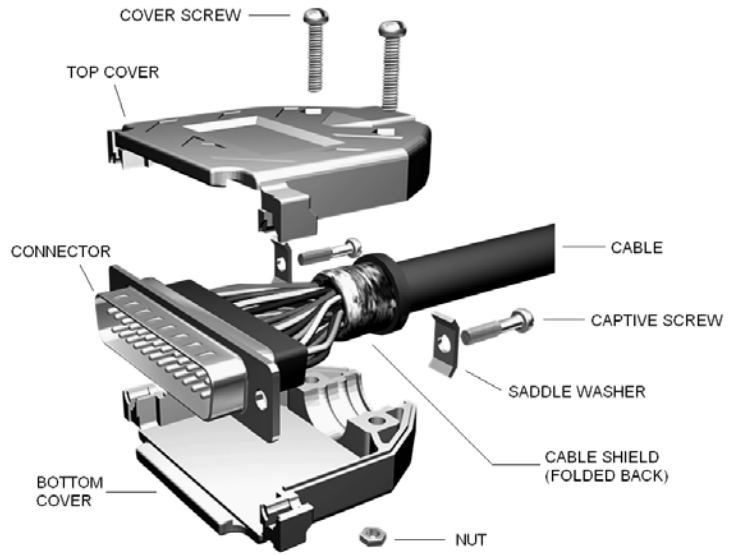
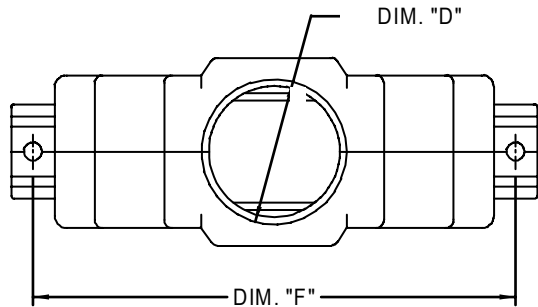


Table 1 - Junction Shell

3M Part Number	Dimensions						Cable O.D. Range	
	Dim. "A"	Dim. "B"	Dim. "C"	Dim. "D"	Dim. "E"	Dim. "F"	Min	Max*
3357-6209-1C	.640 [16.26]	1.217 [30.91]	1.692 [42.98]	.400 [10.16]	N/A	.984 [24.99]	0.19 [4.8]	0.35 [8.9]
3357-6215-1C		1.540 [39.12]	1.650 [41.91]	.400 [10.06]	N/A	1.312 [33.32]	0.19 [4.8]	0.35 [8.9]
3357-6225-1C		2.090 [53.08]	1.800 [45.72]	.522 [13.26]	.710 [18.03]	1.857 [47.17]	0.19 [4.8]	0.46 [11.7]
3357-6237-1C		2.734 [69.44]	1.975 [50.17]	.726 [18.44]	.906 [23.01]	2.500 [63.50]	0.30 [7.6]	0.68 [17.27]
3357-6250-1C		.770 [19.56]	2.645 [67.18]	2.000 [50.80]	.726 [18.44]	.940 [23.88]	2.406 [61.11]	0.30 [7.6]

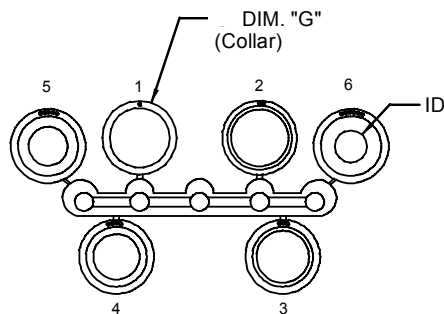
Note: *These numbers will vary depending upon the compressibility of the wire.

Backshell Dimension Table
Table 1

TS-2132-02
Sheet 2 of 3

3M™ D Sub EMI Junction Shell

Metalized Plastic



**Elastomeric Backshell Inserts
Figure 1**

Table 2 - Compression Inserts

Insert For	Dimensions												G
	1		2		3		4		5		6		
	OD	ID	OD	ID	OD	ID	OD	ID	OD	ID	OD	ID	
3357-6209	0.475 [12.07]	0.320 [8.13]	0.360 [9.14]	0.315 [8.00]	0.360 [9.14]	0.285 [7.24]	0.360 [9.14]	0.255 [6.48]	0.360 [9.14]	0.210 [5.33]	N/A	N/A	0.475 [12.07]
3357-6215	0.600 [15.24]	0.450 [11.43]	0.450 [11.43]	0.410 [10.41]	0.450 [11.43]	0.370 [9.40]	0.450 [11.43]	0.300 [7.62]	0.450 [11.43]	0.230 [5.84]	N/A	N/A	0.600 [15.24]
3357-6225	0.655 [16.64]	0.650 [16.51]	0.700 [17.78]	0.620 [15.75]	0.810 [20.57]	0.570 [14.48]	0.655 [16.64]	0.500 [12.70]	0.655 [16.64]	0.425 [10.80]	0.655 [16.64]	0.350 [8.89]	0.810 [20.57]
3357-6237	0.810 [20.57]	0.650 [16.51]	0.700 [17.78]	0.620 [15.75]	0.655 [16.64]	0.570 [14.48]	0.655 [16.64]	0.500 [12.70]	0.655 [16.64]	0.425 [10.80]	0.655 [16.64]	0.350 [8.89]	0.810 [20.57]

**Cable Insert Dimension Table
Table 2**

Ordering Information

3357-62XX-1C

Backshell Size
09 = 9 Pin
15 = 15 Pin
25 = 25 Pin
37 = 37 Pin
50 = 50 Pin

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Sheet 3 of 3

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