

# 3M™ Round, Shielded/Jacketed, Flat Cable

.050" 28 AWG Stranded, Mass Terminatable, 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
- RoHS\* Compliant

Date Modified: April 13, 2007

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## Physical

**Jaket 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 x 36 AWG [ 7 x Ø 0.127 ] Tinned Stranded Copper  
**Shielding:** 0.001 [ 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:    | $> 1 \times 10^{10} \Omega/10 \text{ ft. [ 3m ]}$ |                                                |          |
|                           | <b>Unbalanced</b>                                 | <b>Balanced</b>                                |          |
| Characteristic Impedance: | 62 $\Omega$                                       | 106 $\Omega$                                   |          |
| Capacitance:              | 27.7 pF/ft [ 90.88 pF/m ]                         | 15.2 pF/ft [ 49.9 pF/m ]                       |          |
| Inductance:               | 0.11 $\mu\text{H/ft}$ [ 0.35 $\mu\text{H/m}$ ]    | 0.17 $\mu\text{H/ft}$ [ 0.57 $\mu\text{H/m}$ ] |          |
| Propagation Delay:        | 1.72 ns/ft [ 5.64 ns/m ]                          | 1.62 ns/ft [ 5.31 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: -20° C to +105° C      Canada: -20° C to +80° C  
**Flammability Rating:** USA: VW-1      Canada: FT1

\*\*RoHS Compliant 2005/95/EC" means that the product or part ("Product") does not contain any of the substances in excess of the maximum concentration values in EU Directive 2002/95/EC, as amended by Commission Decision 2005/618/EC, unless the substance is in an application that is exempt under EU RoHS. This information represents 3M's knowledge and belief, which may be based in whole or in part on information provided by third party suppliers to 3M.

In the event any product is proven not to conform with 3M's Regulatory Information Appendix, then 3M's entire liability and Buyer's exclusive will be in accordance with the Warranty stated below.

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

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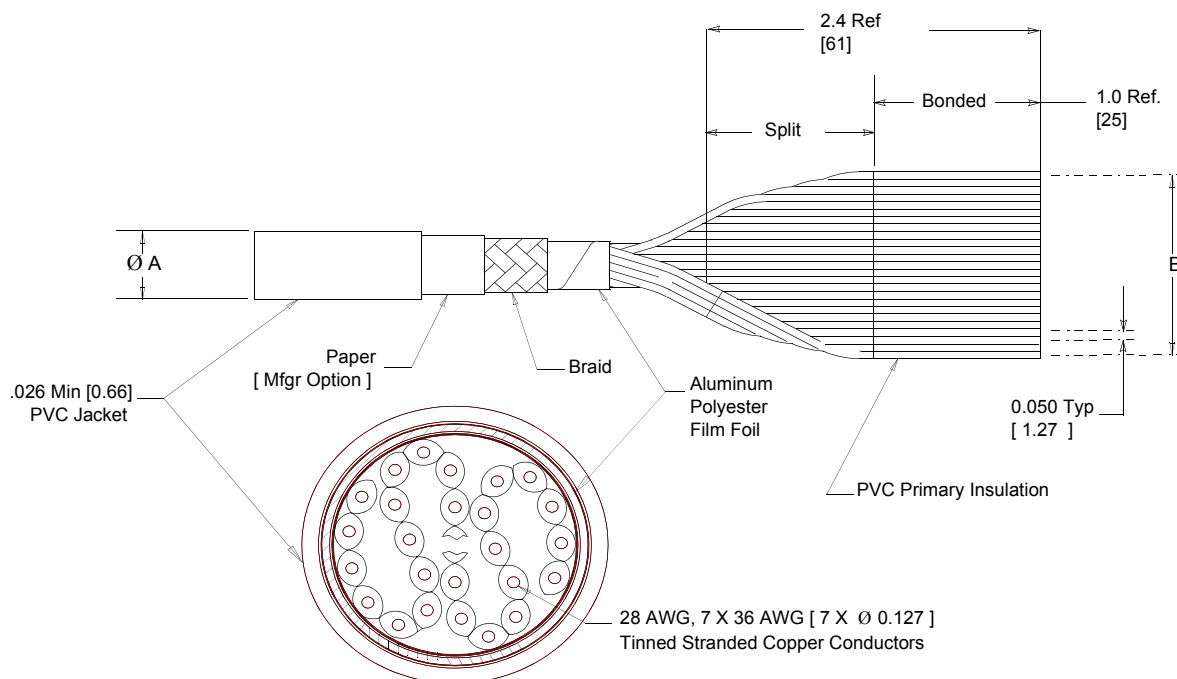


| Inch<br>[mm]           |     |      |       |
|------------------------|-----|------|-------|
| Tolerance Unless Noted |     |      |       |
|                        | .0  | .00  | .000  |
| Inch                   | ±.1 | ±.05 | ±.010 |

[ ] Dimensions for  
Reference only

| Number of<br>Conductors | 3M Part Number | Diameter A    | Dimension B Ref<br>(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 ]                   |

Note: Contact 3M for availability of additional conductor counts.



## Notes:

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

## Ordering Information

3659 / XX XX X00 XX

Number of Conductors  
(See Table)

Blank = Standard  
SF = Splice Free  
Length of Roll in Feet  
100 = 100 ft Standard  
300 = 300 ft Standard

Blank = Standard  
SO = Continuously Bonded Wire  
(No Split)

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Note: Contact 3M for availability of custom roll lengths.



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Minimum 10%  
Post-Consumer Fiber

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