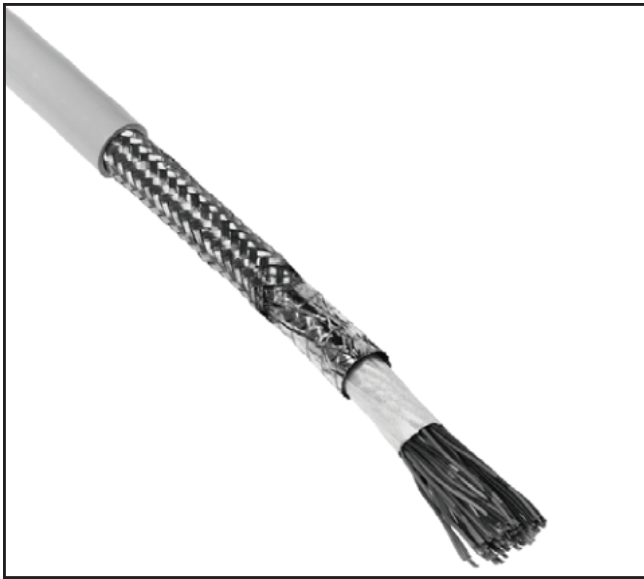


3M™ Round, Shielded/Jacketed, Disc. Wire Cable

28 AWG Stranded, Twisted Pair, PO/PVC

3644X Series



- Dual shielding provides 35 db average shielding effectiveness
- Wires are color coded for easy identification
- Meets external wiring requirements of National Electrical Code, Article 725 (CL2)
- UL listed for US and Canadian markets
- Please contact your 3M sales representative for variations not described in this specification.
- See Regulatory Information Appendix (RIA) for chemical compliance information (RIA E1 & C1 apply)

Date Modified: May 13, 2009

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Sheet 1 of 3

Physical

Jacket Material: Polyvinyl Chloride (PVC)

Color: Beige

Primary Material: Polyolefin (PO)

Marking:

Standard: (UL) CL2 75C 30 AWG 3M XX

C  AWM IIA/B 80C 150V FT1 EU <50V

(where XX may be NU or NW)

Conductors: 28 AWG 7 × 36 [7 × 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 Canada: 150V EU: <50V

Insulation Resistance: (Primary Cable) > 1 × 10¹⁰ Ω/10 ft. [3 m]

Characteristic Impedance:	Unbalanced	Balanced
	63 Ω	100 Ω

Capacitance:	24.2 pF/ft [79.4 pF/m]	15.3 pF/ft [50.2 pF/m]

Inductance:	0.10 μH/ft [0.33 μH/m]	0.15 μH/ft [0.49 μH/m]

Propagation Delay:	1.54 ns/ft [5.05 ns/m]	1.54 ns/ft [5.05 ns/m]

Velocity of Propagation:	66%	66%

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	Canada: 80°C
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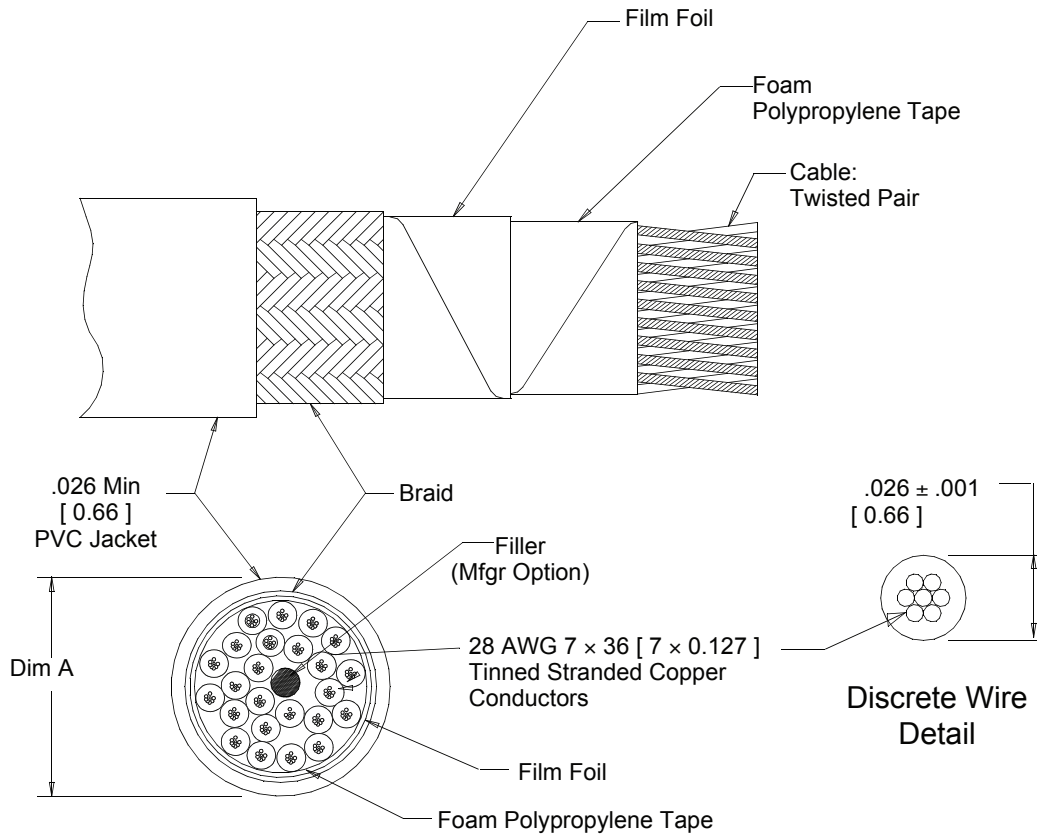
Flammability Rating:	USA: N.E.C. 725, CL2	Canada: FT1
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UL File No.: E118773, Power Limited Circuit Cable; CL2

3M™ Round, Shielded/Jacketed, Disc. Wire Cable

28 AWG Stranded, Twisted Pair, PO/PVC

3644X Series



Number of Conductors	3M Part Number	Dimension A ± .02
14 (7 Pair)	3644X/14	.22 [5.6]
16 (8 Pair)	3644x/16	.23 [5.8]
20 (10 Pair)	3644X/20	.24 [6.1]
24 (12 pair)	3644X/24	.25 [6.4]
26 (13 Pair)	3644X/26	.25 [6.4]
30 (15 Pair)	3644X/30	.27 [6.9]
36 (18 Pair)	3644X/36	.29 [7.4]
40 (20 Pair)	3644X/40	.30 [7.6]
50 (25 Pair)	3644X/50	.32 [8.1]
68 (34 Pair)	3644X/68	.37 [9.4]
80 (40 Pair)	3644X/80	.39 [9.9]
100 (50 Pair)	3644X/100	.44 [11.2]

Inch
[mm]

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

[] Dimensions for Reference Only

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Sheet 2 of 3

3M™ Round, Shielded/Jacketed, Disc. Wire Cable

28 AWG Stranded, Twisted Pair, PO/PVC

3644X Series

Pair Identification						
Pair	Cond	1st Conductor		Cond	2nd Conductor	
		Solid	Band		Solid	Band
1	1	White	Tan	2	Tan	White
2	3	White	Brown	4	Brown	White
3	5	White	Pink	6	Pink	White
4	7	White	Orange	8	Orange	White
5	9	White	Yellow	10	Yellow	White
6	11	White	Green	12	Green	White
7	13	White	Blue	14	Blue	White
8	15	White	Violet	16	Violet	White
9	17	White	Gray	18	Gray	White
10	19	Tan	Brown	20	Brown	Tan
11	21	Tan	Pink	22	Pink	Tan
12	23	Tan	Orange	24	Orange	Tan
13	25	Tan	Yellow	26	Yellow	Tan
14	27	Tan	Green	28	Green	Tan
15	29	Tan	Blue	30	Blue	Tan
16	31	Tan	Violet	32	Violet	Tan
17	33	Tan	Gray	34	Gray	Tan
18	35	Brown	Pink	36	Pink	Brown
19	37	Brown	Orange	38	Orange	Brown
20	39	Brown	Yellow	40	Yellow	Brown
21	41	Brown	Green	42	Green	Brown
22	43	Brown	Blue	44	Blue	Brown
23	45	Brown	Violet	46	Violet	Brown
24	47	Brown	Gray	48	Gray	Brown
25	49	Pink	Orange	50	Orange	Pink
26	51	Pink	Yellow	52	Yellow	Pink
27	53	Pink	Green	54	Green	Pink
28	55	Pink	Blue	56	Blue	Pink
29	57	Pink	Violet	58	Violet	Pink
30	59	Pink	Gray	60	Gray	Pink
31	61	Orange	Yellow	62	Yellow	Orange
32	63	Orange	Green	64	Green	Orange
33	65	Orange	Blue	66	Blue	Orange
34	67	Orange	Violet	68	Violet	Orange
35	69	Orange	Gray	70	Gray	Orange
36	71	Yellow	Green	72	Green	Yellow
37	73	Yellow	Blue	74	Blue	Yellow
38	75	Yellow	Violet	76	Violet	Yellow
39	77	Yellow	Gray	78	Gray	Yellow
40	79	Green	Blue	80	Blue	Green
41	81	Green	Violet	82	Violet	Green
42	83	Green	Gray	84	Gray	Green
43	85	Blue	Violet	86	Violet	Blue
44	87	Blue	Gray	88	Gray	Blue
45	89	Violet	Gray	90	Gray	Violet
46	91	White	-	92	Tan	-
47	93	Gray	-	94	Brown	-
48	95	Blue	-	96	Pink	-
49	97	Violet	-	98	Orange	-
50	99	Green	-	100	Yellow	-

Ordering Information

3644X / XX XX

Jacket Color Options: _____
 A = "Special" Black Jacket
 B = "Standard" Beige Jacket

Blank = Standard
 SF = Splice Free

Number of Conductors
 (See Table)

Note: Standard length 20 through 68 conductors is 300 feet per roll. Standard length of 80 and 100 conductor cables is 200 feet per roll.

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 Sheet 3 of 3

Regulatory Information Appendix

3M Electronic Solutions Division/Interconnect

EUROPE

Appendix E1: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment, as amended by EU Commission Decision 2005/618/EC.

This product is RoHS Compliant 2005/95/EC.

“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. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon 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 remedy will be in accordance with the Warranty stated below.

Appendix E2: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment, as amended by EU Commission Decision 2005/618/EC.

This product contains lead in the compliant pin area in excess of the maximum concentration value allowed but is compliant by exemption under EU Commission Decision 2005/747/EC.

“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. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon 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 remedy will be in accordance with the Warranty stated below.

Appendix E3: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment as amended by Commission Decision 2005/618/EC.

This product contains lead in the solder tail area in excess of the maximum concentration value allowed.

Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon 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 remedy will be in accordance with the Warranty stated below.

Appendix E4: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment, as amended by EU Commission Decision 2005/618/EC, as amended by EU Commission Decision 2005/717/EC, as amended by EU Court of Justice Decision 2008/C 116/04

This product contains decaBDE in the insulating material in excess of the maximum concentration allowed for finished products subject to EU RoHS that are placed on the EU market after June 30, 2008.

Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon 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 remedy will be in accordance with the Warranty stated below.

Appendix E5: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, as amended by EU Commission Decision 2005/618/EC.

This product contains lead in excess of the maximum concentration value allowed but is compliant by exemption under Item 6 of the Annex to the Directive.

“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. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon 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 remedy will be in accordance with the Warranty stated below.

CHINA

Appendix C1: China RoHS



Electronic Industry Standard of the People’s Republic of China, SJ/T11363-2006, Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products.

This symbol, per Marking for the Control of Pollution Caused by Electronic Information Products, SJ/T11364-2006, 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: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers (excluding decaBDE); or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon 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 remedy will be in accordance with the Warranty stated below.

Appendix C2: China RoHS



Electronic Industry Standard of the People’s Republic of China, SJ/T11363-2006, Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products.

This symbol, per Marking for the Control of Pollution Caused by Electronic Information Products, SJ/T11364-2006, means that the product or part **does** contain a substance, as detailed in the chart below, in excess of the following maximum concentration values in any homogeneous material: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers (excluding decaBDE); or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon information provided by third party suppliers to 3M.

The numerical reference in the symbol above should not be construed as a representation regarding the product’s life or an extension of a product warranty. The product warranty is stated below. 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 remedy will be in accordance with the product Warranty stated below.

产品中有毒有害物质或元素的名称及含量 Name and Content of Hazardous Substances or Elements

部件名称 (Part or Component Name)	有毒有害物质或元素 (Hazardous Substances or Elements)					
	铅(Pb)	汞(Hg)	镉(Cd)	六价铬(Cr(VI))	多溴联苯(PBB)	多溴二苯醚(PBDE)
端子镀层(contact plating)	×	○	○	○	○	○
○：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006 标准规定的限量要求以下。(Indicates that this hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.)						
×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。(Indicates that this hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.)						

Appendix C3: China RoHS



Electronic Industry Standard of the People's Republic of China, SJ/T11363-2006, Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products.

This symbol, per Marking for the Control of Pollution Caused by Electronic Information Products, SJ/T11364-2006, means that the product or part **does** contain a substance, as detailed in the chart below, in excess of the following maximum concentration values in any homogeneous material: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers (excluding decaBDE); or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M's best knowledge and belief based upon information provided by third party suppliers to 3M.

The numerical reference in the symbol above should not be construed as a representation regarding the product's life or an extension of a product warranty. The product warranty is stated below. 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 remedy will be in accordance with the product Warranty stated below.

产品中有毒有害物质或元素的名称及含量 Name and Content of Hazardous Substances or Elements

部件名称 (Part or Component Name)	有毒有害物质或元素 (Hazardous Substances or Elements)					
	铅(Pb)	汞(Hg)	镉(Cd)	六价铬(Cr(VI))	多溴联苯(PBB)	多溴二苯醚(PBDE)
合金(Metal alloy)	×	○	○	○	○	○
<p>○：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006 标准规定的限量要求以下。(Indicates that this hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.)</p> <p>×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。(Indicates that this hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.)</p>						

Important Notice

All statements, technical information, and recommendations related to 3M's products are based on information believed to be reliable, but the accuracy or completeness is not guaranteed. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use. Any statements related to the product which are not contained in 3M's current publications, or any contrary statements contained on your purchase order shall have no force or effect unless expressly agreed upon, in writing, by an authorized officer of 3M.

Warranty; Limited Remedy; Limited Liability.

This product will be free from defects in material and manufacture for a period of one (1) year from the time of purchase. **3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** If this product is defective within the warranty period stated above, your exclusive remedy shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product. **Except where prohibited by law, 3M will not be liable for any indirect, special, incidental or consequential loss or damage arising from this 3M product, regardless of the legal theory asserted.**



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