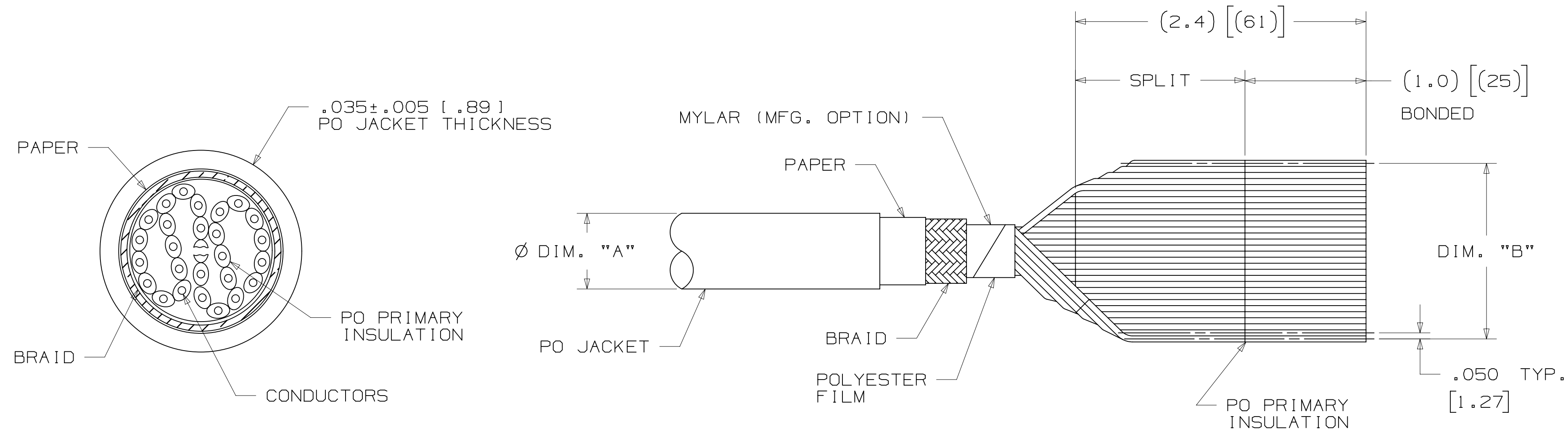


3M™ ROUND, SHIELDED/JACKETED, FLAT CABLE, HF659 SERIES
 .050" 28 AWG STRANDED, MASS TERMINATABLE, HALOGEN FREE PO/PO



NOTE:
 1) BLUE MARKING ON ONE EDGE OF PRIMARY CABLE DESIGNATES WIRE #1.
 2) DIMENSION "B" PERTAINS TO BONDED AREA ONLY.

ORDERING INFORMATION

HF659/XX XX XX

NUMBER OF CONDUCTORS (SEE TABLE 1)

BLANK = STANDARD
 SF = SPLICE FREE

BLANK = STANDARD
 SO = CONTINUOUSLY BONDED WIRE (NO SPLIT)

NOTE:
 AVAILABLE IN STANDARD 275FT ROLLS. CONTACT 3M FOR AVAILABILITY OF ADDITIONAL CONDUCTOR COUNTS AND/OR CUSTOM ROLL LENGTHS.

TABLE 1

| NO. OF CONDUCTORS | 3M PART NUMBER | DIM. "A" | DIM. "B" |
|-------------------|----------------|------------|-------------|
| 09 | HF659/09 | .25 [6.4] | .40 [10.2] |
| 10 | HF659/10 | .25 [6.4] | .45 [11.4] |
| 14 | HF659/14 | .30 [7.6] | .65 [16.5] |
| 15 | HF659/15 | .30 [7.6] | .70 [17.8] |
| 16 | HF659/16 | .30 [7.6] | .75 [19.1] |
| 20 | HF659/20 | .33 [8.4] | .95 [24.1] |
| 24 | HF659/24 | .34 [8.6] | 1.15 [29.2] |
| 25 | HF659/25 | .34 [8.6] | 1.20 [30.5] |
| 26 | HF659/26 | .34 [8.6] | 1.25 [31.8] |
| 30 | HF659/30 | .37 [9.4] | 1.45 [36.8] |
| 34 | HF659/34 | .37 [9.4] | 1.65 [41.9] |
| 36 | HF659/36 | .41 [10.4] | 1.75 [44.5] |
| 37 | HF659/37 | .41 [10.4] | 1.80 [45.7] |
| 40 | HF659/40 | .41 [10.4] | 1.95 [49.5] |
| 50 | HF659/50 | .45 [11.4] | 2.45 [62.2] |
| 60 | HF659/60 | .48 [12.2] | 2.95 [74.9] |
| 64 | HF659/64 | .48 [12.2] | 3.15 [80.0] |

PHYSICAL :

JACKET MATERIAL: HALOGEN FREE POLYOLEFIN (PO)
 COLOR: DARK GRAY
 PRIMARY MATERIAL: HALOGEN FREE POLYOLEFIN (PO)
 COLOR: DARK GRAY

MARKING: STANDARD: NONE
 CONDUCTORS: 28 AWG, 7 X 36 AWG [7 X Ø .127] TINNED STRANDED COPPER
 SHIELDING: .001 [.03] THICK ALUMINUM/POLYESTER FILM FOIL AND 90% COVERAGE TINNED COPPER BRAID.

ELECTRICAL :

VOLTAGE RATING: USA 150V CANADIAN 150V EU: <50V
 INSULATION RESISTANCE: (PRIMARY CABLE) >1 X 10¹⁰Ω/10ft. [3m]

| CHARACTERISTIC | UNBALANCED | | BALANCED | |
|---------------------------|------------|---------------|------------|---------------|
| | VALUE | UNIT | VALUE | UNIT |
| CHARACTERISTIC IMPEDANCE: | 54Ω | | 107Ω | |
| CAPACITANCE: | 28.7 pF/ft | [84.2 pF/m] | 14.4 pF/ft | [47.2 pF/m] |
| INDUCTANCE: | .08μH/ft | [.27μH/m] | .16μH/ft | [.52μH/m] |
| PROPAGATION DELAY: | 1.55 ns/ft | [4.95 ns/m] | 1.54 ns/ft | [4.95 ns/m] |
| VELOCITY OF PROPAGATION: | 66% | | 66% | |

NOTE: UNBALANCED IS MEASURED BETWEEN GROUND-SIGNAL-GROUND CONDUCTORS.
 BALANCED IS MEASURED BETWEEN CONDUCTORS WITHIN A PAIR.
 MEASURED VALUES ARE TYPICAL

ENVIRONMENTAL :

TEMPERATURE RATING: -40°C TO +105°C (EIA-364-32G, METHOD A, TEST CONDITION 2)
 -15°C TO +75°C (UL TEMPERATURE RATING)

FLAMMABILITY RATING: INTERNAL: HORIZONTAL FLAME PER UL758
 EXTERNAL: CABLE FLAME (VERTICAL) PER UL758

HALOGEN FREE IS DEFINED AS BOTH 1) NO HALOGEN COMPOUNDS THAT ARE INTENTIONALLY ADDED TO THE PRODUCT OR USED IN THE MANUFACTURING PROCESS FOR THE PRODUCT AND 2) ANY IMPURITIES PRESENT ARE LESS THAN 900ppm BROMINE, LESS THAN 900ppm CHLORINE AND/OR LESS THAN 1500ppm TOTAL BROMINE AND CHLORINE. THE LATTER ARE THE LEVELS SET FORTH IN CERTIAN INDUSTRY STANDARDS FOR PRINTED CIRCUIT BOARDS, SUCH AS THE INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC) 61249-2-21 STANDARDS. THIS INFORMATION REPRESENTS 3M'S KNOWLEDGE AND BELIEF WHICH MAY BE BASED IN WHOLE OR IN PART ON INFORMATION PROVIDED BY 3RD PARTY SUPPLIERS TO 3M.

- * LOW SMOKE ZERO HALOGEN (LSZH) INSULATION. ADVANTAGES OF LSZH INSULATION ARE THE LOW SMOKE (IEC 61034-2-2005) AND LOW TOXICITY OF COMBUSTION GASES (NF X 70-100-2-2006), REDUCING THE RISK TO FIREFIGHTERS AND REDUCING THE SOOT AND CORROSION DAMAGE TO NEARBY EQUIPMENT.
- * ROUND CONSTRUCTION PERMITS MORE EASY ROUTING.
- * 28 AWG WIRE ON .050 INCH CENTERS PERMITS MASS TERMINATION TO BROAD LINE OF IDC CONNECTORS.
- * CONTINUOUS SPLIT/BOND REPEAT ALLOWS FOR MASS TERMINATIONS OF IDC CONNECTORS.
- * DUAL SHIELDING PROVIDES 35 db AVERAGE SHIELDING.
- * PRIMARY CABLE IS ZIPPABLE FOR BRANCHING OR DISCRETE TERMINATION.

- NOTES
- REGULATORY INFORMATION: VISIT 3M.com/regs OR CONTACT YOUR 3M REPRESENTATIVE TO FIND THE RoHS COMPLIANCE STATUS OF THE 3M PART YOU ARE INTERESTED IN.
 - IN THE EVENT OF CONFLICT BETWEEN THIS DATA AND THAT CONTAINED IN THE PRODUCT SPECIFICATION, THE PRODUCT SPECIFICATION TAKES PRECEDENT.

3M ELECTRONICS MATERIALS SOLUTIONS DIVISION
 INTERCONNECT SOLUTIONS
<http://www.3mconnectors.com>

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 FOR TECHNICAL, SALES OR ORDERING
 INFORMATION CALL 800-225-5373



UL FILE NO: E42769,
 UL STYLE NO: 22170

| INCH [MM] | | | |
|-------------------------------|-----|------|-------|
| TOLERANCE - UNLESS NOTED | | | |
| [INCH] | ±.1 | ±.05 | ±.010 |
| [] = DIM. FOR REFERENCE ONLY | | | |

| | | | | | | |
|-------------------------------|---------------|----------------------------|--------------|----------------------------|------|------|
| DESIGN REFERENCE | NEXT ASSEMBLY | REV | ECO | ISSUE DATE AND DESCRIPTION | DRFT | CHKD |
| | | | | MAY 29, 2018 | | |
| APPROVED | DATE | APPROVED | DATE | | | |
| B. MIZE | MAY 29, 2018 | B. MIZE | MAY 29, 2018 | | | |
| DIVISION CODE | | EMSD | | | | |
| DO NOT SCALE DRAWING | | TOLERANCES EXCEPT AS NOTED | | | | |
| THIRD ANGLE PROJECTION | | INCHES | | | | |
| MAX SURFACE ROUGHNESS | | MILLIMETERS | | | | |
| [] = DIM. FOR REFERENCE ONLY | | REV. E | | | | |
| CAGE NUMBER | | DRAWING NO. | | REV. | | |
| D78-5100-2335-7 | | D78-5100-2335-7 | | E | | |
| MODEL | | HF659 | | SHT 1 OF 2 | | |

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ROUND, SHIELDED /
 JACKETED, FLAT,
 CABLE, .050", HF659

78-5100-2335-7
 178-5100-2335-7
 178-5100-2335-7

8 7 6 5 4 3 2 1

3M™ ROUND, SHIELDED/JACKETED, FLAT CABLE, HF659 SERIES
 .050" 28 AWG STRANDED, MASS TERMINATABLE, HALOGEN FREE PO/PO

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| | | | | | | |
|------------------------|---------------------------------|----------------------------|---|----------------------------|-------------|--|
| DESIGN REFERENCE | NEXT ASSEMBLY | REV | ECO | ISSUE DATE AND DESCRIPTION | DRFT | CHKD |
| | | | | | | |
| DO NOT SCALE DRAWING | SCALE | TOLERANCES EXCEPT AS NOTED |  © 3M COPYRIGHT 2018 This document and the information it contains are 3M property and may not be reproduced or further distributed without 3M permission, or used or disclosed other than for 3M authorized purposes. All rights reserved. | | | |
| THIRD ANGLE PROJECTION | INTERPRET PER ASME Y14.5 - 2009 | MILLIMETERS | TITLE ROUND, SHIELDED / JACKETED, FLAT, CABLE, .050", HF659 | | | |
| MAX SURFACE ROUGHNESS | MARKED ONLY | INCHES | CAGE NUMBER | SIZE | DRAWING NO. | REV. |
| | | | D | 78-5100-2335-7 | E | |
| | | | MODEL | HF659 | DET | LISTS <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO SHT 2 OF 2 |

E REVISION
 78-5100-2335-7 DRAWING NUMBER
 B
 A
 Time 8/1/2018 11:53:10 AM UTC Offset (hrs) 6

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- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
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- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
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