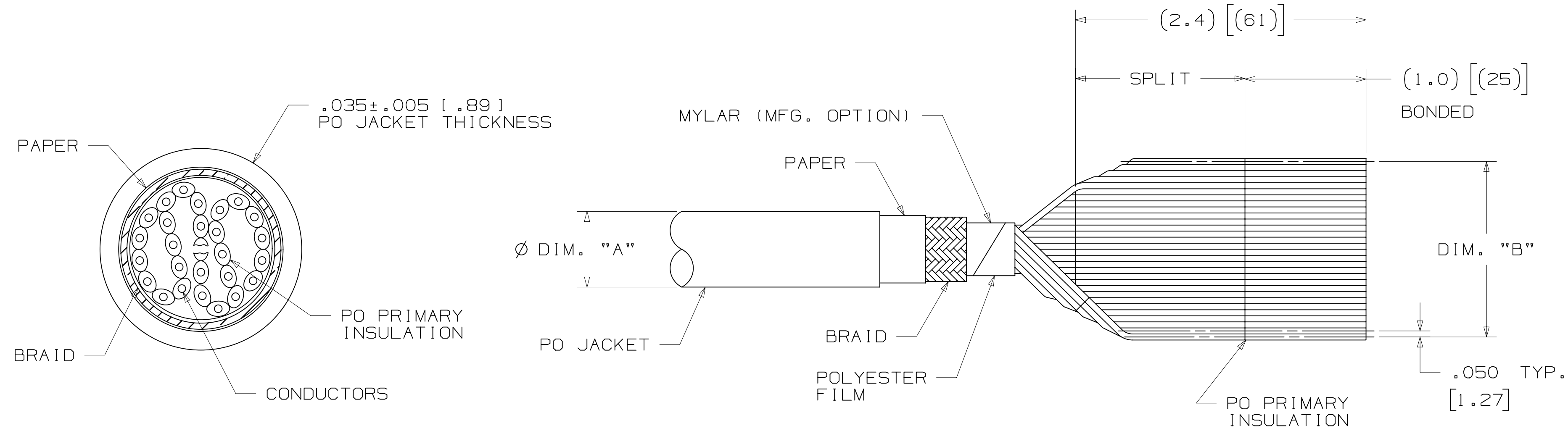


# 3M™ ROUND, SHIELDED/JACKETED, FLAT CABLE, HF659 SERIES

.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.

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: NONE  
 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 10<sup>10</sup>Ω/10ft. [3m]

CHARACTERISTIC IMPEDANCE:	UNBALANCED	BALANCED	
	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 CERTAIN 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
1. 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.
  2. 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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UL FILE NO: E42769,  
 UL STYLE NO: 22170

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

DESIGN REFERENCE	NEXT ASSEMBLY	REV	ECO	ISSUE DATE AND DESCRIPTION	DRFT	CHKD
DO NOT SCALE DRAWING	SCALE	TOLERANCES EXCEPT AS NOTED				
THIRD ANGLE PROJECTION		INTERPRET PER ASME Y14.5 - 2009				
MAX SURFACE ROUGHNESS		SURFACES				
MARKED ONLY		ANGLES				

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TITLE	ROUND, SHIELDED / JACKETED, FLAT, CABLE, .050", HF659
CAGE NUMBER	D 78-5100-2335-7
SIZE	E
DRAWING NO.	78-5100-2335-7
REV.	E
MODEL	HF659
DET	1
ISTS	YES
NO	X
SHT	1 OF 2

78-5100-2335-7  
 178-5100-2335-7  
 Time 8/1/2018 11:52:00 AM UTC Offset (hrs) 6

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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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



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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