

.050" 28 AWG STRANDED, MASS TERMINATABLE, HALOGEN FREE PO/PO



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

HF 659 / 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.

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.

VOLTAGE RATING: USA 150V CANADIAN 150V EU: <50V
INSULATION RESISTANCE: (PRIMARY CABLE) $>1 \times 10^{10} \Omega / 10^6 t$. [3m]

	UNBALANCED	BALANCED
CHARACTERISTIC IMPEDANCE:	54 Ω	107 Ω
CAPACITANCE:	28.7 pF/ft [84.2 pF/m]	14.4 pF/ft [47.2 pF/m]
INDUCTANCE:	.08 μ H/ft [.27 μ H/m]	.16 μ H/ft [.52 μ H/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"

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.

TABLE 1

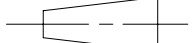
NO. OF CONDUCTORS	3M PART NUMBER	DIM. "A"	DIM. "B"
09	HF659/09	.25 [6.4]	.40 [10.2]
10	HF659/10	.25 [6.4]	.45 [11.4]
14	HF659/14	.30 [7.6]	.65 [16.5]
15	HF659/15	.30 [7.6]	.70 [17.8]
16	HF659/16	.30 [7.6]	.75 [19.1]
20	HF659/20	.33 [8.4]	.95 [24.1]
24	HF659/24	.34 [8.6]	1.15 [29.2]
25	HF659/25	.34 [8.6]	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]

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

DESIGN REFERENCE		NEXT	ASSEMBLY		REV	ECO	ISSUE DATE AND DESCRIPTION		DRFT	CHKD
ADDRESS CODES					DRFT CASTIGLIONE	DATE MAY 29, 2018	MFG		DATE	
					CHKD	DATE	APPROV. S. MIZE		DATE MAY 29, 2018	
DIVISION			DIVISION CODE EMSD			 3M Center St. Paul, MN 55144				
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.				
				INCHES 0.0 0.00 0.000 0.000 ±		TITLE ROUND, SHIELDED / JACKETED, FLAT, CABLE, 0.050", HF659				
THIRD ANGLE PROJECTION		INTERPRET PER ASME Y14.5 - 2009		MILLIMETERS 0.0 0.00 0.00 ±		CAGE / SIZE / DRAWING NO. NUMBER D 78-5100-2335-7 REV.				
MAX. SURFACE ROUGHNESS		MAX. SURFACES		ANGLE		MODEL HF659				
☒ UNFINISHED ☐ MARKED ONLY						DET. YES ☐ NO ☒ SHT 1 OF 2				

REVISION

78-5100-2335-7
DRAWING NUMBER

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1

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