

# 3M™ Ultra Hard Metric (UHM) High-Performance Cable Assembly

2 mm 5×1 Column Stacked Wafers for Coax or Twin Axial Cable, Power

UHM Series



- Mates with Hard Metric/Compact PCI® IEC 61076-4-101 backplane connectors, UHM headers, HSHM headers
- Hard Metric 2 mm × 2 mm grid spacing
- Fully-shielded coaxial or twin axial interface
- Standard or custom wafer stacks
- Range of high performance cable - 50 Ω, 75 Ω coax, 85 Ω, 100 Ω twin axial
- Power wafer
- Semi-rigid stacking system reduces insertion force
- Mix-and-match custom options

Date Modified: October 15, 2010

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## Physical

**Connector/Insulation Material:** LCP

Flammability: UL 94V-0

**Connector Contact Material:** Copper alloy

### Plating:

Underplating: 100 μ" (2.54 μm) Avg. Nickel

Contact Interface: [30 μ" ] Gold minimum wipe area

### Ground Shield Contact:

Underplating: 100 μ" (2.54 μm) Avg. Nickel overall

Overplating: 10 μ" (0.25 μm) Avg. Gold

## Electrical

**Cable Voltage Rating:** 30 V

**Cable Current Rating:** 1 A min. (Rating is application dependent)

**Cable Insulation Resistance:** >100 Megohms at 500 V<sub>DC</sub>

**Cable Withstanding Voltage:** 500 V<sub>DC</sub> for 1 minute

**Cable Characteristic Impedance:** 50 Ω and 75 Ω single ended assemblies, 85 Ω and 100 Ω differential assemblies

## Environmental

**Cable Temperature Rating:** -20 to +80°C Minimum

UL File No.: E86982

## Mechanical

**Cable Connector Insertion Force:** 0.3 N [1.35 pounds]/Single wafer max

**Cable Connector Withdrawal Force:** 0.11 N [0.50 pounds]/Single wafer max

**Cable Retention Force:** 44.5 N [10 pounds] minimum

**Cable Connector Durability:** 50 Mating Cycles

**3M**

Electronic Solutions Division  
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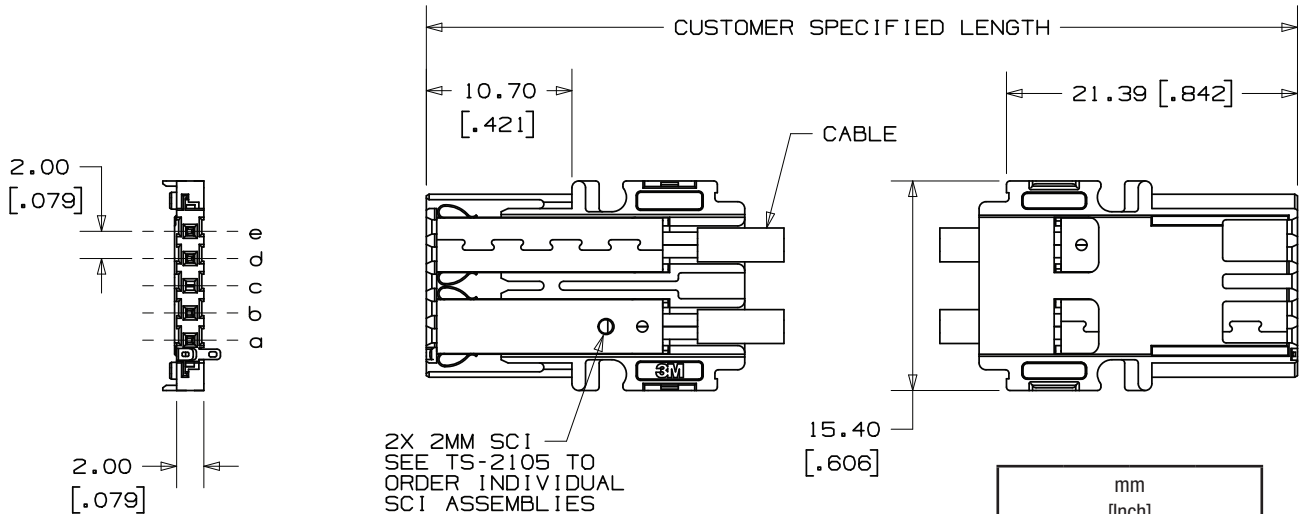
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## Shielded Controlled Impedance (SCI) Wafer Receptacle



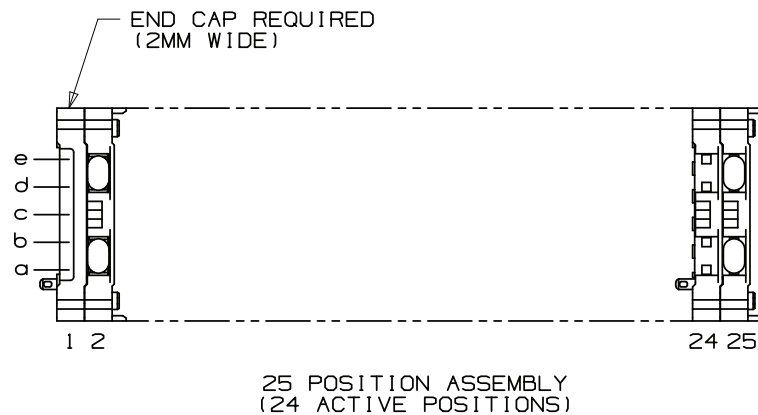
mm [Inch]		
Tolerance Unless Noted		
	.0	.00
mm	±.3	±.15
[ ] Dimensions for Reference Only		

Assembly Tolerance

<36" ± 0.5"

36" to 120" ± 1.0"

Minimum Assembly Length = 4 inches



If all 25 positions are needed, end cap extends 2 mm over position one end. Space headers at 2 mm gap.

## Ordering Information

**98XXXX-XXX-XXX.X-X-X-XX**

Right and Left Connectors:

- a b c d e
- 12 = 1 Coax G S G X X
- 13 = 1 Coax X X G S G
- 15 = 2 Coax G S G S G
- 17 = 2 Twin Axial S S G S S
- 19 = 1 Twin Axial S S G X X
- 20 = 1 Twin Axial X X G S S
- XX = Custom, contact 3M

Coax Cable Type:

- 027 = 50 Ω Cable, 26 AWG
- 105 = 50 Ω Cable, 28 AWG
- 054 = 75 Ω Cable, 30 AWG

Twin Axial Cable Type:

- 058 = 100 Ω Twin Axial, 26 AWG
- 122 = 85 Ω Twin Axial, 25 AWG

Length:  
Tip-to-tip in inches

Cable Configuration:  
C = Pin A to Pin A (Ref Figure A)  
D = Transmit to Receive (Ref Figure B)

Number of Wafer Assemblies in Harness:  
1 through 26

Ground Pattern:  
1 = Ground to C Row

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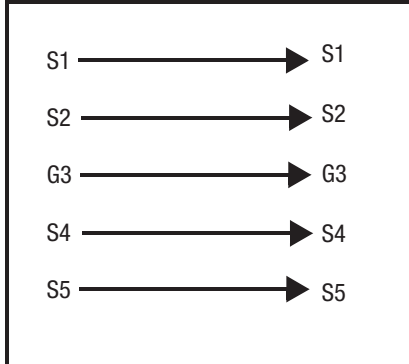
2 mm 5×1 Column Stacked Wafers for Coax or Twin Axial Cable, Power

UHM Series

## Cable Configuration

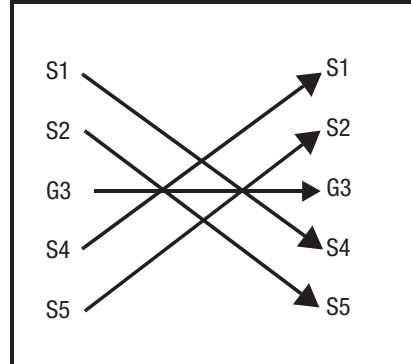
**Figure A**

(PIN 1 to PIN 1)  
Twin Axial shown



**Figure B**

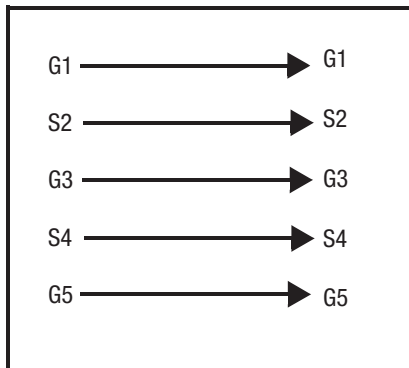
(Transmit to Recieve)  
Twin Axial



S = Signal / G = Ground / NC = Not Connected

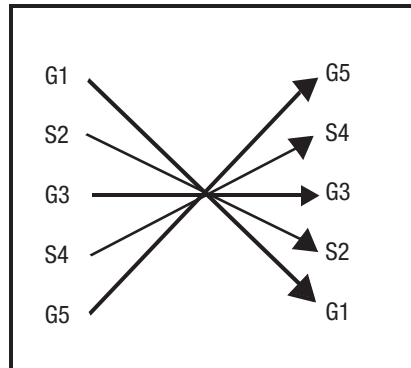
**Figure A<sup>2</sup>**

Coax



**Figure B<sup>2</sup>**

(Transmit to Recieve)  
Coax



## UHM Cable Assemblies (Standard Assemblies)

Socket Style	Order Number (Add Cable Length)	# Assemb.
UHM B110	981717-058-XXX.X-C-1-22	
UHM C055	981717-058-XXX.X-C-1-11	
UHM B095	981717-058-XXX.X-C-1-19	
UHM A110	981717-058-XXX.X-C-1-11	(2)
UHM B125	981717-058-XXX.X-C-1-25	

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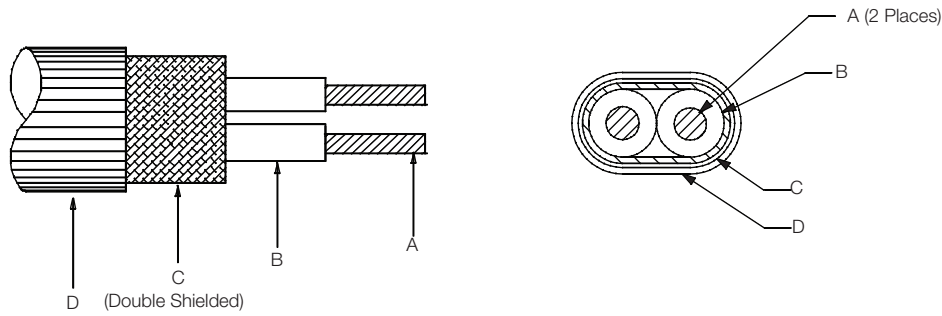
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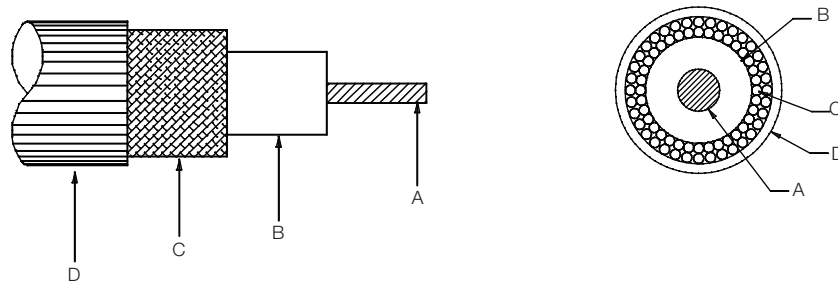
UHM Series

## Twin Axial Cable



Physical Properties (Typical)					
Cable Type			Dielectric Material	Shield	Jacket
058 Twin Axial	100 Ω	26 AWG, Solid Silver Plated Copper 0.455 mm [0.018]	Air & PTFE	Dual layer braid	FEP Brown 1.55 x 2.49 mm O.D. [.061" x .098" O.D.]
122 Twin Axial	85 Ω ± 5 Ω	24.5 AWG, Solid SPC 0.483 mm [0.019]	Air & PTFE	Braid	FEP Burgundy 1.73 x 2.67 mm O.D. [.068" x .105" O.D.]

## Coaxial Cable



Physical Properties (Typical)					
Cable Type			Dielectric Material	Shield	Jacket
027 Coax	50 Ω	26 AWG, 7/34, Silver Plated Copper 0.48 mm O.D. [.019" O.D.]	Air & PTFE	Dual layer silver plated copper wire served shield	FEP Blue 1.80 mm O.D. [.071" O.D.]
105 Coax	50 Ω	28 AWG, 19/40 Silver Plated Copper 0.33 mm O.D. [.013" O.D.]	Foamed FEP	Silver plated braid	FEP Black 1.65 mm O.D. [.065" O.D.]
048 Coax	75 Ω	30 AWG, 7/38, Silver Plated Copper 0.31 mm O.D. [.012" O.D.]	Air & PTFE	Silver plated braid	FEP Gray 1.88 mm O.D. [.074" O.D.]

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## Coaxial and Twin Axial Cable

Electrical Properties (Typical)				
Cable Type		Capacitance	Propagation Delay	Attenuation
<b>Coaxial Cable</b>				
027 Coax	50 Ω	74.5 pF/m Max [22.7 pF/ft]	3.81 nS/m [1.16 nS/ft]	-8.23 dB (typical) / 10 m @ 650 MHz
105 Coax	50 Ω	87 pF/m Max [26.5 pF/ft]	4.2 nS/m [1.28 nS/ft]	-3 dB (typical) / 3 m @ 500 MHz
054 Coax	75 Ω	51.2 pF/m Max [16 pF/ft]	4.00 nS/m [1.22 nS/ft]	-4.76 dB (typical) / 10 m @ 650 MHz
<b>Twin Axial Cable</b>				
058 Twin Axial	100 Ω	42.6 pF/m Max [13.0 pF/ft]	4.17 nS/m [1.27 nS/ft]	-7.79 dB (typical) / 10 m @ 650 MHz
122 Twin Axial	85 Ω ± 5 Ω	45.88 pF/m Max [14.0 pF/ft]	3.87 nS/m [1.18 nS/ft]	Contact 3M

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