

# High-Speed NANO-D CONNECTOR and Cable Solutions

Designed to meet the requirements of today's  
high-speed applications & protocols



**Omnetics Connector Corporation** is a leading global provider of precision and high-reliability electronic connectors and interconnect systems.

For more than 40 years, we have engineered an extensive portfolio of innovative products, with a special focus on micro-miniature and nano-miniature interconnects. Omnetics connectors are among the smallest on the market and deliver exceptional performance in challenging work environments. As interconnect technologies continue to evolve, we design next-generation products that help bring transformative ideas to life.

The **High-Speed Nano-D** uses modified insulators and pin arrangements to optimize impedance and performance for high-speed or high-density signal routing. 1 Amp pre-wired parallel pair cable and PCB solutions deliver up to 20 Gbps performance per differential pair.

**High-Speed connectors and cables** are optimized for gigabit digital applications and protocols such as: USB 3.0, 10GbE, Camera Link, and

PCIe. These high performance Mil-Aero style Nano-D connectors are built using Omnetics MIL-DTL-32139 compliant Flex Pin contact solution. The **High-Speed connector solutions** have the ability to withstand high shock and vibration while maintaining signal integrity:

*Turnkey pre-wired factory cables and PCB connector solutions.*

*Unique contact isolation and spacing for optimal performance up to 20 Gbps.*

*Uses 30 AWG parallel pair High-Speed cable.*

*1 Amp Flex Pin contacts performance in high vibrations and shock environments.*

**We take great pride in the products we build for you.** Our design team works closely with customers to create new and custom interconnect solutions for tomorrow's innovative products. Omnetics connectors are designed, produced, and tested by hand at our plant in the United States. Omnetics is a privately held company and we exist to advance innovation wherever it is needed next.



**Electro-Mechanical Specifications**

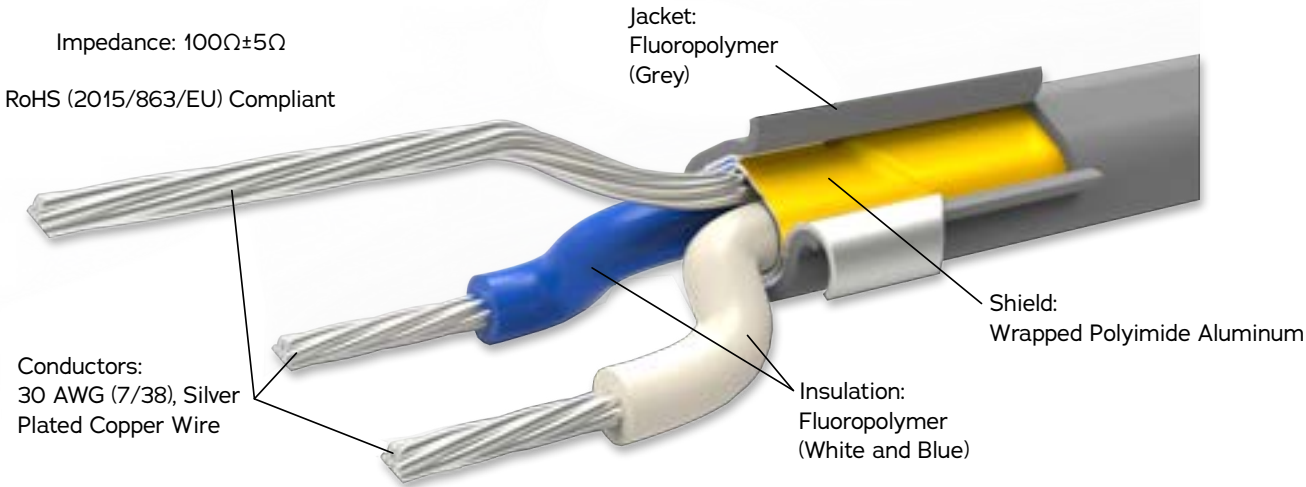
TYPE	PERFORMANCE
Durability	> 2000 Mating Cycles min
Temperature	-55°C to +125 °C
Current rating	1 Amp per contact
Voltage Rating (DWV)	250 VAC RMS Sea Level
Insulation Resistance	5,000 Megohms @ 100 VDC
Shock	100 g's discontinuity < 10 nanoseconds
Vibration	20 g's discontinuity < 10 nanoseconds
Thermal Vacuum Outgassing	1.0% max TML, 0.1% VCM
Contact Resistance	71 milliohms (71 mV) max @ 1 Amp
Mating/Unmating Force	2.5 oz. (.71g) typical per contact

**Material Specifications**

Contact	Copper Alloy Per MIL-DTL-32139
Contact Finish	Gold per ASTM B488, Type II, Class 1.27, Code C Over Nickel Underplate
Insulator	LCP Per MIL-DTL-32139 Or PEEK
Encapsulant	Epoxy

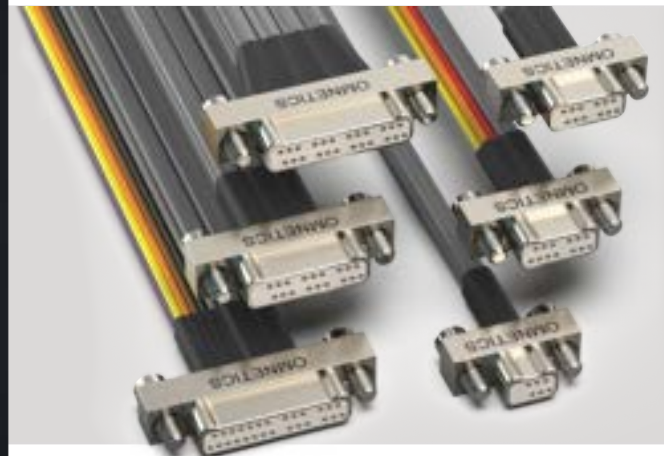
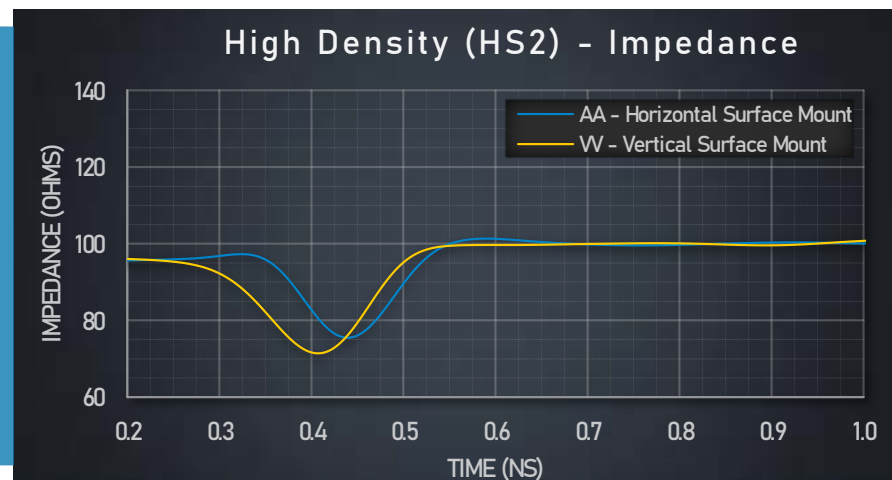
**Shell Options**

Aluminum 6061	Electroless Nickel per SAE-AMS-2404
Stainless Steel, 300 Series	Passivated per SAE-AMS-2700

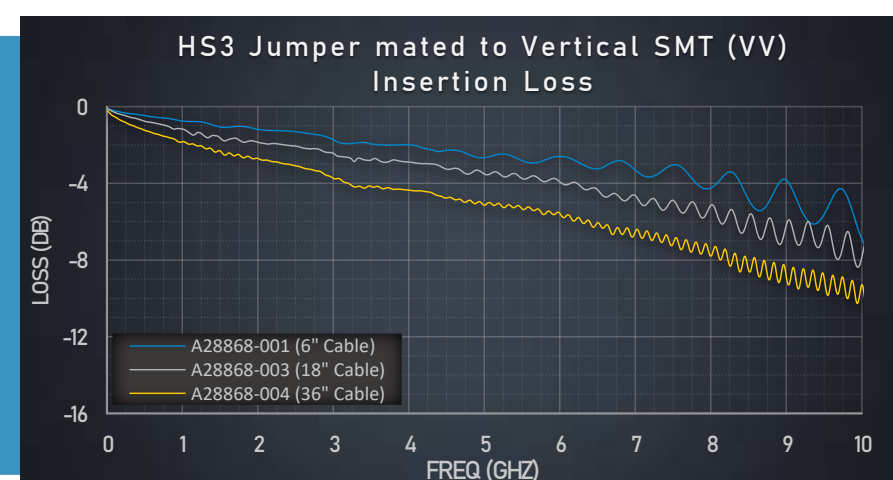
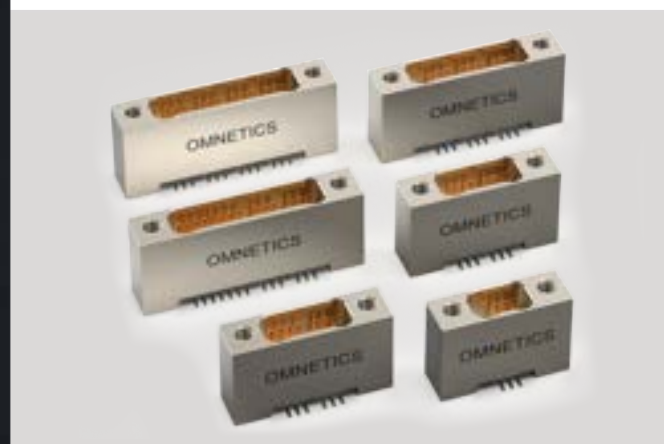
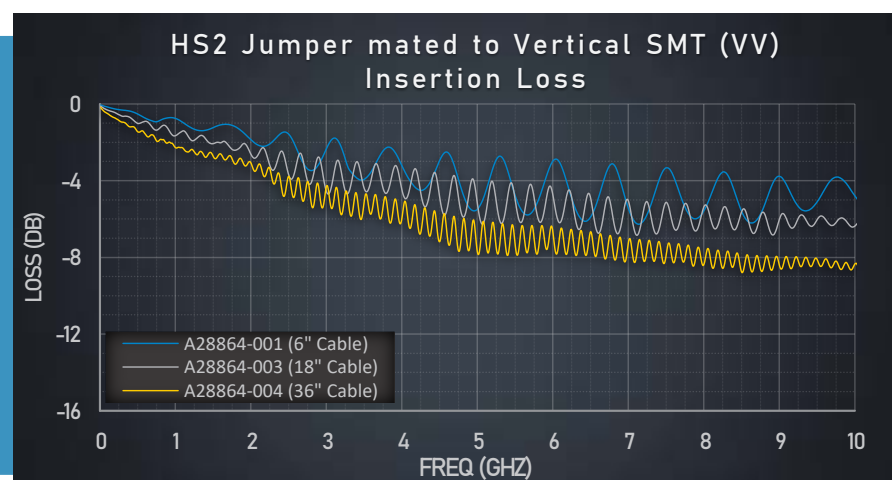
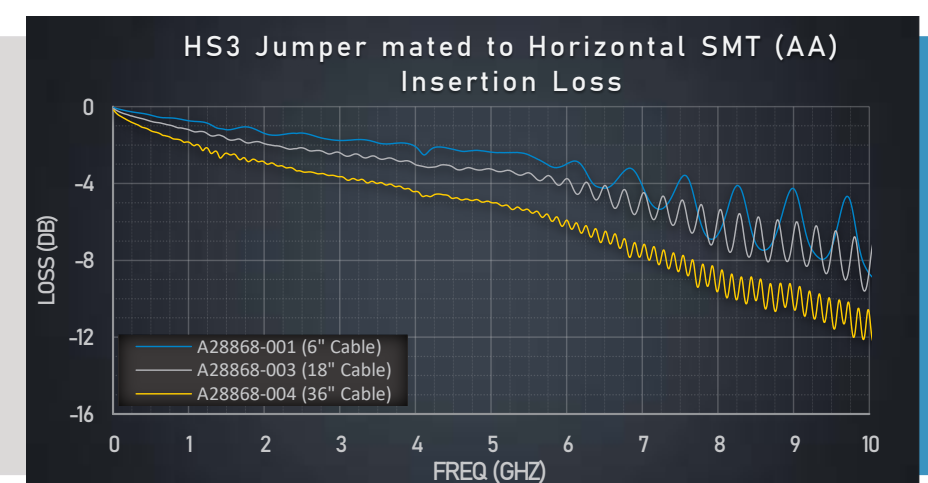
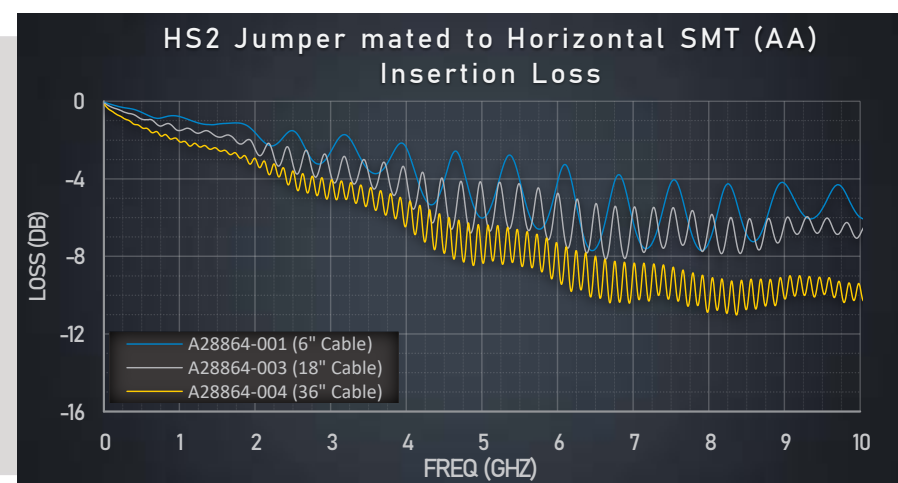
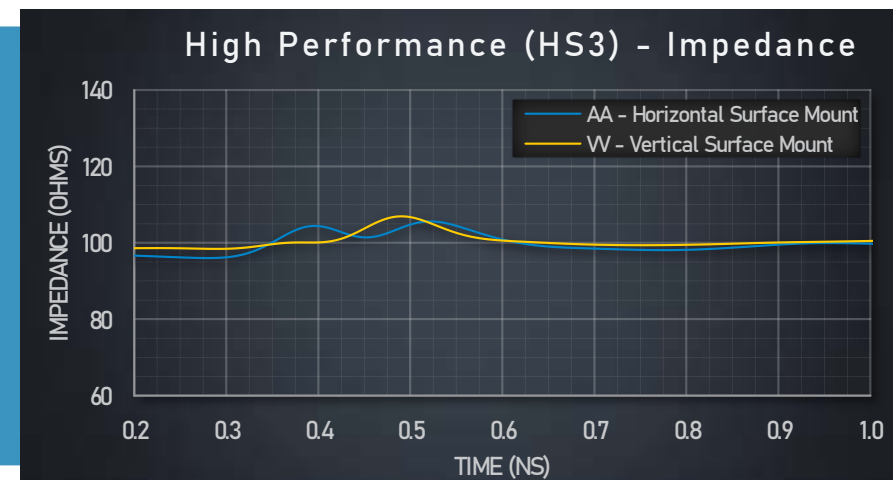




## High-Speed Nano-D High Density (HS2)



## High-Speed Nano-D High Performance (HS3)



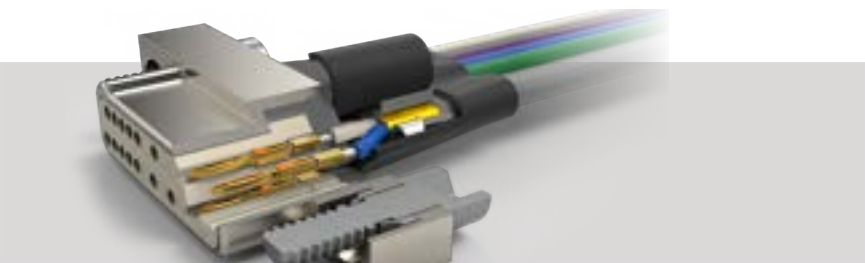
\* Insertion loss results reflect a cabled jumper mated to board mount connectors on both ends.

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High-Speed Nano-D Mated Performance

High Density (HS2) Mated Performance		
Matings	Horizontal Surface Mount (AA)	Vertical Surface Mount (VV)
6" Jumper	13 Gbps	20 Gbps
18" Jumper	10 Gbps	14 Gbps

\* Test reports available upon request



High Performance (HS3) Mated Performance		
Matings	Horizontal Surface Mount (AA)	Vertical Surface Mount (VV)
6" Jumper	17 Gbps	20 Gbps
18" Jumper	16 Gbps	17 Gbps

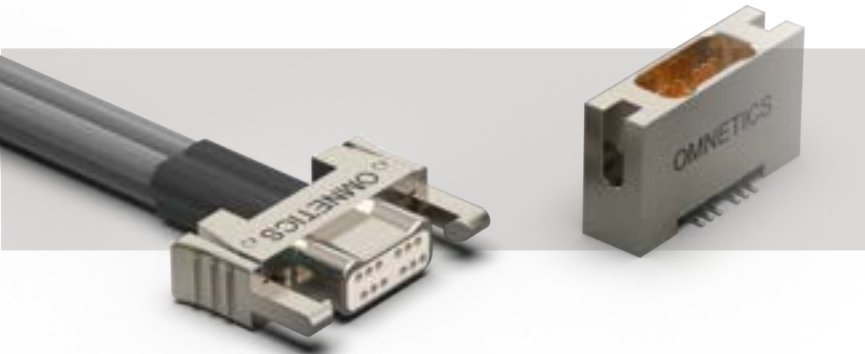
\* Test reports available upon request

High-Speed Nano-D High Density (HS2) Standard Part Numbers

High Speed Pairs	Discrete Singles	Female Surface Mount		Male Jumper					
		Horizontal (AA)	Vertical (VV)	w/6.00" cable	w/12.00" cable	w/18.00" cable	w/36.00" cable	w/72.00" cable	w/108.00" cable
2	0	A29860-001	A29870-001	A28860-001	A28860-002	A28860-003	A28860-004	A28860-005	A28860-006
2	7	A29861-001	A29871-001	A28861-001	A28861-002	A28861-003	A28861-004	A28861-005	A28861-006
4	0	A29862-001	A29872-001	A28862-001	A28862-002	A28862-003	A28862-004	A28862-005	A28862-006
4	16	A29863-001	A29873-001	A28863-001	A28863-002	A28863-003	A28863-004	A28863-005	A28863-006
6	0	A29864-001	A29874-001	A28864-001	A28864-002	A28864-003	A28864-004	A28864-005	A28864-006
8	0	A29865-001	A29875-001	A28865-001	A28865-002	A28865-003	A28865-004	A28865-005	A28865-006

High-Speed Nano-D High Performance (HS3) Standard Part Numbers

High Speed Pairs	Discrete Singles	Female Surface Mount		Male Jumper					
		Horizontal (AA)	Vertical (VV)	w/6.00" cable	w/12.00" cable	w/18.00" cable	w/36.00" cable	w/72.00" cable	w/108.00" cable
2	0	A29866-001	A29876-001	A28866-001	A28866-002	A28866-003	A28866-004	A28866-005	A28866-006
2	9	A29867-001	A29877-001	A28867-001	A28867-002	A28867-003	A28867-004	A28867-005	A28867-006
3	0	A29868-001	A29878-001	A28868-001	A28868-002	A28868-003	A28868-004	A28868-005	A28868-006
4	0	A29869-001	A29879-001	A28869-001	A28869-002	A28869-003	A28869-004	A28869-005	A28869-006



Latching Nano-D versions are an available option.

High-Speed Jumper Nomenclature



1 Jumper	JUM Jumper
2 Series	MNPO-MNPO Metal Nano Pin Offset MNPL-MNPL Metal Nano Pin Latching
3 Contacts (xxPRyy)	xx # of High-Speed Pairs yy # of Discrete Wires
4 Termination	WC High Speed Cable WC/WD High Speed Cable / Discrete Wired
5 Wire Gage (WD Only)	O 30 AWG
6 Wire Type (WD Only)	Q NEMA HP3 (Formerly M16878/4 &/6) (Std) S M22759/33 X Other Wire Types That Are Not Q & S
7 Cable/Wire Length	xx.x Custom Length in Inches
8 Wire Colors (WD Only)	C 10 Repeating Colors Per Mil Std 681 Y All Other Wire Colors
9 Shell Finish	N Aluminum Shell, Electroless Nickel Plated S Stainless Steel Shell, Passivated
10 Common Options	EJS End Jack Screw, #0-80 RH RoHS Compliant
11 High-Speed Option	HS2 High Speed - High Density HS3 High Speed - High Performance

High-Speed Surface Mount Nomenclature



1 Series	MNSO Metal Nano Socket Offset MNSOP Metal Nano Socket Offset Panel MNSLP Metal Nano Socket Latching Panel	MNSL Metal Nano Socket Latching
2 Contacts (xxPRyy)	xx # of High-Speed Pairs	yy # of Discrete Wires
3 Termination	AA Horizontal Surface Mount	VV Vertical Surface Mount
4 Shell Finish	N Aluminum Shell, Electroless Nickel Plated	S Stainless Steel Shell, Passivated
5 Common Options	ETH End Threaded Holes, #0-80 NTH Non-Threaded Holes For Board Mount	RH RoHS Compliant
6 High-Speed Option	HS2 High Speed - High Density	HS3 High Speed - High Performance



# OMNETICS

CONNECTOR CORPORATION



## SPACE

Missile Warning  
SATCOM  
PNT Signals  
ISR



## COMMAND

GPS Guided Artillery  
IR Guided Missiles  
High Power Microwaves



## AIR

IO Broadcast  
Radar EA  
IFF Signals



## WATER

Radar Guided Missiles  
RF Sensors  
Laser Comms



## LAND

Tracking Radars  
Laser Dazzler  
Laser Guided Munition



**Ruggedized nano-miniature  
interconnect solutions for high  
reliability applications.**

Omnetics' connectors are proven  
to deliver exceptional performance  
in extreme environments for  
mission-critical applications.

