

MINIATURE CIRCLE HEX

CONNECTORS





Featuring High Performance, Lightweight, Composite Construction

Positronic Provides Complete Capability Mission Statement

Experience

- Founded in 1966
- **Involvement** in the development of international connector specifications through EIA®, IEC and ISO as well as PICMG®.
- Introduction of new and unique connector products to the electronics industry.
- Patent holder for many unique connector features and manufacturing techniques.
- Vertically integrated manufacturing raw materials to finished connectors.

Technology

- Expertise with solid machined contacts provides a variety of high reliability connectors including high current density power connectors.
- Quality Assurance lab is capable of testing to IEC, EIA, UL, CUL, military and customer-specified requirements.
- In-house design and development of connectors based on market need or individual customer requirements.
- Internal manufacturing capabilities include automatic precision contact machining. injection molding, stamping, plating operations and connector assembly.
- Manufacturing locations in southwest Missouri, U.S.A. (headquarters); Puerto Rico, France, China, Singapore, and India. Total square footage: 407,441.

Support

- Quality Systems: Select locations qualified to ISO 9001, ISO 14001, AS9100, MIL-STD-790 and customer "dock to stock" programs. Applicable products qualified to MIL-DTL-24308, SAE AS39029, DSCC 85039, MIL-DTL-28748, Space D32, GSFC S-311-P-4 and GSFC S-311-P-10.
- Compliance to a variety of international and customer specific environmental requirements.
- Large in-house inventory of finished connectors. Customer specific stocking programs.
- Factory direct technical sales support in major cities worldwide.
- One-on-one customer support from worldwide factory locations.
- World class web site.
- Value-added solutions and willingness to develop custom products with reasonable price and delivery.

Regional Headquarters



Auch, France



"To utilize product flexibility and application

assistance to present quality interconnect solutions which represent value to customers worldwide."



Products described within this catalog may be protected by one or more of the following US patents:

> #4,900,261† #5,255,580 #5,329,697 #6,260,268 #6,835,079 #7,115,002

†Patented in Canada, 1992 Other Patents Pending

Positronic Industries' FEDERAL SUPPLY CODE (Cage Code) FOR MANUFACTURERS is 28198

Unless otherwise specified, dimensional tolerances are:

- ±0.001 inches [0.03 mm] for male contact mating diameters.
- ±0.003 inches [0.08 mm] for contact termination diameters.
- ±0.005 inches [0.13 mm] for all other diameters.

POSITRONIC® IS AN ITAR REGISTERED COMPANY

±0.015 inches [0.38 mm] for all other dimensions.

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POSITRONIC CABLIZED CONNECTORS

SAVE TIME AND MONEY!

Let Positronic support you by cablizing your GH / LGH / MGH connector selection.

Cable Assembly Design Support

We work closely with customers to:

- Design assemblies in accordance with customer specifications.
- Prepare cablized connector configuration and performance specifications.
- Design each system in accordance with applicable customer, domestic, and international standards.
- 4. Define and conduct performance and verification testing.



Puerto Rico Cable Assembly

FOR MORE DETAILS CONTACT TECHNICAL SALES
OR VISIT OUR WEB SITE AT:
HTTP://WWW.CONNECTPOSITRONIC.COM/
PRODUCTS/47/CABLEASSEMBLIES



Technical Sales Support



Engineering Support



Quality Assurance

Circle Hex

GH SERIES PROFESSIONAL QUALITY / FIXED CONTACTS MINIATURE CIRCLE HEX CONNECTORS



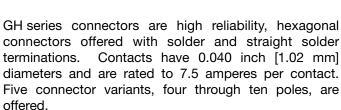
Size 20 Contacts

High Performance
Construction

5 Insulator Variants

4 through 10 Contacts

UL Recognized File #E49351



GH series connectors have DAP insulators. A variety of plastic and metal hoods are available, and the locking system is achieved by a lock-ring spring mechanism. Polarization is accomplished by contact layouts or by an oversized contact.



GH series connectors are ideal for use in industrial and instrumentation applications where light weight, miniature, high reliability interconnections are necessary.



TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator: Glass-filled DAP per

ASTM-D-5948, Type SDG-F. Grey

color is standard.

Contacts: Precision machined copper alloy.

Contact Plating: Gold flash over nickel.

Hoods: Aluminum with yellow or black

anodize. Glass-filled DAP.

Lock Rings and Lock Springs: Copper alloy with zinc plate and

chromate seal.

MECHANICAL CHARACTERISTICS:

Fixed Contacts: Size 20 contact, male - 0.040

inch [1.02 mm] diameter. Female contact - open entry is standard. "Closed entry" is available on solder cup contacts for high reliability applications.

Contact Retention in Insulator: 10 lbs. [44.5N], minimum.

Contact Termination: Solder cup - 0.046 inch [1.17 mm]

hole diameter for 20 AWG [0.5

mm²] wire maximum

Straight printed board mount - 0.025 inch [0.64 mm] termination

diameter.

Locking Systems: Friction, lock spring with lock ring.

MECHANICAL CHARACTERISTICS. continued:

Polarization: 0.056 inch [1.42 mm] diameter

male contact in position "A" on Size 4 connector. Molding configuration provides polarization

on other sizes.

Mechanical Operations:

Open Entry Contacts: 250 operations per IEC 60512-5. **Closed Entry Contacts:** 500 operations per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:7.5 amperes, maximum.Initial Contact Resistance:0.010 ohms, maximum.Flash over Voltage:1,750 VAC (rms).

Test Voltage: 1,200 VAC (rms).
Insulation Resistance: 5 G ohms.

Insulation Resistance:
Clearance and Creepage

Distance: 0.025 inch [0.64 mm], minimum.

Working Voltage: 600 VAC (rms).

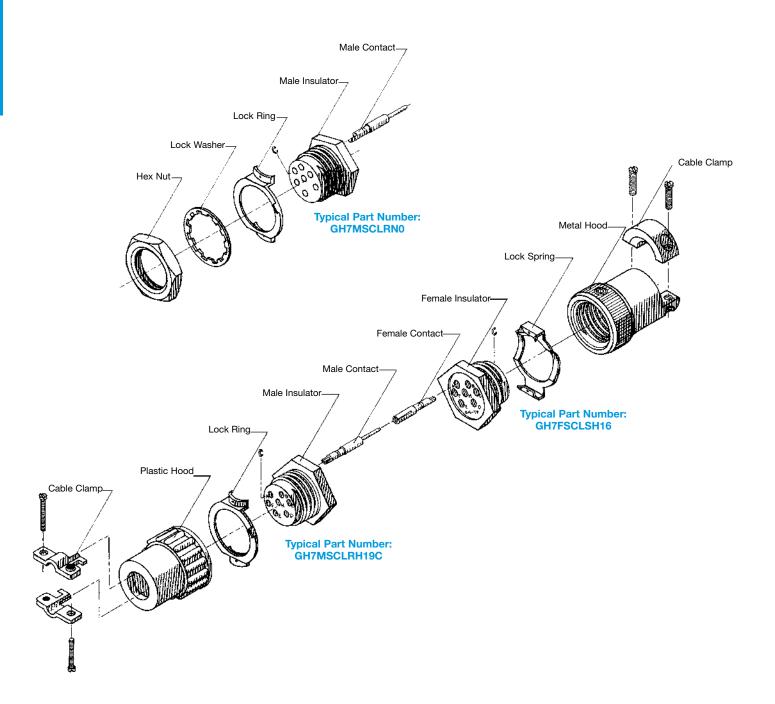
CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C.

Damp Heat, Steady State: 21 days.



EXPLODED VIEW OF TYPICAL CONNECTOR ASSEMBLY



GH SERIES

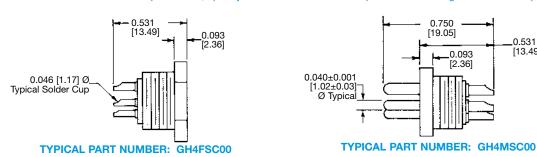
PROFESSIONAL QUALITY / FIXED CONTACTS MINIATURE CIRCLE HEX CONNECTORS



SOLDER CUP TERMINATION

CODE SC *1

For solder cup contacts, specify contact code "SC" in Step 4 of the ordering information on page 8.



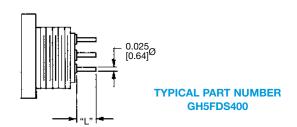
NOTE:

.0.531 [13.49]

> *1 GH4 has 0.056±0.001 [1.42±0.03] Ø Pin in "A" position for polarization.

STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION CODE DS3, DS4, DS5 and DS6 *1

For straight solder contacts, specify contact code (DS3, DS4, DS5, or DS6) for desired length of contact termination in Step 4 of the ordering information on page 8.



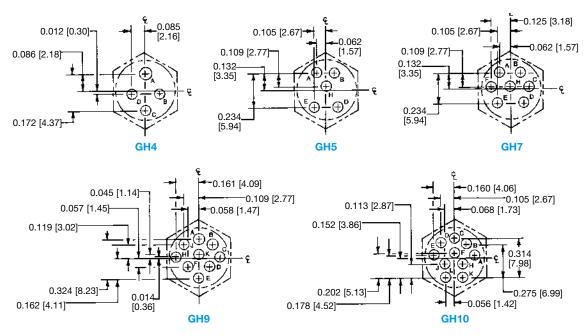
CONTACT CODE	"L"
DS3	0.093 [2.36]
DS4	0.125 [3.18]
DS5	0.156 [3.96]
DS6	0.187 [4.75]

NOTE:

*1 Straight solder contacts are not available in GH4 connector.

CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD MOUNT CONTACT HOLE PATTERN

HOLE IDENTIFICATION SHOWN IS FOR MATING FACE OF FEMALE CONNECTOR. USE MIRROR IMAGE FOR MALE CONNECTOR.



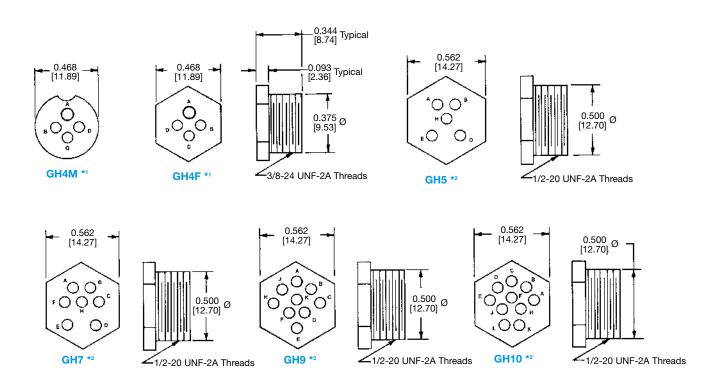
SUGGESTED PRINTED BOARD HOLE SIZES:



Circle Hex

INSULATOR DIMENSIONS

MATING FACE OF FEMALE CONNECTOR FOR SIZES GH 5, 7, 9, AND 10.



NOTES:

- *1 Size GH4 uses 0.056 [1.42] Ø pin in position "A" for polarization. For all other sizes, the body design provides polarization.
- *2 For Sizes 5 through 10, male and female connector dimensions are typical.

See GH Series Printed Board Hole Patterns, page 3 of this catalog, for contact variant hole positions.

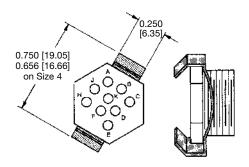
TYPICAL MATING ASSEMBLIES



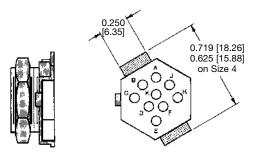


LOCKING DEVICES

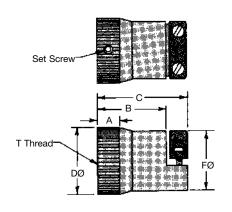
LOCK SPRING CODE LS

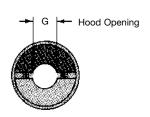


LOCK RING AND NUT CODE LRN



ALUMINUM HOODS CODE H14 and H16





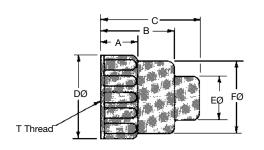


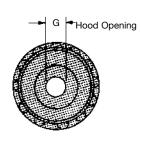
HOOD CODE	CONNECTOR SIZE	А	В	С	D	F	G	T THREAD
H14	GH-4	<u>0.250</u> [6.35]	<u>0.799</u> [20.29]	1.062 [26.97]	<u>0.594</u> [15.09]	<u>0.563</u> [14.30]	<u>0.218</u> [5.54]	3/8-24 UNF-2B
H16	GH-5, 7, 9, 10	<u>0.260</u> [6.60]	<u>0.708</u> [17.98]	0.938 [23.82]	<u>0.632</u> [16.05]	<u>0.578</u> [14.68]	0.250 [6.35]	1/2-20 UNF-2B



Circle Hex

STANDARD PLASTIC HOOD CODE H10 and H19

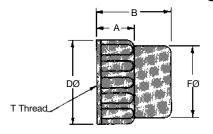


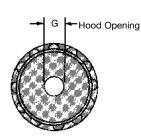




HOOD CODE	CONNECTOR SIZE	А	В	С	D	E	F	G	T THREAD
H10	GH4	<u>0.312</u> [7.92]	<u>0.687</u> [17.45]	<u>0.750</u> [19.05]	<u>0.562</u> [14.27]	0.250 [6.35]	<u>0.437</u> [11.10]	<u>0.157</u> [3.99]	3/8-24 UNF-2B
H19	GH 5, 7, 9, 10	<u>0.281</u> [7.14]	<u>0.656</u> [16.66]	0.875 [22.23]	<u>0.655</u> [16.64]	<u>0.422</u> [10.72]	<u>0.540</u> [13.72]	<u>0.297</u> [7.54]	1/2-20 UNF-2B

SHORT PLASTIC HOOD CODE H10S and H19S

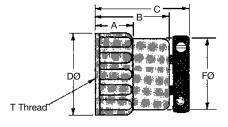


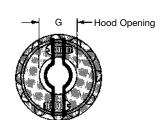




HOOD CODE	CONNECTOR SIZE	A	В	D	F	G	T THREAD
H10S	GH4	<u>0.312</u> [7.92]	<u>0.687</u> [17.45]	<u>0.562</u> [14.27]	<u>0.437</u> [11.10]	<u>0.157</u> [3.99]	3/8-24 UNF-2B
H19S	GH 5, 7, 9, 10	<u>0.281</u> [7.14]	<u>0.656</u> [16.66]	<u>0.655</u> [16.64]	0.540 [13.72]	0.297 [7.54]	1/2-20 UNF-2B

PLASTIC HOODS WITH CABLE CLAMPS CODE H10C and H19C



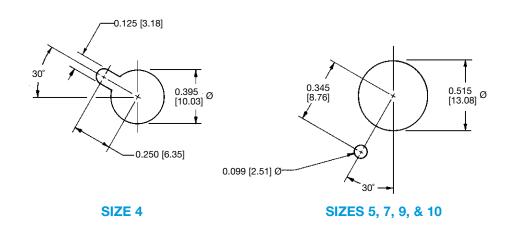




HOOD CODE	CONNECTOR SIZE	А	В	С	D	F	G	T THREAD
H10C	GH4	<u>0.312</u> [7.92]	<u>0.687</u> [17.45]	<u>0.851</u> [21.61]	<u>0.562</u> [14.27]	<u>0.437</u> [11.10]	<u>0.209</u> [5.31]	3/8-24 UNF-2B
H19C	GH 5, 7, 9, 10	<u>0.281</u> [7.14]	<u>0.656</u> [16.66]	0.820 [20.83]	<u>0.655</u> [16.64]	<u>0.540</u> [13.72]	<u>0.297</u> [7.54]	1/2-20 UNF-2B



PANEL CUT-OUT DIMENSIONS







Circle Hex

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 6

_								
STEP	1	2	3	4	5	6	7	8
EXAMPLE	GH	10	M	sc	LRN	0	CE	/AA
STEP 1 - BASIC SERIE	ES							
STEP 2 - CONNECTO 1, 5, 7, 9, 10	R VARIA	NTS						
M - Male F - Female	R GEND	ER	J				90	ROHS
TEP 4 - CONTACT TE SC - Solder Cup. For "(add "CE" in Step 7 DS3 - Straight Solder, 0.0 DS4 - Straight Solder, 0.1 DS5 - Straight Solder, 0.1	Closed Er 7. 093 [2.36] 125 [3.18]	ntry" desig		1			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Directive 2002
DS6 - Straight Solder, 0.1 NOTE: DS contacts are no	187 [4.75]		connecto	r.				*1 B - Fo
STEP 5 - MOUNTING	AND LO	OCKING	ACCESS	ORIES				NOTE: P
LR - Lock Ring. LS - Lock Spring. N - Mounting Nut. W - Lockwasher.								SKIP STE ARE REG
o - If no mounting or NOTE: When the Lock R with the Mounting	ting (LR) o	or Lock Sp	oring (LS) a	are ordered			H19 -	- CABLE Standard Standard 10 variant
							H19S - H10C - H19C - *1H14 - *1H16 -	Short plas Short plas variants. Plastic ho variant. Plastic ho 9, and 10 Aluminum Aluminum variants.

NOTE:

*1 Yellow anodize finish is standard for Aluminum parts.

0 - If no hoods are required.

Circle Hex

LGH SERIES PROFESSIONAL QUALITY / FIXED CONTACTS CIRCLE HEX CONNECTORS



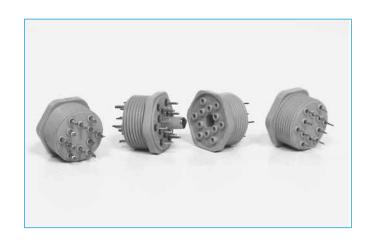
Size 20 Contacts

High Performance Construction

12 Contacts

LGH series connectors are high reliability hexagonal connectors offered with wire solder and straight printed board mount contact terminations. Contacts have 0.040 inch [1.02mm] diameters and are rated at 7.5 amperes each.

LGH series connectors have 12 contacts in a high performance connector package that includes a center post which serves to align and polarize the connectors during mating.



LGH series connectors are ideal for use in industrial and instrumentation applications.



TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator: Glass-filled polyester per

MIL-M-24519, UL 94V-0.

Grey color.

Contacts: Precision machined copper alloy.

Contact Plating: Gold flash over nickel.

MECHANICAL CHARACTERISTICS:

Fixed Contacts: Size 20 contact, male - 0.040

inch [1.02 mm] diameter. Female contact - open entry or closed entry design available.

Contact Retention in Insulator: 9 lbs. [40 N]

Contact Termination: Solder cup - 0.046 inch [1.17 mm]

hole diameter for 20 AWG [0.5 mm]

wire maximum.

Straight printed board mount - 0.030 inch [0.76 mm] termination

diameter.

Polarization: Center post provides polarization

of connector.

Mechanical Operations: Open entry 250 operations

Closed entry 500 operations

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 7.5 amperes, maximum.
Initial Contact Resistance: 0.008 ohms, maximum.

Clearance and Creepage

Distance: 0.039 inch [1.0 mm], minimum.

Working Voltage: 600 VAC (rms).

CLIMATIC CHARACTERISTICS:

Temperature Range: -55° to +125° C.

Damp Heat, Steady State: 10 days.

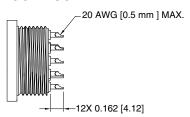


Circle Hex

SOLDER CUP TERMINATION CODE SC

NOTE:

Specify contact code "SC" in Step 4 of the ordering information, page 11.

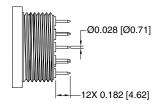


TYPICAL PART NUMBER: LGH12FSC00

STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION CODE DS6

NOTE:

Specify contact code "DS6" in Step 4 of the ordering information, page 11.

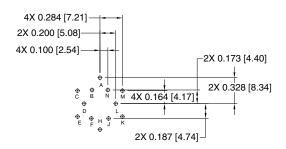


TYPICAL PART NUMBER: LGH12FDS600

CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD MOUNT CONTACT HOLE PATTERN

HOLE IDENTIFICATION SHOWN IS FOR MATING FACE OF FEMALE CONNECTOR.

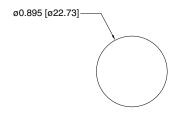
USE MIRROR IMAGE FOR MALE CONNECTOR.



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø holes in printed board for contact terminations.

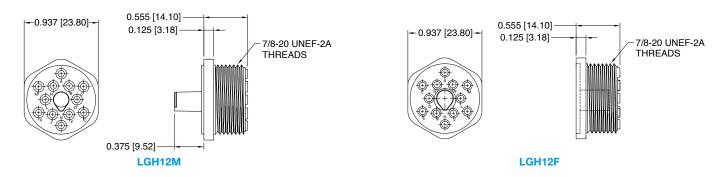
PANEL CUT-OUT DIMENSIONS





INSULATOR DIMENSIONS

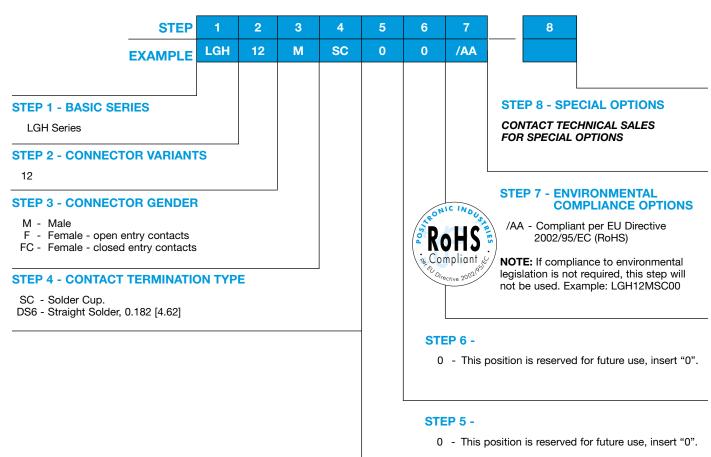
MATING FACE OF FEMALE CONNECTOR FOR SIZE LGH 12.



See LGH Series Printed Board Hole Patterns, page 10 of this catalog, for contact variant hole positions.

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 6





Circle Hex

Size 22 Signal/Power Contacts

High Performance Construction

Polarization and Locking Accessories

UL Recognized File #E49351

MGH series connectors are microminiature, high reliability connectors. They are available with three contacts for providing polarization: two contacts at 0.030 inch [0.76 mm] diameter, and one contact at 0.040 inch [1.02 mm] diameter. The MGH series is rated to 5 amperes per contact. Spacing between contacts is 0.102 inch [2.59 mm], and the face diameter of the connector is 0.312 inch [7.92 mm].

MGH series connectors are ideally applied where limited space is a concern. MGH series connectors



can be used as cable connectors, panel-mounted connectors, or probes. Constructed of high performance materials, MGH series connectors are widely used in medical, industrial, military, and automotive applications.



TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator: Glass-filled DAP per ASTM-D-5948,

Type SDG-F. Green color is

standard.

Contacts: Precision machined copper alloy.

Contact Plating: Gold flash over nickel.

Hoods: Aluminum with yellow or black

anodize.

Lock Rings and Lock Springs: Copper alloy with zinc plate and

chromate seal.

MECHANICAL CHARACTERISTICS:

Fixed Contacts: Two (2) size 22 contacts, male -

0.030 inch [0.76 mm] diameter, and one (1) size 20 contact, male - 0.040 inch [1.02mm] diameter. Female contact - open entry.

Contact Retention in Insulator: 6 lbs. [26.5 N], minimum.

Contact Termination: Solder cup - 0.027 inch [0.69mm]

hole diameter for 24 AWG [0.25mm²] wire maximum.

Locking Systems: Friction, lock spring with lock ring.

Polarization: 0.040 inch [1.02 mm] diameter male contact in position "A".

Mechanical Operations: 250 operations per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 5 amperes.

Initial Contact Resistance:0.012 ohms, maximum.Flash over Voltage:1,500 VAC (rms).Test Voltage:1,000 VAC (rms).Insulation Resistance:5 G ohms, minimum.

Clearance and Creepage

Distance: 0.021 inch [0.53 mm], minimum.

Working Voltage: 600 VAC (rms).

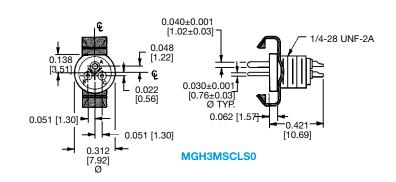
CLIMATIC CHARACTERISTICS:

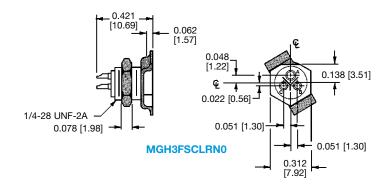
Temperature Range: -55°C to +125°C.

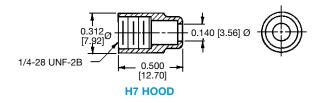
Damp Heat, Steady State: 21 days.



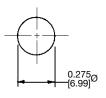
TYPICAL ASSEMBLIES







PANEL CUT-OUT DIMENSIONS

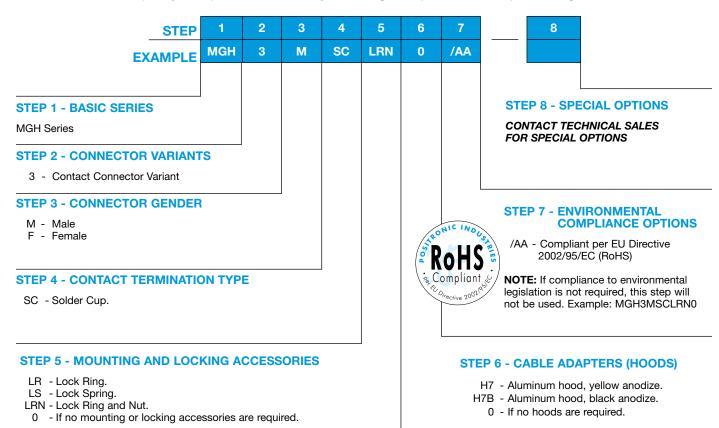




Circle Hex

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 6



rcellence Positronic HIGH RELIABILITY Products

OWER



FEATURES:

- High current density Energy saving low contact resistance • Hot swap capability
- AC/DC operation in a single connector Signal contacts for hardware management • Blind mating • Sequential mating
- Large surface area contact mating system • Wide variety of accessories
- Customer-specified contact arrangements • Modular tooling which produces a single piece connector insert

Contact Sizes: **Current Ratings:** Terminations:

Compliance:

0, 8, 12, 16, 20, 22 and 24

To 200 amperes per contact

Crimp and panel mount, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Multiple variants in a variety of package sizes PICMG 2.11, PICMG 3.0, VITA 41, DSCC, GSFC S-311-P-4, Configurations:

GSFC S-311-P-10

BMINIAT



Contact Sizes: **Current Ratings:** Terminations:

Configurations:

Qualifications:

8, 16, 20 and 22 To 100 amperes

Crimp, wire solder, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

IP65, IP67

Multiple variants in both standard and high densities, seven shell sizes MIL-DTL-24308, GSFC S-311-P-4, GSFC S-311-P-10,



FEATURES:

- Two performance levels available: industrial quality and military quality
- A wide variety of accessories
- Broad selection of contact variants and
- Connector keying options

Contact Sizes: Current Ratings:

To 13 amperes nominal

Crimp, wire solder, straight solder, right angle (90°) solder, and

straight compliant press-in Configurations:

Multiple variants in both standard and high densities,

MIL-DTL-28748, SAE AS39029, CCITT V.35

CULA FEATURES:



 Non-corrodible / lightweight composite construction

FEATURES: Four performance levels available for

best cost/performance ratio: professional,

industrial, military and space-flight quality

Options include high voltage, coax,

environmentally sealed and dual port

Size 20 and 22 contacts suitable for

use in carrying power

thermocouple and air coupling contacts;

connector packages including mixed density Broad selection of accessories

- EMI/RFI shielded versions
- Thermocouple contacts
- Environmentally sealed versions
- Rear insertion/ front release of removable contacts
- Two level sequential mating
- Overmolding available on full assemblies

Terminations:

Qualifications:

16, 20 and 22

Contact Sizes: **Current Ratings:** 12, 16, 20 and 22

Crimp, wire solder, straight solder, and right angle (90°) solder Multiple variants in four package sizes

Terminations: Environmental protection to IP67 Configurations: Qualifications:



FEATURES:

- Shorten the supply chain and reduce additional costs and delays by "cablizing" your Positronic connector selection
- Overmolding available
- Shielded and environmentally sealed versions available
- Power cables and access boxes which meet the SAE J2496 specification
- Design assemblies in accordance with customer specifications.
- Prepare cablized connector configuration and performance specifications.
- Design each system in accordance with applicable customer, domestic, and international standards.
- Define and conduct performance and verification testing.



FEATURES:

- Intended for use as an electrical feedthrough in high vacuum applications
- Leakage rate: 5 x 10-9 mbar.l/s @ vacuum
- Signal, power, coax and high voltage ver-
- Connectors can be mounted on flange assembly per customer specification

Contact Sizes: Current Ratings: Terminations:

Compliance:

8, 12, 16, 20 and 22 To 40 amperes nominal

Feedthrough is standard; flying leads and board mount available

Configurations: See D-subminiature and circular configurations above Space-D32

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office listed on the back of this catalog.



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