ITT

Interconnect Solutions

Cannon
Mil-DTL 38999
Class G Space Grade Connectors

Engineered for life

Mil-DTL 38999 Class G Space Grade Series Connectors

The Challenge

Our traditional and longest served Space System customers approached ITT ICS regarding the deployment of Mil-DTL 38999 class G connectors meeting the Thermal Vacuum Outgassing requirements of Mil-DTL 38999. These requirements mandated “all non-metalic materials shall not release greater than 1.0% total mass loss (TML) and 0.1% collected condensable material (CVCM)." These customers new that ITT ICS historically manufactured highly capable space grade connectors but never qualified them to Mil-DTL 38999. Specific materials used in the manufacture of Cannon Mil-DTL 38999 connectors disqualified the products from the class G requirements.

Grommet:
Wire sealing rear grommet provides environmental sealing against harsh environments

Interfacial Seal:
Individual raised seal barriers around each pin contact ensure contact seal integrity

Peripheral Seal:
Seal around the connector interface to minimize compression set when connectors are mated

Scoop Proof:
Low profile contact design to prevent damage during blind mating

Contact:
Closed entry select contact design to assist contact mating

Shielding:
Superior EMI shielding provides protection up to 65dB at 10 GhZ

Contacts:
Standard Mil-C 39029 contacts MIL-1 81969 application tools provided

Quality:
Superior quality product, reliable, low cost, and military approved

The ITT Solution ...

Addressing the specifications of our customers, ITT ICS implemented a special potting and lubricant material to meet the TML and CVCM requirements of Mil-DTL 38999. Cannon achieved outgassing of the connectors by baking at 350 degrees for 48 hours. These changes, coupled with ICS Cannon's innovative and proven 38999 design, resulted in a low cost, Space Grade connector meeting the class G requirements of Mil-DTL 38999.

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Mil-DTL 38999 Class G Space Grade Series Connectors

Technical Overview

Serving aviation markets since Cannon first introduced aircraft circular connectors in 1935, ICS's participation in aerospace and aviation interconnects spans over 70 years. With its pioneering first products on the DC-1 aircraft, ITT ICS now expands it Mil-C 38999 product offering to include Class G Space Grade connectors. Acknowledging our participation in the Mil-C 38999 market since 1971, ICS now grows our traditional product offering with a full range of qualified, Class G connectors. These new KJ series connectors offer all of the features and benefits of a government qualified product coupled with the time-tested assurance of Cannon quality, a product proudly know as "Cannon Plugs" for over 95 years.

ITT 's Mil-DTL 38999 class G miniature connectors offer high density configurations designed and manufactured for high reliability and vacuum conditions. These interconnects represent ideal solutions for military approved products specifying government required testing. This series offers all the features of Mil-DTL 38999 while supporting a wide variety of layouts governed by the Military Standard 1560B.

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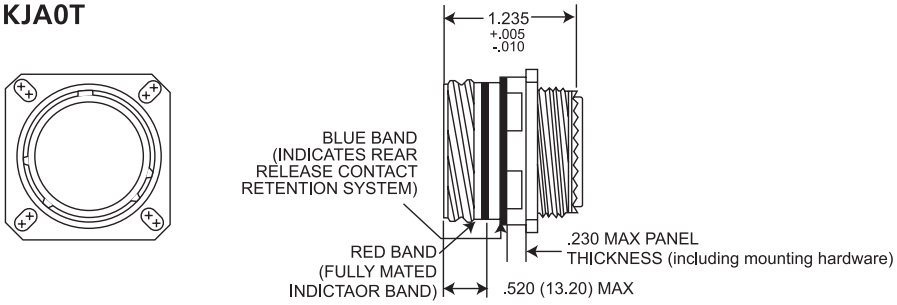

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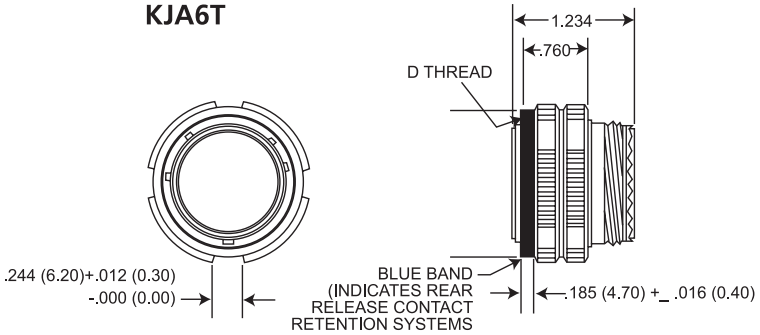

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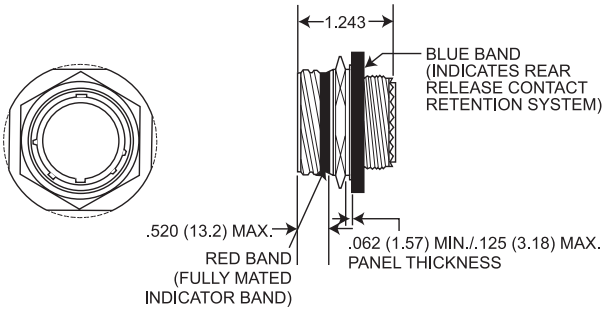


Mil-DTL 38999 Class G Performance Summary	
Temperature Range	-65 deg C (-85 deg F) to 200 deg C (392 deg F).
Contact Sizes	12 to 22D.
Wire Accomodations	12 to 28 AWG.
Durability	500 cycles of mating and unmating, 250 cycles for series II with spring fingers.
Coupling	Series I and II Bayonet. Series III Threaded.
Corrosion Resistance	48 hours salt spray.
Vibration	Sine- up to 60 G's, series I & III at rated temperature. Random- 43.7Grms at rated temp- series III, 49.5 Grms at ambient temp- series I & III, 43.7 Grms at ambient temp- series II.
EMI Shielding	EMI leakage attenuation, greater than 90dB at 100 Mhz, greater than 65dB at 10 Ghz. Shell to shell conductivity 1.0 millivolt max resistance.
Thermal Vacuum Outgassing	Total mass loss 1.0%, collected volatile condensible material 0.1% max.

Mil-DTL 38999 Class G Space Grade Series Connectors

ITT Part Number Nomenclature to Mil-DTL 38999

SERIES I MILITARY NOMENCLATURE MS27467 G 17 F 35 S

- MS SHELL STYLE
- CLASS
- SHELL SIZE
- HARDWARE FINISH
- CONTACT ARRANGEMENT
- CONTACT STYLE

MS SHELL STYLE
MS27466 - Wall Mounting Receptacle
MS27467 - Grounded Plug
MS27468 - Jam Nut Receptacle
MS27505 - Box Mounting Receptacle
(back panel mounting, class E)

CLASS
G- Space Grade, Environmental Resistant

SHELL SIZE
9, 11, 13, 15, 17, 19, 21, 23, 25

HARDWARE FINISH
F - Electroless Nickel

CONTACT ARRANGEMENT
Refer to Mil Standard 1560

CONTACT STYLE
P - Pin Contact
S - Socket Contact
A - Less Pin Contact
B - Less Socket Contact

POLARIZATION
A, B, C, D (No letter required for normal)

SERIES II MILITARY NOMENCLATURE MS27473 G 16 F 35 S

- MS SHELL STYLE
- CLASS
- SHELL SIZE
- HARDWARE FINISH
- CONTACT ARRANGEMENT
- CONTACT STYLE

MS SHELL STYLE
MS27472 - Wall Mounting Receptacle
MS27473 - Straight Plug
MS27474 - Jam Nut Receptacle
MS27484 - Grounded Plug
MS27497 - Wall Mounting Receptacle
(back panel mounting)

CLASS
G- Space Grade, Environmental Resistant

SHELL SIZE
9, 11, 13, 15, 17, 19, 21, 23, 25

HARDWARE FINISH
F - Electroless Nickel

CONTACT ARRANGEMENT
Refer to Mil Standard 1560

CONTACT STYLE
P - Pin Contact
S - Socket Contact
A - Less Pin Contact
B - Less Socket Contact

POLARIZATION
A, B, C, D (No letter required for normal)

SERIES III MILITARY NOMENCLATURE D38999 26 G E 35 S N

- MS SHELL STYLE
- CLASS
- SHELL SIZE
- HARDWARE FINISH
- CONTACT ARRANGEMENT
- CONTACT STYLE
- POLARIZATION POSITION

MS SHELL STYLE
MS27466 - Wall Mounting Receptacle
MS27467 - Grounded Plug
MS27468 - Jam Nut Receptacle
MS27505 - Box Mounting Receptacle
(back panel mounting, class E)

CLASS
G- Space Grade, Environmental Resistant

SHELL SIZE
9, 11, 13, 15, 17, 19, 21, 23, 25

HARDWARE FINISH
F - Electroless Nickel

CONTACT ARRANGEMENT
Refer to Mil Standard 1560

CONTACT STYLE
P - Pin Contact
S - Socket Contact
A - Less Pin Contact
B - Less Socket Contact

POLARIZATION
N (normal), A, B, C, D, E

Mil-DTL 38999 Class G Space Grade Series Connectors

"Cannon Plugs," Your Historical Choice for Critical Space Applications

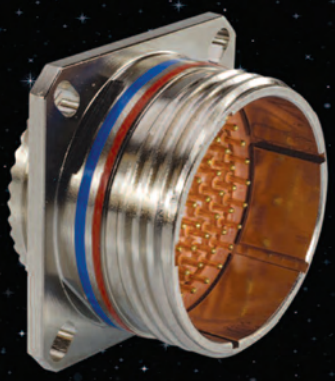
We understand the choices relevant to correctly specifying a Space Grade connector. When critiquing the market of available products, note the one company with a record spanning over 95 years in the interconnect markets; ITT ICS Cannon. Proudly boasting participation on every free world space mission, Cannon connectors have brought the universe to our doorstep through missions to the Moon, Mars, and beyond. With unparalleled quality, innovative engineering excellence, and globally deployed manufacturing capabilities, ITT ICS welcomes your critical space missions and provides an unequaled, qualified partnership to our Space customers.

Product Features

- Lightweight aluminum shells and copper alloy contacts
- Variety of layouts as described in Mil Standard 1560
- Offering the shell styles currently provided with the standard product line
- Operating temperature of -65 deg C to 200 deg C
- Durability of 500 mating cycles
- Available in series I, II, and III

Benefits To Customers

- Low cost space grade connector system
- Proven track record for reliability and quality
- Military qualified
- Meets the performance requirements of Mil-DTL 38999
- High Density Requirements
- Distribution inventory position
- Standard M39029 contacts utilized



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