



ITT

Cannon

Cannon 38999-Style Class G Space Grade Connectors



Engineered for life

38999-Style Class G Space Grade Series Connectors

The Challenge

Our traditional and longest served Space System customers approached ITT Cannon regarding the deployment of 38999-Style class G connectors that are designed to be comparable to Thermal Vacuum Outgassing requirements of Mil-DTL-38999. These requirements mandated "all non-metallic materials shall not release greater than 1.0% total mass loss (TML) and 0.1% collected condensable material (CVCN)." These customers knew that ITT Cannon historically manufactured highly capable space grade connectors, but specific materials used in the manufacture of Cannon 38999-Style 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



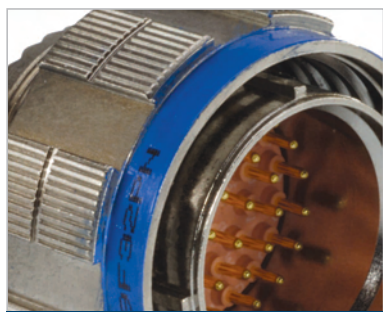
Scoop Proof:

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 Cannon Solution

Addressing the needs of our customers, ITT Cannon implemented a special potting and lubricant material designed to be comparable to the TML and CVCN requirements of Mil-DTL 38999. Cannon achieved outgassing of the connectors by baking at 350 degrees for 48 hours. These changes, coupled with ITT Cannon's innovative and proven 38999-Style design, resulted in a low cost, Space Grade connector.



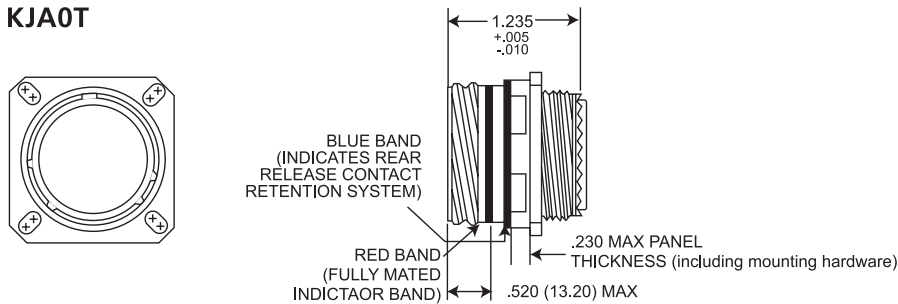
38999-Style Class G Space Grade Series Connectors

Overview

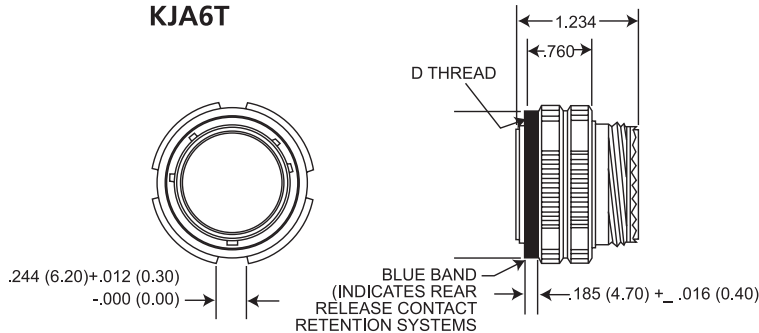
Since our pioneering Cannon AF Plug was used on the first DC-1 transport plane in the 1930s, ITT Cannon has designed and manufactured custom interconnect solutions for the aerospace industry. Today, we support global space initiatives with one of the industry's broadest portfolios of high reliability connector solutions for mission critical commercial and defense-related applications. Our extensive custom engineering capability provides unrivaled support and experience for space exploration.

ITT Cannon's 38999-Style Class G miniature connectors offer high density configurations designed and manufactured for high reliability and vacuum conditions. These interconnects are engineered to be comparable to Mil-DTL 38999, while supporting a wide variety of layouts.

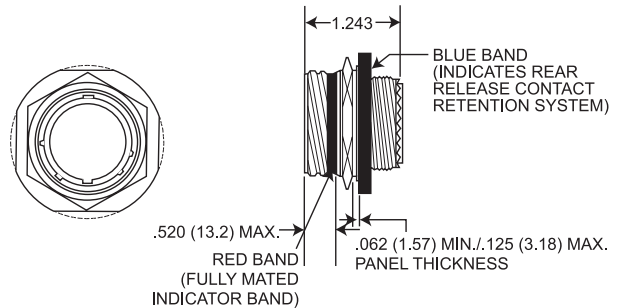
KJA0T



KJA6T



KJA7T



38999-Style 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 condensable material 0.1% max.

38999-Style Class G Space Grade Series Connectors

ITT Part Number Nomenclature to 38999-Style

SERIES I MILITARY NOMENCLATURE

MS SHELL STYLE	MS27467	G	17	F	35	S
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

MS SHELL STYLE	MS27473	G	16	F	35	S
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

MS SHELL STYLE	D38999	26	G	E	35	S	N
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



38999-Style Class G Space Grade Series Connectors

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

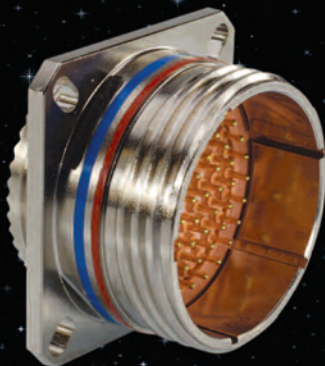
We understand the choices relevant to correctly specifying a Space Grade connector. When critiquing the market of available products, note the one company with more than a century of interconnect solutions experience: ITT Cannon. Proudly boasting participation on every free world space mission, Cannon 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 Cannon welcomes your critical space missions and provides an unequaled, qualified partnership to our valued 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
- Designed to be comparable to Mil-DTL-38999
- High Density Requirements
- Distribution inventory position
- Standard M39029 contacts utilized





ITT

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