



# ITT

# Cannon

## Cannon 38999-Style Class G Space Grade Connectors

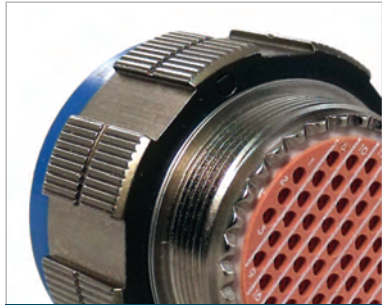


*Engineered for life*

# 38999-Style Class G Space Grade Series Connectors

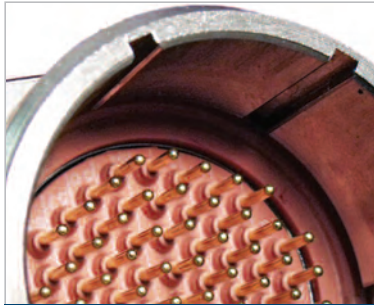
## The Challenge

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 (CVCM)." 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



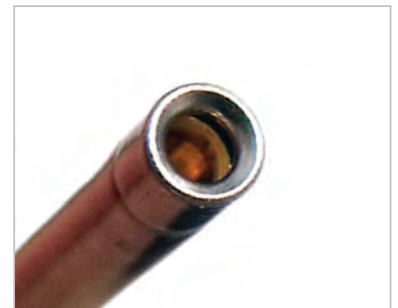
### Peripheral Seal:

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



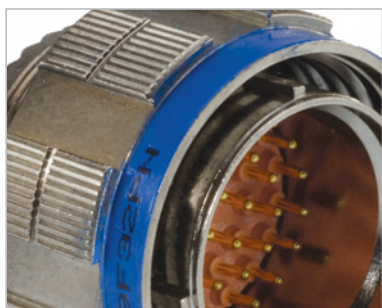
### Scoop Proof:

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 CVCM 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.



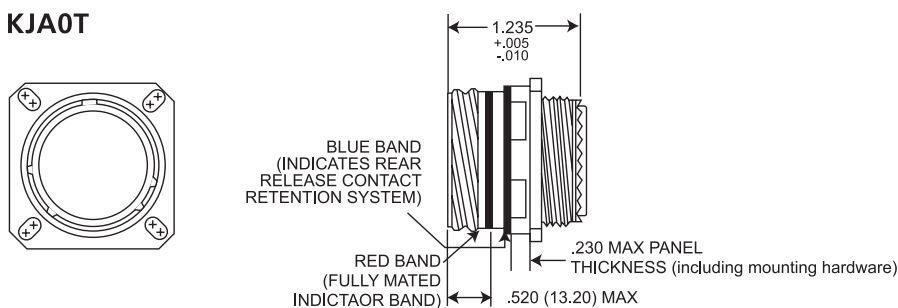
# 38999-Style Class G Space Grade Series Connectors

## Overview

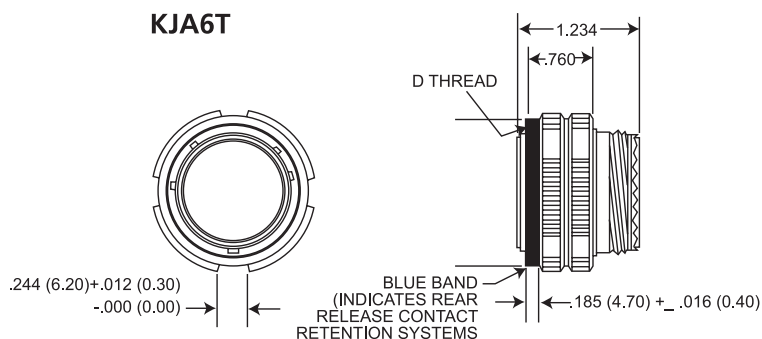
Since our pioneering Cannon AF Plug was used on the first DC-1 transport plane in the 1930s, ITT Cannon has designed and manufactured custom interconnect solutions for the aerospace industry. Today, we support global space initiatives with one of the industry's broadest portfolios of high reliability 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.

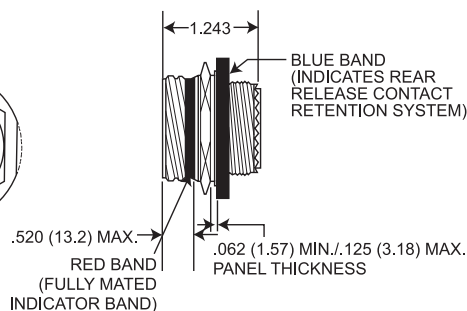
**KJA0T**



**KJA6T**



**KJA7T**



## 38999-Style Class G Performance Summary

<b>Temperature Range</b>	-65 deg C (-85 deg F) to 200 deg C (392 deg F).
<b>Contact Sizes</b>	12 to 22D.
<b>Wire Accomodations</b>	12 to 28 AWG.
<b>Durability</b>	500 cycles of mating and unmating, 250 cycles for series II with spring fingers.
<b>Coupling</b>	Series I and II Bayonet. Series III Threaded.
<b>Corrosion Resistance</b>	48 hours salt spray.
<b>Vibration</b>	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.
<b>EMI Shielding</b>	EMI leakage attenuation, greater than 90dB at 100 Mhz, greater than 65dB at 10 Ghz. Shell to shell conductivity 1.0 millivolt max resistance.
<b>Thermal Vacuum Outgassing</b>	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

<b>SERIES I MILITARY NOMENCLATURE</b>	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)

<b>SERIES II MILITARY NOMENCLATURE</b>	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)

<b>SERIES III MILITARY NOMENCLATURE</b>	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

# 38999-Style Class G Space Grade Series Connectors

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

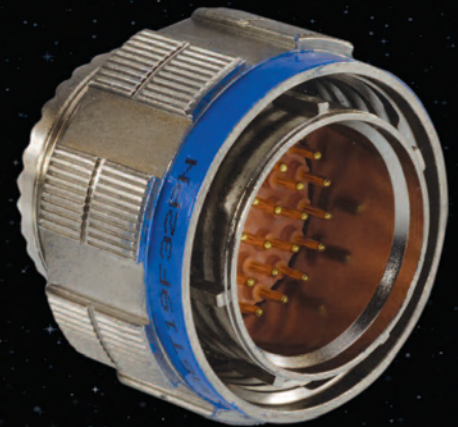
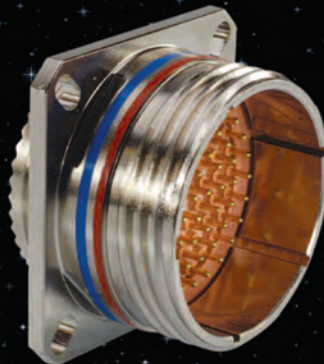
We understand the choices relevant to correctly specifying a Space Grade connector. When critiquing the market of available products, note the one company with more than a century of interconnect solutions experience: ITT Cannon. Proudly boasting participation on every free world space mission, Cannon 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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