RUPP tronik

Power Sub-Miniature «PSM»

Connectors for Space Applications

Edition 2018/08

PSM (Power Sub Miniature) interface meets the increasing demand of cost effective, power and weight sensitive Aerospace applications. Especially developed for Space Flight, High Altitude Platforms and TVAC environments. Space qualified per MIL-PRF-39012 and ESCC 3402. The PSM connector family has the size and weight of an SMA and the power handling capabilities of a standard TNC per MIL-PRF-39012 and MIL-STD-348. The PSM connector system enables customers to maximize performance on power handling while minimizing overall system weight and size. Multipaction breakdown and corona withstanding meet or exceed TNC interface level.

Features and benefits

- Power handling capabilities like a TNC per MIL-PRF-39012
- SMA size and weight
- Multipaction and Corona resistant
- Non Magnetic and low PIM
- Space qualified
- Cable assemblies, panel connectors and adaptors

HUBER+SUHNER
Excellence in Connectivity Solutions

PSM Connectors – technical data

Electrical data		Requirements	
Impedance		50 Ω	
Frequency range		DC ... 18 GHz	
Return loss		see table below	
Insertion loss		0.05 dB typ.	
RF leakage		< –90 dB	
Working, dielectric and RF voltage		driven by multipactor requirements	
Corona threshold		peak power	800 W
High power handling under vacuum		1 GHz: 4 GHz: 12 GHz:	150 W (CW) 76 W (CW) 40 W (CW)
Multipactor threshold 20 µs, 2 % duty cycle		peak power	800 W
PIM performance, 2 x 20 W		–168 dBc (3rd order power at 1900 MHz)	
Insulation resistance		> 5000 MΩ	
Contact resistance	– centre conductor – outer conductor	< 2 mΩ < 2 mΩ	

Return loss	Frequencies			
(typical values)	1 GHz	4 GHz	12 GHz	18 GHz
Connector straight	36 dB (1.03)	31 dB (1.06)	28 dB (1.08)	26 dB (1.10)

Mechanical data	Requirements
Recommended coupling nut torque	≥ 1.5 Nm/13.3 in lbs
Coupling nut retention force	≥ 250 N/56.2 lbs
Contact captivation	≥ 27 N/6.1 lbs
Cable retention force	≥ 100 N/22.5 lbs
Durability (matings)	≤ 100

Environmental data	Requirements
Temperature range	–65 to +165 °C (thermal vacuum test)
Thermal shock	MIL-STD-202, method 107 condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	MIL-STD-202, method 101 condition B
Sine vibration	MIL-STD-202, method 204, 28 g peak
Random vibration	MIL-STD-202, method 214 condition K-I, 46.3 g
Shock	MIL-STD-202, method 213, 12000 g peak

Space qualified per	MIL-PRF-39012, ESCC 3402

Material data

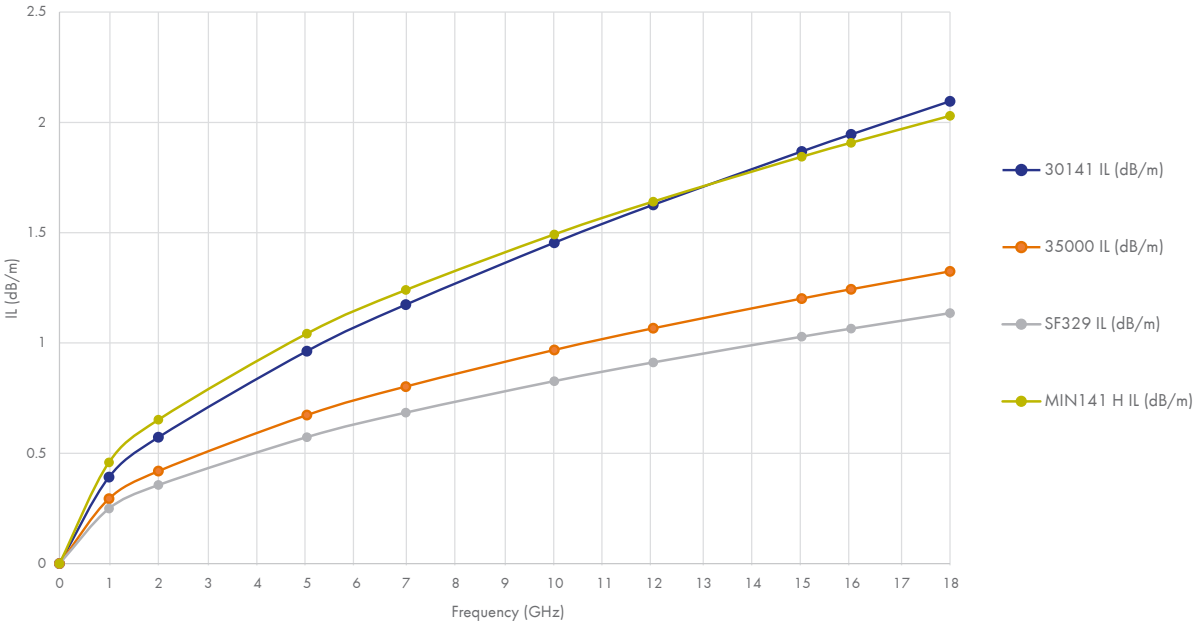
Connector part	Material	Plating
Bodies	copper-beryllium alloy	gold
Pin contacts	copper-beryllium alloy	gold
Coupling nuts	copper-beryllium alloy	gold
Insulator	PTFE	–

Cable connectors

Male and female straight connectors available for cables Mini141 H, SucoFlex 329, Semi-Rigid 141 low loss and Semi-Rigid 141 standard.

	Mini 141 H 32021E	SUCOFLEX 329	35000	30141 EZ 141
Type	Flexible	Flexible	Semi-Rigid	Semi-Rigid
Type of junction	Solderless	Soldered	Soldered	Soldered
Velocity nominal (%)	76.5	84.0	82.0	69.5
RF leakage assembly (dB) at 18 GHz	> 110	> 90	> 100	> 100
Static bend radius (inch min.) / [mm min.]	0.33 / [8.38]	0.90 / [23]	0.75 / [19.05]	0.12 / [3.18]
Weight (lbs/100 ft nom.) / [g/m]	2.70 / [40.20]	2.70 / [40.20]	2.75 / [40.95]	1.07 / [30.5]
Insertion loss at 18 GHz (dB/100 ft) / [dB/m]	62 / [2.03]	35 / [1.15]	45 / [1.48]	59 / [1.93]
OD max. diameter (in) / [mm]	144 / [3.68]	210 / [5.33]	141 / [3.58]	141 / [3.58]
Shields	5	3	–	–
Dielectric	Microporous PTFE	Microporous PTFE	Microporous PTFE	PTFE

Insertion Loss (cable only)



Straight panel receptacle and surface mount

- Flange mount
- Surface mount
- Direct replacement for SMA
- DC to 18 GHz

HUBER+SUHNER part number	Item no.
23_PSM-50-0-2/111_UE	80351702
96_PSM-50-0-1/111_NE	80351697

Adaptors

Within series

PSM/PSM	HUBER+SUHNER part number	Item no.
	31_PSM-PSM-50-1/11-_UE	80351700
Gender	female/jack	
Material	CuBe/gold	
VSWR	≤ 1.10 DC - 14* GHz	

In between series

PSM/TNC Hermetic	HUBER+SUHNER part number	Item no.
	34_PSM-TNC-50-1/111_NE	80351699
PSM	female/jack	
TNC	female/jack	
Material PSM	CuBe/gold	
Material TNC	Center Contact CuBe/Gold Body & mounting nut SS 303	
VSWR	≤ 1.10 DC - 10* GHz	

TNC/PSM	HUBER+SUHNER part number	Item no.
	33_TNC-PSM-50-1/119_UE	80351698
TNC	male/plug	
PSM	female/jack	
Material TNC	SS corrosion resistant, non-magnetic. Nut and center contact CuBe/gold. Nut: black chemical finish MIL-F-495	
Material Heat sink	aluminum black anodized	
Material PSM	SS corrosion resistant, non-magnetic	
VSWR	≤ 1.10 DC - 14* GHz	

* Frequency limited due to power handling capacity.

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