

QPS Terminations

Qualified Parts for Space (QPS) Terminations

Midwest Microwave has used its experience of designing custom space parts for many space programs and QPL for many military programs. In addition to the existing line of Qualified Parts for Space (QPS) attenuators, Cinch introduces a standard line of QPS terminations built with materials that meet or exceed 1% TML (Total Mass Loss) and 0.1% CVCM (Collected Volatile Condensable Materials) requirements as tested per ASTM E595.

QPS terminations were qualified using qualification testing guided by MIL-DTL-39030. They are available with three standard screening options with various severity of screening. Custom screening options are available on request.



Midwest Microwave Attenuators and Terminations Space Flight History

- Emirates Mars Mission
- Parker Solar Probe
- Europa Clipper
- One Web
- GPS Satellites

Features

- Qualification and screening guided by MIL-DTL-39030
- Meets or exceeds 1% TML and 0.1% CVCM
- Three standard screening levels available
- Male and female versions available
- Screening level A Male models stocked by our distribution partners

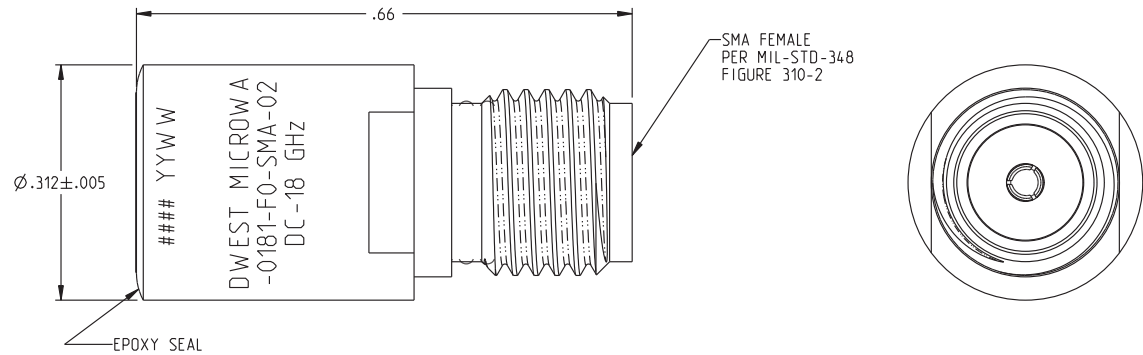
Specifications

Frequency	DC-18 GHz
VSWR	1.05 + 0.01F (GHz), 1.23:1 @ 18 GHz
Average Power @25° C	0.5 W*
Peak Power	50 W**
Operating Temperature	-55° C to +125° C
Weight (max.)	0.25 oz (7.1 g)

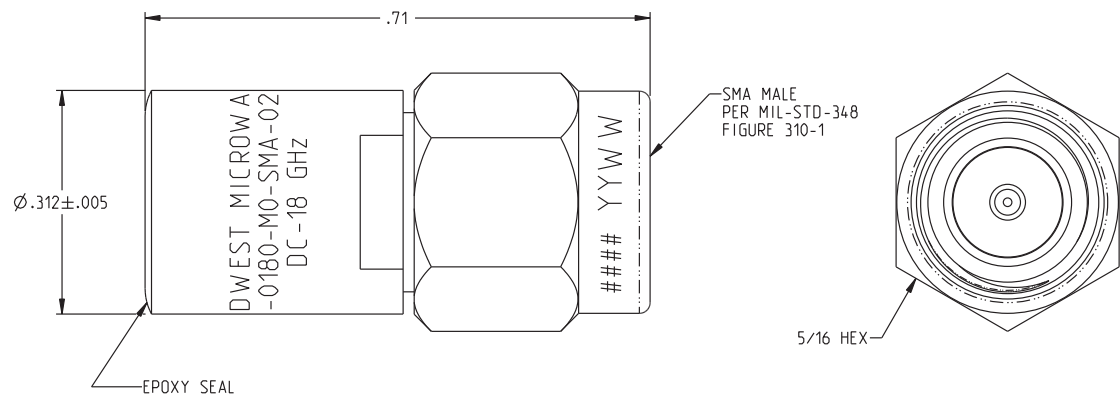
Notes:

- * Derated linearly to 0.125 W at 125° C
 - ** Duty cycle of 5×10^{-4} max pulse duration 5 μ s
- Each part marked with date code and serial number

SQT-018x-F0-SMA-02



SQT-018x-M0-SMA-02



Complete Materials List

SQT-018x-M0-SMA-02 Male Models

ITEM	QTY	DESCRIPTION	MATERIAL	FINISH/OUTGASSING
1	1	Coupling Nut	Stainless Steel per ASTM A582, type 303	Passivated per SAE AMS2700, Method 2
2	1	Gasket	Viton A Fluoroelastomer per SAE AMS7276	TML .21%, CVCM .02% (for reference only)
3	1	Retaining Ring	Beryllium Copper per ASTM B197, alloy C17200	No finish required
4	1	Center Contact	Beryllium Copper per ASTM B196, alloy C17300	50 microinch min Gold plate per ASTM-B488 Type II, Grade C, Class 1.27
5	1	Dielectric	PTFE Type 1, Grade 1, Class B per ASTM D 1710	No finish required
6	1	Connector Housing	Stainless Steel per ASTM A582, type 303	Passivated per SAE AMS2700, Method 2
7	1	Washer	Stainless Steel per ASTM A582, type 303	Passivated per SAE AMS2700, Method 2
8	1	Bushing	Stainless Steel per ASTM A582, type 303	Passivated per SAE AMS2700, Method 2
9	2	Edge Springs	Beryllium Copper per ASTM B194, alloy C17200	20 microinch min Gold plate per ASTM B488 Type II, Class 0.5 Grade B or C
10	1	Card Spacer	Beryllium Copper per ASTM B196, alloy C17300	20 microinch min Gold plate per ASTM B488 Type II, Class 0.5 Grade B or C
11	1	Resistor Card	"Tantalum Nitride thin film over Aluminum Nitride ceramic"	40 microinches min Gold sputtered terminals per MIL-G-45204, Type III, Grade A
12	1	Center Plunger	Beryllium Copper per ASTM B194, alloy C17200	20 microinch min Gold plate per ASTM B488 Type II, Class 0.5 Grade B or C
13	1	Plunger Spring	Beryllium Copper per ASTM B197, alloy C17200	No finish required
14	1	Support Bead	Ultem 1000 per ASTM D7293 S-PEI0111	No finish required
15	1	End Plug	Stainless Steel per ASTM A582, type 303	Passivated per SAE AMS2700, Method 2
16	A/R	Epoxy Seal	3M Scotch-Weld 2214 NMF (1 Hour cure @ 125°C)	TML% = 0.77, CVCM% = 0.02
17	A/R	Black Marking Ink	Videojet 16-5900 (1 Hour min cure @ 175°C)	TML% = 0.74, CVCM% = 0.04
18	A/R	BLACK MARKING INK	VIDEOJET 16-5900 (1-HOUR MIN CURE @ 175° C)	TML%=0.74, CVCM%=0.04

Complete Materials List

SQT-018x-F0-SMA-02 Female Models

ITEM	QTY	DESCRIPTION	MATERIAL	FINISH/OUTGASSING
1	1	Dielectric	PTFE Type 1, Grade 1, Class B per ASTM D 1710	No finish required
2	1	Washer	Stainless Steel per ASTM A582, type 303	Passivated per SAE AMS2700, Method 2
3	1	Bushing	Stainless Steel per ASTM A582, type 303	Passivated per SAE AMS2700, Method 2
4	2	Edge Springs	Beryllium Copper per ASTM B194, alloy C17200	20 microinch min Gold plate per ASTM B488 Type II, Class 0.5 Grade B or C
5	1	Card Spacer	Beryllium Copper per ASTM B196, alloy C17300	20 microinch min Gold plate per ASTM B488 Type II, Class 0.5 Grade B or C
6	1	Resistor Card	"Tantalum Nitride thin film over Aluminum Nitride ceramic"	40 microinches min Gold sputtered terminals per MIL-G-45204, Type III, Grade A
7	1	Center Plunger	Beryllium Copper per ASTM B194, alloy C17200	20 microinch min Gold plate per ASTM B488 Type II, Class 0.5 Grade B or C
8	1	Plunger Spring	Beryllium Copper per ASTM B197, alloy C17200	No finish required
9	1	Connector Housing	Stainless Steel per ASTM A582, type 303	Passivated per SAE AMS2700, Method 2
10	1	Center Contact	Beryllium Copper per ASTM B196, alloy C17300	50 microinch min Gold plate per ASTM-B488 Type II, Grade C, Class 1.27
11	1	Support Bead	Ultem 1000 per ASTM D7293 S-PEI0111	No finish required
12	1	End Plug	Stainless Steel per ASTM A582, type 303	Passivated per SAE AMS2700, Method 2
13	A/R	Epoxy Seal	3M Scotch-Weld 2214 NMF (1 Hour cure @ 125°C)	TML% = 0.77, CVCM% = 0.02
14	A/R	Black Marking Ink	Videojet 16-5900 (1 Hour min cure @ 175°C)	TML% = 0.74, CVCM% = 0.04

Screening Level A

- Recommended for non-flight applications
- Thermo-vacuum chamber testing
- Pre-flight testing
- Pre-flight system evaluation

Test Sequence	Inspection Name	Test Method per ATP-09418-60-02*	Sample Size
1	Parts and Assembly Verification (PAV)	4.4	100%
2	VSWR	4.1	
3	Visual and Mechanical Inspection	4.7	

* Available upon request

Standard part numbers with Level A screening

SQT-0182-F0-SMA-02, SPACE QUALIFIED TERMINATION, SMA FEMALE, LEVEL A

SQT-0182-M0-SMA-02, SPACE QUALIFIED TERMINATION, SMA MALE, LEVEL A



Screening Level B

- Absolute minimum testing recommended for space flight applications
- Cost effective space terminations option
- Low orbit satellite

Test Sequence	Inspection Name	Test Method per ATP-09418-60-02*	Sample Size
1	VSWR	4.1	100%
2	Thermal Shock	4.2	
3	Parts and Assembly Verification (PAV)	4.4	
4	Burn-in	4.5	
5	VSWR	4.1	
6	Radiographic Inspection	4.6	
7	Visual and Mechanical Inspection	4.7	

Standard part numbers with Level B screening

SQT-0181-F0-SMA-02, SPACE QUALIFIED TERMINATION, SMA FEMALE, LEVEL B
 SQT-0181-M0-SMA-02, SPACE QUALIFIED TERMINATION, SMA MALE, LEVEL B

Screening Level C

- Highest level of screening, recommended for all space flight applications
- Recommended for all orbits and for deep space missions
- As little as 10 weeks lead time

Test Sequence	Inspection Name	Test Method per ATP-09418-60-02	Sample Size
1	VSWR	4.1	100%
2	Thermal Shock	4.2	
3	VSWR	4.1	
4	Random Vibration	4.3	
5	VSWR	4.1	
6	Parts and Assembly Verification (PAV)	4.4	
7	VSWR	4.1	
8	Burn-in	4.5	
9	VSWR	4.1	
10	Radiographic Inspection	4.6	
11	Visual and Mechanical Inspection	4.7	

Standard part numbers with Level C screening

SQT-0180-F0-SMA-02, SPACE QUALIFIED TERMINATION, SMA FEMALE, LEVEL C
 SQT-0180-M0-SMA-02, SPACE QUALIFIED TERMINATION, SMA MALE, LEVEL C

Qualification Testing

Qualification testing performed on QPS terminations was guided by MIL-DTL-39030 and consisted of the tests indicated.

MIL-DTL-39030F(2)					
Sequence	Test	Test Method	Test Method	Pass	Qty Fail
1	Shock	3.16	4.6.13	4	0
1.1	Visual for Physical Damage	3.16	-	4	0
2	VSWR	3.13	4.6.10	4	0
3	Moisture Resistance	3.17	4.6.14	4	0
3.1	Visual for Physical Damage	3.17	-	4	0
4	VSWR	3.13	4.6.1	4	0
5	Moisture Resistance	3.20	4.6.17	4	0
5.1	Visual for Physical Damage	3.20	-	4	0
6	VSWR	3.13	4.6.10	4	0
7	Endurance	3.21	4.6.18	4	0
8	Cycle 1 - VSWR 1	3.13	4.6.10	4	0
9	Cycle 2 - VSWR 2	3.13	4.6.10	4	0
10	Cycle 3 - VSWR 3	3.13	4.6.10	4	0
11	Cycle 4 - VSWR 4	3.13	4.6.10	4	0
12	Cycle 5 - VSWR 5	3.13	4.6.10	4	0
13	Cycle 6 - VSWR 6	3.13	4.6.10	4	0
14	Cycle 7 - VSWR 7	3.13	4.6.10	4	0
15	Cycle 8 - VSWR 8	3.13	4.6.10	4	0
16	Cycle 9 - VSWR 9	3.13	4.6.10	4	0
17	Cycle 10 - VSWR 10	3.13	4.6.10	4	0
18	Visual for Physical Damage	3.21	-	4	0
19	Visual and Mechanical Inspection and Weight	3.1, 3.3 to 3.4.1, 3.4.5 to 3.4.8 incl. 3.24 and 3.25	4.6.1	4	0

For more information and custom options, please contact Midwest Microwave product manager Tibor Urbanek at Tibor.UrbaneK@us.cinch.com

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