

Coaxial Low Pass Filter

VLFG-400+

50Ω

DC to 400 MHz



Generic photo used for illustration purposes only

CASE STYLE: FF704

The Big Deal

- Excellent power handling, 3.5W
- Temperature stable
- Rugged, unibody construction
- Good rejection, 31 dB typical

Product Overview

VLFG-400+ is a 50Ω low pass filter built in rugged unibody construction. Covering DC-400 MHz bandwidth, these units offer good matching within the passband and high rejection in stopband. VLFG-400+ offer low insertion loss, and excellent power handling capability. It handles up to 3.5W RF input power and provides a wide operating temperature range from -55°C to 125°C.

Key Features

Feature	Advantages
Low passband insertion loss	Suitable for high performance application.
3.5W Power handling	Supports a range of system power requirements.
Connectorized package	The connectorized package is easy to interface with other devices and well suited for test setups.

Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp



Low Pass Filter

VLFG-400+

50Ω

DC to 400 MHz



Features

- Low loss, 1 dB typical
- Good rejection 31 dB typical
- Excellent power handling, 3.5 W
- Temperature stable
- Connectorized package

Generic photo used for illustration purposes only
CASE STYLE: FF704

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Applications

- Harmonic Rejection
- VHF/UHF transmitters / receivers
- RF suppression for DC lines on PCB
- Anti-aliasing for A/D converter

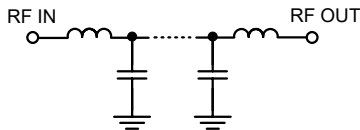
Electrical Specifications at 25°C

	Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC - 400	—	1.0	1.8	dB
	Freq. Cut-Off	F2*	520	—	3.0	—	dB
	Return Loss	DC-F1	DC - 400	—	18	—	dB
Stop Band	Rejection Loss	F3-F4	800 - 2500	25	31	—	dB
		F4-F5	2500 - 4500	—	23	—	dB

In Application where DC voltage is present at either input or output port, DC blocks are required.

* Typically, a ±5% frequency deviation from the stated value may occur on a unit-to-unit basis.

Functional Schematic



Maximum Ratings

Operating Temperature	-55°C to 125°C
Storage Temperature	-55°C to 125°C
RF Power Input*	3.5 W max. @25°C

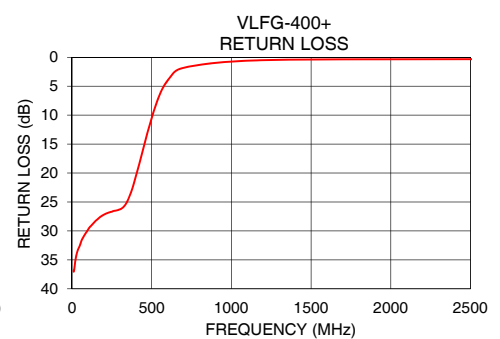
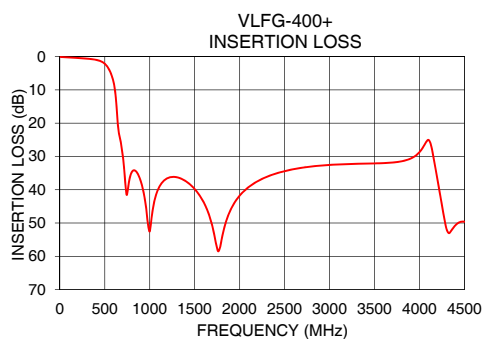
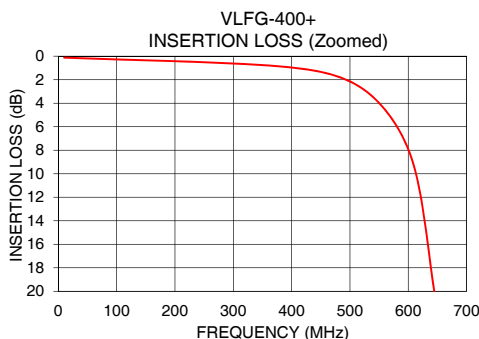
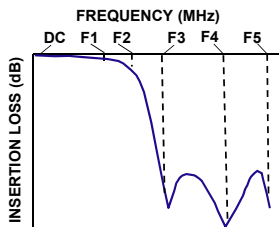
*Passband rating, derate linearly to 0.6 W at 125°C ambient

Permanent damage may occur if any of these limits are exceeded.

Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)
10	0.12	36.88
50	0.20	32.49
100	0.27	29.81
200	0.42	27.20
400	0.96	20.67
500	2.14	10.48
520	2.71	8.72
530	3.07	7.92
645	20.16	2.48
705	30.86	1.78
800	34.73	1.31
900	37.41	0.97
1000	52.52	0.74
1500	39.81	0.38
2000	41.77	0.34
2500	34.41	0.33
3000	32.54	0.33
3500	32.10	0.33
4000	28.67	0.37
4500	49.60	0.36

Typical Frequency Response



Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
 B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
 C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

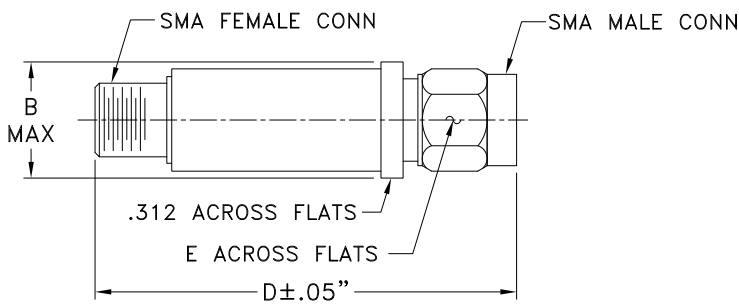


www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

Coaxial Connections

PORT - 1	SMA-Male
PORT - 2	SMA-Female

Outline Drawing



Outline Dimensions (inch mm)

B	D	E	wt.
.410	1.43	.312	grams
10.41	36.32	7.92	10

Note: Please refer to case style drawing for details

Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

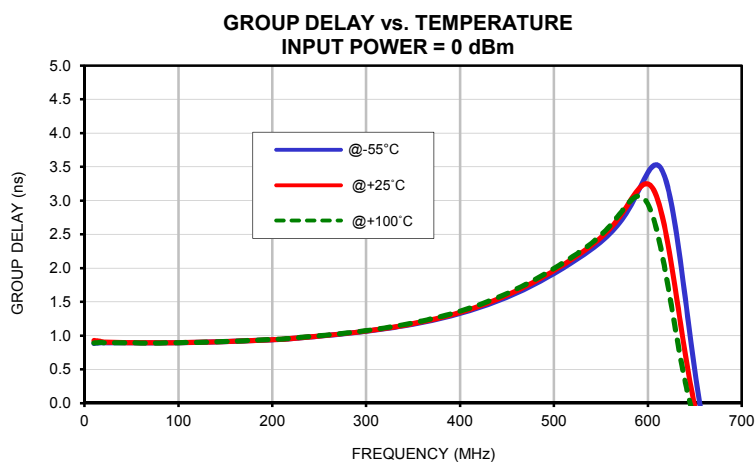
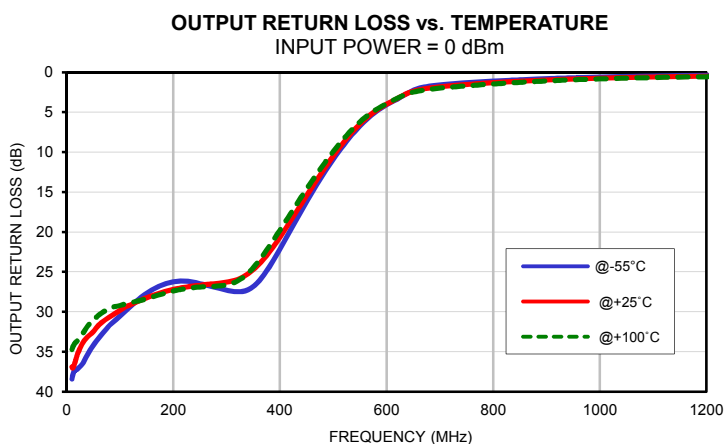
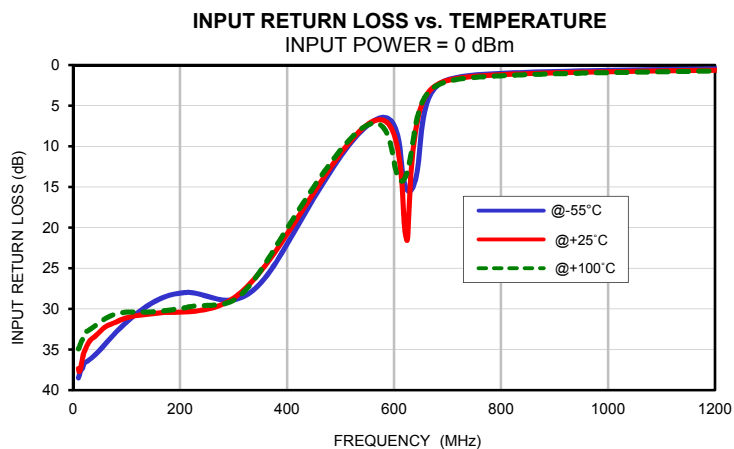
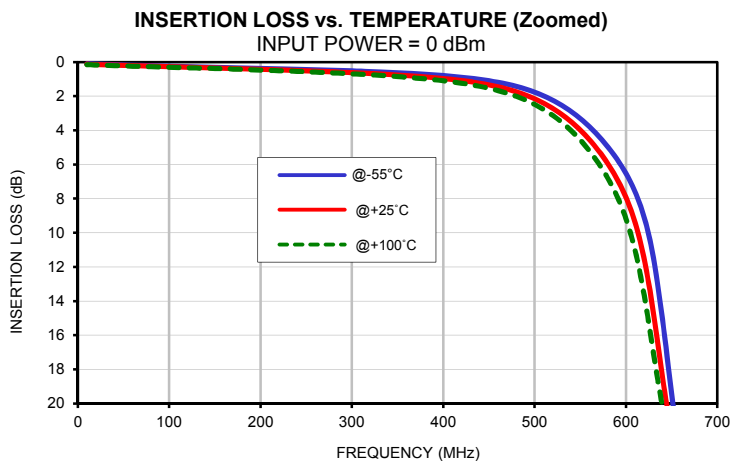
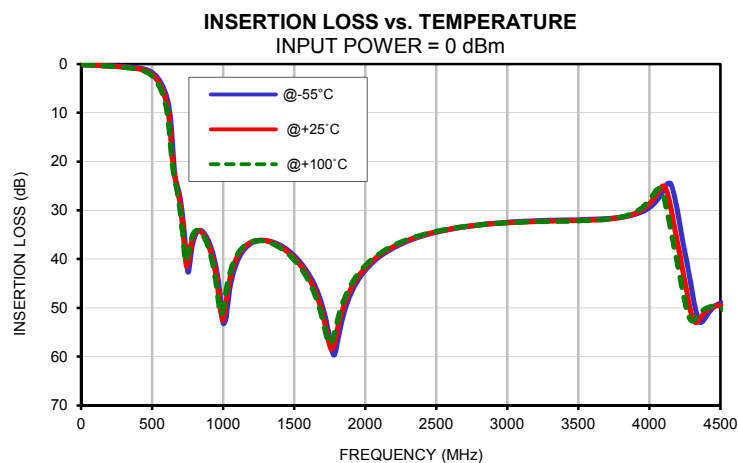
Typical Performance Data

FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C
10	0.10	0.12	0.15	38.49	37.32	34.92	38.41	36.88	34.72
50	0.17	0.20	0.22	35.07	32.79	31.66	34.16	32.49	31.08
100	0.24	0.27	0.30	31.60	31.06	30.39	30.57	29.81	29.21
150	0.31	0.34	0.38	29.17	30.58	30.35	27.68	28.22	28.36
200	0.37	0.42	0.46	28.04	30.37	29.94	26.22	27.20	27.39
250	0.44	0.51	0.57	28.42	30.05	29.56	26.47	26.68	26.90
300	0.52	0.62	0.69	28.88	28.67	28.91	27.30	26.28	26.64
350	0.62	0.76	0.85	26.86	25.42	25.33	26.82	24.72	24.47
400	0.79	0.96	1.09	22.04	20.80	20.09	22.16	20.67	19.78
450	1.09	1.34	1.54	16.36	15.69	14.97	16.19	15.46	14.63
500	1.76	2.14	2.48	11.26	10.88	10.43	10.91	10.48	9.93
520	2.24	2.71	3.13	9.52	9.23	8.94	9.08	8.72	8.29
550	3.31	3.98	4.56	7.42	7.33	7.37	6.72	6.48	6.22
600	6.52	7.92	9.17	7.40	8.57	11.88	4.06	4.00	3.94
635	13.10	16.53	18.66	15.06	10.80	9.50	2.79	2.76	2.80
685	25.83	26.77	27.71	2.31	2.24	2.35	1.71	1.93	2.10
700	28.12	29.68	30.99	1.81	1.88	2.00	1.59	1.82	1.99
800	35.29	34.73	34.37	1.01	1.17	1.31	1.11	1.31	1.47
900	36.52	37.41	38.10	0.79	0.95	1.07	0.81	0.97	1.09
1000	53.13	52.52	50.37	0.64	0.80	0.92	0.60	0.74	0.83
1100	40.37	39.48	39.01	0.53	0.70	0.81	0.47	0.59	0.66
1200	36.73	36.49	36.45	0.45	0.62	0.72	0.39	0.50	0.56
1300	36.18	36.24	36.38	0.39	0.55	0.66	0.34	0.44	0.49
1400	37.15	37.41	37.69	0.35	0.50	0.61	0.31	0.41	0.45
1500	39.32	39.81	40.21	0.31	0.46	0.57	0.30	0.38	0.42
1600	43.02	43.78	44.41	0.29	0.44	0.54	0.28	0.37	0.40
1700	49.86	51.38	52.55	0.28	0.41	0.52	0.28	0.36	0.39
1800	57.69	54.88	53.03	0.26	0.40	0.50	0.27	0.35	0.38
1900	46.94	46.00	45.23	0.26	0.39	0.49	0.27	0.34	0.37
2000	42.28	41.77	41.33	0.25	0.39	0.48	0.27	0.34	0.37
2100	39.53	39.19	38.88	0.25	0.38	0.47	0.26	0.34	0.36
2200	37.67	37.42	37.19	0.25	0.38	0.47	0.26	0.34	0.36
2300	36.31	36.13	35.96	0.25	0.38	0.46	0.26	0.33	0.36
2400	35.27	35.16	35.03	0.26	0.38	0.46	0.26	0.33	0.36
2500	34.48	34.41	34.30	0.26	0.39	0.47	0.26	0.33	0.36
2600	33.88	33.83	33.76	0.25	0.39	0.47	0.26	0.33	0.36
2700	33.38	33.36	33.32	0.25	0.39	0.48	0.25	0.33	0.36
2800	32.99	33.02	32.99	0.25	0.40	0.48	0.25	0.33	0.37
2900	32.69	32.74	32.74	0.25	0.40	0.49	0.24	0.33	0.37
3000	32.46	32.54	32.55	0.25	0.40	0.50	0.24	0.33	0.37
3050	32.37	32.46	32.48	0.25	0.41	0.50	0.24	0.33	0.37
3100	32.28	32.39	32.41	0.26	0.41	0.50	0.24	0.33	0.38
3150	32.21	32.34	32.37	0.26	0.41	0.51	0.24	0.33	0.38
3200	32.14	32.29	32.33	0.26	0.41	0.51	0.24	0.33	0.38
3250	32.09	32.25	32.29	0.26	0.42	0.51	0.23	0.33	0.39
3300	32.06	32.21	32.27	0.26	0.42	0.51	0.23	0.33	0.39
3350	32.03	32.18	32.24	0.26	0.42	0.52	0.23	0.33	0.39
3400	31.99	32.15	32.21	0.27	0.42	0.52	0.23	0.33	0.39
3450	31.96	32.12	32.18	0.27	0.43	0.52	0.23	0.33	0.40
3500	31.94	32.10	32.16	0.27	0.43	0.52	0.23	0.33	0.40
3550	31.89	32.06	32.11	0.28	0.43	0.52	0.22	0.33	0.40
3600	31.84	32.00	32.05	0.29	0.43	0.53	0.22	0.33	0.41
3700	31.70	31.83	31.84	0.30	0.44	0.53	0.22	0.33	0.42
3800	31.43	31.46	31.38	0.31	0.46	0.55	0.21	0.34	0.43
3900	30.83	30.65	30.37	0.34	0.49	0.60	0.21	0.34	0.44
4000	29.43	28.67	27.86	0.42	0.59	0.89	0.22	0.37	0.50
4100	25.80	25.04	27.27	0.84	1.38	1.09	0.31	0.57	0.66
4200	30.74	37.13	41.55	0.84	0.67	0.75	0.32	0.40	0.50
4300	46.64	51.81	52.71	0.42	0.51	0.62	0.22	0.36	0.48
4500	49.09	49.60	50.00	0.31	0.48	0.62	0.19	0.36	0.50

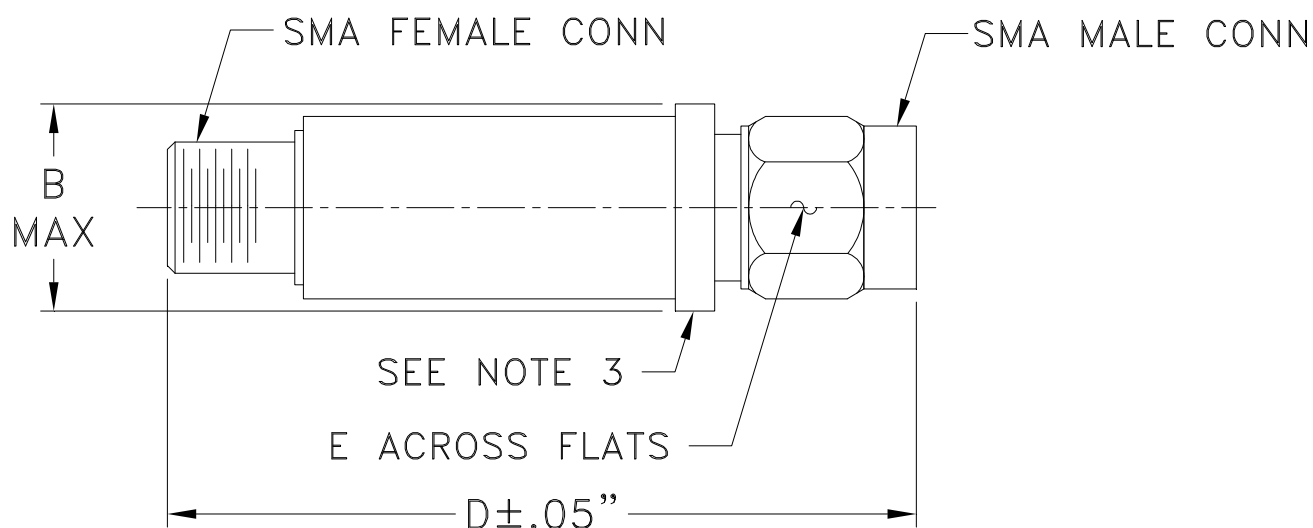
Typical Performance Data

FREQ.	GROUP DELAY		
(MHz)	(nsec)		
	@-55°C	@+25°C	@+100°C
10	0.88	0.93	0.89
20	0.89	0.90	0.90
30	0.89	0.90	0.89
40	0.89	0.90	0.89
50	0.89	0.90	0.89
60	0.89	0.89	0.89
70	0.89	0.89	0.89
80	0.89	0.89	0.89
90	0.89	0.89	0.89
100	0.89	0.89	0.89
110	0.90	0.90	0.90
120	0.90	0.90	0.90
130	0.90	0.90	0.90
140	0.91	0.91	0.91
150	0.91	0.91	0.91
160	0.92	0.92	0.92
170	0.92	0.92	0.92
180	0.93	0.93	0.93
190	0.93	0.93	0.94
200	0.94	0.94	0.94
210	0.94	0.95	0.95
220	0.96	0.96	0.96
230	0.97	0.97	0.97
240	0.98	0.98	0.98
250	0.99	0.99	1.00
260	1.00	1.01	1.01
270	1.02	1.02	1.02
280	1.03	1.03	1.04
290	1.05	1.05	1.06
300	1.06	1.07	1.07
310	1.08	1.09	1.09
320	1.10	1.11	1.11
330	1.12	1.13	1.14
340	1.15	1.15	1.16
350	1.17	1.18	1.19
360	1.20	1.21	1.22
370	1.23	1.24	1.25
380	1.26	1.27	1.28
390	1.29	1.30	1.32
395	1.31	1.32	1.34
400	1.33	1.34	1.36

Typical Performance Curves



Outline Dimensions



CASE #.	A	B	C	D	E	WT GRAMS
FF704	--	.410 (10.41)	--	1.43 (36.32)	.312 (7.92)	10.0

Dimensions are in inches (mm). Tolerances: 2Pl. ± .04; 3Pl. ± .030

Notes:

1. Case material: Stainless steel.
2. Case finish: Gold plated.
3. Round Flange may have .312 Across Flats in some models.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Thermal Shock	-55° to 100°C, 5 cycles	MIL-STD-202, Method 107, Condition A, Except +100°C