

Coaxial Low Pass Filter

NLP-500+

50Ω

DC to 500 MHz

The Big Deal

- Low insertion loss (0.5 dB typical)
- Wide stop band (up to 10 GHz)
- Rugged connectorized package



Generic photo used for illustration purposes only
CASE STYLE: FF967

Product Overview

The NLP-500+ is a connectorized low pass filter, built in N-unibody. The NLP-500+ offers a very low passband insertion loss 0.5 dB typical and a wide stop band rejection.

Key Features

Feature	Advantages
Designed for any environment	The NLP-500+ is equipped with a rugged shielded case and with a wide operating temperature range (-55°C to 100°C). Suitable for many environments and applications the NLP-500+ offers excellent performance and value.
Wide rejection, stop band is extending beyond typical theoretical limits.	This enables the filter to attenuate spurious signals and reject harmonics for broad band of frequency.
Minimal passband insertion loss	Provides low signal loss.
More than 40dB rejection up to 4500 MHz and 40 dB typical up to 10GHz	This enables the filter to attenuate spurious signals and reject harmonics over a broad frequency band.

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



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Low Pass Filter

50Ω

DC to 500 MHz

NLP-500+



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CASE STYLE: FF967

Features

- Excellent stop band rejection, 40dB typical up to 10GHz
- Rugged connectorized package

Applications

- Harmonic rejection
- Test equipment
- Lab use

Input	Output	Connectors	Model
Male	Female	N-type	NLP-500+

Electrical Specifications at 25°C

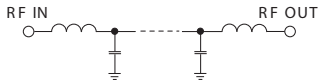
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC-500	—	0.5	1.0	dB
	Freq. Cut-Off	F2	630	—	3.0	—	dB
	VSWR	DC-F1	DC-500	—	1.2	1.75	:1
Stop Band	Rejection Loss	F3-F4	1000-1400	20	—	—	dB
		F4-F5	1400-4500	40	51	—	dB
		F5-F6	4500-10000	—	40	—	dB
	VSWR	F3-F6	4500-10000	—	15	—	:1

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power Input	2W max.

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

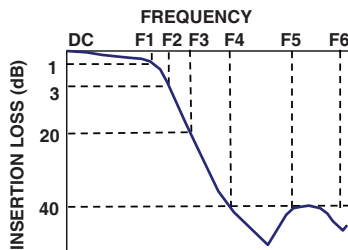
Functional Schematic



Typical Performance Data at 25°C

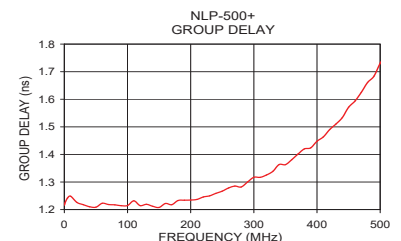
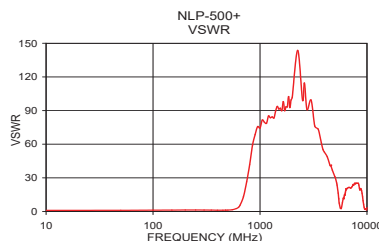
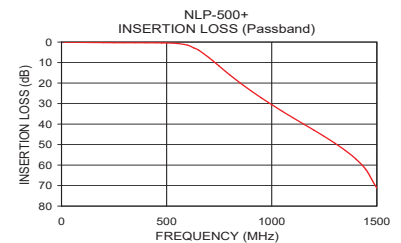
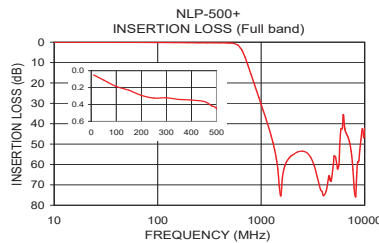
Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
10	0.06	37.85	10.0	1.25
50	0.12	27.47	50.0	1.21
150	0.23	18.65	100.0	1.21
500	0.46	20.07	120.0	1.21
550	0.74	13.19	150.0	1.21
600	1.66	6.95	180.0	1.23
630	3.11	4.60	190.0	1.23
700	7.84	1.28	200.0	1.23
800	16.35	0.40	220.0	1.25
1000	30.89	0.23	250.0	1.27
1200	43.25	0.21	270.0	1.29
1400	57.33	0.20	300.0	1.32
3000	56.59	0.18	320.0	1.33
4500	72.30	0.41	340.0	1.36
5000	66.23	0.58	350.0	1.36
6220	30.91	1.14	370.0	1.40
7000	45.51	0.75	380.0	1.42
8000	67.21	0.71	400.0	1.45
9000	51.59	1.91	450.0	1.57
10000	40.89	1.57	500.0	1.73

Typical Frequency Response



+RoHS Compliant

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



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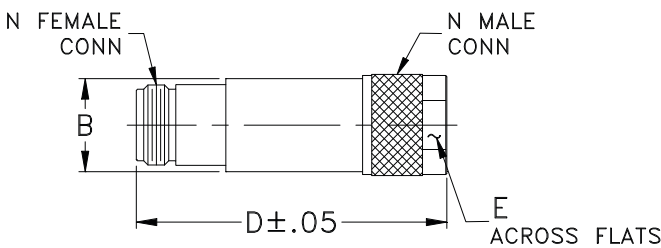


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Coaxial Connections

INPUT	Male
OUTPUT	Female

Outline Drawing



Outline Dimensions (^{inch}_{mm})

A	B	C	D	E	Wt.
--	.71	--	2.43	.718	grams
--	18.03	--	61.72	18.24	73

Note: Please refer to case style drawing for details

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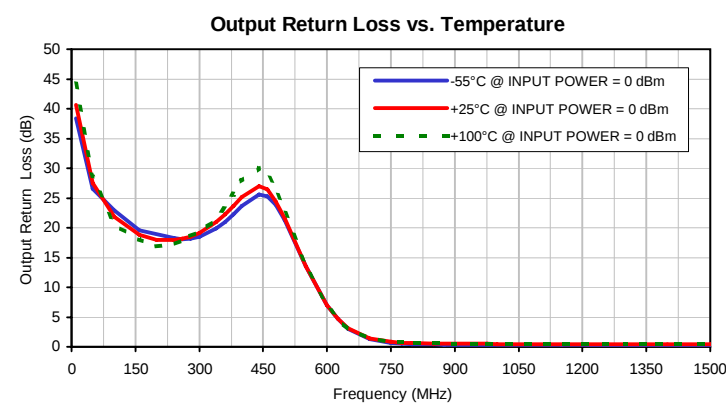
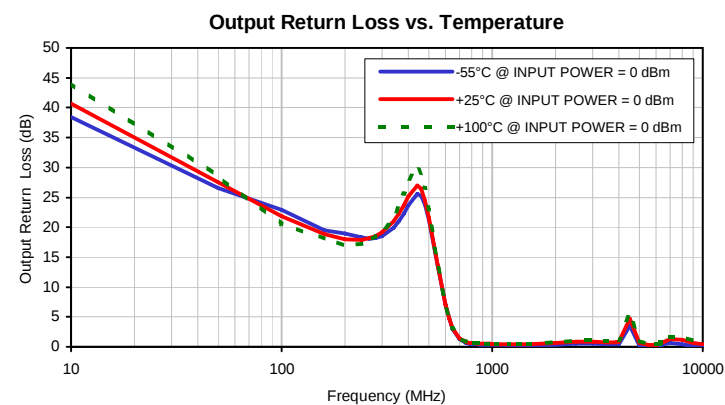
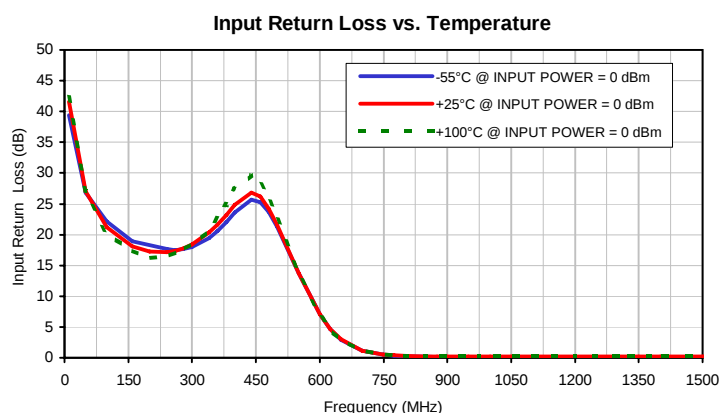
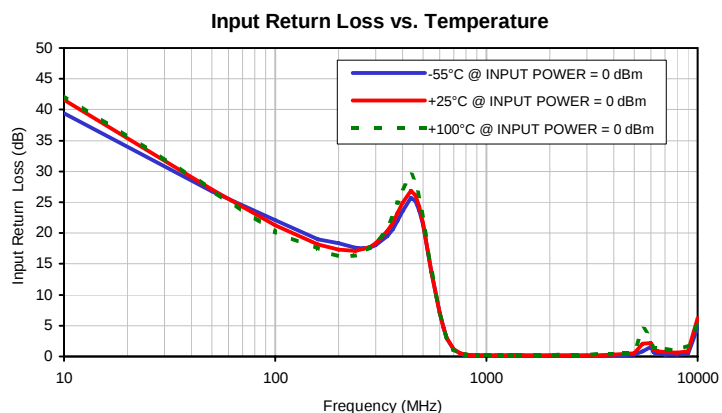
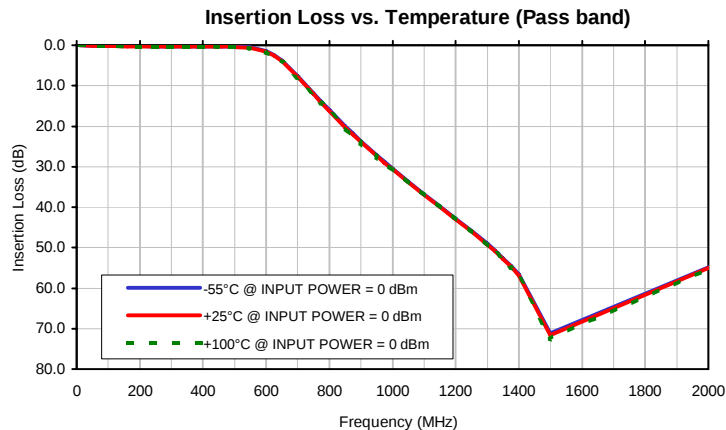
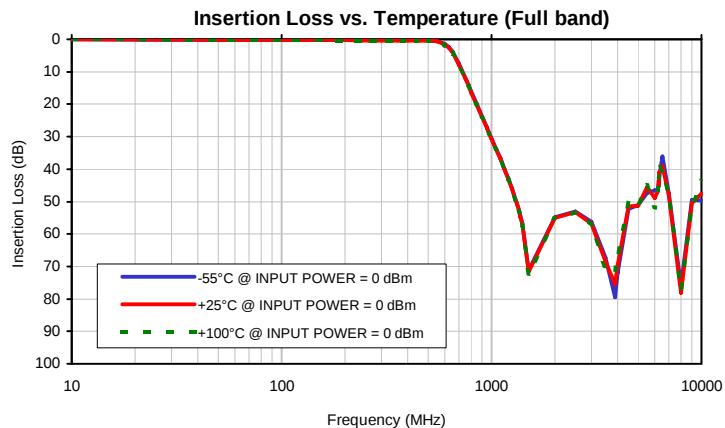
Typical Performance Data

FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
(MHz)	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C
10.0	0.03	0.04	0.04	39.40	41.59	42.31	38.39	40.66	44.16
50.0	0.11	0.14	0.14	26.77	27.07	27.07	26.59	27.54	28.58
100.0	0.16	0.18	0.21	22.12	21.25	20.18	22.93	21.85	20.53
160.0	0.21	0.25	0.28	18.94	18.13	17.43	19.54	18.80	18.09
200.0	0.23	0.28	0.33	18.34	17.28	16.17	18.97	18.00	16.88
240.0	0.25	0.30	0.35	17.64	17.17	16.43	18.26	17.93	17.20
260.0	0.26	0.31	0.35	17.50	17.38	17.00	18.08	18.15	17.86
280.0	0.26	0.31	0.35	17.64	17.79	17.65	18.17	18.55	18.57
300.0	0.26	0.31	0.35	18.02	18.41	18.40	18.54	19.15	19.29
340.0	0.26	0.31	0.34	19.48	20.32	20.69	19.92	20.98	21.46
360.0	0.25	0.31	0.34	20.62	21.66	22.57	20.97	22.23	23.29
380.0	0.25	0.31	0.34	22.03	23.20	24.87	22.26	23.65	25.55
400.0	0.25	0.32	0.35	23.59	24.86	27.33	23.68	25.14	27.82
440.0	0.26	0.34	0.38	25.68	26.84	29.71	25.58	27.01	30.15
460.0	0.27	0.36	0.40	25.22	26.16	28.38	25.28	26.41	29.11
480.0	0.29	0.38	0.42	23.70	24.27	25.92	23.82	24.45	26.53
500.0	0.32	0.42	0.46	21.33	21.59	22.76	21.33	21.58	22.94
550.0	0.55	0.66	0.72	13.68	13.71	13.85	13.51	13.56	13.69
600.0	1.42	1.59	1.72	7.07	7.04	6.90	7.03	7.03	6.88
625.0	2.39	2.58	2.77	4.66	4.66	4.53	4.68	4.72	4.60
650.0	3.80	4.00	4.25	2.93	2.97	2.89	2.99	3.09	3.02
700.0	7.58	7.80	8.09	1.12	1.18	1.17	1.27	1.40	1.42
750.0	11.85	12.08	12.34	0.48	0.54	0.56	0.67	0.81	0.86
775.0	13.98	14.20	14.44	0.34	0.40	0.42	0.54	0.69	0.74
800.0	16.04	16.27	16.48	0.25	0.31	0.33	0.46	0.61	0.67
850.0	19.95	20.23	20.39	0.17	0.23	0.24	0.39	0.54	0.61
875.0	21.83	22.10	22.25	0.15	0.20	0.21	0.37	0.52	0.59
900.0	23.66	23.93	24.07	0.14	0.19	0.21	0.35	0.51	0.58
950.0	27.16	27.42	27.52	0.13	0.18	0.19	0.33	0.49	0.57
975.0	28.83	29.08	29.16	0.12	0.17	0.18	0.33	0.50	0.58
1000.0	30.49	30.72	30.81	0.12	0.17	0.18	0.31	0.48	0.57
1050.0	33.69	33.90	33.96	0.12	0.17	0.18	0.30	0.47	0.56
1100.0	36.78	36.96	37.03	0.12	0.17	0.18	0.29	0.48	0.57
1150.0	39.81	39.98	40.05	0.12	0.17	0.18	0.29	0.47	0.57
1200.0	42.79	42.99	43.08	0.12	0.18	0.18	0.28	0.47	0.57
1250.0	45.90	46.06	46.17	0.13	0.18	0.19	0.26	0.46	0.57
1300.0	49.09	49.29	49.45	0.13	0.18	0.19	0.25	0.45	0.56
1325.0	50.73	50.99	51.12	0.13	0.18	0.19	0.26	0.46	0.57
1350.0	52.60	52.82	53.04	0.13	0.19	0.20	0.25	0.45	0.56
1375.0	54.51	54.78	55.00	0.13	0.18	0.19	0.25	0.46	0.57
1400.0	56.66	56.86	57.19	0.13	0.19	0.20	0.24	0.45	0.56
1500.0	71.15	71.59	72.58	0.13	0.19	0.20	0.24	0.46	0.58
2000.0	54.87	55.09	55.17	0.12	0.21	0.24	0.34	0.60	0.73
2500.0	53.10	53.27	53.30	0.09	0.21	0.28	0.53	0.86	1.03
3000.0	56.25	56.85	57.17	0.07	0.21	0.31	0.50	0.86	1.11
3500.0	67.29	68.48	70.99	0.10	0.25	0.37	0.40	0.75	0.97
3880.0	79.45	75.57	71.26	0.14	0.30	0.43	0.42	0.77	0.98
4000.0	71.91	69.58	66.92	0.15	0.32	0.44	0.43	0.82	1.05
4500.0	52.19	51.46	50.39	0.22	0.39	0.51	3.50	4.76	5.68
5000.0	51.18	51.20	50.97	0.28	0.49	0.62	0.27	0.62	0.92
5500.0	47.43	45.61	45.01	0.81	2.08	4.63	0.05	0.32	0.53
6000.0	46.51	48.99	51.87	1.59	2.21	2.78	0.09	0.37	0.51
6200.0	46.54	46.70	46.53	0.71	1.14	1.55	0.19	0.46	0.59
6220.0	45.98	45.82	45.31	0.69	1.11	1.55	0.21	0.48	0.60
6240.0	45.33	44.86	44.02	0.63	1.06	1.46	0.19	0.50	0.64
6260.0	44.56	43.78	42.63	0.64	1.05	1.46	0.23	0.51	0.63
6280.0	43.60	42.47	40.99	0.62	1.02	1.45	0.21	0.54	0.67
6300.0	42.43	40.95	39.27	0.59	1.00	1.40	0.21	0.56	0.73
6500.0	36.12	39.09	40.65	0.52	0.87	1.20	0.38	0.74	0.86
7000.0	47.62	48.16	48.00	0.30	0.75	1.29	0.61	1.31	1.71
8000.0	75.98	78.10	77.39	0.32	0.65	0.91	0.46	1.14	1.60
9000.0	49.56	50.40	51.49	0.38	0.85	1.79	0.10	0.60	1.04
10000.0	49.64	47.55	43.81	4.65	6.22	5.05	0.18	0.44	0.99

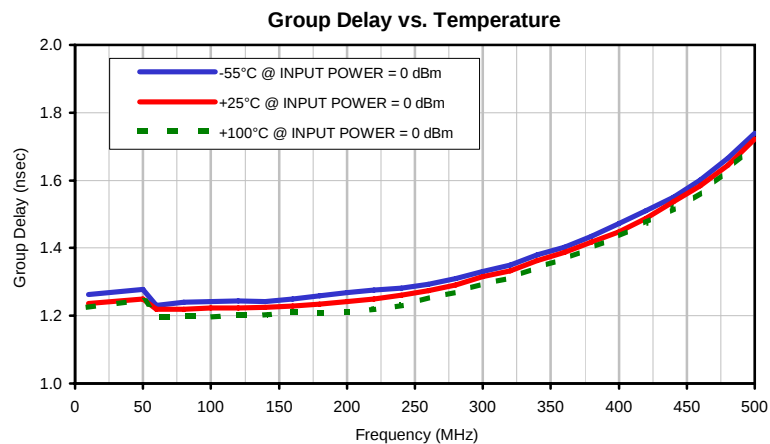
Typical Performance Data

FREQ.	GROUP DELAY		
(MHz)	(nsec)		
	@-55°C	@+25°C	@+100°C
10.0	1.26	1.24	1.22
50.0	1.28	1.25	1.25
60.0	1.23	1.22	1.20
80.0	1.24	1.22	1.20
100.0	1.24	1.22	1.20
120.0	1.24	1.22	1.20
140.0	1.24	1.22	1.20
160.0	1.25	1.23	1.21
180.0	1.26	1.23	1.21
200.0	1.27	1.24	1.21
220.0	1.28	1.25	1.22
240.0	1.28	1.26	1.23
260.0	1.29	1.27	1.25
280.0	1.31	1.29	1.27
300.0	1.33	1.31	1.29
320.0	1.35	1.33	1.31
340.0	1.38	1.36	1.34
360.0	1.40	1.39	1.37
380.0	1.44	1.42	1.40
400.0	1.47	1.45	1.43
420.0	1.51	1.49	1.47
440.0	1.55	1.54	1.52
460.0	1.60	1.58	1.56
480.0	1.67	1.65	1.63
500.0	1.74	1.72	1.71

Typical Performance Curves



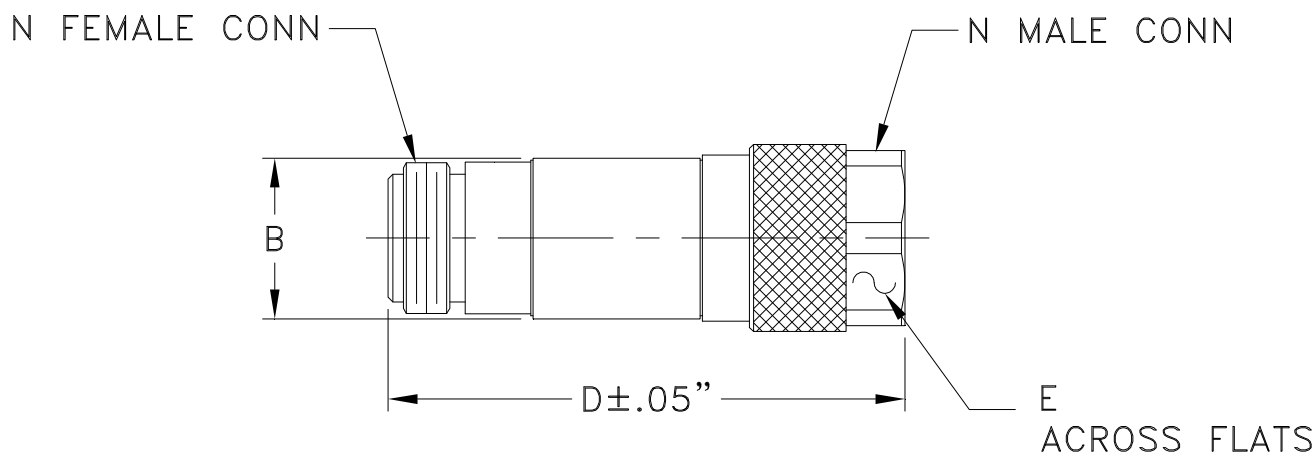
Typical Performance Curves



Case Style

FF

Outline Dimensions

FF967

CASE #.	A	B	C	D	E	WT GRAMS
FF967	--	.71 (18.03)	--	2.43 (61.72)	.718 (18.24)	73.0

Dimensions are in inches (mm). Tolerances: 2Pl. +.05/-.04; 3Pl. ± .030

Notes:

1. Case material: Brass.
2. Case finish: Nickel plate.



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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
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
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	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I