

High Pass Filter

ZHFG-K4400+

50Ω

4900 to 16500 MHz

*Generic photo used for illustration purposes only*

CASE STYLE: UK3042

The Big Deal

- Good power handling, 3W
- Temperature stable
- Broadband connectorized package
- Good rejection, 48 dB typical

Product Overview

ZHFG-K4400+ is a 50Ω high pass filter built in broadband connectorized package. Covering 4900-16500 MHz bandwidth, these units offer good matching within the passband and good rejection in stopband. ZHFG-K4400+ offer low insertion loss, and good power handling capability. It handles up to 3W 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.
3W 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



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Features

- Very good rejection, 48dB typ.
- Temperature stable
- Good power handling, 3W

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Connectors Model
2.92mm-F ZHFG-K4400+

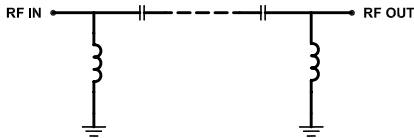
+RoHS Compliant

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

Applications

- Transmitters / Receivers
- Test and measurements
- Military applications
- Telecommunications and broadband wireless systems
- 5G Sub 6 GHz
- Wi-Fi 6E and X-band Radar

Functional Schematic



Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Stop Band	Rejection Loss	DC-F1	DC - 3000	40	48	-	dB
		F1-F2	3000 - 3500	25	39	-	dB
	Freq. Cut-Off	F3*	4560	-	3	-	dB
Pass Band	Insertion Loss	F4-F5	4900 - 5300	-	2.0	-	dB
		F5-F6	5300 - 6100	-	1.6	2.5	dB
	Return loss	F6-F7	6100 - 16500	-	1.4	2.2	dB
		F4-F7	4900 - 16500	-	14	-	dB

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

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

Maximum Ratings

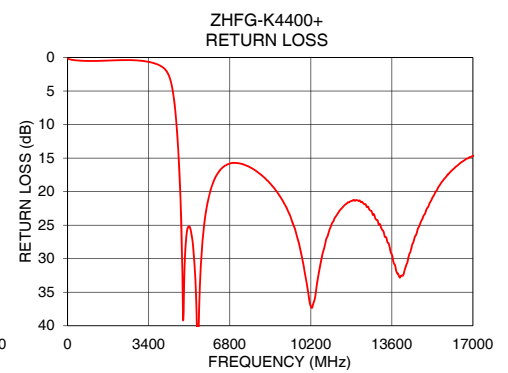
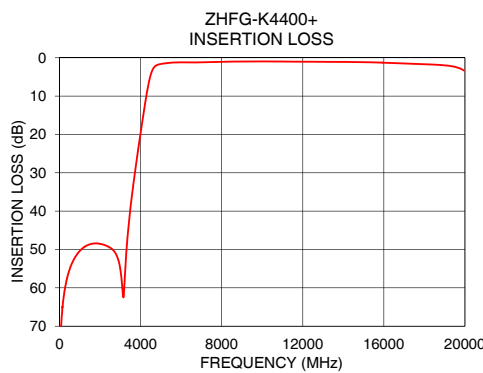
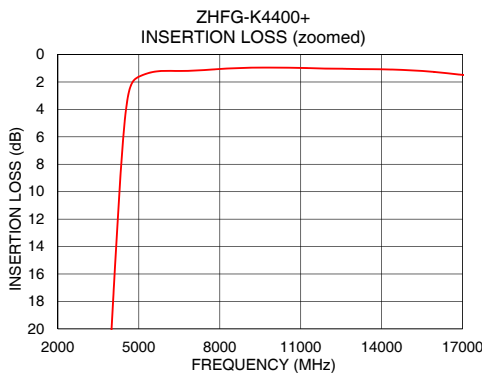
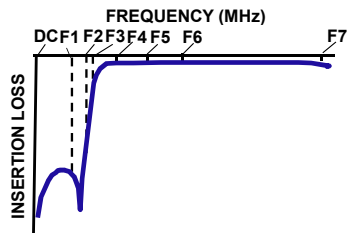
Operating Temperature	-55°C to 125°C
Storage Temperature	-55°C to 125°C
RF Power Input*	3W max. @25°C

*Passband rating, derate linearly to 0.6W 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	82.61	0.15
100	68.41	0.29
500	55.13	0.46
1000	50.38	0.51
2500	49.56	0.38
3000	55.18	0.45
3500	39.14	0.73
3720	29.94	0.96
4000	19.60	1.48
4400	6.60	4.82
4560	3.49	9.80
4900	1.73	31.57
5300	1.39	29.91
6100	1.19	18.65
8000	1.06	17.18
10000	0.95	33.11
12000	1.03	21.22
14000	1.08	32.56
15000	1.14	23.21
16500	1.38	15.65

Typical Frequency Response



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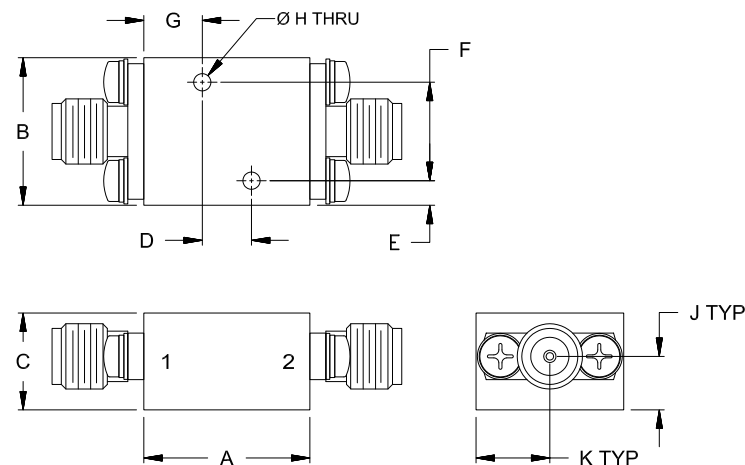


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Coaxial Connections

PORT - 1	2.92mm-Female
PORT - 2	2.92mm-Female

Outline Drawing



Outline Dimensions (inch mm)

A	B	C	D	E	F
.68	.60	.39	.200	.10	.400
17.1	15.2	10.0	5.08	2.5	10.16
G	H	J	K		Wt.
.24	.070	.22	.30		grams
6.0	1.78	5.5	7.6		24

Note: Please refer to case style drawing for details

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Typical Performance Data

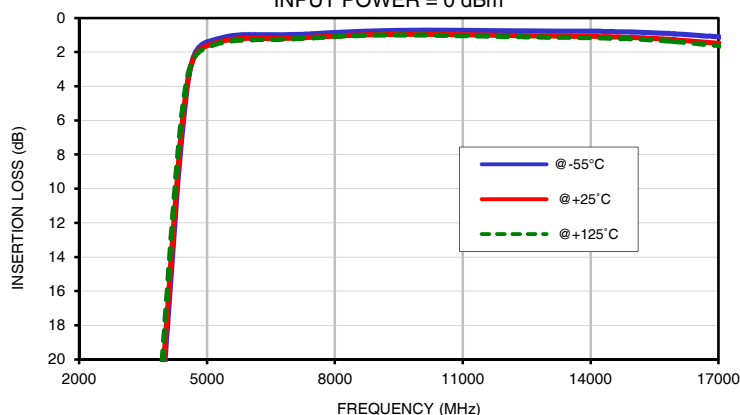
FREQ. (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-55°C	@+25°C	@+125°C	@-55°C	@+25°C	@+125°C	@-55°C	@+25°C	@+125°C
10	76.32	82.61	81.57	0.11	0.15	0.19	0.10	0.17	0.20
50	74.49	73.99	73.77	0.17	0.23	0.30	0.17	0.27	0.32
100	68.38	68.41	68.46	0.23	0.29	0.36	0.22	0.32	0.38
150	64.80	65.12	64.71	0.26	0.33	0.41	0.25	0.37	0.43
200	62.37	62.63	62.59	0.29	0.36	0.45	0.28	0.40	0.46
250	60.61	60.68	60.70	0.30	0.38	0.47	0.31	0.42	0.49
300	59.17	59.34	59.36	0.32	0.40	0.50	0.33	0.44	0.53
350	58.01	58.01	58.00	0.33	0.42	0.52	0.35	0.46	0.56
400	56.78	56.93	56.98	0.34	0.43	0.54	0.37	0.48	0.58
450	55.90	55.95	55.98	0.36	0.45	0.56	0.38	0.49	0.60
500	55.09	55.13	55.21	0.36	0.46	0.58	0.39	0.51	0.62
550	54.32	54.40	54.49	0.37	0.47	0.59	0.40	0.52	0.63
600	53.69	53.77	53.85	0.38	0.48	0.60	0.41	0.54	0.64
700	52.57	52.66	52.77	0.39	0.50	0.61	0.43	0.57	0.66
800	51.66	51.80	51.82	0.40	0.51	0.62	0.44	0.60	0.67
900	50.87	51.01	51.07	0.40	0.51	0.63	0.44	0.61	0.67
1000	50.25	50.38	50.45	0.40	0.51	0.62	0.44	0.61	0.67
1100	49.74	49.85	49.90	0.40	0.51	0.62	0.44	0.60	0.67
1200	49.33	49.43	49.49	0.39	0.51	0.61	0.43	0.59	0.65
1300	48.99	49.11	49.14	0.38	0.50	0.60	0.42	0.58	0.64
1400	48.72	48.84	48.89	0.38	0.49	0.58	0.41	0.57	0.62
1500	48.53	48.63	48.71	0.36	0.47	0.57	0.40	0.56	0.60
2000	48.43	48.53	48.63	0.30	0.41	0.49	0.32	0.48	0.50
2300	48.86	49.00	49.08	0.27	0.38	0.46	0.28	0.44	0.47
2500	49.38	49.56	49.66	0.26	0.38	0.46	0.28	0.44	0.46
2700	50.25	50.49	50.67	0.27	0.39	0.48	0.29	0.46	0.48
3000	54.30	55.18	56.17	0.31	0.45	0.55	0.34	0.53	0.56
3200	62.81	59.43	55.75	0.38	0.53	0.65	0.43	0.62	0.67
3500	40.41	39.14	37.56	0.54	0.73	0.88	0.61	0.84	0.92
3720	30.98	29.94	28.55	0.73	0.96	1.17	0.81	1.08	1.20
3980	21.30	20.32	18.99	1.11	1.43	1.76	1.20	1.54	1.76
4280	10.87	10.05	8.97	2.38	3.03	3.87	2.41	3.06	3.73
4560	3.66	3.49	3.27	8.06	9.80	11.99	7.86	9.50	11.36
4900	1.53	1.73	1.83	32.89	31.57	31.82	30.56	30.92	32.85
5000	1.41	1.62	1.71	24.39	25.99	28.91	24.74	26.66	30.18
5200	1.25	1.45	1.53	23.29	26.52	33.32	23.44	26.89	33.47
5300	1.19	1.39	1.47	25.20	29.91	45.42	25.26	30.06	40.94
5400	1.13	1.33	1.41	28.67	37.35	37.29	28.58	36.42	36.50
5500	1.08	1.28	1.37	36.14	39.52	29.59	35.33	38.55	29.79
5600	1.04	1.25	1.33	38.41	30.20	25.73	37.69	30.35	25.89
5700	1.01	1.22	1.31	29.41	25.74	23.13	29.59	25.95	23.29
5800	0.99	1.20	1.29	25.27	22.99	21.28	25.41	23.19	21.43
5900	0.98	1.20	1.28	22.56	21.10	19.92	22.67	21.26	20.02
6000	0.97	1.19	1.27	20.67	19.70	18.92	20.70	19.82	18.95
6100	0.97	1.19	1.27	19.28	18.65	18.15	19.28	18.74	18.13
6200	0.97	1.19	1.27	18.24	17.84	17.52	18.19	17.88	17.46
6500	0.98	1.20	1.26	16.33	16.39	16.46	16.25	16.38	16.31
7000	0.97	1.18	1.22	15.41	15.72	16.05	15.37	15.85	15.99
7500	0.92	1.12	1.16	15.64	16.14	16.63	15.89	16.60	16.98
8000	0.85	1.06	1.09	16.72	17.18	17.94	17.39	18.22	19.03
8500	0.79	1.00	1.03	18.30	18.81	19.89	19.43	20.48	22.02
9000	0.75	0.97	1.00	20.85	21.23	22.67	22.44	23.68	26.22
9500	0.73	0.95	1.00	24.86	25.26	27.32	26.81	28.07	33.01
10000	0.72	0.95	1.01	32.45	33.11	39.19	34.06	36.06	46.34
11000	0.72	0.98	1.03	26.25	25.52	25.73	30.81	29.79	28.37
12000	0.75	1.03	1.09	21.55	21.22	21.42	25.21	24.77	24.32
13000	0.77	1.06	1.13	24.01	24.28	24.14	25.24	25.58	24.78
14000	0.78	1.08	1.15	29.12	32.56	38.74	27.96	29.91	31.95
15000	0.83	1.14	1.23	22.16	23.21	23.74	24.01	26.45	27.90
16500	1.01	1.38	1.50	15.55	15.65	15.58	15.98	16.05	15.55

Typical Performance Data

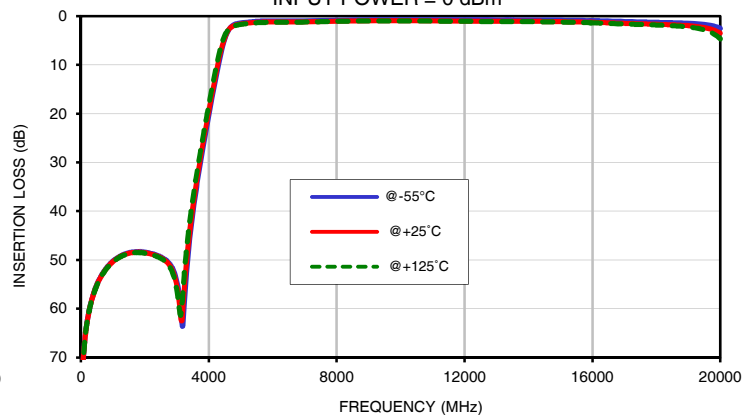
FREQ.	GROUP DELAY		
(MHz)	(nsec)		
	@-55°C	@+25°C	@+125°C
4900	0.58	0.56	0.54
5100	0.49	0.48	0.47
5300	0.43	0.42	0.42
5500	0.39	0.39	0.38
5700	0.36	0.36	0.36
5900	0.34	0.34	0.33
6100	0.32	0.32	0.32
6300	0.30	0.30	0.30
6500	0.29	0.29	0.29
6700	0.28	0.28	0.28
7000	0.27	0.27	0.27
7300	0.26	0.26	0.26
7600	0.25	0.25	0.25
7900	0.24	0.24	0.24
8200	0.24	0.24	0.24
8500	0.23	0.23	0.23
8800	0.23	0.23	0.23
9100	0.22	0.22	0.23
9400	0.22	0.22	0.22
9700	0.22	0.22	0.22
10000	0.22	0.22	0.22
10300	0.21	0.21	0.22
10600	0.21	0.21	0.21
10900	0.21	0.21	0.21
11200	0.21	0.21	0.21
11500	0.21	0.21	0.21
11800	0.21	0.21	0.21
12100	0.20	0.21	0.21
12400	0.20	0.20	0.21
12700	0.20	0.20	0.21
13000	0.20	0.20	0.21
13300	0.20	0.20	0.21
13600	0.20	0.20	0.21
13900	0.20	0.20	0.21
14200	0.20	0.20	0.21
14500	0.20	0.20	0.21
14800	0.20	0.20	0.21
15000	0.20	0.21	0.21
15500	0.20	0.21	0.21
16000	0.20	0.21	0.21
16500	0.21	0.21	0.21

Typical Performance Curves

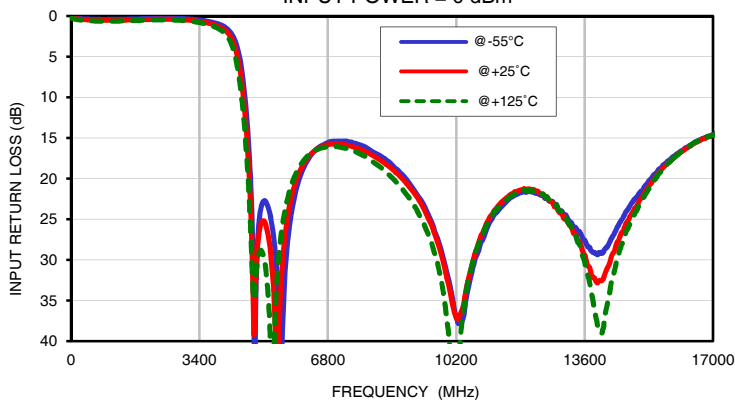
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



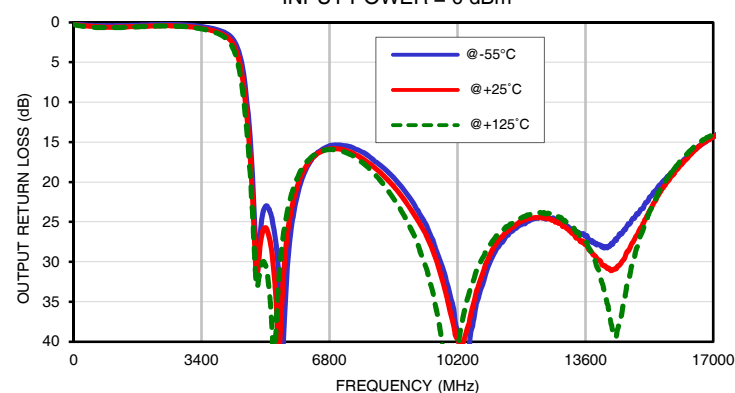
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



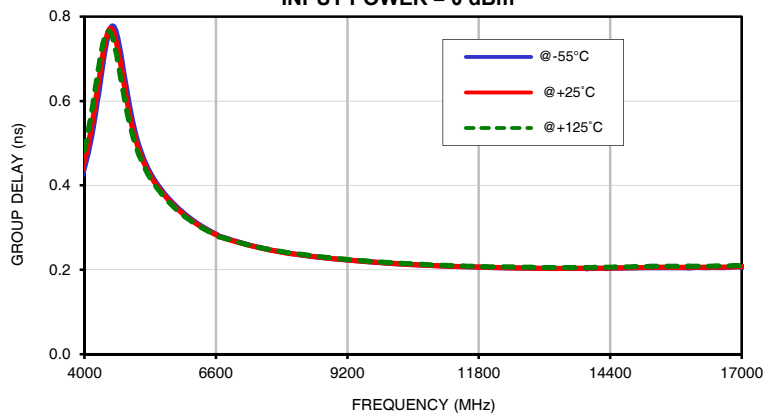
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm

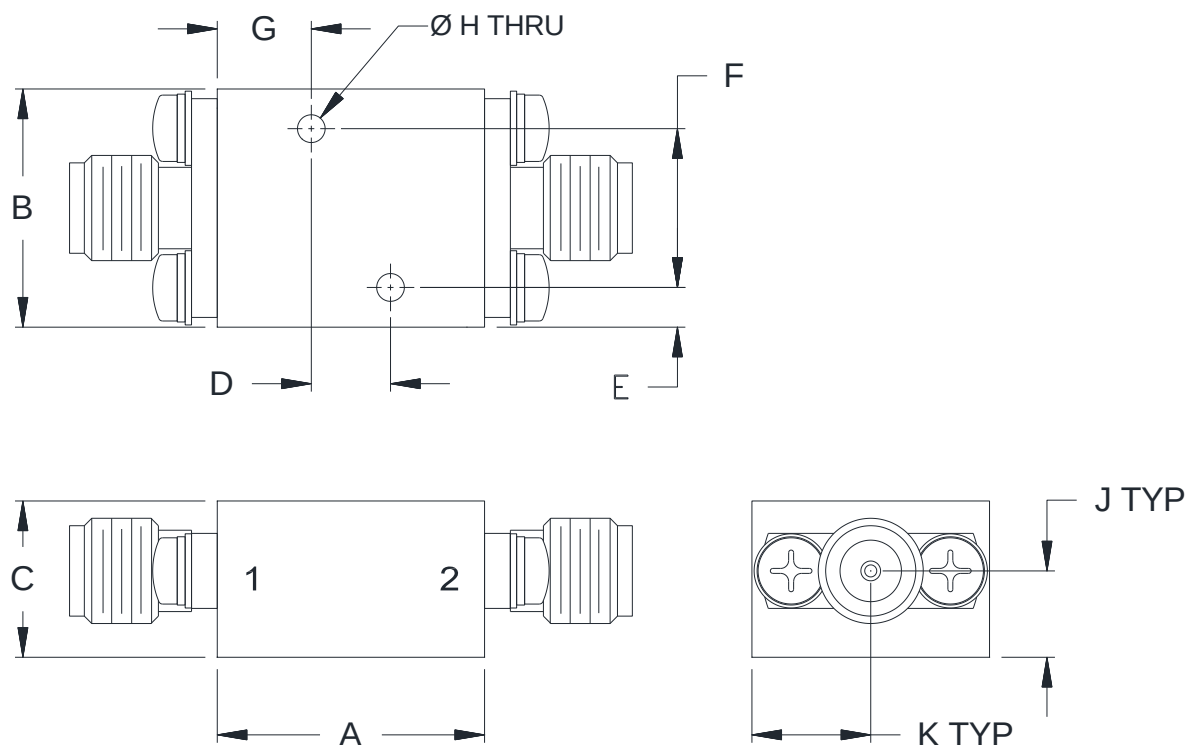


GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Outline Dimensions

UK3042



CASE#	A	B	C	D	E	F
UK3042	.68 (17.1)	.60 (15.2)	.39 (10.0)	.200 (5.08)	.10 (2.5)	.400 (10.16)

CASE#	G	H	J	K	WT.GRAMS
UK3042	.24 (6.0)	.070 (1.78)	.22 (5.5)	.30 (7.6)	24

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .050$; 3 Pl. $\pm .015$

Notes:

- Case material: Brass alloy.
- Case Finish:
 - Case & Cover of the units –Gold plating.
- Refer to the individual model data sheet for the type of connectors available.



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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 125° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 125° C Ambient Environment	Individual Model Data Sheet