COAXIAL

High Power Amplifier

ZHL2G02G4125+
ZHL2G02G4125X+

50Ω 2000 to 2400 MHz SMA Female/N-Type

THE BIG DEAL

- Saturated Power, 125 W Typ.
- Wide Bandwidth, 2000 to 2400 MHz
- High Gain, 51 dB Typ.
- Self-Protected From Overheating and Reverse Polarity
- Self-Protected Against Too Much Reflected Power
- Self-Protected Against Too Much Forward Power

Generic photo used for illustration purposes only

Model No.	ZHL2G02G4125+	ZHL2G02G4125X+
Option	With Heatsink	Without Heatsink
Case Style	BT1689	
Connectors	IN SMA female, OUT N-Type	

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

APPLICATIONS

- High Power Test Sets
- Burn-In Setups
- Communications
- SATCOM

PRODUCT OVERVIEW

The ZHL2G02G4125(X)+ is a Class AB, high-power amplifier providing typically 125 W saturated power in the 2000 to 2400 MHz band, ideal for a variety of high-power applications such as test setups, communications, SATCOM and more. The ruggedly designed amplifier provides unconditional stability and built-in protection against reverse polarity, overheating, excessive amounts of forward and reflected power. The amplifier limits the output power to approximately +52 dBm (158 W). The amplifier's output stage can operate into an open and short, and shuts off when the reflected power exceeds 100 W CW. The rugged aluminum alloy enclosure measures 170x110x30 mm and features an SMA connector at the input and an N-connector at the output. A heatsink and fan attachment for cooling are optional.

KEY FEATURES

Feature	Advantages
Usable from 2000 to 2400 MHz	Suitable for a broad range of high-power applications, including test setups, communications, SATCOM and other applications.
High Power Gain, 51 dB Typ.	Enables signal amplification up to 125 W output power without the need for multiple gain stages.
Built-In Protection	Protected from overheating, reverse polarity and excessive reflected power.
Unconditional Stability	Provides reliable performance independent of input and load conditions.
Ruggedness	Able to operate into an open and short and shuts off when the reflected power exceeds 100 W CW.

REV. A
ECO-028862
ZHL2G02G4125(X)+
MCL NY
260323

High Power Amplifier

ZHL2G02G4125+
ZHL2G02G4125X+

50Ω 2000 to 2400 MHz SMA Female/N-Type

ELECTRICAL SPECIFICATIONS AT $T_{(MOUNTING\ BASE)}$ = +25 °C

Parameter	Symbol	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range	f		2000		2400	MHz
Output Power at 1 dB Compression	P_{1dB}	f = 2000-2400 MHz	+49	+49.5		dBm
			80	90		W
Output Power at 3 dB Compression	P_{3dB}	f = 2000-2120 MHz	+51			dBm
			125			W
		f = 2120-2400 MHz	+50			dBm
			100			W
Small Signal Gain	G_{SS}	f = 2000-2400 MHz, P_{IN} =- 50 dBm	47	52	57	dB
Small Signal Gain Flatness	$G_{SS-FLAT}$	f = 2000-2400 MHz, P_{IN} = -50 dBm		±1.0	±1.5	dB
Power Gain	G_P	f = 2000-2400 MHz, P_{OUT} = P1dB	46	51	55	dB
Power Gain Flatness	G_{P-FLAT}	f = 2000-2400 MHz, P_{OUT} = P1dB		±1.0	±1.5	dB
Noise Figure	NF	f = 2000-2400 MHz		7		dB
Input VSWR	S11	f = 2000-2400 MHz, P_{IN} = -50 dBm			2.0:1	-
Non-Harmonic Spurious Signals	Spur	P_{OUT} = +49 dBm		60		dBc
DC Supply Voltage	V_{SUPPLY}			+28[1]	+30	V
DC Supply Current	I_{SUPPLY}			16	17	A

1. Typical spec is recommended operating voltage.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Mounting Base Temperature[2]	-20 °C to +80 °C
Storage Temperature	-55 °C to +100 °C
PIN Maximum (No Damage)	+20 dBm
Max. Supply Voltage, Reverse Polarity	-30 V

2. Mounting Base is the bottom of the amplifier enclosure which attaches to heatsink.

PROTECTIONS

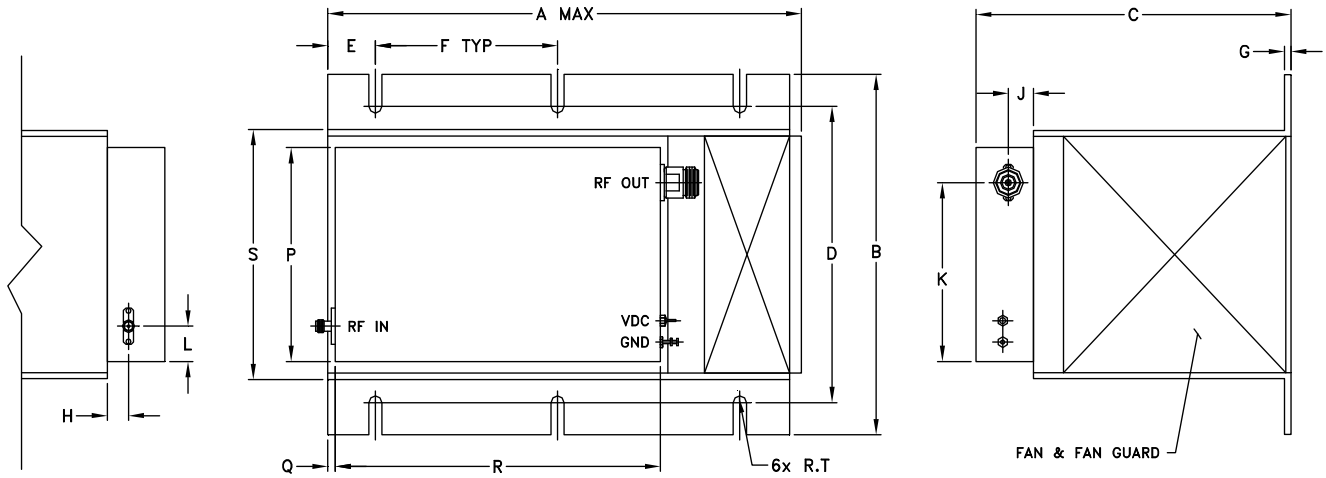
Parameter	Ratings
Mounting Base Temperature	+90 °C ±5 °C
Excessive Forward Power	Limits P_{OUT} to approximately +52 dBm (158 W)
Output Load Mismatch	PA is protected by a built-in circulator and it can withstand full reflected power. PA also has an integrated reverse power detector which disables the amplifier when $P_{REFLECTED}$ exceeds +50 dBm ±1 dB.

High Power Amplifier

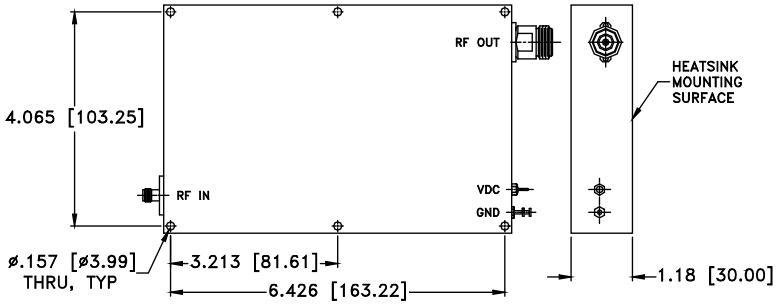
ZHL2G02G4125+
ZHL2G02G4125X+

50Ω 2000 to 2400 MHz SMA Female/N-Type

OUTLINE DRAWING



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK



OUTLINE DIMENSIONS (Inch / mm)

CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
BT1689	9.85 (250.19)	7.3 (185.42)	6.5 (165.10)	6.00 (152.40)	.98 (24.89)	3.75 (95.25)	.13 (3.30)	.43 (11.0)	.51 (13.00)	3.34 (84.83)	.72 (18.29)	- -	- -

CASE#	P	Q	R	S	T	WT, GRAM	WT WITHOUT HEATSINK, GRAM
BT1689	4.33 (109.98)	.2 (5.08)	6.69 (169.93)	5.1 (129.54)	.136 (3.45)	4565	880

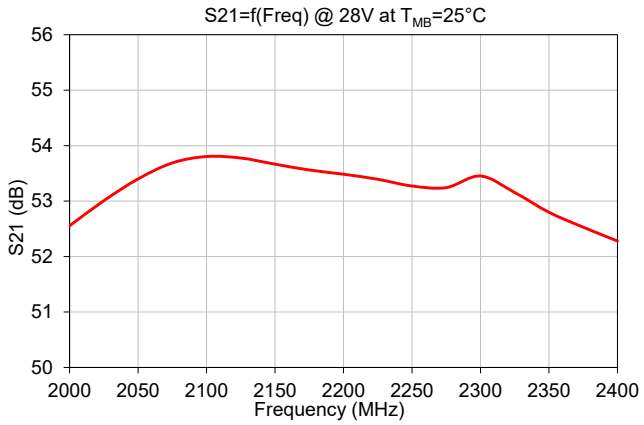
Dimensions in inches [mm]. Tolerances: 1 Pl. + .1; 2Pl. + .03; 3 Pl. + .015

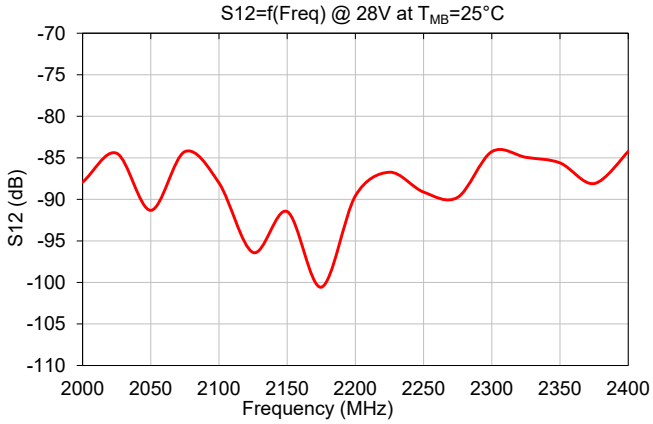
High Power Amplifier

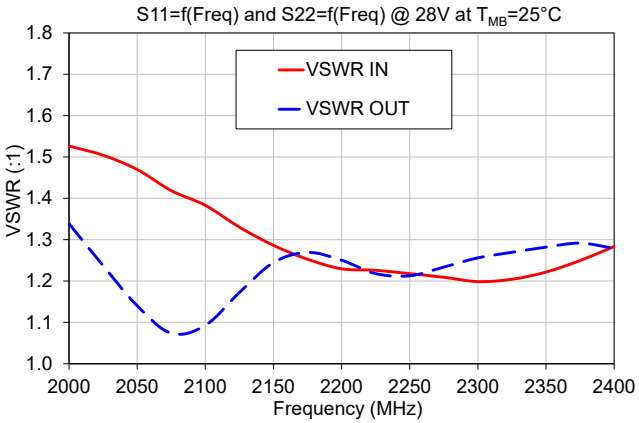
ZHL2G02G4125+
ZHL2G02G4125X+

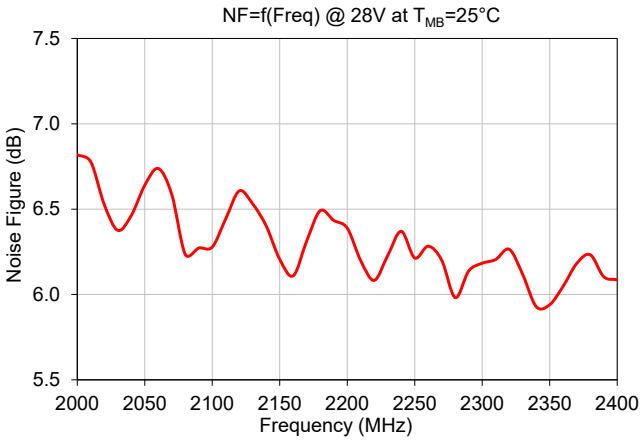
50Ω 2000 to 2400 MHz SMA Female/N-Type

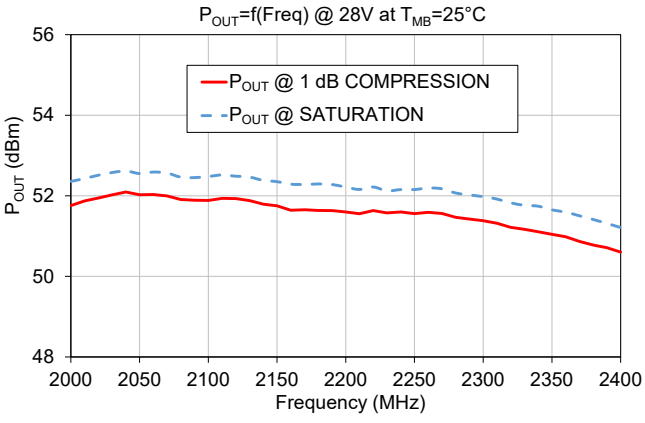
TYPICAL PERFORMANCE CURVES AT V_{DS} = +28 V

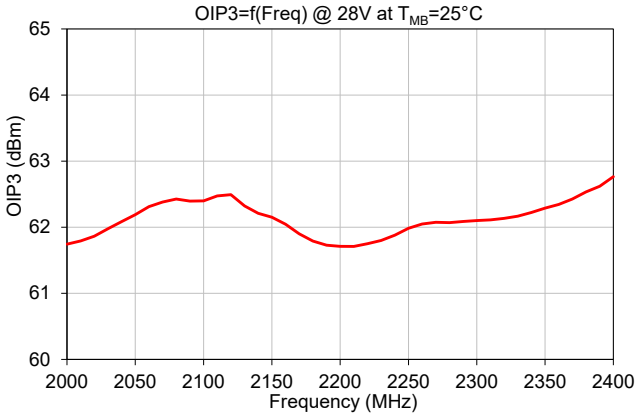










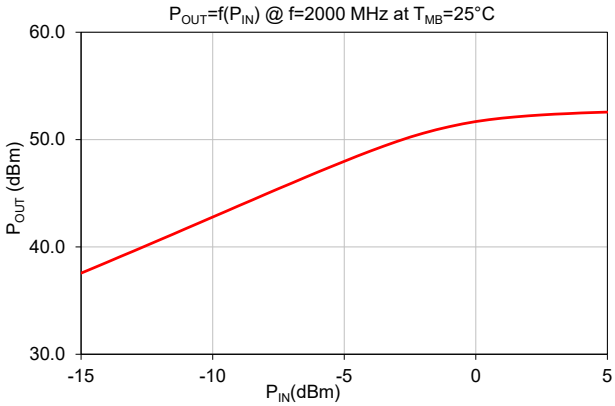


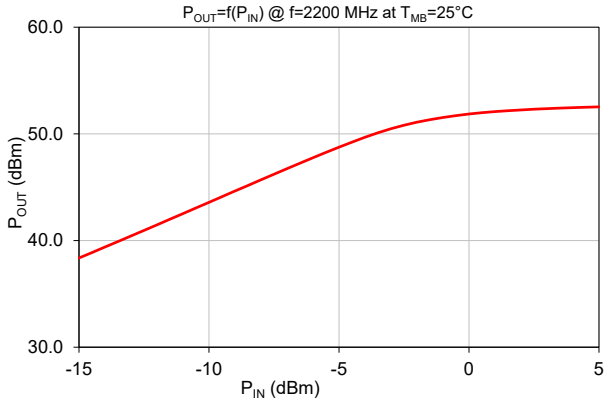
High Power Amplifier

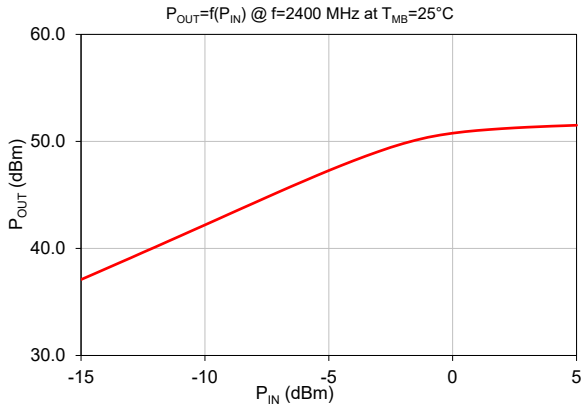
ZHL2G02G4125+
ZHL2G02G4125X+

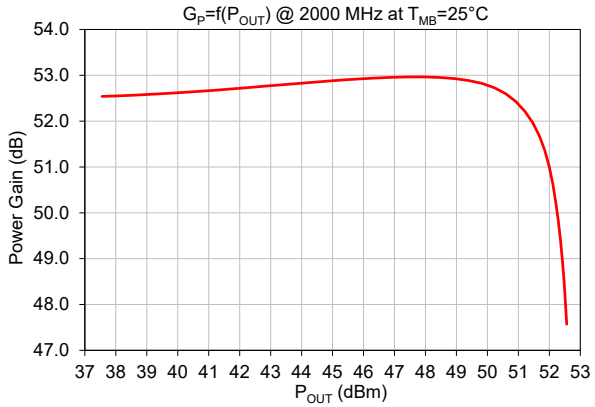
50Ω 2000 to 2400 MHz SMA Female/N-Type

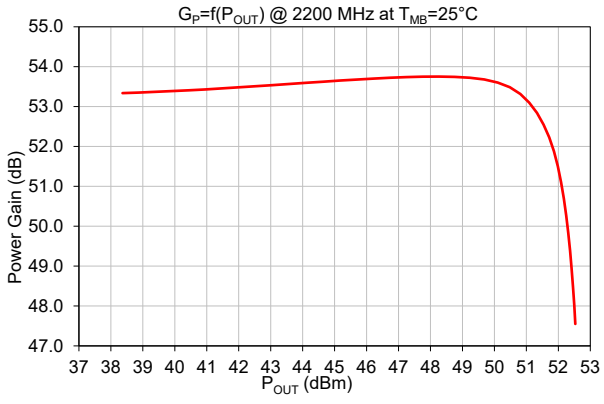
TYPICAL PERFORMANCE CURVES AT V_{DS} = +28 V

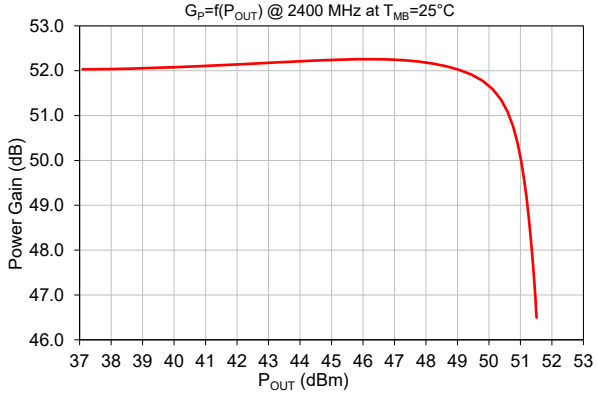












NOTES

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.

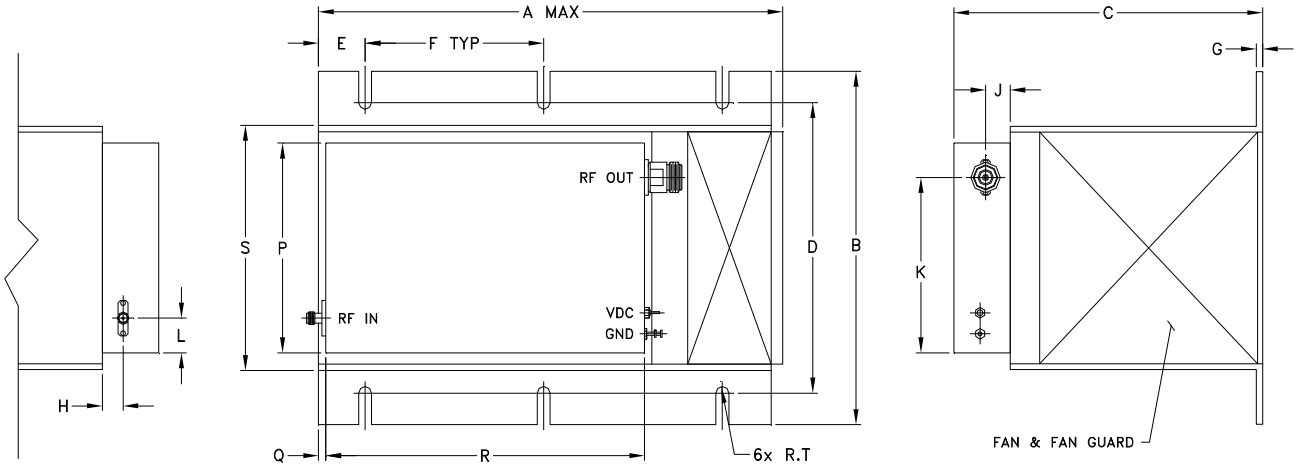
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.

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/terms/viewterm.html

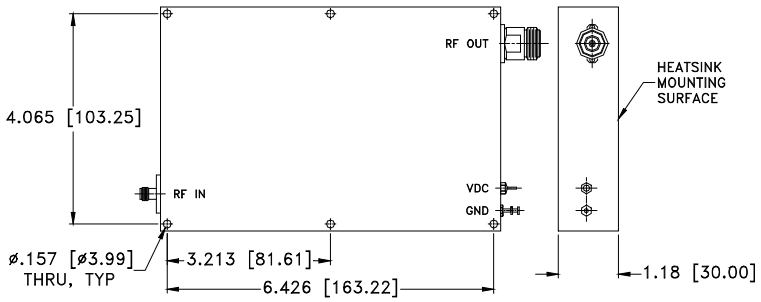
Case Style BT

BT1689

Outline Dimensions



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
BT1689	9.85 (250.19)	7.3 (185.42)	6.5 (165.10)	6.00 (152.40)	.98 (24.89)	3.75 (95.25)	.13 (3.30)	.43 (11.0)	.51 (13.00)	3.34 (84.83)	.72 (18.29)	- -	- -

CASE#	P	Q	R	S	T	WT, GRAM	WT WITHOUT HEATSINK, GRAM
BT1689	4.33 (109.98)	.2 (5.08)	6.69 (169.93)	5.1 (129.54)	.136 (3.45)	4565	880

Dimensions in inches (mm). Tolerances: 1 Pl. ± .1; 2Pl. ± .03; 3 Pl. ± .015

Notes:

1. Case material: Aluminum alloy.
2. Finish:
   For RoHS Case Styles: Clear Chemical conversion coating, non-chrome or trivalent chrome based.
3. Heatsink finish: Black anodize.
4. Refer to the individual model data sheet for the type of connectors available.
5. Recommended screws for mounting model without heat sink on 3/32" thick sheet: #6-32, 1.50" Length.
6. Shape of connector flange may vary.

Mini-Circuits®
ISO 9001 ISO 14001 CERTIFIED
ALL NEW minicircuits.com
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

This document and its contents are the property of Mini-Circuits

Mini-Circuits

Environmental Specifications **ENV23T29**

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	-20° to +80° C	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Stabilization Bake	(Non-operating) 125°C, 24 hours	- - -
DC Burn-in	(DC on) 112 hours at 80°C	---
Thermal Shock	-55°C to +100°C, 100 cycles, 15 mins dwell at extreme temperatures	MIL-STD-202, Method 107
Thermal Imaging	With Output open, short and load conditions	---
Vibration	Category 24, Exposure level figure 514C-17. General use, Random Vibration, 1 hr/axis 20-1000Hz - Amplitude PSD (0.040 G2/Hz). 1000 to 2000 Hz - Amplitude PSD (-6dB/octave)	MIL-STD-810F Method 514.5
Mechanical Shock	Terminal peak sawtooth, 40G's, 11 ms, 3 shocks +/-, Each Axis, 18 Shock Pulses Total	MIL-STD-810F Method 516.5

This document and its contents are the property of Mini-Circuits.