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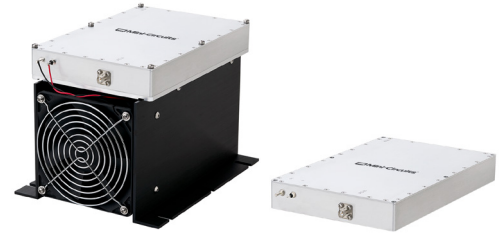
# High Power Amplifier

## ZHL-25W-63+ ZHL-25W-63X+

50Ω 25W 700 to 6000 MHz

### THE BIG DEAL

- Saturated Power 25W typ.
- Wide bandwidth, 700 to 6000 MHz
- High Gain, 53 dB typ.
- Unconditionally stable
- Self protected against excessive drive, high case temp., reverse polarity and shorting/unshorting
- Can withstand short and open circuit at output while delivering 20 watts



Generic photo used for illustration purposes only

Model No.	ZHL-25W-63+	ZHL-25W-63X+▲
Case Style	BT1834-2	
Connectors	IN-SMA, OUT-SMA	

#### +RoHS Compliant

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

### APPLICATIONS

- High Power Test Sets
- Burn-in set-ups
- Communications
- Radar

### PRODUCT OVERVIEW

The ZHL-25W-63+ is a Class AB, high-power amplifier providing 25W saturated power over the 700 to 6000 MHz band, ideal for a variety of high-power test setups as well as applications including communications, radar and more. The ruggedly-designed amplifier provides unconditional stability and built-in self-protection against reverse polarity, excessive drive and overheating. It is capable of withstanding short and open circuits at output while continuously delivering 20W of power. Housed in a rugged aluminum alloy case measuring 5.6 x 8.8 x 1.2", the unit features SMA connectors and an optional heat sink and fan attachment for cooling.

### KEY FEATURES

Feature	Advantages
Wideband, usable from 600 to 6100 MHz	Suitable for a broad range of high-power, wideband applications, including test setups, communications and defense applications.
High Gain, 53 dB	Enables signal amplification to 25W output without the need for multiple gain stages.
Built-in self-protection	In instances of potentially-damaging excessive drive current, heat buildup within the housing, unshorting of DC supply, and short or open loads at the output, an automatic sensing feature signals the unit to power down.
Unconditional stability	Provides reliable performance independent of input and load conditions.

REV. A  
ECO-017770  
ZHL-25W-63+  
MCL NY  
230508





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# High Power Amplifier

## ZHL-25W-63+ ZHL-25W-63X+

50Ω 25W 700 to 6000 MHz

### ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	ZHL-25W-63+ ZHL-25W-63X+ <sup>▲</sup>			Units
	Min.	Typ.	Max.	
Frequency Range	700	—	6000	MHz
Gain <sup>1</sup>	44	53	62	dB
Gain Flatness <sup>1</sup>	—	±4.0	±5.0	dB
Output Power at 1dB compression	—	+37	—	dBm
Output Power at Saturation	+43	+44	—	dBm
Noise Figure	—	13	16	dB
Output third order intercept point <sup>2</sup>	+39	+45	—	dBm
Input VSWR <sup>1</sup>	—	1.8	2.9	:1
Output VSWR <sup>1</sup>	—	2.0	3.2	:1
DC Supply Voltage	—	24 <sup>4</sup>	30	V
Supply Current <sup>3</sup>	—	7	12	A

1. Small signal input power -50 dBm typ.
2. Two tones, 26 dBm/tone, 1 MHz spacing.
3. Power supply should be capable of delivering 15A at startup
4. Recommended Operating Voltage.
5. Power measured of fundamental tone only. Does not include power contribution of harmonic signals.

<sup>▲</sup>Heat sink and fan not included. Alternative heat sinking and heat removal must be provided by the user to limit maximum base-plate temperature to 60°C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heat sink to be 0.08°C/W max.

### ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Ambient Temperature (With Mini-Circuits' heatsink and fan)	0°C to +60°C
Base Plate Temperature (When used without heatsink)	+85°C
Storage Temperature	-55°C to 100°C
DC Voltage	+30V
Input RF Power (no damage)	+5 dBm

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





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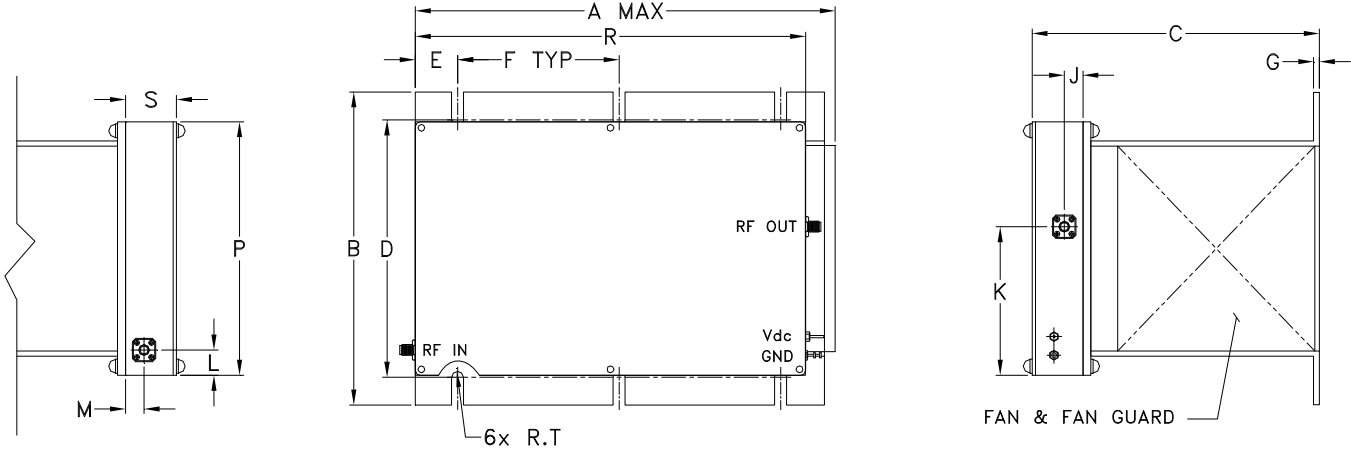
# High Power Amplifier

**ZHL-25W-63+**  
**ZHL-25W-63X+**

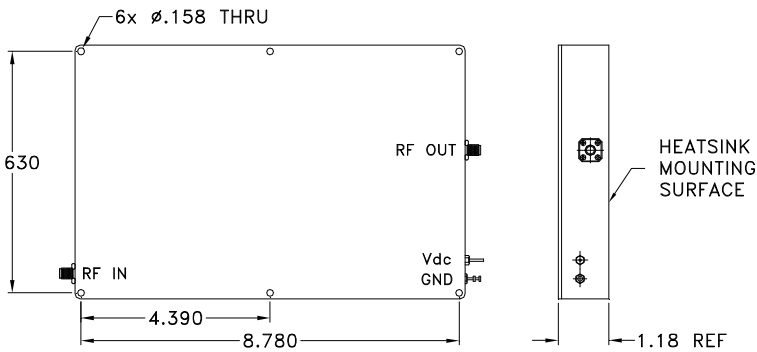
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50Ω 25W 700 to 6000 MHz

## OUTLINE DRAWING FOR MODELS WITH HEATSINK



## OUTLINE DRAWING FOR MODELS WITHOUT HEATSINK



## OUTLINE DIMENSIONS (Inch/mm)

A	B	C	D	E	F	G	J	K	L	M	P	R	S	T	wt
9.85	7.30	6.60	6.00	0.98	3.75	0.13	0.43	3.46	0.59	0.43	5.91	9.06	1.18	0.14	grams*
250.19	185.42	167.64	152.4	24.89	95.25	3.30	11.0	87.9	15.0	11.0	150.0	230.0	30.0	3.43	5350

\*1670 grams without heatsink





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# High Power Amplifier

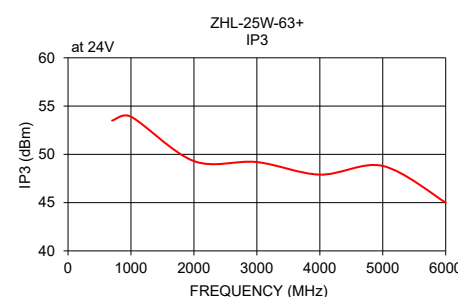
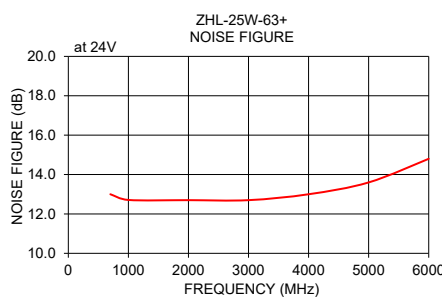
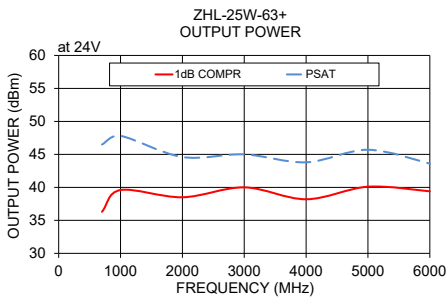
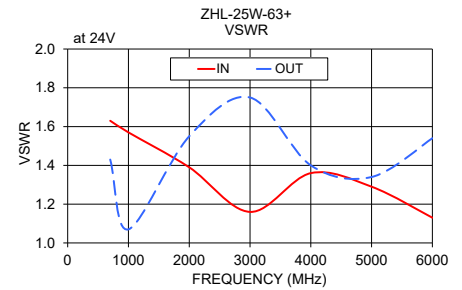
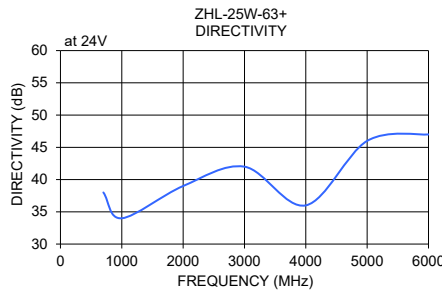
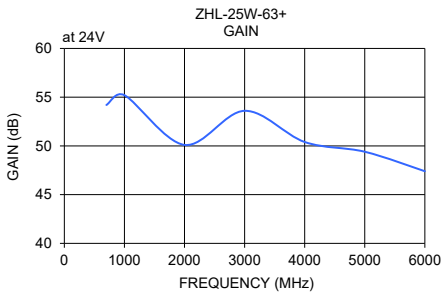
## ZHL-25W-63+ ZHL-25W-63X+

Mini-Circuits

50Ω 25W 700 to 6000 MHz

### TYPICAL PERFORMANCE DATA / GRAPHS

FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1)		POUT at 1 dB COMPR. (dBm)	POUT at Saturation (dBm)	NOISE FIGURE (dB)	IP3 (dBm)
	24V	24V	IN	OUT	24V	24V	24V	24V
700	54.2	38.0	1.6	1.4	36.3	46.5	13.0	53.5
1000	55.2	34.0	1.6	1.1	39.6	47.8	12.7	53.9
2000	50.1	39.0	1.4	1.6	38.5	44.6	12.7	49.3
3000	53.6	42.0	1.2	1.8	40.0	45.0	12.7	49.2
4000	50.4	36.0	1.4	1.4	38.2	43.8	13.0	47.9
5000	46.7	46.0	1.3	1.3	40.1	45.7	13.6	48.8
6000	47.4	47.0	1.1	1.5	39.4	43.6	14.8	45.0



#### NOTES

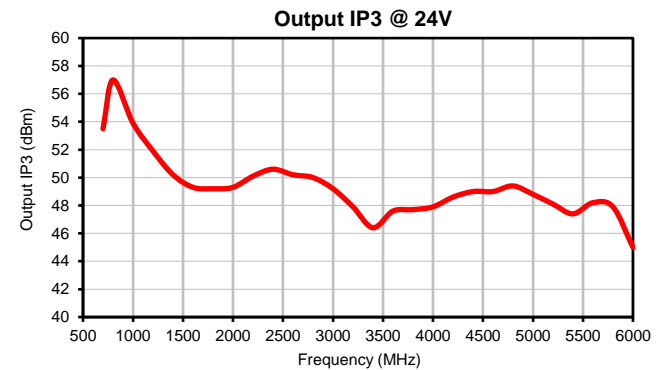
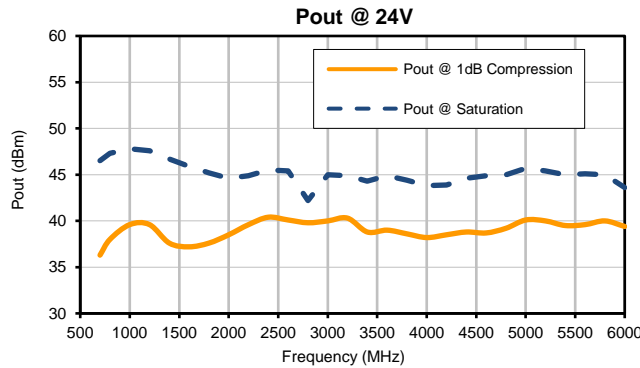
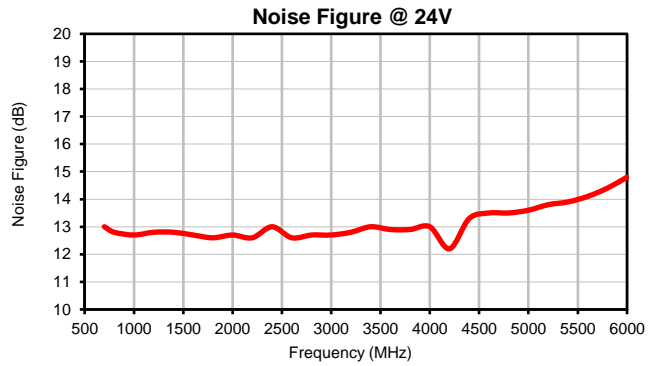
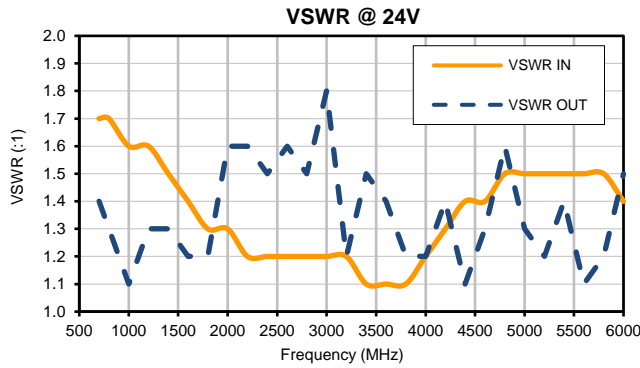
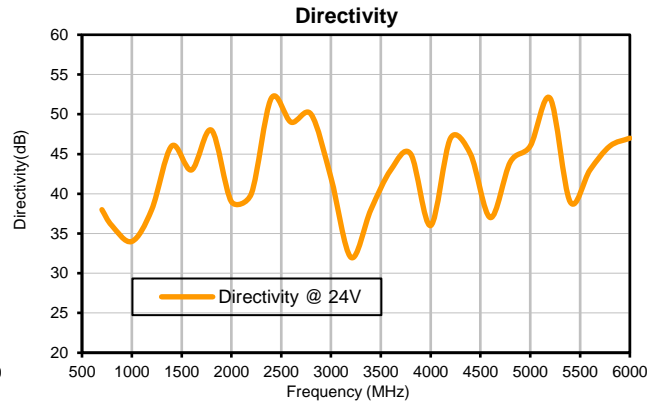
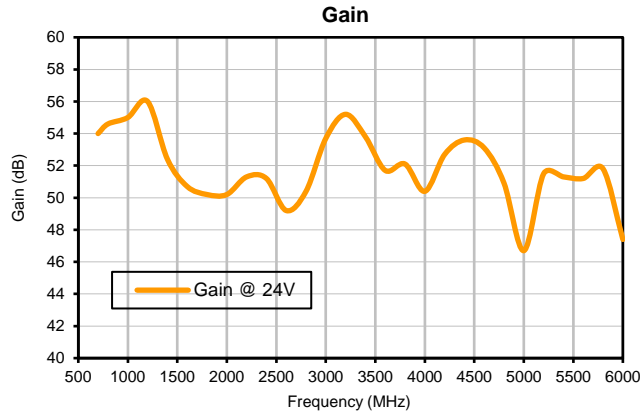
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## Typical Performance Data

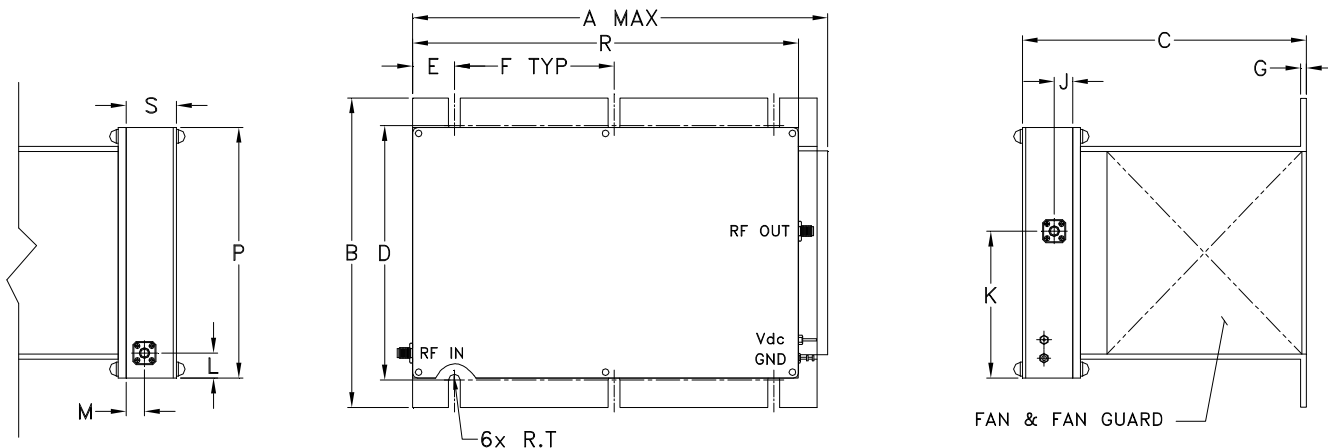
Frequency (MHz)	Gain (dB) 24V	Directivity (dB) 24V	VSWR In (:1) 24V	VSWR Out (:1) 24V	Noise Figure (dB) 24V	Pout at 1dB Compression (dBm) 24V	Pout at Saturation (dBm) 24V	Output IP3 (dBm) 24V
700	54.0	38.0	1.7	1.4	13.0	36.3	46.5	53.5
800	54.6	36.0	1.7	1.3	12.8	38.0	47.3	57.0
1000	55.0	34.0	1.6	1.1	12.7	39.6	47.8	53.9
1200	56.0	38.0	1.6	1.3	12.8	39.6	47.6	51.9
1400	52.4	46.0	1.5	1.3	12.8	37.6	46.7	50.2
1600	50.7	43.0	1.4	1.2	12.7	37.2	45.9	49.3
1800	50.2	48.0	1.3	1.2	12.6	37.6	45.2	49.2
2000	50.2	39.0	1.3	1.6	12.7	38.5	44.6	49.3
2200	51.3	40.0	1.2	1.6	12.6	39.6	44.9	50.1
2400	51.2	52.0	1.2	1.5	13.0	40.4	45.5	50.6
2600	49.2	49.0	1.2	1.6	12.6	40.1	45.4	50.2
2800	50.4	50.0	1.2	1.5	12.7	39.8	42.2	50.0
3000	53.7	42.0	1.2	1.8	12.7	40.0	45.0	49.2
3200	55.2	32.0	1.2	1.2	12.8	40.3	44.9	47.9
3400	53.8	38.0	1.1	1.5	13.0	38.8	44.3	46.4
3600	51.7	43.0	1.1	1.4	12.9	39.0	44.9	47.6
3800	52.1	45.0	1.1	1.2	12.9	38.6	44.4	47.7
4000	50.4	36.0	1.2	1.2	13.0	38.2	43.8	47.9
4200	52.7	47.0	1.3	1.4	12.2	38.5	43.9	48.6
4400	53.6	45.0	1.4	1.1	13.3	38.8	44.6	49.0
4600	53.1	37.0	1.4	1.3	13.5	38.7	44.9	49.0
4800	50.9	44.0	1.5	1.6	13.5	39.2	45.0	49.4
5000	46.7	46.0	1.5	1.3	13.6	40.1	45.7	48.8
5200	51.5	52.0	1.5	1.2	13.8	40.0	45.4	48.1
5400	51.3	39.0	1.5	1.4	13.9	39.5	45.0	47.4
5600	51.2	43.0	1.5	1.1	14.1	39.6	45.1	48.2
5800	51.8	46.0	1.5	1.2	14.4	40.0	45.0	47.9
6000	47.4	47.0	1.4	1.5	14.8	39.4	43.6	45.0

## Typical Performance Curves

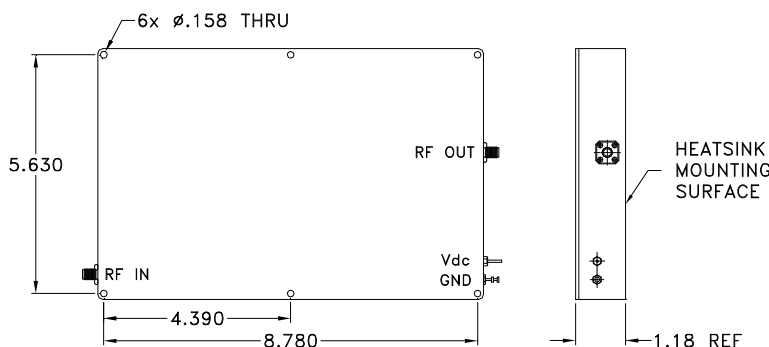


## Outline Dimensions

BT1834-2



### MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK.



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
BT1834-2	9.85 (250.19)	7.3 (185.42)	6.6 (167.64)	6.00 (152.40)	.98 (24.89)	3.75 (95.25)	.13 (3.30)	- -	.43 (11.00)	3.46 (87.90)	.59 (15.00)	.43 (11.00)	- -

CASE#	P	Q	R	S	T	WT, GRAM	WT WITHOUT HEATSINK, GRAM
BT1834-2	5.91 (150.00)	- -	9.06 (230.00)	1.18 (30.00)	.135 (3.43)	5350	1670

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

### 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.

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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	-20° to 45°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Stabilization Bake	(non-operating) 125°C, 24 hours	- - -
Burn-in at Elevated Temp.	(DC on) 160 hours at 60° C base plate Temperature	MIL-STD-202, Method 108
Thermal Shock	-55° to 100°C, 5 cycles	MIL-STD-202, Method 107, Condition A, except 100°C