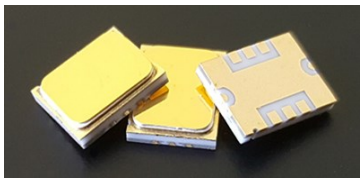
KA103-56

Low Noise Amplifier 2 – 18 GHz

KCB SOLUTIONS
THE HIGHEST STANDARD IN RF

DESCRIPTION

The KA103-56 is a ultra-wideband GaAs Low Noise Amplifier (LNA) that operates from 2-18 GHz in a hermetic surface mount package. The KA103-56 provides a nominal gain of 15 dB with a typical noise figure of 3dB as well as a typical OP1dB of +15 dBm. Supplied in a hermetic surface mount package, this device can be manufactured and tested to the screening requirements of MIL-PRF-38534 Class H and K in addition to the required QCI which makes it highly suitable for high reliability and harsh environment applications.

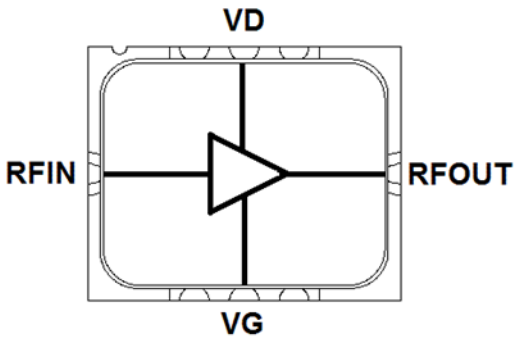


FEATURES

- ✓ **Low Noise GaAs MMIC Design**
- ✓ **Broadband operation from 2–18 GHz**
- ✓ **Surface Mount Hermetic QFN-style Leadless Package**
- ✓ **NASA EEE-INST-002 compliant**
- ✓ **High Reliability Class H and K Screening Available**
- ✓ **See ordering information for MR HI - REL Ordering Details page 4**
- ✓ **Evaluation boards available upon request**

APPLICATIONS

- ✓ **Aerospace and Defense**
- ✓ **Microwave Communications**
- ✓ **Wideband EW Systems**
- ✓ **Phased Array Radar Systems**
- ✓ **PA Driver Amplifier**
- ✓ **Test Equipment**

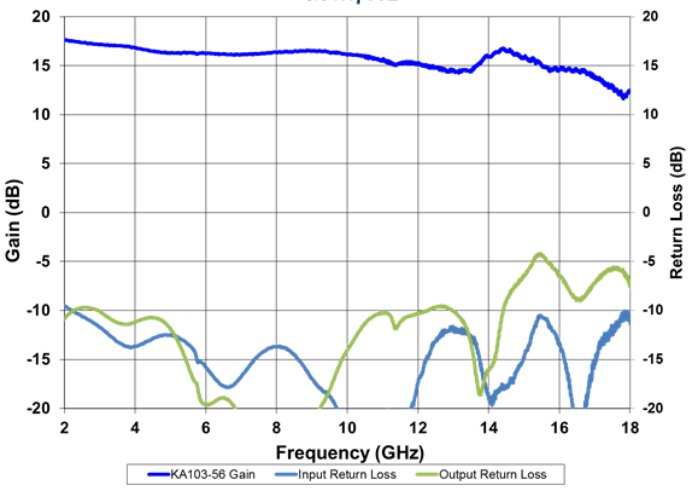


ELECTRICAL CHARACTERISTICS (+25 C, VD = +5V, ID=85mA)

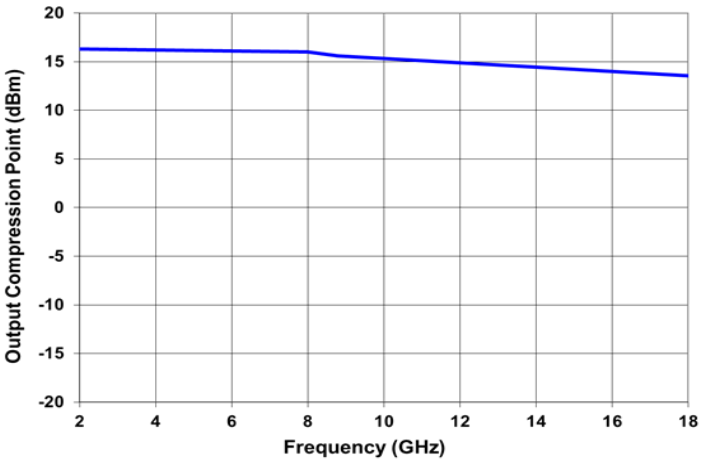
Parameter	Conditions	Min	Typical	Max	Units
Small Signal Gain	2 – 10 GHz 10 – 18 GHz	15 11	17 13		dB dB
Input Return Loss	2 – 10 GHz 10 – 18 GHz	9 7	13 12		dB dB
Output Return Loss	2 – 10 GHz 10 – 18 GHz	9 4	12 8		dB dB
Noise Figure	2 – 10 GHz 10 – 18 GHz		3 3.5	3.5 5	dB dB
Output 1dB Compression Point	2 – 10 GHz 10 – 18 GHz	14 12	15.5 14		dB dB
Quiescent Current	No RF applied		85		mA

TYPICAL PERFORMANCE (Tc=25°C, VD=5V, ID=75mA)

Gain/RL

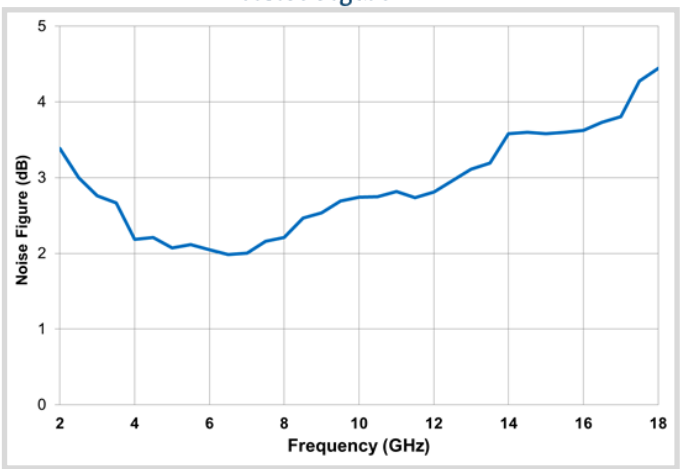


Compression Point



P1dB

Noise Figure

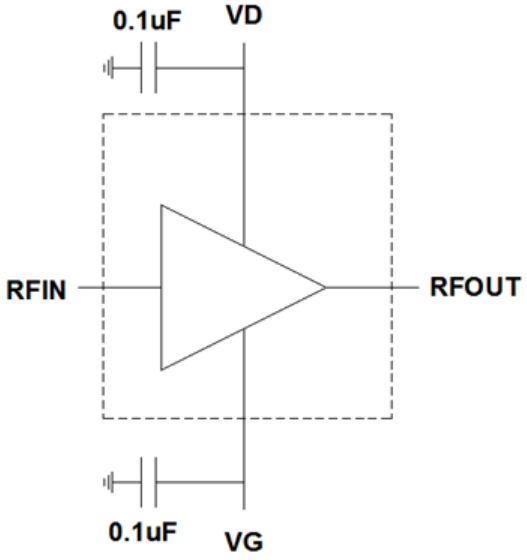


MAXIMUM RATING

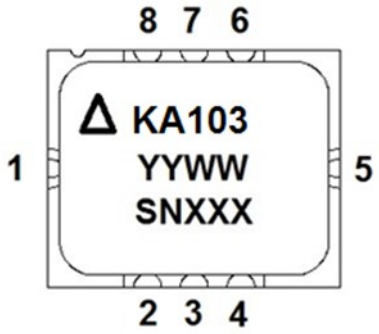
Characteristic	Min Value	Max Value	Units
Supply Voltage (V_D)		5	Volts
Gate Voltage (V_G)	-1	0	Volts
Supply Current (I_D)[2]		130	mA
Gate Current (I_G)		10	mA
Input CW Power		+21	dBm
Dissipated power (P_D)		0.5	W
Operating Channel Temperature (T_{CH})		+200	˚C
Storage Temperature	-65	+150	˚C

Notes:
1.These ratings represent the maximum operable values for this device. Operating the device outside of these parameters may damage or reduce life expectancy.
2.Thermal Resistance: 25°C/W typical.

EVALUATION BOARD SCHEMATIC



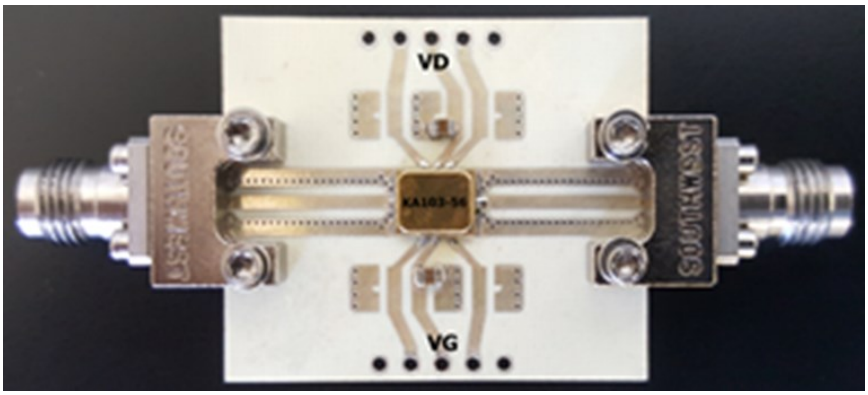
PINOUT



Note: Serial number not on KA103 -56C

1	RF IN
2	GND
3	V_G
4	GND
5	RF OUT
6	RF2/CTL3
7	V_D
8	CTL5

EVALUATION BOARD

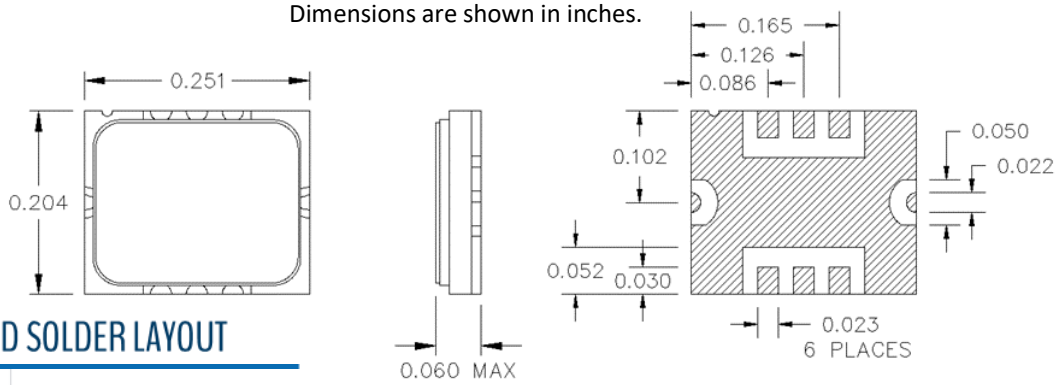


Electrostatic Sensitive Device. Proper ESD precaution should be used when handling device.

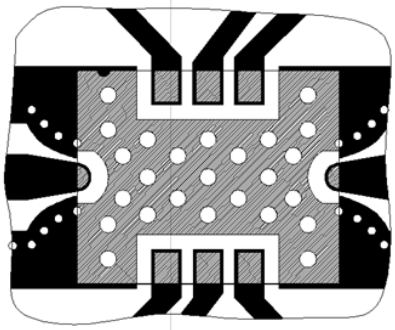
KCB SOLUTIONS
THE HIGHEST STANDARD IN RF

OUTLINE DRAWING

Dimensions are shown in inches.



RECOMMENDED SOLDER LAYOUT



Notes:

1. Flooded ground plane in area outside device leads
2. Add ground vias under part and between corner leads

Contact KCB Solutions for further guidance on device placement and attachment

SCREENING FLOW

Test Inspection	MIL – STD -883		Requirement	
	Method	Condition	Class H	Class K
Element Evaluation	MIL-PRF-38534	Table C-1	Per Table	Per Table
Non-Destructive Bond Pull	2023		Process under SPC	100%
Internal Visual	2010	A = Class H, B = Class K	100%	100%
Temperature Cycle	1010	C, 10 Cycles	100%	100%
Acceleration	2001	B (Y1 only)	100%	100%
PIND	2020	A (5 Cycles)	N/A	100%
Serialization	Per Product Specification		100%	100%
Radiographic	2012		N/A	100%
Electrical Test	Per Product Specification	+25^{O}C	100%	100%
Burn In	1015	A	100%/160 Hrs/125^{O}C	100%/320 Hrs/125^{O}C
Final Electrical	Per Product Specification	+25^{O}C	100%	100%
Group A Electrical	Per Product Specification	-55^{O}C + 125^{O}C	45/0	45/0
Seal: Fine Leak Gross Leak	1014	A C	100%	100%
External Visual	2009		100%	100%

ORDERING INFORMATION

	Unscreened	Class H	Class K
KCB Solutions Part Number	KA103-56C	KA103-56H	KA103-56K