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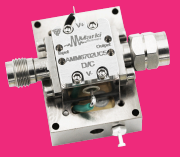
AMM-6702UC5

20-55 GHz GaAs LO Driver Amplifier

DEVICE OVERVIEW

General Description

The AMM-6702 is a broadband MMIC LO buffer amplifier that efficiently provides high gain and output power over a 20-55 GHz frequency band. It is designed to provide a strong, flat output power response when driven with an input power at 0 dBm. It has built-in DC blocking capacitors on the input and output.



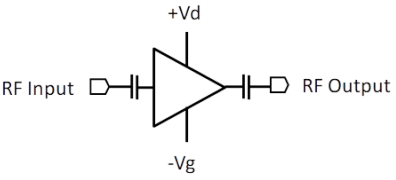
Features

- High 25+ dB gain
- Broadband performance
- +20 dBm output power
- 20%+ PAE
- 5V Single Supply Voltage Module

Applications

- Mobile test and measurement equipment
- Radar
- SATCOM
- 5G transceivers
- Optimal LO driver amp for Marki S-diode and H-diode mixers and millimeter-wave multipliers
- LO driver for Marki MM1-1850, MM1-1467, MM1-1857 mixers

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Connectors	Green Status	Product Lifecycle	Export Classification
AMM-6702UC5	20-55 GHz GaAs LO Driver Amplifier	UC5	Standard	REACH RoHS	Released	EAR99
AMM-6702UC	20-55 GHz GaAs LO Driver Amplifier	UC	Standard	REACH RoHS	Released	EAR99

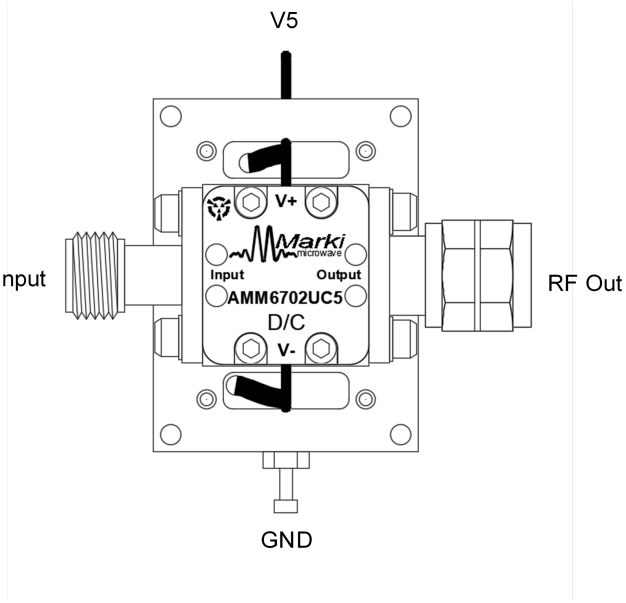
Table Of Contents

Revision History

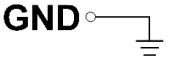
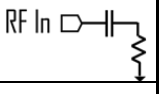
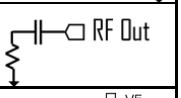
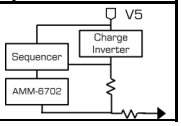
Revision Code	Revision Date	Comment
-	2018-10-01	Datasheet Initial Release
A	2019-01-01	AMM-6702UC Release, additional data
B	2019-02-01	Updated Export Classification
C	2019-03-01	Updated Module Production Specs
D	2019-08-01	Updated Module Production Specs
E	2019-09-01	Updated Absolute Maximum Ratings
F	2020-01-01	Added .s2p Files Link
G	2020-02-01	Updated Datasheet Format, Expanded Performance Plots, Expanded Electrical Specs, Added Sequencing Procedure, Added AMM-6702UC5 Package
H	2020-04-01	Updated AMM-6702UC5 Specs and Performance Plots
I	2020-06-01	Corrected AMM-6702UC Outline Drawing to include Ground Screw
J	2020-06-01	Updated Absolute Maximum Ratings
K	2020-07-01	Update AMM-6702UC5 Saturated Output Power Min Spec
L	2020-07-01	Revised Max Operating Temperature
M	2020-09-01	Updated Ground Pin Location on AMM 6702UC5 Module
N	2020-10-01	Updated Thermal Specs, Updated OIP3 Spec
O	2020-11-01	Updated Min Frequency Spec
P	2020-12-01	Updated Electrical Specifications Table
Q	2026-02-13	MTTF Table Added.

Port Configuration and Functions

Port Diagram



Port Functions

Port	Function	Connector Type	Description	DC Equivalent Circuit
GND	Ground	-	Exterior housing must be connected to a DC/RF ground potential with high thermal and electrical conductivity.	
RF In	RF Input	1.85F	This is the RF Input port of the amplifier die. It is internally DC blocked and RF matched to 50 Ω.	
RF Out	RF Output	1.85M	This is the RF Output port of the amplifier die. It is internally DC blocked and RF matched to 50 Ω.	
V5	5V Voltage Pin	-	The 5V voltage pin activates an internal negative voltage generator and a voltage sequencer with 5V of externally applied bias. Nominally applies 3.5V to Vd and -0.5V to Vg at the amplifier level.	

Specifications

Absolute Maximum Ratings

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. If these limits are exceeded, the device may be inoperable or have a reduced lifetime.

Parameter	Maximum Rating	Unit
Maximum Operating Temperature	85	°C
Maximum Storage Temperature	150	°C
Minimum Operating Temperature	-40	°C
Minimum Storage Temperature	-65	°C
Positive Bias Current (Pin1)	430	mA
RF Input Power	22	dBm
V5 Voltage	6	V

FIT and MTTF Table

T (°C)	λ (TIF)	MTTF (hr)	MTTF (yr)
105	2,441.45	4.10E+05	47
85	310.48	3.22E+06	368
55	8.79	1.14E+08	12,992
25	0.12	8.24E+09	941,063

Package Information

Parameter	Details	Rating
ESD	< 250 Volts	HBM Class 0
Weight	Package name: UC5	45.8g
Dimensions	-	13.21 x 28.19 mm

Recommended Operating Conditions

The Recommended Operating Conditions indicate the limits, inside which the device should be operated, to guarantee the performance given in Electrical Specifications. Operating outside these limits may not necessarily cause damage to the device, but the performance may degrade outside the limits of the Electrical Specifications. For limits, above which damage may occur, see Absolute Maximum Ratings.

Parameter	Min	Nominal	Max	Unit
Ambient Temperature	-55	25	85	°C
Positive DC Voltage	3.5	5	5.5	V
Positive DC Current	200	230	400	mA

Sequencing Requirements

There are no sequencing requirements for the AMM-6702UC5.

Electrical Specifications

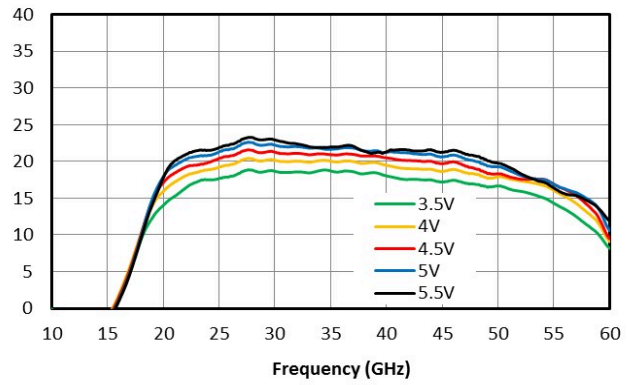
The electrical specifications apply at TA=+25°C in a 50Ω system. Min and Max limits apply only to our connectorized units and are guaranteed at TA=+25°C.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Current Consumption [1]	+5V	-	-	-	230	-	mA
Input IP3	5V bias, -25 dBm Input Power	21	55	-	3	-	dBm
Input Power for Saturation	+5V Bias	21	55	-	3	-	dBm
Input Return Loss	+5V bias, -25 dBm Input Power	21	55	-	8	-	dB
Noise Figure	+5V bias, -25 dBm Input Power	21	55	-	6.5	-	dB
Output IP3	5V bias, -25 dBm Input Power	21	55	-	27	-	dBm
Output P1dB	+5V Bias	21	55	-	14.8	-	dBm
Output Return Loss	+5V bias, -25 dBm Input Power	21	55	-	9	-	dB
Reverse Isolation	+5V bias, -25 dBm Input Power	21	55	-	45	-	dB
Saturated Output Power	+5V bias, +5 dBm Input Power	48	55	-	17	-	dBm
Saturated Output Power	+5V bias, +5 dBm Input Power	21	25	-	20	-	dBm
Saturated Output Power	+5V bias, +5 dBm Input Power	25	48	17	21	-	dBm
Small Signal Gain	+5V bias, -25 dBm Input Power	25	48	20	24	-	dB
Small Signal Gain	+5V bias, -25 dBm Input Power	21	25	-	25	-	dB
Small Signal Gain	+5V bias, -25 dBm Input Power	48	55	-	22	-	dB

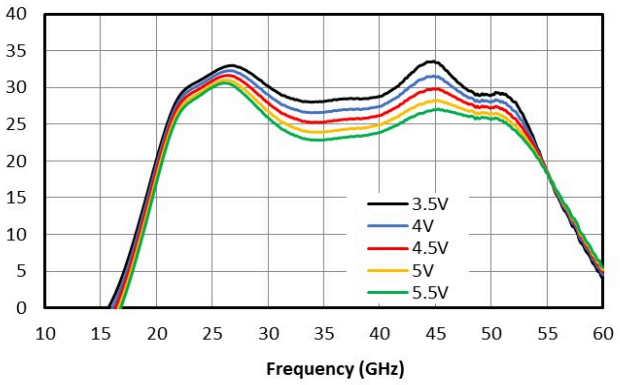
[1] Bias conditions tested with no RF input power. See Electrical Specifications for DC current vs. RF power

Typical Performance Plots

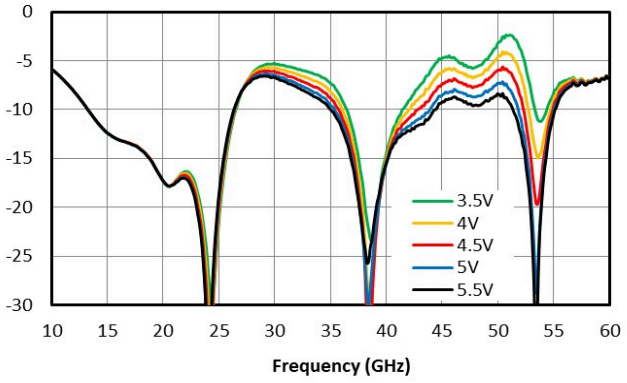
AMM-6702UC5 Psat (dBm) vs. Frequency; Input Power = +5 dBm



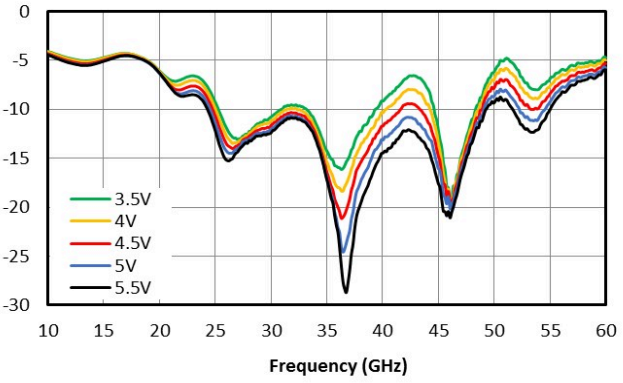
AMM-6702UC5 Small Signal Gain (dB) vs. Frequency



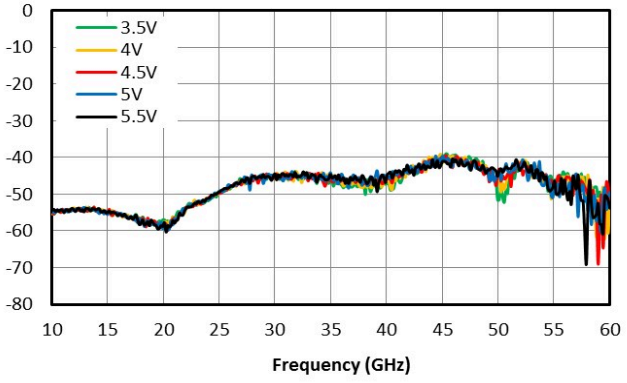
AMM-6702UC5 Input Return Loss (dB) vs. Frequency



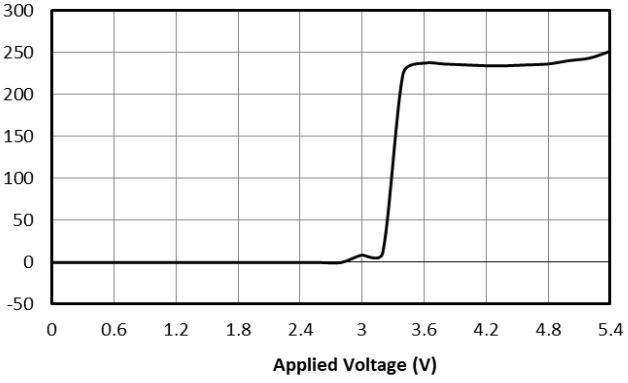
AMM-6702UC5 Output Return Loss (dB) vs. Frequency



AMM-6702UC5 Reverse Isolation (dB) vs. Frequency



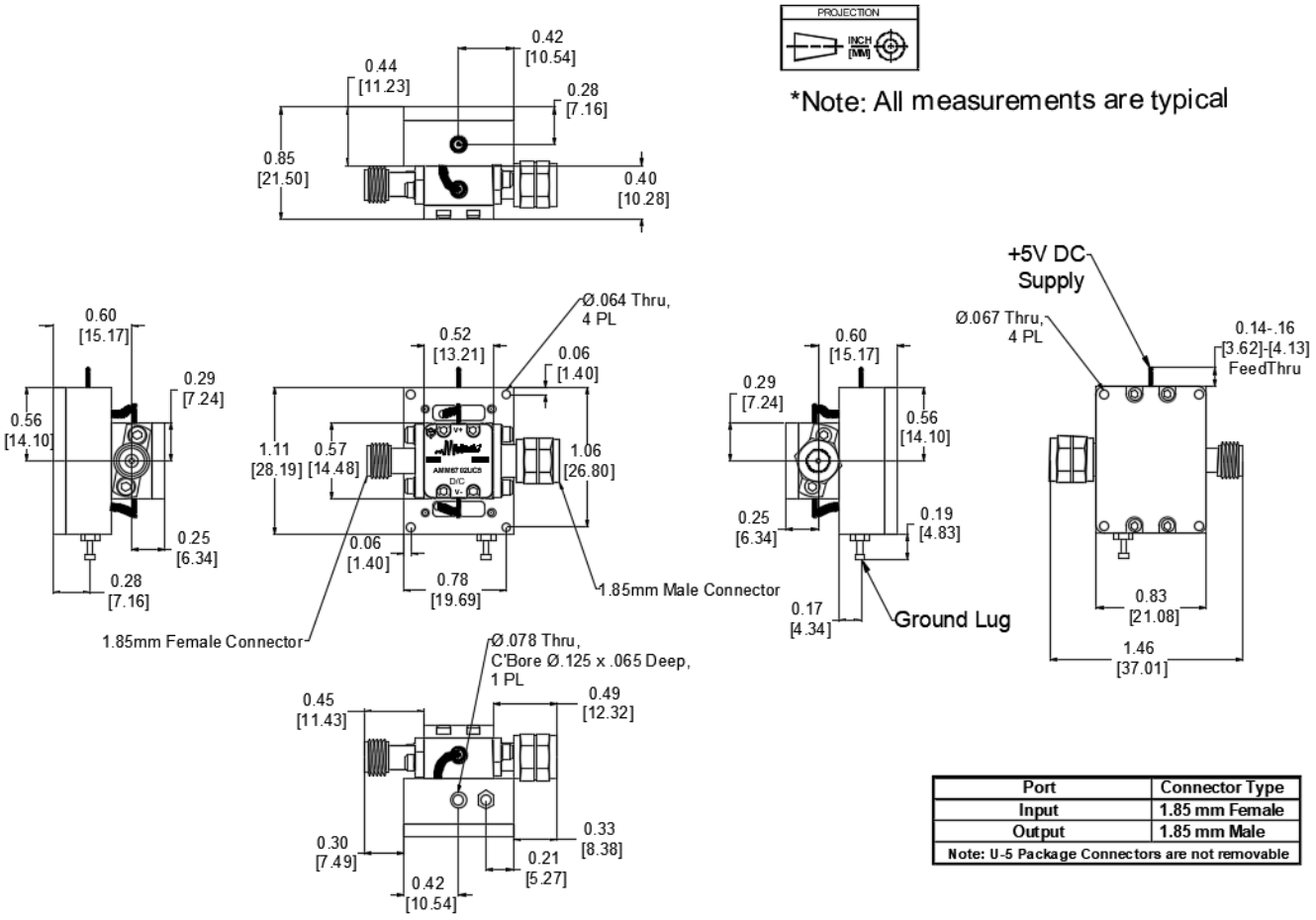
AMM-6702UC5 DC Current (mA) vs. Applied Voltage



Mechanical Data

Outline Drawing

Download : Outline 2D Drawing | Outline 3D Drawing | Outline 3D STP



Port	Connector Type
Input	1.85 mm Female
Output	1.85 mm Male
Note: U-5 Package Connectors are not removable	

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