

16.0-18.0 GHz 1.5-Watt Power Amplifier

Mimix
BROADBAND™

May 2006 - Rev 24-May-06

CMM1631-SM
RoHS

Features

- ✕ 32dBm (Typ.) Saturated output power
- ✕ 26dB (Typ) Linear Gain
- ✕ Fully Matched
- ✕ Unconditionally Stable
- ✕ Low Cost, Surface Mount Package
- ✕ 6mmX6mmX1.6mm
- ✕ Optimum Thermal Dissipation
- ✕ 7V, 770mA

Applications

- ✕ Military Ku Band
- ✕ VSAT
- ✕ Point to Point Radio
- ✕ Ku-Band Space

General Description

The CMM1631-SM is a four stage pHEMT GaAs MMIC power amplifier packaged in a 6mm X6mm surface mount package. The CMM1631-SM provides 26dB of linear gain and delivers 1.5 watts of output power at saturation operating between 16 to 18GHz. The unconditional stability and internal matching provides for a reduction in external components making this product a simple and low cost solution. The true surface mount package makes it ideal solution in all manufacturing environments. The power amplifier is intended for use in the extended Ku-Band satellite applications.

Electrical Characteristics (T = +25°C, Vd = 6V, Idq = 1.5A)

Parameter	Condition	Min	Typ	Max	Units
Frequency Range		16.0		18.0	GHz
Output Power	@ 1dB compression		31.5		dBm
Saturated Output Power	Pin = 10 dBm		32.0		dBm
Saturated Output Power Variation	Over operating frequency		0.5	1.0	dBm
Linear Gain			26.5		dB
Linear Gain Variation	Over operating frequency		1.0	3.0	dB
Input Reflection Coefficient			-7.0		dB
Output Reflection Coefficient			-7.0		dB
Gate Supply Voltage	Idq ≤ 800 mA	-1.1	-0.9	-0.7	Volts
Drain Current	At Saturation		800 mA		A
Power Added Efficiency	At Saturation		23		%

Electrical Specifications (TA = -40°C to +75°C)

Parameter	Condition	Min	Typ	Max	Units
Saturated Output Power	Variation from Room Temperature	-0.5			dBm
Linear Gain	Variation from Room Temperature	-2.5		2.5	dB
Stability		Unconditionally stable			

Maximum Ratings (TA = -40°C to +75°C)

Operation outside these limits can cause permanent damage.

Parameter	Typ	Units	Parameter	Typ	Units
Drain Voltage (+V _{dd})	8.5	Volts	RF Input Power (P _{in})	13	dBm
Gate Voltage (V _{gg})	-3.0	Volts	Dissipated Power (P _{diss})	5.6	Watts
Quiescent Current (I _{dq})	1	A	Storage Temperature	-50 to +150	°C
Gate Current (I _g)	5	mA	Operating Backside Temperature	-40 to +75	°C



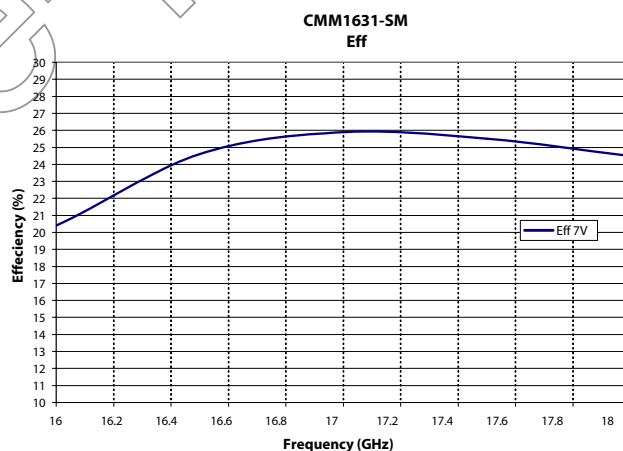
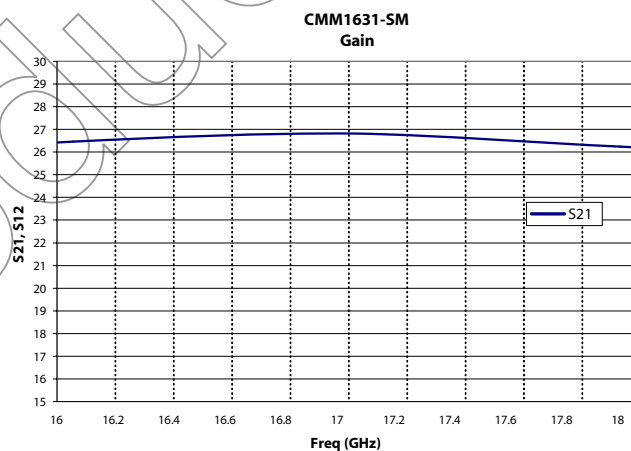
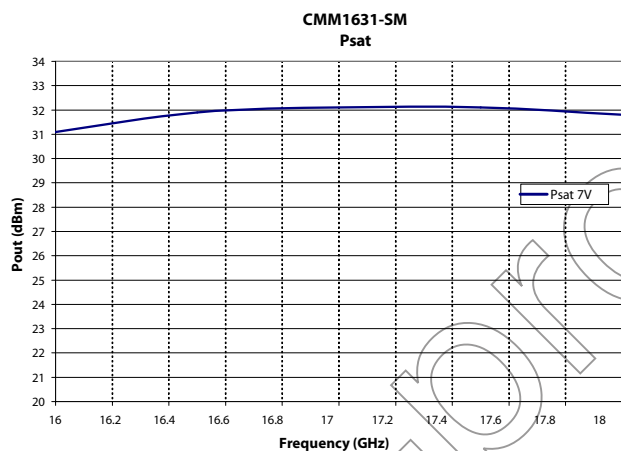
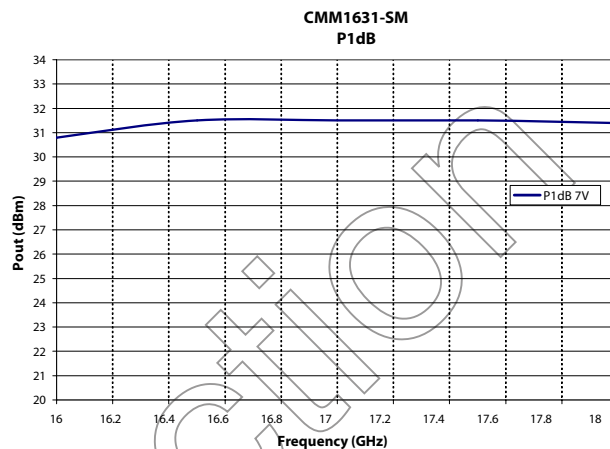
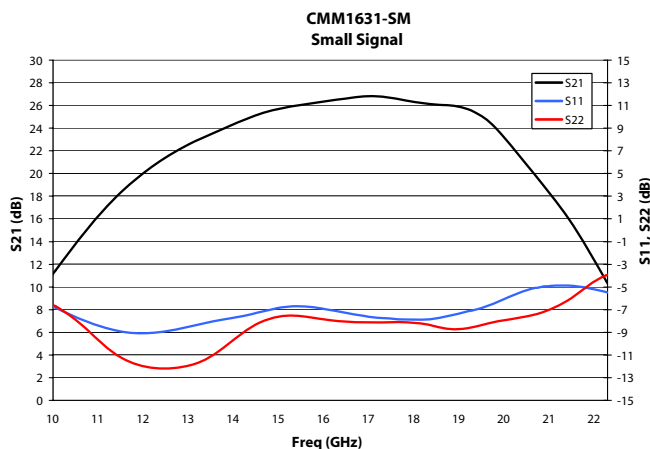
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Power Amplifier Measurements (7 V, 800 mA)



CMMI63I-SM
X RoHS

Recommended Application Circuit

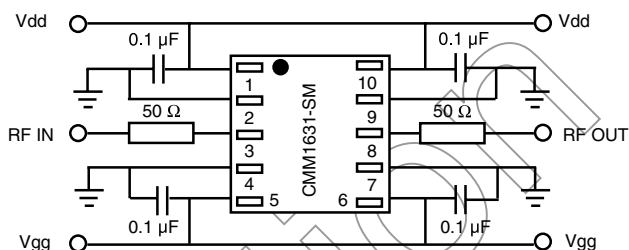
Diagram illustrating the dimensions of a 10-pin DIP package. The package is shown with dimensions in mils (mm) and an orientation mark.

Dimensions (mils (mm)):

- Pin 1 to Pin 10: 10 pins, 5 pins on each side.
- Pin 1 to Pin 5: 236 $\pm$ 3 (5.99 $\pm$ 0.08)
- Pin 6 to Pin 10: 236 $\pm$ 3 (5.99 $\pm$ 0.08)
- Pin 1 to Pin 6: 15 (0.38)
- Pin 6 to Pin 10: 30 (0.76)
- Pin 1 to Pin 10: 50 mil Typ.

Orientation Mark: Indicated by an arrow pointing to the top of the package.

DIMENSIONS IN mils (mm)



Biasing Notes

1. Dual bias is required
2. 0.1 μ F bypass capacitors are needed on PC board as close as possible to pins 1, 5, 6 and 10.
3. Positive (+) bias can be applied either at pin 1 or pin 6.
4. Negative (-) bias can be applied either at pin 5 or pin 6.
5. No DC block is required at RF IN/OUT.
6. Negative (-) bias must be applied before applying positive (+) bias.

Pin 1 Vdd

Pin 2 GROUND

Pin 3 RF IN

Pin 4 GROUND

Pin 5 Vgg

Pin 6 Vgg

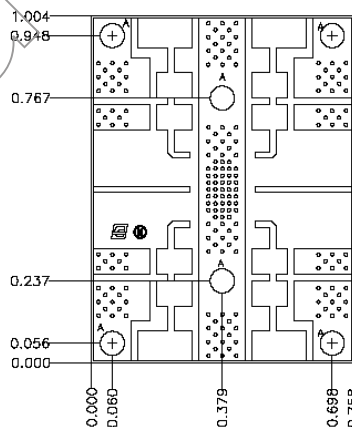
Pin 7 GROUND

Pin 8 RF OUT

Pin 9 GROUND

Pin 10 Vdd

CMM1631-SM



HOLE TABLE				
REF.	DIA.	TOL.	QTY.	PLATING
A	.070	+/- .0003	6	THRU
NONE	.010	+/- .0003	187	THRU

Surface mount package in bulk quantity
Surface mount package in tape and reel
Evaluation Board