

Advanced Product Specifications October 2003 (1 of 2)

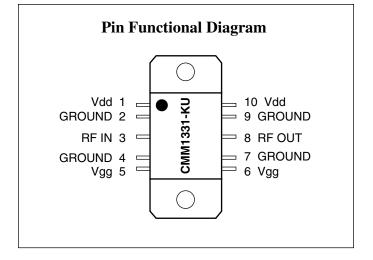
Features

- **32.5 dBm** (Typ.) Saturated Output Power
- **32.0 dB** (Typ.) Linear Gain
- Fully Matched
- **Unconditionally Stable**
- Copper/Molybdenum Flange Package for Optimum Thermal Dissipation

Applications

□ Ku-Band VSAT Transmit Subsystems

12.70 to 13.50 GHz 1.5 Watt Power Amplifier



The unconditional stability and internal matching

provides for reduction of external components making this

designed with a base material of gold-plated copper/molybdenum composite that offers excellent thermal properties and

product a simple and low-cost solution. The package is

minimum mechanical stress.

Description

The CMM1331-KU is a four-stage pHEMT GaAs MMIC power amplifier that is ideally suited for transmit subsystems designed for Ku-Band VSAT applications. The CMM1331-KU provides 32.0 dB linear gain and delivers 1.5 watts of output power at saturation operating from 12.70 to 13.50 GHz frequency.

Electrical Characteristics (T = +25°C, Vd = 7V, Idq = 770mA)

Parameter	Condition	Min	Тур	Max	Units
Frequency Range		12.70		13.50	GHz
Saturated Output Power	Pin = 3.0 dBm	32.0	32.5		dBm
Saturated Output Power Variation	Over operating frequency		0.3	0.6	dBm
Linear Gain		29.0	32.0	35.0	dB
Linear Gain Variation	Over operating frequency		2.5	4.5	dB
Input Reflection Coefficient			-10.0		dB
Output Reflection Coefficient			-7.0		dB
Gate Supply Voltage	Idq = 770 mA	-1.1	-0.9	-0.7	Volts
Drain Current	At Saturation		940	1000	mA
Power Added Efficiency		23.0	27.0		%
Thermal Resistance	Channel to Backside				°C/W

Electrical Characteristics (T = -40°C to +70°C, Vd = 7V, Idq = 770mA)

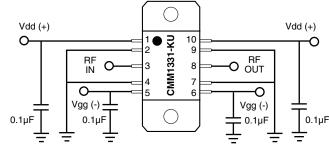
Parameter	Condition	Min	Тур	Мах	Units
Saturated Power Output	Variation from room temperature value	-0.5			dBm
Linear Gain Variation	Variation from room temperature value	-2.5		3.5	dB
Stability		Unco	nditionally	Stable	

Maximum Ratings (TA = -40°C to +70°C) Operation outside any of these limits can cause permanent damage.

Parameter	Rating	Units	Parameter	Rating	Units
Drain Voltage (+V _{dd})	8.5	Volts	RF Input Power (P _{in})	7.0	dBm
Gate Voltage (V _{gg})	-3.0	Volts	Storage Temperature	-50 to +150	°C
Bias Current (I _{dq})	1000	mA	Channel Temperature	175	°C
Gate Current (Ig)	5	mA	Dissipated Power (P _{dis})	7.3	Watts

Phone: (408) 986-5060

Application Notes



Biasing Notes

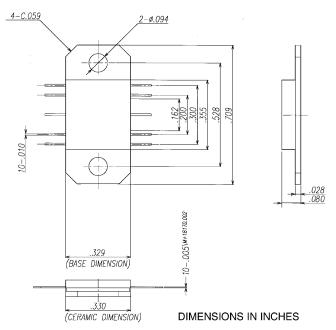
1. Dual bias is required

- 2. 0.1 μF 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.

Mounting Recommendations

- 1. Leads should be as short as possible.
- Solder all leads on PC board. Solder area should be as small as possible. Grounds should be provided for pins 2, 4, 7, and 9 on PC boards.
- Flange should be screwed down on adequate heat sink. Do not over torque screws in order to avoid breaks in ceramic and die (tightening torque: 6lbf-in).
- Grounding shims should be placed between the flange and heat sink to ensure optimal ground contact. Aluminum or Copper foil can be used.
- 5. 50 Ω RF IN/OUT interface are required for optimal electrical performance.
- 6. Due to the high gain of this device it is highly recommended to maintain the reverse isolation (S12) above 50 dB.

Physical Dimensions



Ordering Information The CMM1331-KU is available in plastic trays.

Part Number for Ordering	Package
СММ1331-КИ	Leaded flange package in plastic trays

Celeritek reserves the right to make changes without further notice to any products herein. Celeritek makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Celeritek assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters can and do vary in different applications. All operating parameters, including "Typical" must be validated for each customer application by customer's technical experts. Celeritek does not convey any license under its patent rights nor the rights of others. Celeritek products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Celeritek product could create a situation where personal injury or death may occur. Should Buyer purchase or use Celeritek products for any such unintended or unauthorized application, Buyer shall indemnify and hold Celeritek and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death massociated with such unintended or unauthorized use, even if such claim alleges that Celeritek was negligent regarding the design or manufacture of the part. Celeritek is a registered trademark of Celeritek, Inc. Celeritek, Inc. is an Equal Opportunity/Affirmative Action Employer.

