

Product Features

- Frequency from 1.2 ~ 1.4GHz
- GaN HEMT
- 50 Ohm Input/Output impedance
- High efficiency

Applications

- Radar system



Description

The RRP131K0-10 is designed for Radar system application frequencies from 1.2 ~ 1.4GHz. This module uses GaN HEMT technology which performs high breakdown voltage, wide bandwidth and high efficiency.

Electrical Specifications @ $V_{DS} = 50V, T = 25^{\circ}C, 50\Omega$ System

| PARAMETER | UNIT | MIN | TYP | MAX | SYMBOL |
|-----------------------|------------|------|------|-----------|--------------|
| Operating Frequency | MHz | 1200 | - | 1400 | f_O |
| Operating Bandwidth | MHz | - | 200 | - | BW |
| Output Pulse Power | W | 1000 | 1200 | - | P_O |
| Input Pulse Power | dBm | - | 7 | 10 | P_I |
| Power Gain | dB | 53 | 54 | - | G_P |
| Gain Flatness | dB | - | - | ± 1.0 | ΔG_P |
| Duty Cycle | % | - | - | 20 | DC |
| Pulse Width | us | - | - | 500 | PW |
| Efficiency | % | 40 | 50 | - | E_{ff} |
| Amplitude Pulse Droop | dB | - | 0.5 | 1.0 | Droop |
| Harmonics 1 to N | dBc | 30 | - | - | H_N |
| Spurious Level | dBc | 60 | - | - | Spur |
| Rise Time | ns | - | - | 200 | t_r |
| Fall Time | ns | - | - | 200 | t_f |
| Input VSWR | - | - | - | 1.5:1 | VSWR |
| Output VSWR | - | - | - | 1.5:1 | VSWR |
| Switching Time | us | - | 0.5 | 1 | t_{sw} |
| Phase Deviation | $^{\circ}$ | -20 | - | 20 | $\Delta\phi$ |

* Test Pulse conditions = 100us, 10%

* Above electrical specifications is measured by connecting electrolytic condenser 10,000uF to DC. Please make sure that electrolytic condenser is connected properly while testing the module.

* Custom design available

Absolute Maximum Ratings

| PARAMETER | UNIT | RATING | SYMBOL |
|--------------------------------|-------------|-----------|-----------|
| Operating Junction Temperature | $^{\circ}C$ | 225 | T_J |
| Operating Flange Temperature | $^{\circ}C$ | -30 ~ 75 | T_C |
| Storage Temperature | $^{\circ}C$ | -30 ~ 125 | T_{STG} |

Operating Voltages

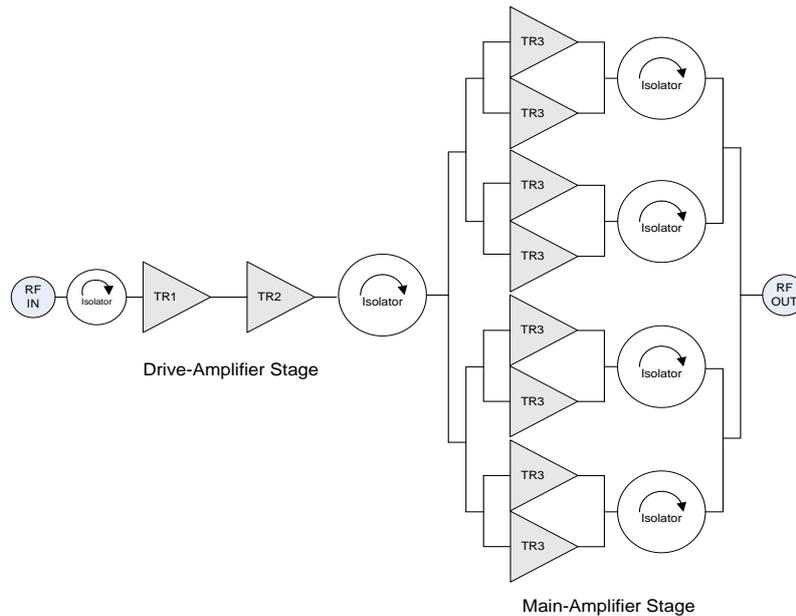
| PARAMETER | UNIT | NOMINAL VOLTAGE | VOLTAGE ACCURACY | SYMBOL |
|--------------------------|------|--|------------------|------------------|
| Drain-Source Voltage | V | 50 | ± 5% | V _{DS1} |
| Drain-Source Sub Voltage | V | 12 | ± 5% | V _{DS2} |
| Shutdown Voltage | V | TTL Low(0V) : PA ON, TTL High(5V) : PA OFF | | V _{DC1} |
| On/Off Control Voltage | V | TTL Low(0V) : PA ON, TTL High(5V) : PA OFF | | V _{DC2} |

Power Supply

| PARAMETER | UNIT | MIN | TYP | MAX | SYMBOL |
|-------------------------------|------|-----|------|-----|------------------|
| Drain-Source Current(AVG) | A | - | 11 | 16 | I _{DS1} |
| Drain-Source Sub Current(AVG) | A | - | 0.12 | 0.2 | I _{DS2} |

* Duty Cycle 20%, Pulse Width 200us

Block diagram

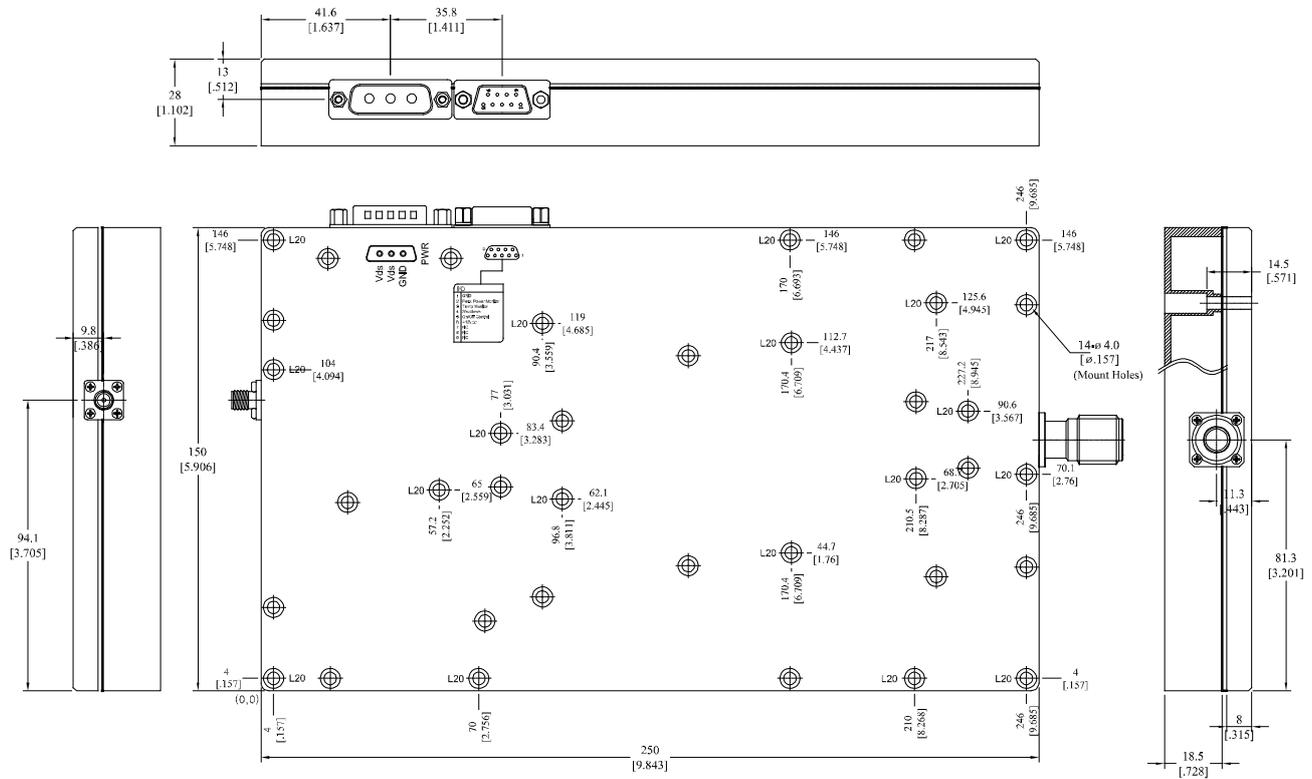


Mechanical Specifications

| PARAMETER | UNIT | TYP |
|--------------|------|---------------------------|
| Mass | kg | 1.3 |
| Dimension | mm | 220 x 145 x 27 |
| RF Connector | - | SMA Female : RF Input |
| | | N-type Female : RF Output |
| DC Connector | - | 3W3 connector : Supply |
| | | 9Pin D-Sub : Control |

Outline Drawing

* Unit: mm[inch] | Tolerance ±0.2[.008]



Pin Description

| Supply : 3W3 Connector | | | |
|------------------------|-------------------------|--------|-------------------------|
| Pin No | Description | Pin No | Description |
| 1 & 2 | V _{DS1} (+50V) | 3 | GND |
| Control : 9Pin D-Sub | | | |
| Pin No | Description | Pin No | Description |
| 1 | GND | 6 | V _{DS2} (+12V) |
| 2 | Peak Power Monitor | 7 | NC |
| 3 | Temp Monitor | 8 | NC |
| 4 | Shutdown | 9 | NC |
| 5 | On/Off Control | - | - |

Revision History

| Part Number | Release Date | Version | Modification | Data Sheet Status |
|-------------|--------------|---------|----------------|-------------------|
| RRP131K0-10 | 2012.12.28 | 1.0 | Version update | - |
| RRP131K0-10 | 2012.9.6 | 0.1 | - | Preliminary |
| - | - | - | - | - |

RFHIC Corporation reserves the right to make changes to any products herein or to discontinue any product at any time without notice. While product specifications have been thoroughly examined for reliability, RFHIC Corporation strongly recommends buyers to verify that the information they are using is accurate before ordering. RFHIC Corporation does not assume any liability for the suitability of its products for any particular purpose, and disclaims any and all liability, including without limitation consequential or incidental damages. RFHIC products are not intended for use in life support equipment or application where malfunction of the product can be expected to result in personal injury or death. Buyer uses or sells such products for any such unintended or unauthorized application, buyer shall indemnify, protect and hold RFHIC Corporation and its directors, officers, stockholders, employees, representatives and distributors harmless against any and all claims arising out of such unauthorized use.

Sales, inquiries and support should be directed to the local authorized geographic distributor for RFHIC Corporation. For customers in the US, please contact the US Sales Team at 919-677-8780. For all other inquiries, please contact the International Sales Team at 82-31-250-5078.