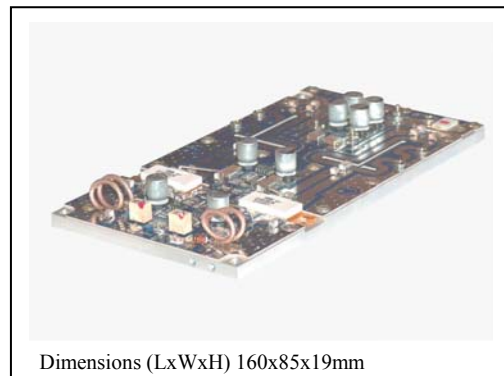


## 400W pep –27dBc min Tetrafet Technology

Designed for analog and digital TV transposers and transmitters, this amplifier incorporates microstrip technology and push-pull TETRAFET to enhance ruggedness and reliability.

- 170 - 230 MHz
- (28 ±32 Volt) 30 Nominal
- Input/Output 50Ω - 50Ω
- Pout CW: 200W (Continuous Work)
- Pout : 400W pep –27 dBc min (two-tone test 6MHz spacing )
- Gain : 13.5 dB min; 14.5 dB typ
- Class AB
- Devices: D1028UK or equivalent
- Connectorized version available
- RoHS Compliant



Dimensions (LxWxH) 160x85x19mm

This picture is a mere example, it does not bind the provided product

## ABSOLUTE MAXIMUM RATINGS (Device Flange T = 70 °C)

| Symbol           | Parameter                                     | Value                 | Unit |
|------------------|-----------------------------------------------|-----------------------|------|
| V <sub>S</sub>   | Voltage Supply                                | 35                    | V dc |
| I <sub>S</sub>   | Current Supply                                | 25                    | A dc |
| T <sub>stg</sub> | Storage Temperature Range                     | -20 + 80              | °C   |
| T <sub>c</sub>   | Operating Base Plate Temperature <sup>1</sup> | 0 + 75 <sup>2</sup>   | °C   |
| ψ                | VSWR max                                      | 3:1 all phase angle   | -    |
|                  | Max input power                               | See note <sup>3</sup> | -    |
|                  | Max cw output power (continuous work)         | 200                   | Watt |

## ELECTRICAL SPECIFICATIONS (Base Plate T. = 45 °C, 50Ω loaded, Vd = 30 V)

| Symbol                 | Parameter                      | Test Conditions                                                                                                | Min                    | Value Typ. | Max | Unit |
|------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------|------------|-----|------|
| BW                     | Bandwidth                      | P <sub>out</sub> = 250 W (CW)                                                                                  | 170                    |            | 230 | MHz  |
| Gp                     | Power gain                     | P <sub>ref</sub> = 250 W (CW)                                                                                  | 13.5                   | 14.5       | -   | dB   |
| P <sub>out</sub> – 1dB | Power Output @ 1dB Compression | Referred to P <sub>out</sub> = 60W (CW)                                                                        | 370                    | 400        | -   | W    |
| I <sub>q</sub> *       | Quiescent Current              | P <sub>out</sub> = 0 W – Total * <sup>4</sup>                                                                  | -                      | -          | 6.0 | A    |
| I <sub>tot</sub>       | @ P <sub>Max</sub>             | 300W Ps Black Level Video + Audio                                                                              | -                      | -          | 18  | A    |
| I <sub>rl</sub>        | Input return loss              | P <sub>out</sub> = 250 W CW                                                                                    | 16                     | 20         | -   | dB   |
| ψ                      | Load mismatch                  | P <sub>ref</sub> = 250 W CW, f = 230MHz, load VSWR = 2:1, all phase angles                                     | No degradation in Pout |            |     |      |
| Gr                     | Gain Flatness                  | P <sub>ref</sub> = 250 W CW, BW: 170-230MHz                                                                    |                        | ±0.5       | ±1  | dB   |
| η                      | Drain Efficiency               | P <sub>out</sub> = 300 W (CW)                                                                                  | 40                     | 45         | -   | %    |
|                        | Pout separate ampl.            | Sync. Compression < 1dB without correction                                                                     | 350                    |            |     | Wps  |
|                        | Pout common ampl.              | Pout 300W ps common ampl. dual sound, with Red Field sound 1 @ -13dB and sound 2 @ -20dB without precorrection | -45                    | -50        |     | dBc  |
|                        | Pout DAB                       | Pout 150Wrms without precorrection                                                                             | -27                    | -30        |     | Wrms |
|                        | Pout DVB-T                     | Pout 80Wrms without precorrection                                                                              | -28                    | -30        |     | Wrms |

<sup>1</sup> A temperature sensor is mounted on the circuit to have an immediate working temperature measurement. The temperature can be measured by a Voltmeter on the pin 1 (see picture on pag. 3), 1mV = 1 °C. **Warning:** the measured temperature refers to the Printed Circuit Board and not to the device flanges.

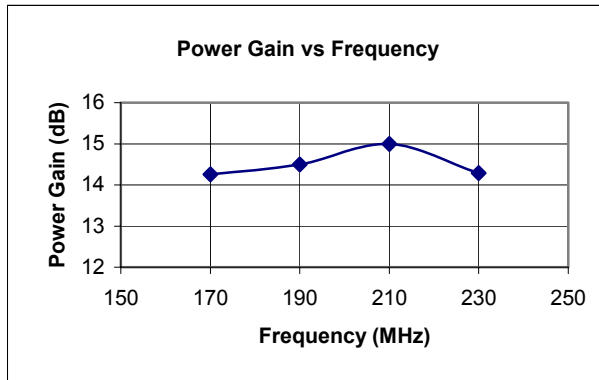
<sup>2</sup> **Warning:** The base plate temperature must be 75 °C max, using an appropriate Heatsink.

<sup>3</sup> The input power must not exceed +6dB, for 1 microsec., the nominal input power referred to the 1dBcp power output.

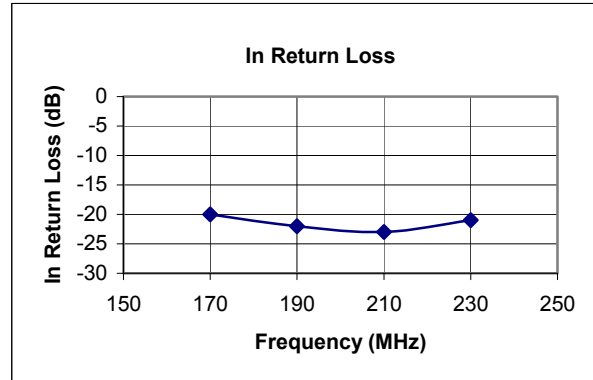
<sup>4</sup> The Quiescent Current is set at typical value, in factory. This parameter can be adjusted by the final user depending on the applied signal and/or frequency and output power (See Application note ING01). (**Warning:** Do not exceed the specified max Iq value).

\* Depending of handling signal (analog /digital)

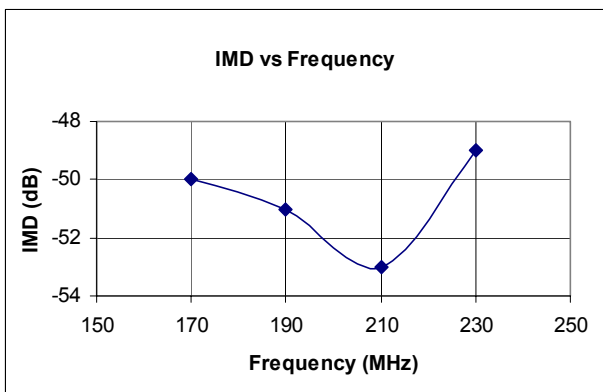
Contact Res-Ingenium, +39 0763 316333 Fax +39 0763316002- or visit [www.res-ingenium.com](http://www.res-ingenium.com) for a complete listing.



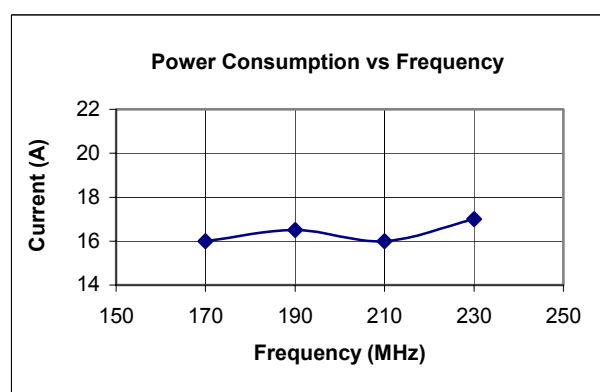
Test Condition: Vd 30V, Idq 2 x 2A, Pout 250W CW



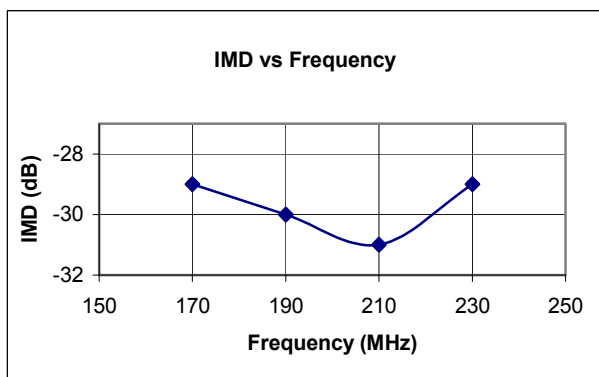
Test Condition: Vd 30V, Idq 2 x 2A, Pout 250W CW



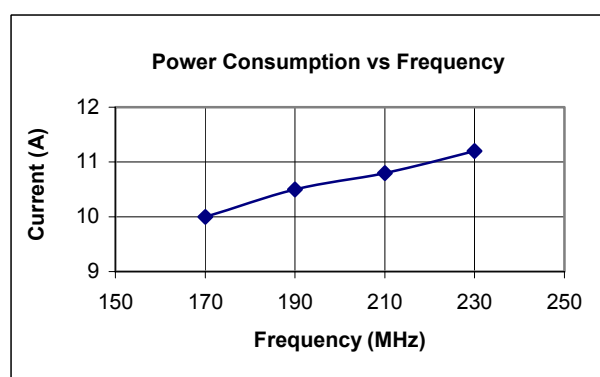
Test Condition: Vd 30V, Idq 2 x 2A, Pout 300W ps  
(red field with sound 1 @-13dB and sound 2 @-20dB)



Test Condition: Vd 30V, Idq 2 x 2A, Pout 300W ps  
with black field



Test Condition: Vd 30V, Idq 2 x 2A, Pout 80Wrms  
DVB-T signal

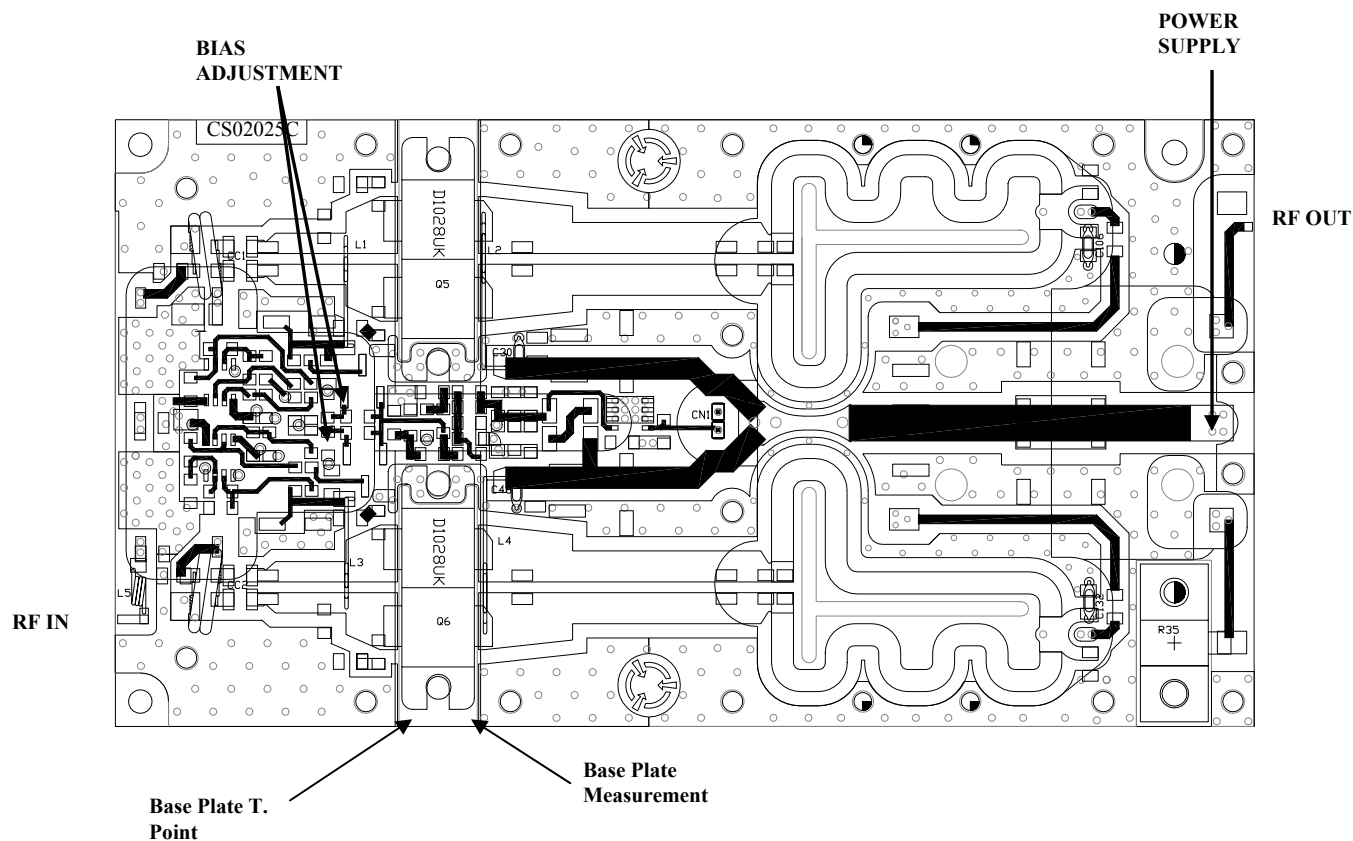


Test Condition: Vd 30V, Idq 2 x 2A, Pout 80Wrms  
DVB-T signal

The operating voltage range of this module is from 28V to 32V, 30V nominal. If used at 32V, the max power available will be higher but with a consequently decrease of MTBF. Under conditions of overdrive or reflected power, when a multicarrier signal is applied, the 32V supply can be the reason of a minor ruggedness. Please, use suitable protection circuits.

Contact Res-Ingenium, +39 0763 316333 Fax +39 0763316002- or visit [www.res-ingenium.com](http://www.res-ingenium.com) for a complete listing.

## THV410C Layout and Connections<sup>5</sup>



## HEATSINK MOUNTING/HARDWARE

## 1.HEATSINK TOOLING

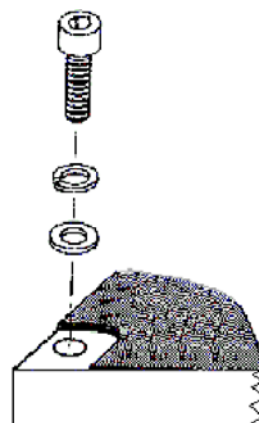
- Planarity: typical value 0.8
- Roughness: better than 0.03 mm

## 2.THERMAL COMPOUND

- Paste with silicones
- Thickness: optimum between 0.06 mm and 0.15 mm, on the whole back surface of the amplifier.

### 3.SCREWS

- 8 x M3 - Socket head cap screws.
- 8 Split lock washers WZ Ø3 + 8 Flat washers ZU Ø3.
- The recommended Torque is 12 Kg/cm for M3 type screws and 10 Kg/cm for M2.5 type screws.

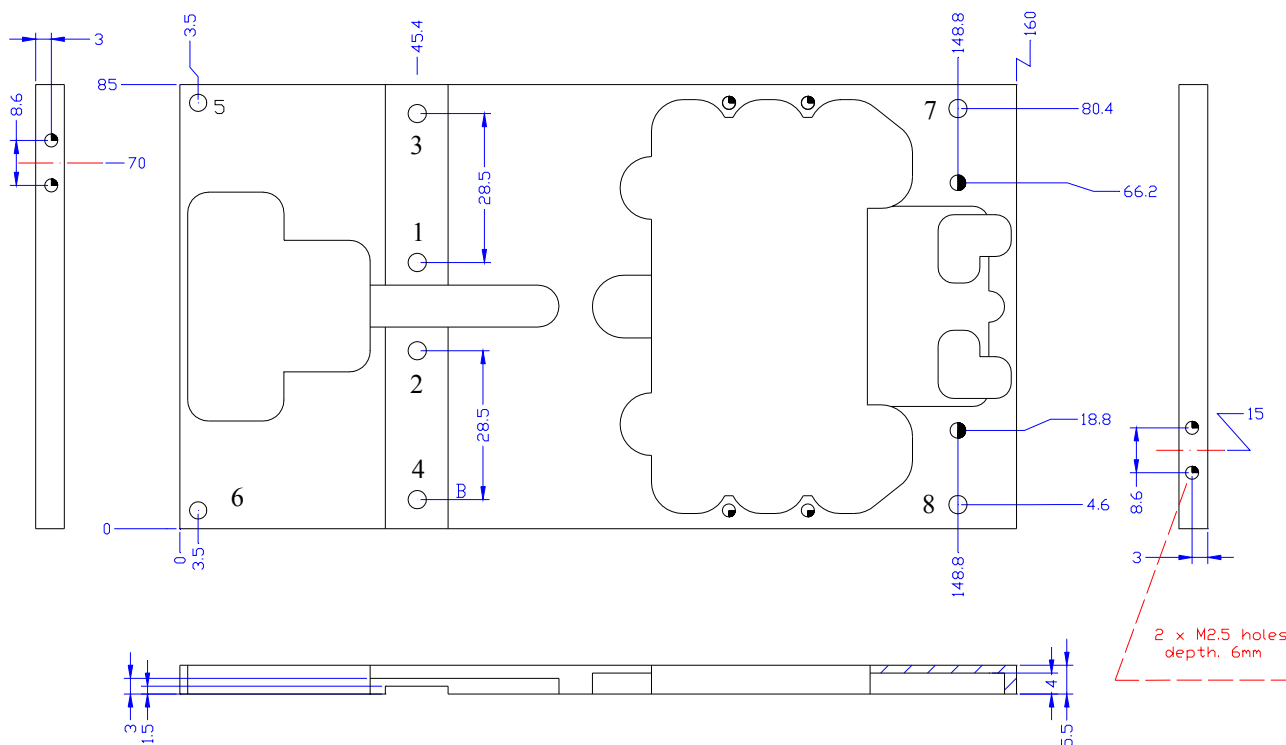


<sup>5</sup> RES-Ingenium provides the pallet without unbalance load resistors (input 50 Ohm 20W/output 50 Ohm 100W. Dimensions: 13 x 6.3mm, about, 1 hole).

Conctat Res-Ingenium, +39 0763 316333 Fax +39 0763316002- or visit [www.res-ingenium.com](http://www.res-ingenium.com) for a complete listing.

## 4. TIGHTENING ORDER

-See next figure:



\*Dimensions in mm.

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