480W pep –27dBc min Tetrafet Technology Amplifier

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
- $P_{out} : 480\,\text{W pep} \, –27\,\text{dBc min (two-tone test 6MHz spacing)}$
- $P_{out} 250\,\text{W CW}$
- Gain : 13.5 dB min; 14.5 dB typ
- Class AB
- Devices: D1030UK or equivalent
- Connectorized version available

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

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_S$</td>
<td>Voltage Supply</td>
<td>35</td>
<td>V dc</td>
</tr>
<tr>
<td>$I_S$</td>
<td>Current Supply</td>
<td>25</td>
<td>A dc</td>
</tr>
<tr>
<td>$T_{stg}$</td>
<td>Storage Temperature Range</td>
<td>-20 + 80</td>
<td>°C</td>
</tr>
<tr>
<td>$T_c$</td>
<td>Operating Base Plate Temperature</td>
<td>0 - 75</td>
<td>°C</td>
</tr>
<tr>
<td>$\psi$</td>
<td>VSWR max</td>
<td>3:1 all phase angle</td>
<td>-</td>
</tr>
<tr>
<td>Max input power</td>
<td></td>
<td>See note3</td>
<td>-</td>
</tr>
<tr>
<td>Max cw output power (continuous work)</td>
<td></td>
<td>250</td>
<td>Watt</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Min</th>
<th>Typ.</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>BW</td>
<td>Bandwidth</td>
<td>$P_{out} = 250,\text{W (CW)}$</td>
<td>170</td>
<td></td>
<td>230</td>
<td>MHz</td>
</tr>
<tr>
<td>$G_p$</td>
<td>Power gain</td>
<td>$P_{ref} = 250,\text{W (CW)}$</td>
<td>13.5</td>
<td>14.5</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>$P_{out} - 1\text{dB}$</td>
<td>Power Output @ 1dB Compression</td>
<td>Referred to $P_{out} = 60,\text{W (CW)}$</td>
<td>450</td>
<td>500</td>
<td></td>
<td>W</td>
</tr>
<tr>
<td>$I_q*$</td>
<td>Quiescent Current</td>
<td>$P_{out} = 0,\text{W – Total *4}$</td>
<td>-</td>
<td>-</td>
<td>6.0</td>
<td>A</td>
</tr>
<tr>
<td>$I_{tot}$</td>
<td>@ $P_{max}$</td>
<td>350W Ps Black Level Audio + Video</td>
<td>-</td>
<td>-</td>
<td>22</td>
<td>A</td>
</tr>
<tr>
<td>$I_{rl}$</td>
<td>Input return loss</td>
<td>$P_{out} = 250,\text{W CW}$</td>
<td>16</td>
<td>20</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>$\psi$</td>
<td>Load mismatch</td>
<td>$P_{ref} = 250,\text{W CW, f= 230MHz, load VSWR = 2:1, all phase angles}$</td>
<td>No degradation in Pout</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$G_r$</td>
<td>Gain Flatness</td>
<td>$P_{out} = 300,\text{W}^2$ (CW)</td>
<td>±0.5</td>
<td>±1</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>$\eta$</td>
<td>Drain Efficiency</td>
<td>$P_{out} =$</td>
<td>40</td>
<td>45</td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>$P_{out}$ separate ampl.</td>
<td>Sync. Compression &lt; 1dB without correction</td>
<td>400</td>
<td>450</td>
<td>Wps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$P_{out}$ common ampl.</td>
<td>Red field IMD &lt; -45 dBc without correction</td>
<td>360</td>
<td>380</td>
<td>Wps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$P_{out}$ DVB-T</td>
<td>Shoulder &lt; -27 dB</td>
<td>80</td>
<td>100</td>
<td>Wrms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$P_{out}$ DAB</td>
<td>Pout 170Wrms without precorrection</td>
<td>-27</td>
<td>-30</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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1 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.

2 Warning: The base plate temperature must be 75 °C max, using an appropriate Heatsink.

3 The input power must not exceed +6dB, for 1 microsec., the nominal input power referred to the 1dBp power output.

4 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 $I_q$ value).

5 Depending of handling signal (analog/digital)

6 Do not keep the amplifier working at this Pout for more than one minute

Concat Res-Ingenium, +39 0763 316333 Fax +39 0763316002- or visit www.res-ingeniun.com for a complete listing.
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.

4. TIGHTENING ORDER
   - See next figure:

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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).

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A= Ø 3.5 mounting holes (M3 on heat-sink), 10 places

*Dimensions in mm.
Res-Ingenium
Via dei Vasari, 17
Zona Industriale Fontanelle di Bardano
05018 Orvieto (TR)
Italy
Telephone: +39 0736 316333
Fax: +39 0763 316002
Internet: res-ingenium.com
E-Mail: map@res-ingenium.com

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