600W pep –27dBc min LDMOS Technology

Designed for analog and digital TV transposers and transmitters, this amplifier incorporates micro-strip technology and push-pull LDMOS to enhance ruggedness and reliability. Patented bias control and matching circuit.

- 470 - 862 MHz
- (28 ÷32 Volt) 30 Nominal
- Input/Output 50Ω - 50Ω
- Pout : 600W pep –27 dBc min (two-tone test 6MHz spacing )
- Gain : 13 dB min; 15 dB typ
- Class AB
- Devices: PTFA043002E or equivalent
- Connectorized version available
- No mechanical trimmers - maximizes MTBF

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 (without RF)</td>
<td>35</td>
<td>V dc</td>
</tr>
<tr>
<td>I_s</td>
<td>Current Supply</td>
<td>40</td>
<td>A dc</td>
</tr>
<tr>
<td>Tstg</td>
<td>Storage Temperature Range</td>
<td>-20 ÷ 80</td>
<td>°C</td>
</tr>
<tr>
<td>Tc</td>
<td>Operating Base Plate Temperature</td>
<td>0 + 75</td>
<td>°C</td>
</tr>
<tr>
<td>ψ</td>
<td>VSWR max</td>
<td>3:1 all phase angle</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Max input power</td>
<td>See note1</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Max cw output power</td>
<td>400</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>Pout = 300 W (CW)</td>
<td>470</td>
<td>862</td>
<td>MHz</td>
<td></td>
</tr>
<tr>
<td>Gp</td>
<td>Power gain</td>
<td>Pref = 200 W (CW)</td>
<td>13</td>
<td>15</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>Pout – 1dB Compression</td>
<td>Power Output</td>
<td>Referred to Pout = 80W (CW)</td>
<td>400</td>
<td>550</td>
<td>-</td>
<td>W</td>
</tr>
<tr>
<td>Iq *</td>
<td>Quiescent Current</td>
<td>Pout = 0 W – Total</td>
<td>-</td>
<td>-</td>
<td>4.0</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>@ Pmax</td>
<td>450W Ps Black Level Video + Audio</td>
<td>-</td>
<td>-</td>
<td>30</td>
<td>A</td>
</tr>
<tr>
<td>Irl</td>
<td>Input return loss</td>
<td>Pout = 300 W CW</td>
<td>16</td>
<td>20</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>ψ</td>
<td>Load mismatch</td>
<td>Pref = 300 W CW, f= 862MHz, load VSWR = 2:1, all phase angles</td>
<td>No degradation in Pout</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gr</td>
<td>Gain Flatness</td>
<td>Pref = 300 W CW, BW: 470-862MHz</td>
<td>±0.5</td>
<td>±1.5</td>
<td>dB</td>
<td></td>
</tr>
<tr>
<td>η</td>
<td>Drain Efficiency</td>
<td>Pout = 400 W (CW)</td>
<td>40</td>
<td>45</td>
<td>-</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>Pout separate ampl.</td>
<td>Sync. Compression &lt; 1dB without correction</td>
<td>450</td>
<td>-</td>
<td>Wps</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pout common ampl.</td>
<td>Pout 450W ps common ampl. dual sound, with Red Field sound 1 @ -13dB and sound 2 @ -20dB without precorrection</td>
<td>-46</td>
<td>-50</td>
<td>dBc</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pout DVB-T</td>
<td>Pout 120Wrms without precorrection</td>
<td>-28</td>
<td>-32</td>
<td>dBc</td>
<td></td>
</tr>
</tbody>
</table>

1 A temperature sensor is mounted on the circuit to have an immediate working temperature measurement.
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 1kHz 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 LDMOS Technology Note). (Warning: Do not exceed the specified max Iq value).
5 Depending of handling signal (analog /digital)
6 Do not keep the amplifier working at this Pout for more than one minute
SMART BIAS SPECIAL FEATURES

- No mechanical trimmers to increase reliability
- Unmatched stability of the rest current (Iq) in the range of -30 to +100 deg.C (flange temperature)
- Built-in over temperature protection
- Built-in soft start for switch-on at extreme low temperatures (for outdoor application)
- Bias factory settings stored in memory

IR COMMANDS

- Current control (Left and right power device)
- Shut down (pallet switch-off)
- Look-up table bias values activation via IR port (Bias factory settings stored in memory)

Note

IR bias control unit (shown above with LDU601C) is available upon request.
NOTE. In response to customer request, this pallet has been designed to allow two different positions of IN/OUT connections: /TL = connection on the left side, /TR = connection on the right side.

HEATSINK MOUNTING/HARDWARE

1. HEATSINK TOOLING
   - Planarity: better than 0.03 mm
   - Roughness: typical value 0.8

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 (10.5 in . lbs).

4. TIGHTENING ORDER
   - See next figure:

---

RES provides the pallet without unbalanced load resistors (input 50 Ohm 20W/output 50 Ohm 100W. Dimensions: 13 x 6.3mm, about, 1 hole).

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

In the interest of continual product improvement all specifications are subject to change without notice.
IMPORTANT NOTICE
RES-INGENIUM RESERVE THE RIGHT TO MAKE CHANGES TO THE PRODUCT(S) OR INFORMATION CONTAINED HEREIN WITHOUT NOTICE. RES-INGENIUM ASSUMES NO RESPONSIBILITY FOR ANY ERRORS WHICH MAY APPEAR IN THIS DOCUMENT.

WARRANTY INFORMATION APPLICABLE TO THE PRODUCT IDENTIFIED HEREIN IS AVAILABLE UPON REQUEST. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A WARRANTY, REPRESENTATION OR GUARANTEE OF ANY KIND. RES-INGENIUM EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND/OR IMPLIED INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY, AND OF FITNESS FOR A PARTICULAR PURPOSE, USE OR APPLICATION.

No part of this document may be copied or reproduced in any form or by any means without the prior written consent of Res-Ingenium.

WARNING
RES-INGENIUM PRODUCTS ARE NOT INTENDED FOR USE IN LIFE SUPPORT APPLIANCES, DEVICES OR SYSTEMS. USE OF A RES-INGENIUM PRODUCT IN ANY SUCH APPLICATION WITHOUT WRITTEN CONSENT IS PROHIBITED.