

Model PA-TV1-17-200 TV Pallet Amplifier Module

This amplifier module is ideal for final output stages in analog and digital TV broadcast equipment.

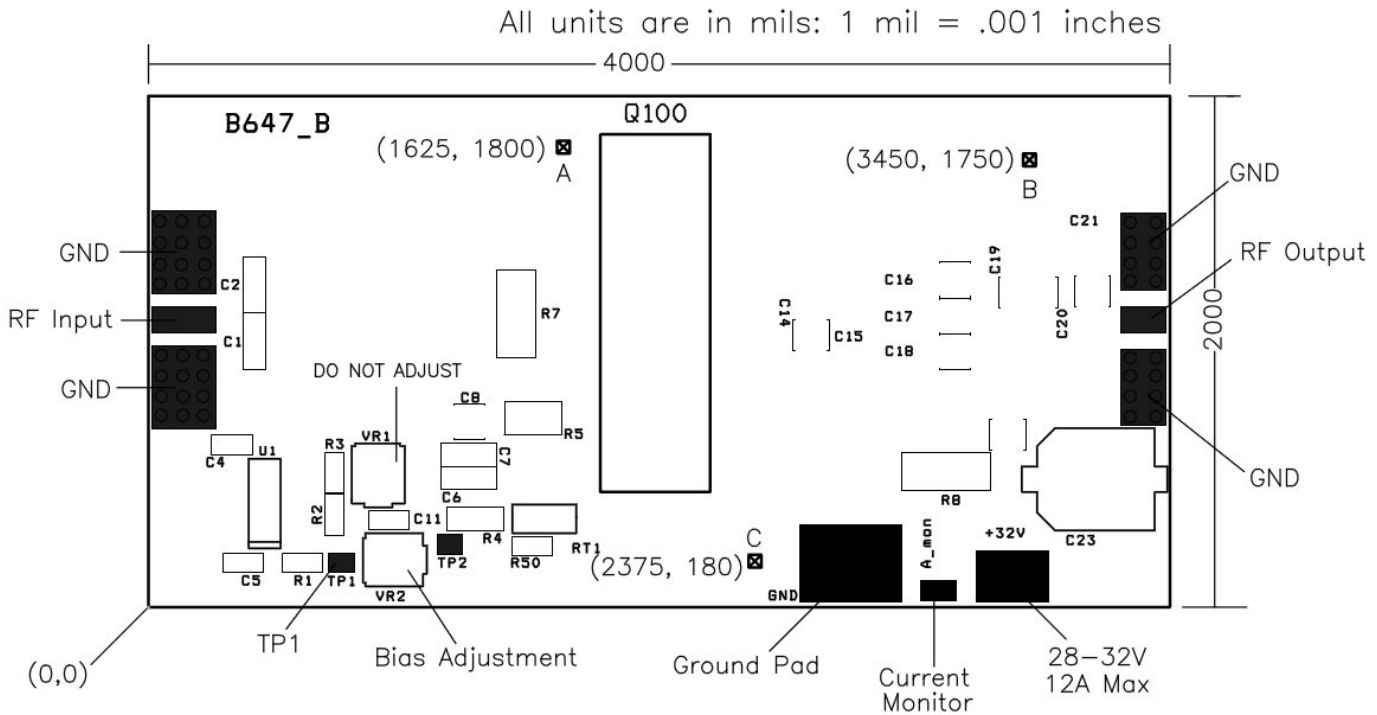
- **New updated revision. (10/10/09)**
- **New Gold Mosfet (10/10/09)**
- **55– 88MHz (CH 2 – 6)**
- **28- 32 Volts**
- **Input/output 50 ohms**
- **Pout: 200W Peak Sync NTSC.**
- **40 Watts digital power.**
- **18dB Gain Typical**
- **Thermal Tracking Bias**
- **Current Sense Resistor**
- **Broadband “No tune” design.**
- **Made in the USA**



Dimension (L x W x H inch) [2.00” x 4.00” x 1.5”]

Electrical Specifications: 32Vdc, Idq=0.8A, Freq=55-88MHz				
Characteristics	min	typ	max	unit
Operating Frequency range	55		88	MHz
Fundamental output power – P1dB CW		200W		W
Power Input		2	3.0	W
Input VSWR		1.3	1.6	VSWR
Power Gain P1dB	17.5	18.5	19.0	dB
Collector Current – P1dB		12.0		A dc
Insertion Phase variation (unit to unit)		+/-4.0		degrees
Power gain (unit to unit)		+/-0.8		dB
F2 Second Harmonic		-30dB		dB
F3 Third Harmonic		-25dB		dB
Bias Current per transistor: Factory set to 800ma @32V.		0.8	3.0	A dc
Drain voltage supply	28	32	32	
Base plate operating temperature	0	n/a	60	Celsius
Load Mismatch (All phase angles, Id=15A, 2.5 seconds)			5:1	VSWR

Amplifier Drawing: Figure 1



Heatsink Mounting/Hardware

Tips for Mechanical Mounting:

- 1 All holes (Designated "A thru C") are 0.156 inch thru and they are deigned for a #6 Screw. Stainless Steel mounting hardware is recommended, grade 18-8 or better. A lock washer of same material should also be used.
- 2 Ensure mounting surface is flat to better than 0.0025"
- 3 Use a thin layer of thermal compound on the backside of the PA - no more than 0.001" - 0.002" thickness!
- 4 Torque all screws to 10-12 in-lbs

Use of cooling air on top of pallet to keep output transformers cool is recommended. Output transformers are rated for continuous operation at 150C. Keep all external circuitry away from input and output transformers to avoid interference - give at least 1.45" clearance to avoid creating feedback loops.

Warning: Failure to use a proper heat sink will cause the transistors to burn out. This type of failure is not covered by warranty. This product can be ordered with a custom heat sink. Please contact factory for more information.

Warning: Careless adjustment of the bias adjustment pot VR2 may cause the transistor to burn out. This type of failure is not covered by warranty.

Bias Settings:

The factory bias settings are 0.8A @ 32V at 25C. We feel that this setting offers the best performance tradeoff for gain, linearity, efficiency; however, there are situations where the bias settings may need to be adjusted. If the module is going to be used as a driver stage where maximum linearity is required then we suggest that the bias be increased to 1.6A @ 32V. At 100W average power and 1.6A bias, this module can deliver 3rd order IMD performance better than -50dBc. Increasing the bias current above 1.6A degrades the IMD performance of the module at all power levels; therefore, the 1.6A bias should be considered the maximum rating.

Amplifier startup procedure

The amplifier supply voltage must be between 28 – 32V. It is recommended that the amplifier be powered up in this sequence:

- (1) Verify that the amplifier is connected to 50 ohm system at input and output.
- (2) Apply 28 – 32 V supply voltage.
- (3) Enable bias.
- (4) Apply RF input signal.
- (5) Please note that TP1 should be grounded to disable bias. (See amplifier drawing on Page 2)

Amplifier shutdown procedure

Always remove bias and RF input signal before powering down the amplifier.

The amplifier startup and shutdown procedures described here must be followed or damage to the mosfets may result.

Special handling for TV pallet amplifiers:

Input transients may damage this amplifier. Never make or break the input or output connection to the amplifier while bias is enabled. Avoid using step attenuators to control output power, consider using a continuously variable or voltage variable attenuator before the driver stage of the system. If you are using a CATV modulator, avoid changing channels while bias is enabled. Some signal generators and network analyzers can generate transients as well. On network analyzers, avoid changing registers with bias enabled.

Note: The new transistor which is being used in units manufactured after October 10th 2009 appears to be immune to the transients described above; however, we still suggest that these precautions be taken into consideration.

Warning: Solid state amplifiers can be easily destroyed! Operating the amplifier outside of its specifications will cause the mosfets to fail. These failures are not covered by warranty.

- Do not over drive the amplifier.
- Do not run the amplifier into an open circuit. Do not run the amplifier when the SWR is unknown. System integrator must foresee adding VSWR protection if there is a risk that the amplifier will be subjected to high VSWR conditions. Do not allow the amplifier to overheat. Do not let the base plate temp exceed 60C.
- Do not adjust the bias settings without a DC ammeter attached.

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Revision Change Note:

- (1) *Units manufactured after October 10th 2009 use a new gold mosfet from a new supplier.*