

4379

Part Number

P250-100-500-25

Amplifier Name

Revision 1.b Release Date July 29, 2007

This data sheet covers models 4379, 4472

Revision Notes

Repl 0.d (Rev p/n 250W, B version of Comb)

Technical Specifications Summary

Frequency Range: 100 - 500 MHz
P1dB: 250 Watts CW
Class: AB
Supply Voltage: 28.0V

Gain: 25dB
Efficiency: 45%
Temperature Range: 0 to 60°C
Max VSWR: 5:1

Amplifier General Description

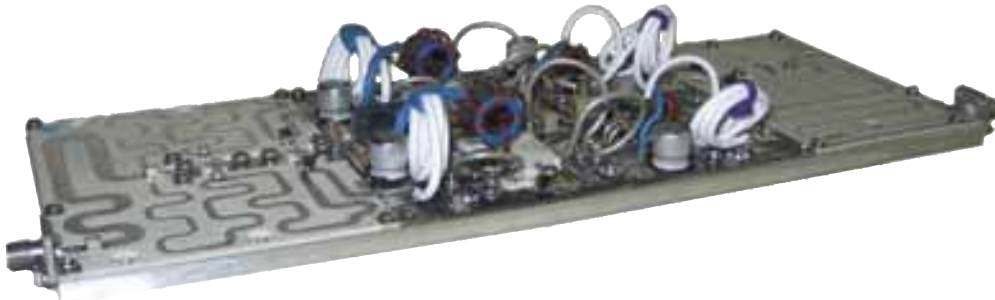
The P250-100-500-25 is our high power UHF broadband offering designed for a variety of communications and jamming applications. Featuring an all gold metallized LDMOS / MOSFET configuration in a two stage configuration, this pallet offers an unmatched combination of efficiency, P1dB and gain in a convenient sized package.

The base amplifier has been certified survivable to in excess of 20:1 VSWR, and we offer this combined unit with a 5:1 continuous VSWR tolerance. Capable of sustained operation to 250W CW over a broad temperature range, this is the rugged amplifier for your harshest requirements. Suitable for use as a communications amplifier in excess of 65W (CW, SSB) or for FM communications at 250W, this versatile amplifier will be sure to please!

Standard options include an aluminum enclosure (model 4472). We also offer high power 2-way combiners with matching splitters for higher power operation.

Heatsink is required for operation.

Amplifier Picture



4379 shown with optional SMA connectors



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Parameter	Min	Typ	Max	Units	Notes
Frequency	100		500	MHz	
P1dB	200	250		W, CW	
Linear Power Out	65			W	AM SSB 5% dist max, 80% modulation
IMD3	-26			dBc	For 2 tones, 10kHz spacing, 250W PEP
Power Input		0.8		W, CW	250W CW
Gain	23	25		dB	
Vsupply	26	28	32	V, DC	VSWR tolerance valid Vsup ≤ 28V
Drain Current, 250W CW		22	26	A, DC	FM Mode
Efficiency	35	41		%, DC	250W CW
Drain Current, 65W CW		12	14.5	A, DC	AM Mode
Input VSWR		1.2:1	1.7:1		
Insertion Phase Variation		±5		°	Unit to unit
Gain Variation			±1.5	dB	Unit to unit
F2 Second Harmonic		-12		dBc	
F3 Third Harmonic		-25		dBc	
Baseplate Operating Temperature	0		60	°C	

Physical Dimensions

4.0" x 10.0" x 1.5" / 10.2cm x 25.4cm x 3.8cm

All specifications valid for output impedance 50 Ω, V_{sup} = +28VDC, I_{dq} = 3.0A

Absolute Maximum Ratings

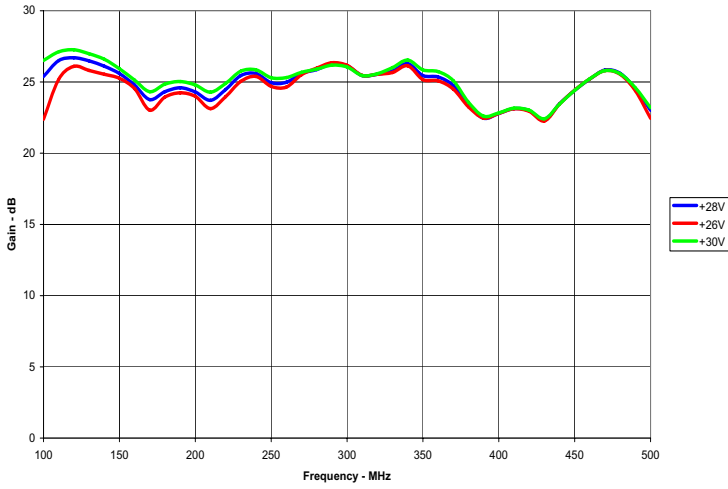
Parameter	Value	Units	Notes
Maximum Operating Voltage	32	V, DC	
Stable Operating Voltage	26 - 30	V, DC	
Maximum Bias Current, Q100,101	1.5	A, DC	Factory set to 1.0 A ea transistor
Maximum Bias Current, Q102,103	2.0	A, DC	Factory set to 0.5 A ea transistor
Maximum Drain Current	28	A, DC	
Load Mismatch Survival	5:1		
Storage Temperature	-20 to +85	°C	
Maximum Operating Baseplate Temp	60	°C	

Features, Auxillary Functions

- ◆ Temperature Compensated Bias
- ◆ Amplifier Disable
- ◆ Current Sense, Each Transistor Pair
- ◆ Connectorized Power and I/O

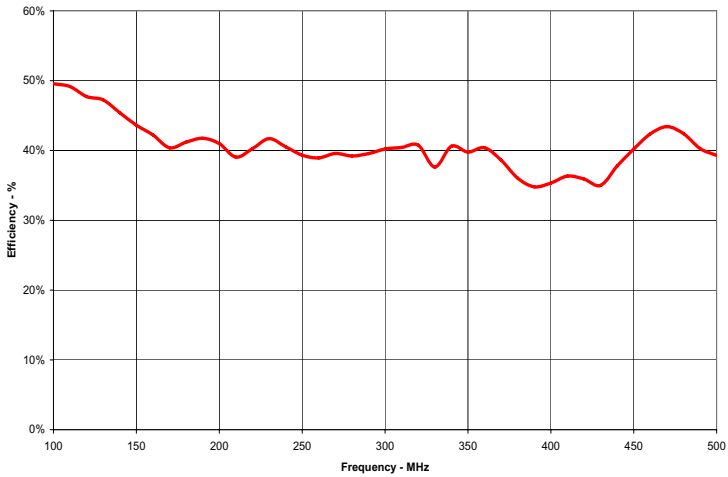


P250-100-500-25 Gain vs. Vsup



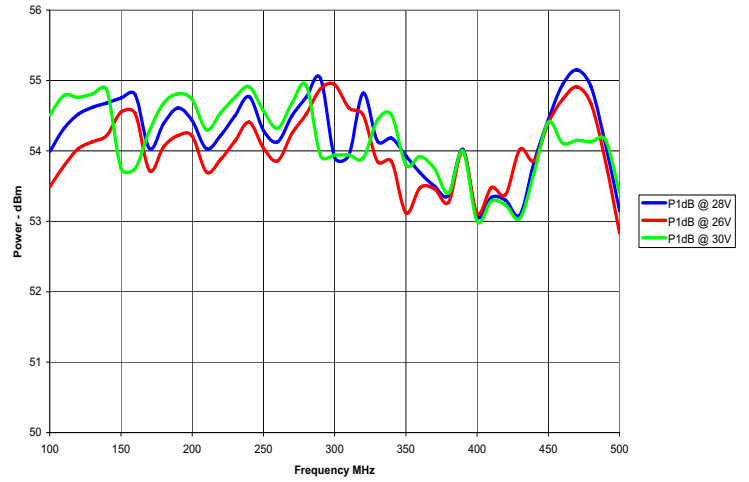
Graph 1. Gain vs. Vsup

P250-100-500-25 Efficiency 250W 28V



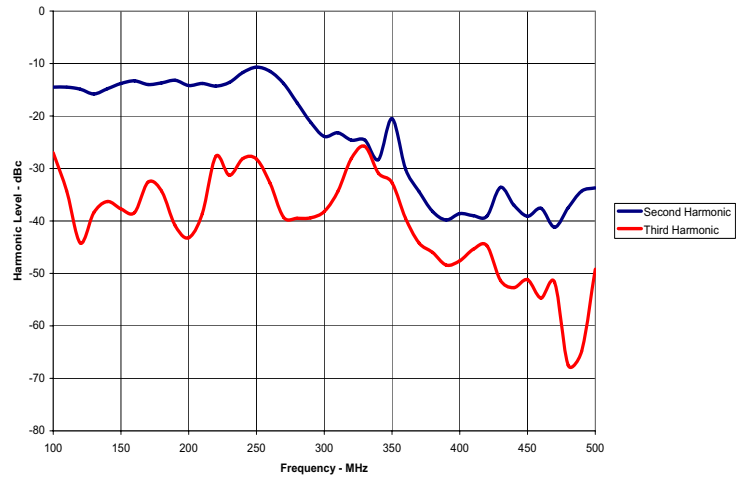
Graph 3. Efficiency

P250-100-500-25 P1dB Comparison vs. Vsup



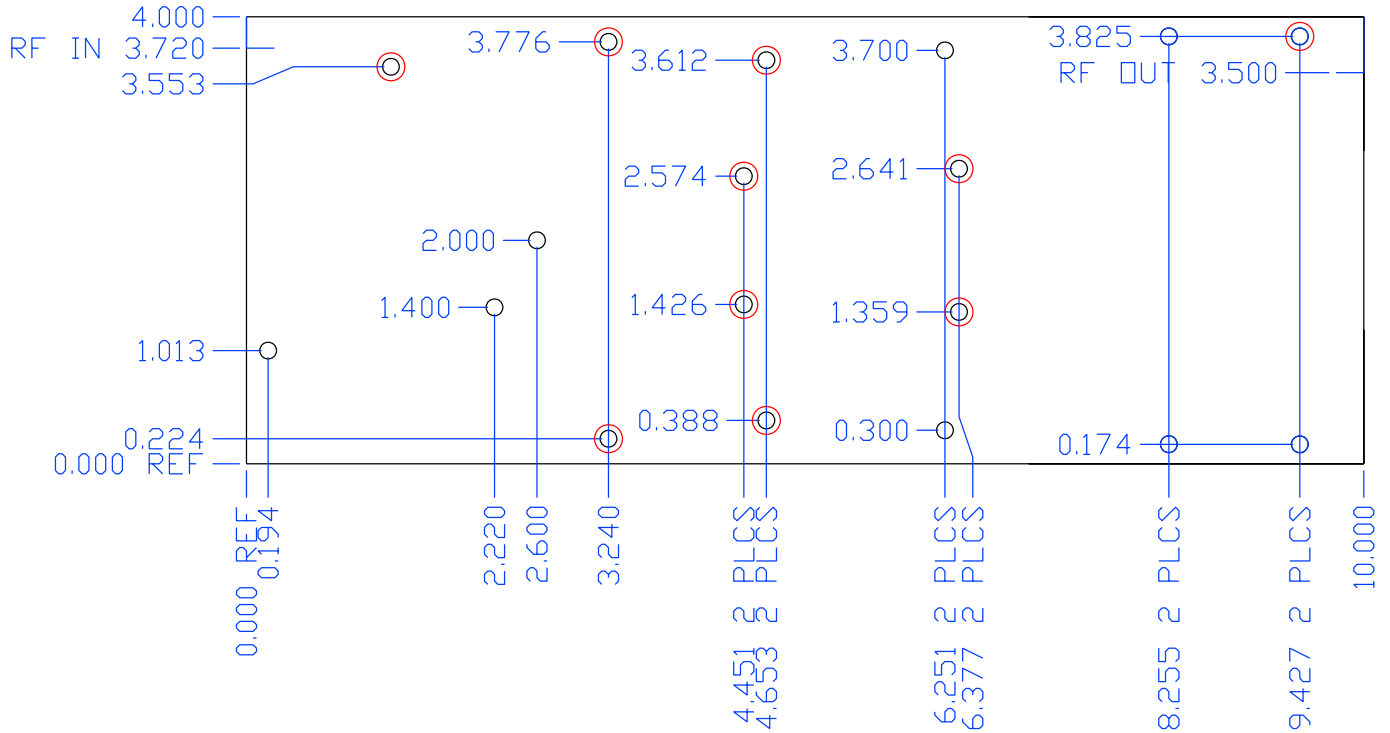
Graph 2. P1dB vs. Vsup

P250-100-500-25 Harmonics +28VDC 250W



Graph 4. Harmonics





○ Holes marked red require bolt hole. All others optional. For extreme service, use of all holes is recommended. All holes clear for #6 screw.



Connections:

Connect amplifier to +Vsup and Ground using solder pads indicated. 2 x 16 Gauge wires are recommended for supply and ground (4 wires total). In all cases, use of teflon insulated wires is highly recommended.

Connect coaxial cable to input and output RF connections (semi rigid or flexible) using best RF practices. Ensure output cable is of sufficient power handling capacity. Pads are provided for ground on co-axial connections.

DISABLE pad provided for shutdown - ground to disable amplifier, float to operate. Do not apply positive voltage to this pad or damage will result.

An optional wire harness is sold to mate to the on board connector which can ease installation. This connector may be ordered with the amplifier and includes current sense connections - one current sense resistor per amplifier half.

Amplifier Startup:

Ideal amplifier startup allows for application of Vsup with no drive applied. After Vsup has reached minimum operating voltage, drive may be applied. If necessary to start amplifier with drive applied, ensure proper VSWR or chance of oscillation may occur before Vsup is reached.

Bias Current:

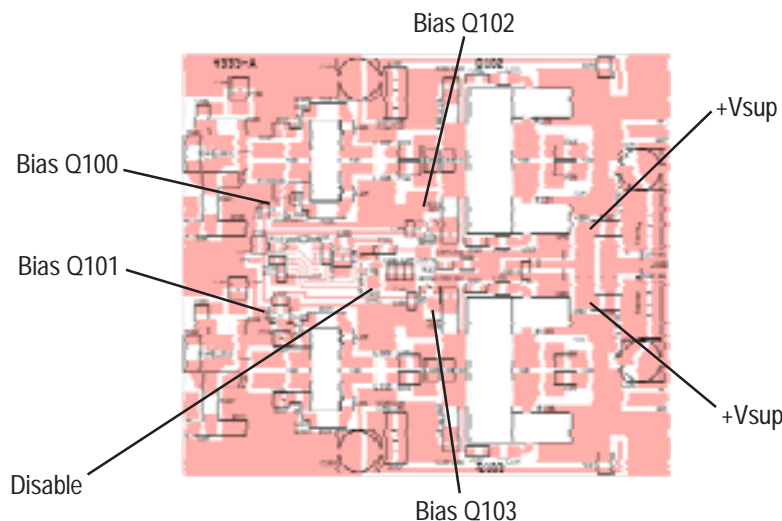
Bias Current is controlled via temperature compensated bias system that uses a hermetically sealed glass thermistor as reference. If excessive air is directed above the amplifier such that the thermistor is cooled below the temperature of the baseplate, this circuitry may not perform properly. Bias has been pre-set at the factory per specifications page. This bias point has been selected to offer the optimum balance between IMD performance, efficiency, and gain. If this bias point is changed, take great care not to exceed the bias listed on page 2 - Absolute Maximum Ratings.

Fault condition - Bad VSWR:

In the case of an output fault, the amplifier may draw excessive current. Care should be taken to current limit the power supply to prevent damage to the amplifier. Disabling the amplifier through DISABLE will prevent damage to the amplifier.

Miscellaneous:

Placing noisy analog or digital systems, such as additional control circuitry, directly over the top of transistor or RF path can cause improper operation in the form of noise or distortion in the output. Care should be taken to locate these components where they will not cause interference or properly shield these components.



Ordering Information:

Order Code	Description	DRFT Reference
P250-100-500-25	250W VHF/UHF broadband Communications Pallet Amplifier	4379
PAB250-100-500-25	250W VHF/UHF broadband Communications Module	4472

Options

-A11	SMA Female Connectors In / Out	0201
-A12	Heat Sink Option	0202
-A13	Heat Sink Option with DC Fan, pre wired	0203
-A14	Ruggedized for vibration	0204
-A15	Wire harness, 1' length, 10 wires for pallet amplifier only (NON-FM)	0205
-A16	Wire harness, customer specified length for pallet amplifier only	0206
-T2	Extended Burn In	0271
-T3	Extended Data Collection	0272

Standard Pallet Options:

SMA Female Connectors, Input and Output. Stainless Body, Gold Center pin, 4-hole SMA bolted to pallet amplifier edge through bottom two holes located at amplifiers RF IN and RF OUT locations. All stainless steel hardware.

Enclosure- all aluminum machined enclosure available for most pallet amplifiers. Alodined aluminum, alloy 6061-T6. SMA Female input and output RF connectors. Supply voltage and ground through solder / feedthrough connections. Module must be bolted to appropriate heatsink.

Heat Sink - aluminum extruded heat sink, black anodized. Pallet amplifier or module will be bolted to heatsink. Customer will be required to provide adequate airflow.

Heat sink with fan - aluminum extruded heat sink as above, with included fan bolted to push air through the heat sink. Depending on heat requirements, a second fan may also be provided on the output of the unit.

Ruggedized - all screws have threadlocking compound applied, and all flying components are staked and attached to base. Designed to withstand MIL-STD-810E 514.4 Category 8.

Power Connector - a 10 pin molex connector is used on all standard pallet amplifiers to supply +Vsup and Ground connections, as well as hi-side current shunts for current monitoring. Delta RF offers the mating connector with 1' wires - Red (Vsup), Black (Ground), Yellow (Current monitor). All wires are 18 gauge teflon insulated wires. Customer may optionally specify wire length and wire color.

Testing Options:

Standard - includes power test and brief burn - in under laboratory conditions. Printed test report gives graph of Gain and Input Return Loss at rated P1dB and Voltage Conditions. Report shows pass/fail criteria. All amplifiers include this test.

Extended burn in - 8-hour burn in at P1dB with standard test run at completion. Unit is monitored during test and any discrepancy reported. Standard test data is included.

Extended data collection - Standard data is run and included. Detailed data is taken point by point giving the customer 25 - 70 frequency points, depending on the amplifier model. For each frequency point, data is generated to include gain, input power, input return loss, current, second harmonic, third harmonic, efficiency, audio distortion.

Other tests available - Vibration, Temp cycling, Shock. Please inquire.

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