

Broadband Pallet Amplifier

IGNP0110UM100 is a dual Gallium Nitride (GaN) high electron mobility transistor (HEMT) pallet amplifier. It is designed for Broadband applications operating over the 100MHz – 1GHz instantaneous frequency band. Under CW conditions it supplies a minimum of 100 watts of output power with 12dB gain. Specified operation is with Class AB bias. It is also operable under a wide range of pulse widths and duty factors. It operates with spectral purity into all phases of 3:1 output load VSWR. All units are 100% screened for large signal RF parameters in a 50-Ohm environment.

GaN on Silicon Carbide HEMT

- High Power Gain
- Excellent Thermal Stability
- Gold Metal

Broadband Performance

- 100 MHz to 1 GHz

Push-Pull Amplifier Configuration

CW or Pulsed Operation

Class AB Bias

Depletion Mode Device

- Negative Gate Voltage to Bias
- Bias Sequencing Required
- See App Note to Prevent Damage

Gold Metal System

- Maximum Reliability

Pallet Carrier

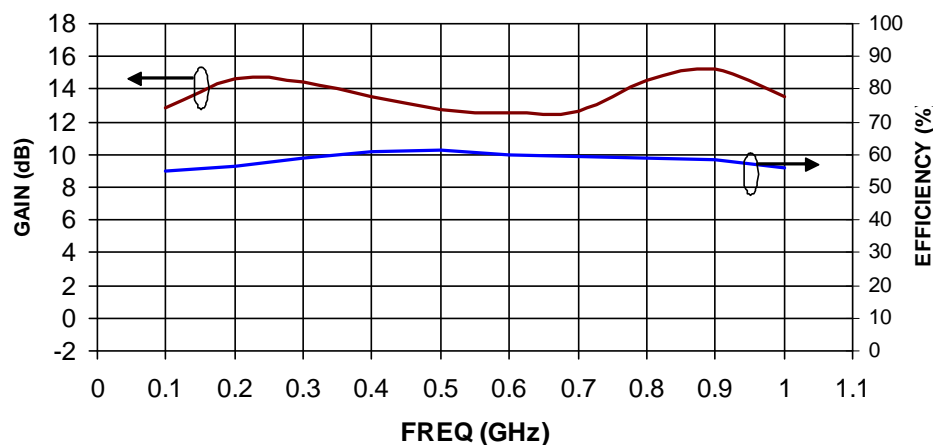
- Nickel-Plated Aluminum

RF Test Fixture

- Broadband
- 100% RF Screening
- No External Tuning Allowed

BROADBAND RF DATA

Output Power = 100W CW
Vdd = 28V, Idq = 480mA



MAXIMUM RATINGS

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
BD	Drain-Source Voltage	V_{DS}	--	60	V	--
BD	Gate-Source Voltage	V_{GS}	-10	0	V	--
BD	Storage Temperature Range	T_{STG}	-55	+150	°C	--
BD	Operating Junction Temperature Range	T_J	-55	+200	°C	--
Note	Screen 'BD' = parameter qualified By Design.					

THERMAL CHARACTERISTICS

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
BD	Thermal Resistance	$R_{TH(JC)}$	--	0.50	°C/W	$V_{DD}=V1, I_{DQ}=I_{DQ1}, PW=PW1, DF=DF1, T_F=25\pm5^\circ C, P_{OUT}=100W$
Note	Screen 'BD' = parameter qualified By Design.					

PROCESSING SPECIFICATIONS

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	DC Wafer Probe	--	--	--	--	Per Integra specification.
Q1	Wafer DC and RF Qualification	--	--	--	--	Per Integra specification.
LM	Wire Bond Strength	--	--	--	--	Line monitor per Integra specification.
100%	Pre-cap visual inspection	--	--	--	--	Per Integra specification
100%	Gross leak test	--	--	--	--	MIL-STD-750D, Method 1071.6, Test Condition C
Note	Screen 'Q1' = parameter is qualified by assembly and test of 3 pieces minimum per wafer.					
Note	Screen 'LM' = parameter is qualified by assembly line monitor.					

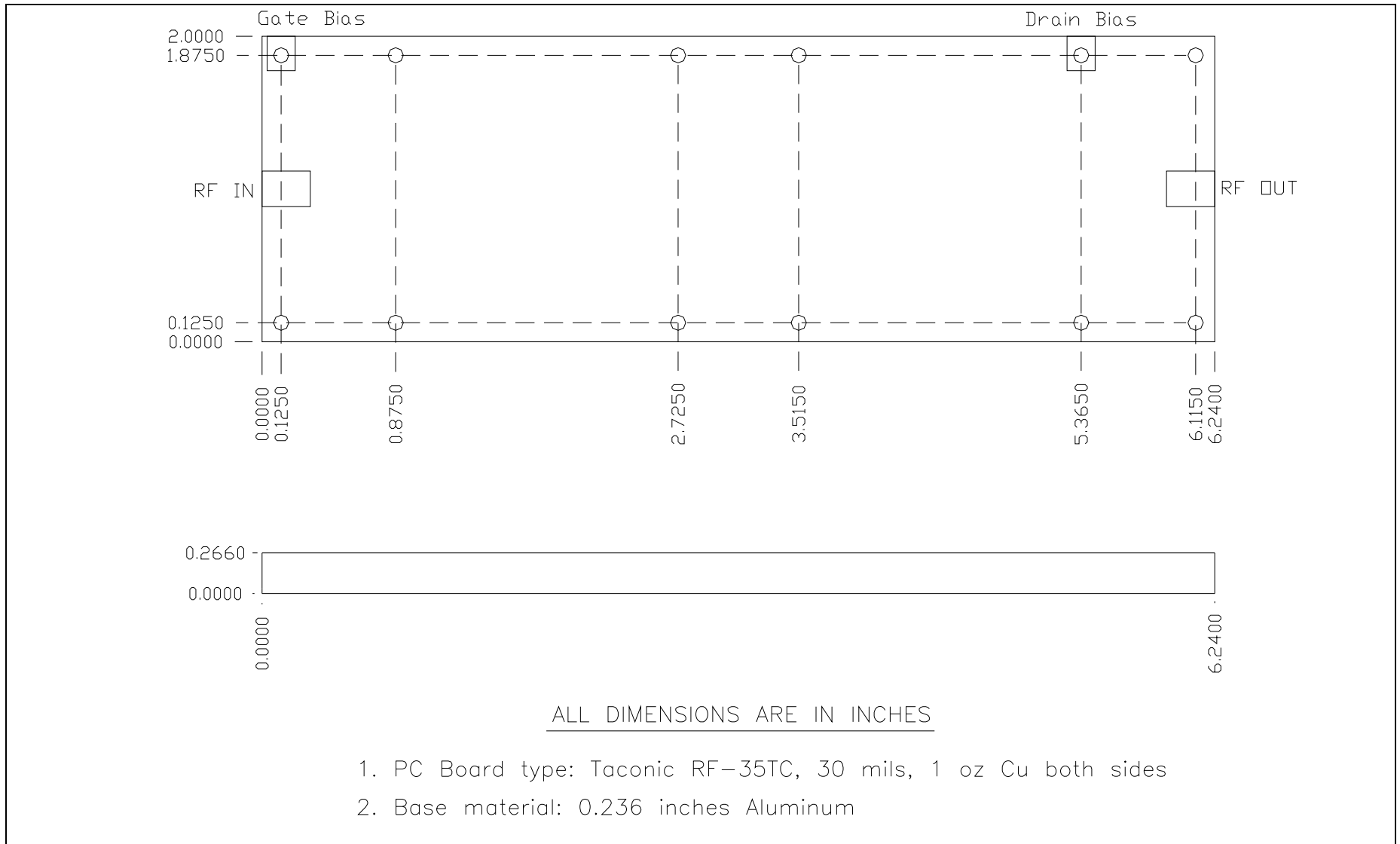
DC ELECTRICAL CHARACTERISTICS

Screen	Parameter	Symbol	Min	Typ	Max	Units	Test Conditions
100%	Drain Leakage Current	I_{D-OFF}	--	0.6	--	mA	$V_{GS} = -8V, V_{DS} = 28V, T_F = 25\pm5^\circ C, \text{Per Side}$
100%	Gate Threshold Voltage	V_{GS-TH}	--	-3.5	--	V	$V_{DS} = 5V, I_D = 480mA, T_F = 25\pm5^\circ C, \text{Per Side}$

RF ELECTRICAL CHARACTERISTICS

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	Input Return Loss	RL	-18	-5	dB	$V_{DD}=V1, I_{DQ}=I_{DQ1}, PW=PW1, DF=DF1, T_F=T_{F1}, P_{OUT}=P_{OUT1}, F=F1, F2, F3.$
100%	Output Power	P_{IN}	6.3	--	W	$V_{DD}=V1, I_{DQ}=I_{DQ1}, PW=PW1, DF=DF1, T_F=T_{F1}, P_{OUT}=P_{OUT1}, F=F1, F2, F3.$
100%	Drain Efficiency	N_d	50	75	%	$V_{DD}=V1, I_{DQ}=I_{DQ1}, PW=PW1, DF=DF1, T_F=T_{F1}, P_{OUT}=P_{OUT1}, F=F1, F2, F3.$
100%	Power Gain	G_p	12	16	dB	$V_{DD}=V1, I_{DQ}=I_{DQ1}, PW=PW1, DF=DF1, T_F=T_{F1}, P_{OUT}=P_{OUT1}, F=F1, F2, F3.$
100%	3:1 Load Mismatch Stability	VSWR-S	S	--	--	$V_{DD}=V1, I_{DQ}=I_{DQ1}, PW=PW1, DF=DF1, T_F=T_{F1}, P_{OUT}=P_{OUT1}, F=F1, F2, F3.$ Rotate 3:1 output VSWR through 360° phase. No oscillatory or pulse break-up characteristics allowed on detected output pulse. All non-harmonically related signals must be at least -65 dBc.
Note 1	$V1 = 28V; I_{DQ1} = 480mA; PW1 = CW; DF1 = CW$					
Note 2	Output Power Test Levels: $P_{OUT1} = 100W$					
Note 3	Test Frequencies: $F1 = 0.1 \text{ GHz}, F2 = 0.6 \text{ GHz}, F3 = 1.0 \text{ GHz}.$					
Note 4	$T_{F1} = 25\pm5^\circ\text{C} =$ Device flange temperature.					
Note 5	Screen 'BD' = parameter qualified By Design.					

PALLET DIMENSIONAL OUTLINE DRAWING



CONTACT FACTORY FOR RF TEST FIXTURE CAD DRAWING WITH CIRCUIT DIMENSIONS AND COMPONENT LIST

DEFINITIONS

Data Sheet Status	
Proposed Specification	This data sheet contains proposed specifications.
Preliminary Specification	This data sheet contains specifications based on preliminary measurements and data.
Product Specification	This data sheet contains final product specifications.
Maximum Ratings	
Stress above one or more of the maximum ratings may cause permanent damage to the device. These are maximum ratings only operation of the device at these or at any other conditions above those given in the characteristics sections of the specification is not implied. Exposure to maximum values for extended periods of time may affect device reliability.	

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