

136-174M,30W, 12.5V, 2 stage for Mobile radio

Description

IA30N1317 is a rugged 30W RF LDMOS Amplifier Module for 12.5V mobile radios that operate in the 136 to 174MHz range. The battery can be connected directly to the drain of the modules. This module is designed for non-linear modulation, but may also be used for linear modulation by setting the drain quiescent current with the gate voltage and controlling the output power with the input power.



Features

- Rugged LDMOS technology
- $P_{out} > 30W$, $Eff > 50\%$ @ $V_{ds} = 12.5V$, $V_{gs} = 5V$, $P_{in} = 50mW$
- Broadband Frequency Range: 136-174MHz
- Metal shielding structure
- Module Size: 67 x 19.4 x 9.9 mm
- DC block capacitor integrated
- Linear and non linear operation supported

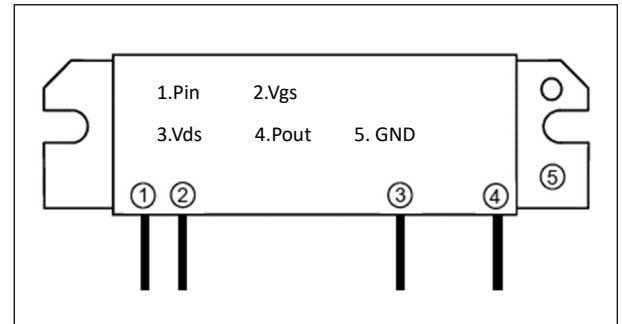


Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DS}	+65	Vdc
Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+24	Vdc
Storage Temperature Range	T_{stg}	-65 to +150	°C
Case Operating Temperature	T_c	+150	°C
Operating Junction Temperature	T_J	+225	°C

Table 2. ELECTRICAL CHARACTERISTICS ($T_{case} = +25^{\circ}C$, $Z_G = Z_L = 50\Omega$, unless otherwise specified)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
f	Frequency Range	-	136	-	174	MHz
P_{out}	Output Power	$V_{DD} = 12.5V$, $V_{GS} = 5V$, $P_{in} = 50mW$	30	-	-	W
η	Total Efficiency		50	-	-	%
$2f_0$	2nd Harmonic		-	-	-20	dBc
$3f_0$	3rd Harmonic		-	-	-30	dBc
in	Input VSWR		-	-	4:1	-
I_{DD}	Leakage Current	$V_{DD} = 17V$, $V_{GS} = 0V$, $P_{in} = 0W$	-	-	2	mA
-	Load VSWR Tolerance	$V_{DD} = 15.2V$, $P_{in} = 50mW$, $P_{out} = 30W$ (V_{GS} adj.), Load VSWR = 20:1 (All phase)	No degradation or destroy			-
-	Stability	$V_{DD} = 10/12.5/15.2V$, $P_{in} = 25/50/70mW$, $P_{out} \leq 40W$ (V_{GS} control), Load VSWR = 3:1 (All phase)	No parasitic oscillation more than -60dBc			-

Figure 1: Network analyzer Output S11/S21

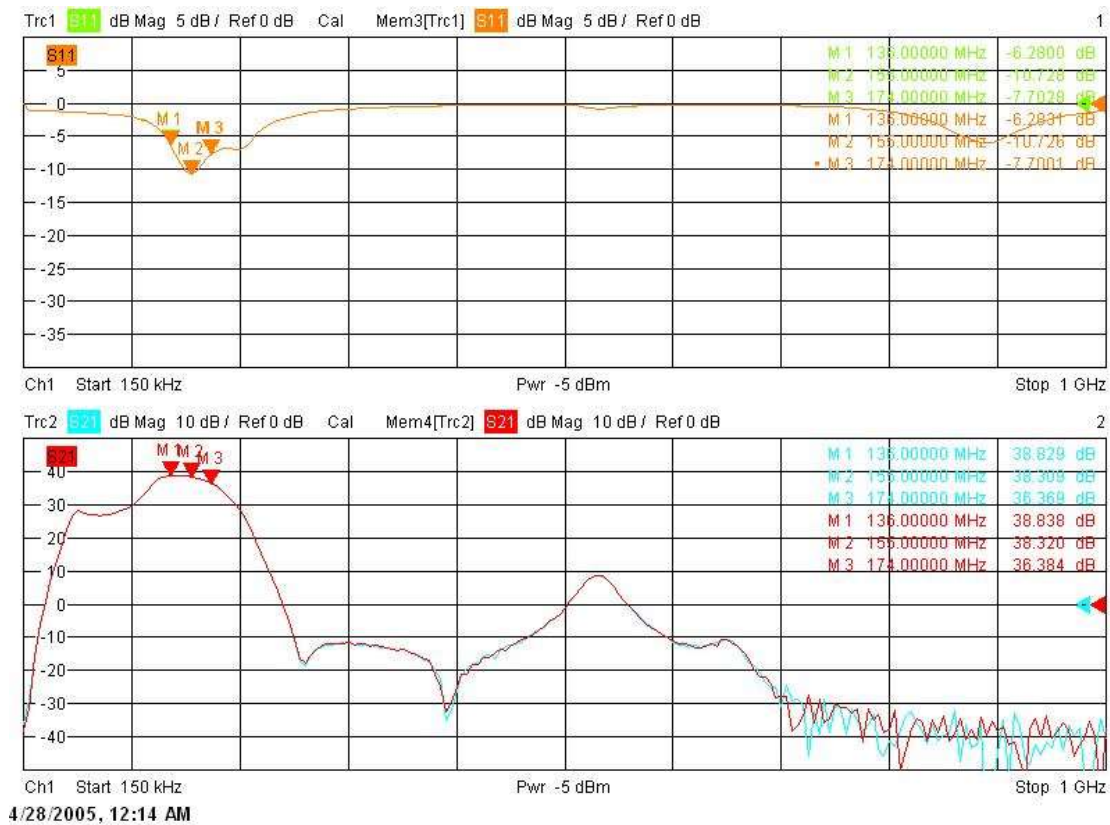
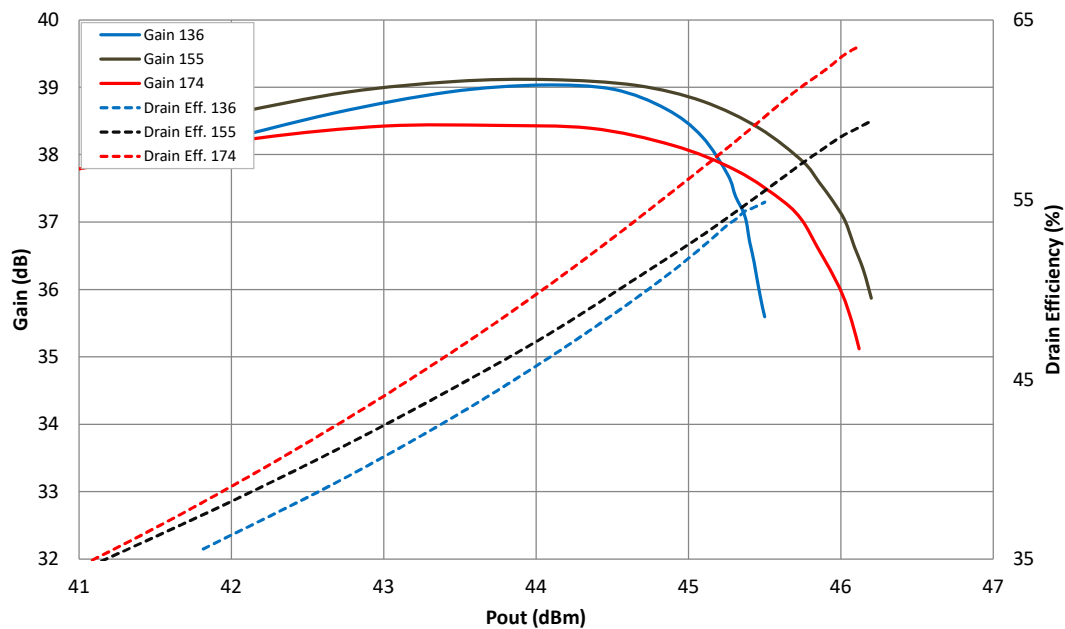


Figure 2: CW Power gain, Efficiency as function of output Power

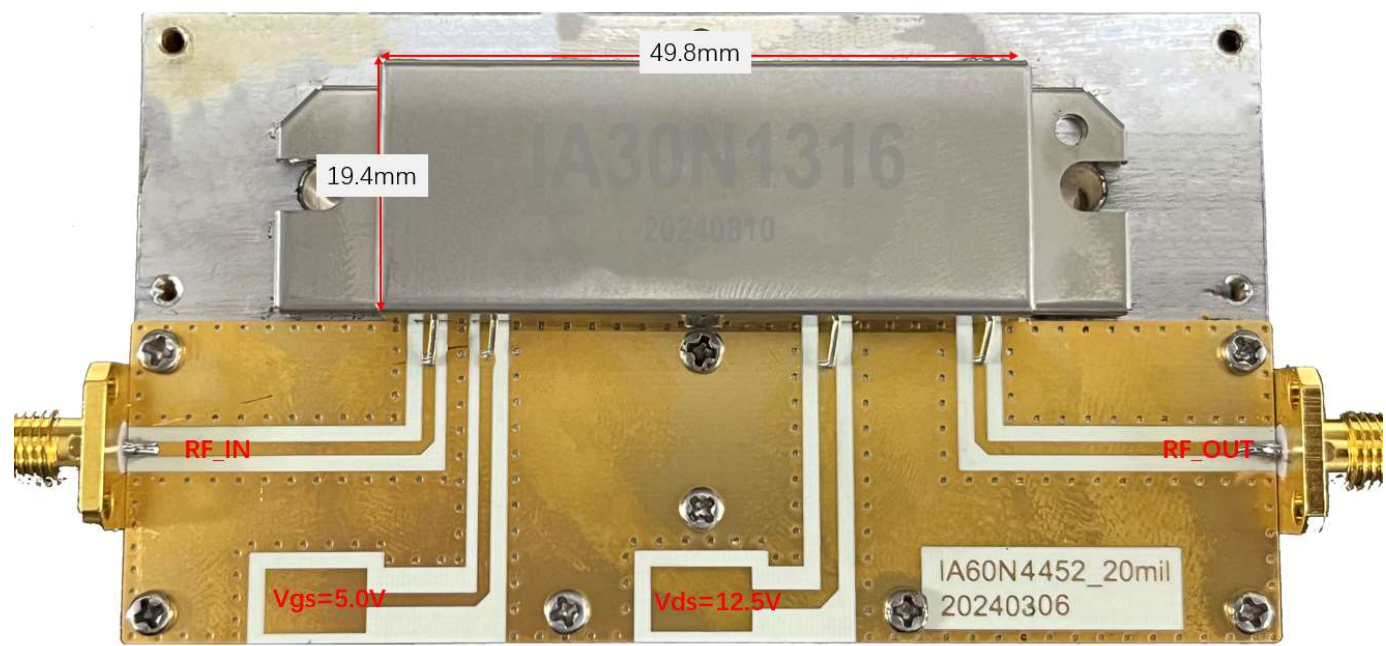


IA30N1317 PA module

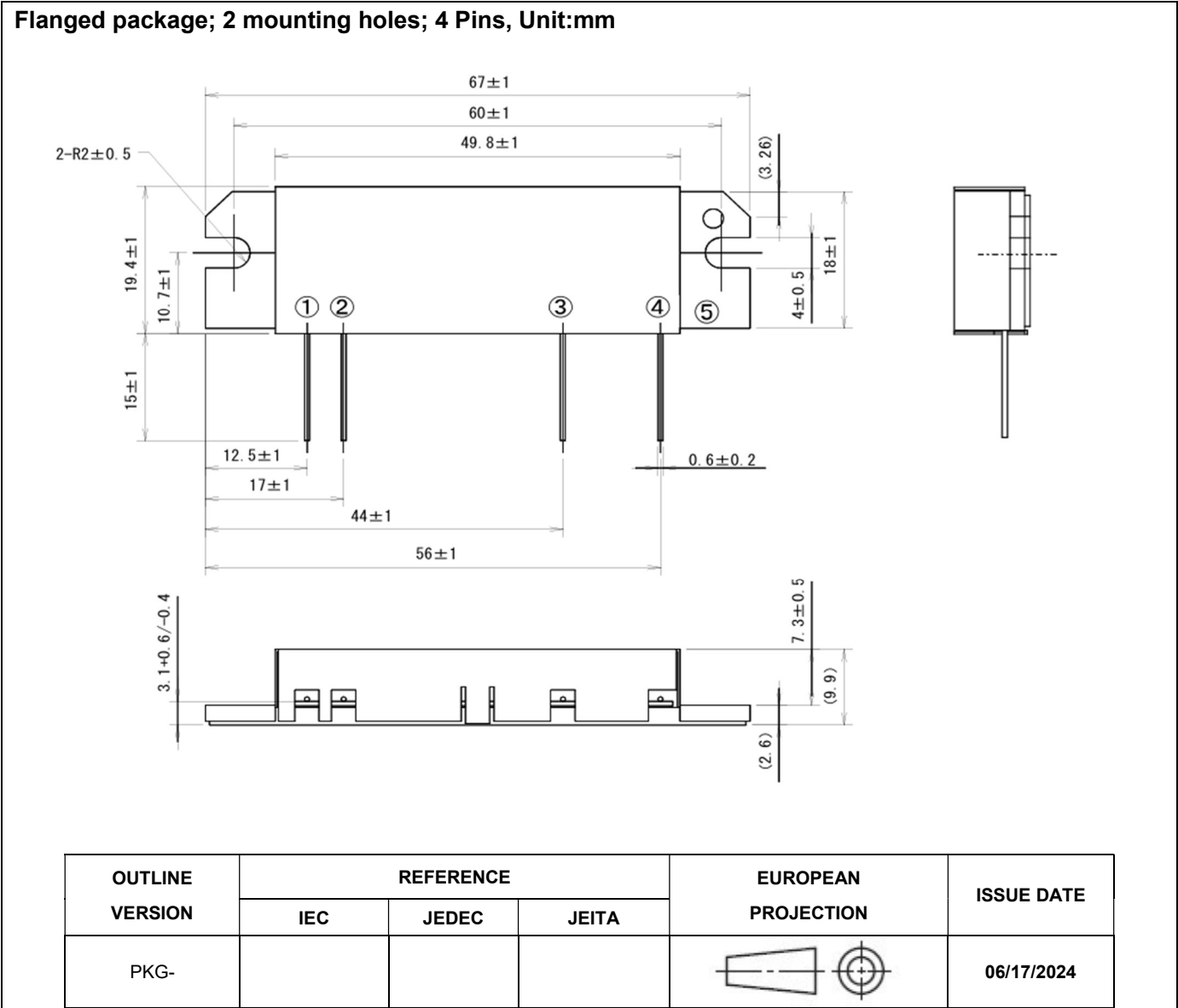
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Product Datasheet V1.0

$V_{DS}=12.5V$, $V_{gs}=5.0V$, $I_{dq}=700mA$					
Freq (MHz)	P1(dBm)	P1 Gain (dB)	P3dB(dBm)	P3dB(W)	EFF (%)
136	45.16	38.0	45.46	35.2	54.7
155	45.62	38.1	46.17	41.4	59.2
174	45.53	37.5	46.08	40.6	63.4

Figure 3: Test circuit



Package Outline



Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2024/8/12	Rev 1.0	Product Datasheet Creation

Application data based on HJ-24-14

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