



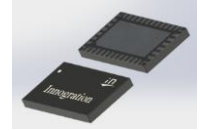
10W,12V Matched RF LDMOS Amplifier

IMEN1415-10

Description

The IMEN1415-10 is a 10-watt, highly rugged, input fully matched and output partially matched LDMOS FET, designed for multiple applications within 1.4-1.5GHz. It can be used in linear or saturated power amplifier, for CW and pulsed signal, and any modulation format in highly compact PCB.

It is also featured by its lower cost of plastic open cavity for surface mount on PCB through vias



- Typical Performance in compact PCB (On Innegration fixture with device soldered).

VDS= 12V, Vpeak=2.80V, IDQ=200mA CW and pulse					
Freq (MHz)	P-1(dBm)	P-1Gain (dB)	P-3(dBm)	P-3(W)	EFF (%)
1300	39.61	12.79	40.59	11.5	39.6
1350	38.57	13.64	40.17	10.4	39.6
1400	39.26	15.1	41.25	13.4	50.3
1450	38.39	15.9	40.83	12.1	54.6
1500	37.89	15.8	40.28	10.7	59.0
1550	36.38	14.92	38.79	7.6	53.8
1600	35.97	13.72	38.28	6.7	51.5

Features

- High Efficiency and Linear Gain Operations
- Integrated ESD Protection
- Excellent thermal stability, low HCI drift
- Large Positive and Negative Gate/Source Voltage Range for Improved Class C Operation
- Pb-free, RoHS-compliant

Suitable Applications

- GPS/Beidou power amplifier
- 1.4GHz image transmission

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V _{DSS}	+40	Vdc
Gate--Source Voltage	V _{GS}	-10 to +10	Vdc
Operating Voltage	V _{DD}	+13.6	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. Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case T _c = 85°C, T _j =200°C, DC test	R _{θJC}	2	°C/W

Table 3. ESD Protection Characteristics



Test Methodology	Class
Human Body Model (per JESD22--A114)	Class 2

Table 4. Electrical Characteristics (TA = 25 °C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics					
Drain-Source Voltage $V_{GS}=0, I_{DS}=100\mu A$	$V_{(BR)DSS}$		70		V
Zero Gate Voltage Drain Leakage Current ($V_{DS} = 12.5V, V_{GS} = 0V$)	I_{DSS}	—	—	1	μA
Gate--Source Leakage Current ($V_{GS} = 9V, V_{DS} = 0V$)	I_{GSS}	—	—	1	μA
Gate Threshold Voltage ($V_{DS} = 12.5V, I_D = 600\mu A$)	$V_{GS(th)}$	—	2	—	V
Gate Quiescent Voltage ($V_{DD} = 12.5V, I_D = 100mA$, Measured in Functional Test)	$V_{GS(Q)}$	—	2.7	—	V

Load Mismatch (In Innegration Test Fixture, 50 ohm system): $V_{DD} = 12.5Vdc, I_{DQ} = 100mA, f = 1500MHz$

VSWR 10:1 at 10W pulse CW Output Power	No Device Degradation
--	-----------------------

Figure 1: Pin Definition(Top View)



Pin No.	Symbol	Description
2,5,7,12,13,18,20,23,25,30,31,36	GND	DC/RF Ground
1	Vgs	
6	RF in	
21,22	Vds/RF out	
Others	NC	Not connected
Package Base	GND	DC/RF Ground.

Reference Circuit of Test Fixture Assembly Diagram

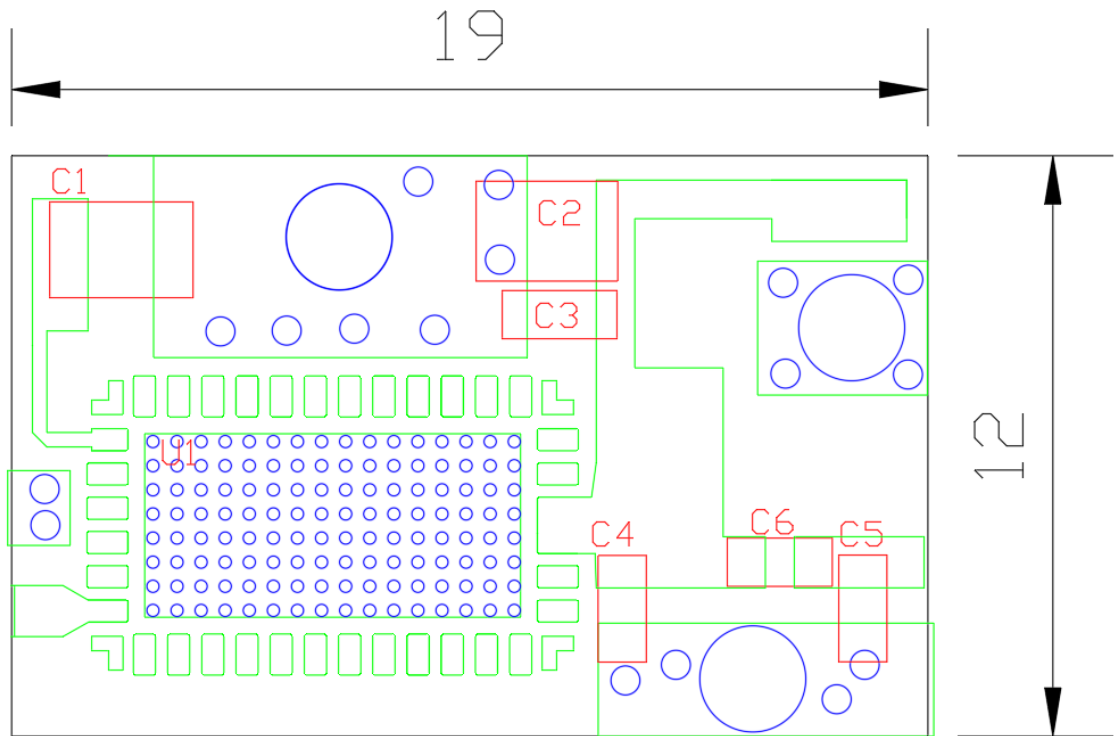


Figure 2. Test Circuit Component Layout

Table 5. Test Circuit Component Designations and Values

Component	Value	Footprint
U1	IMEN1415-10	10.0*6.0mm
C1,C2	10uf	1020
C3,C6	30pF	0603
C4,C5	3.9pF	0603

Typical performance

Figure 3: Power gain efficiency as function of Pout

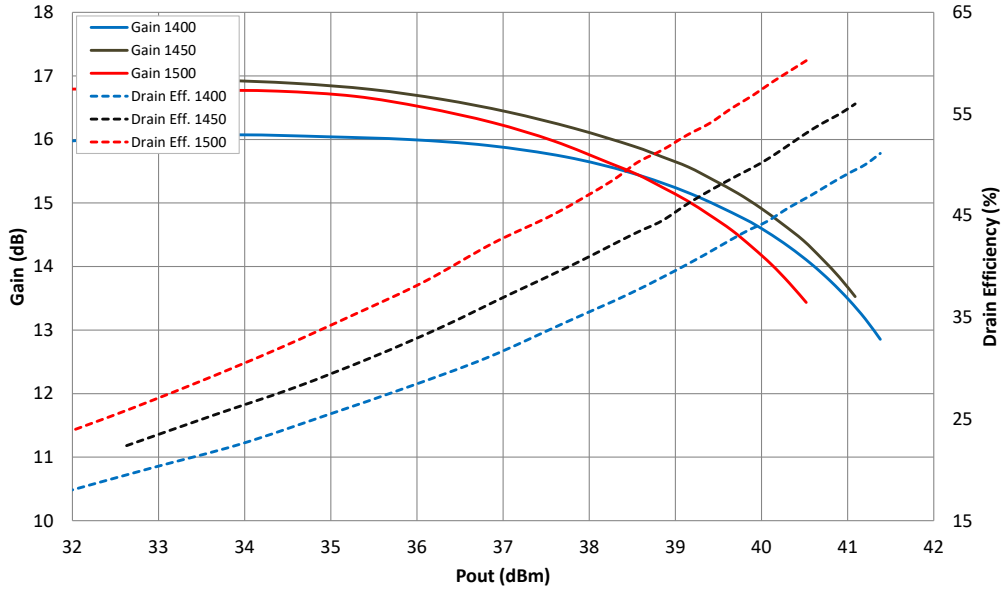
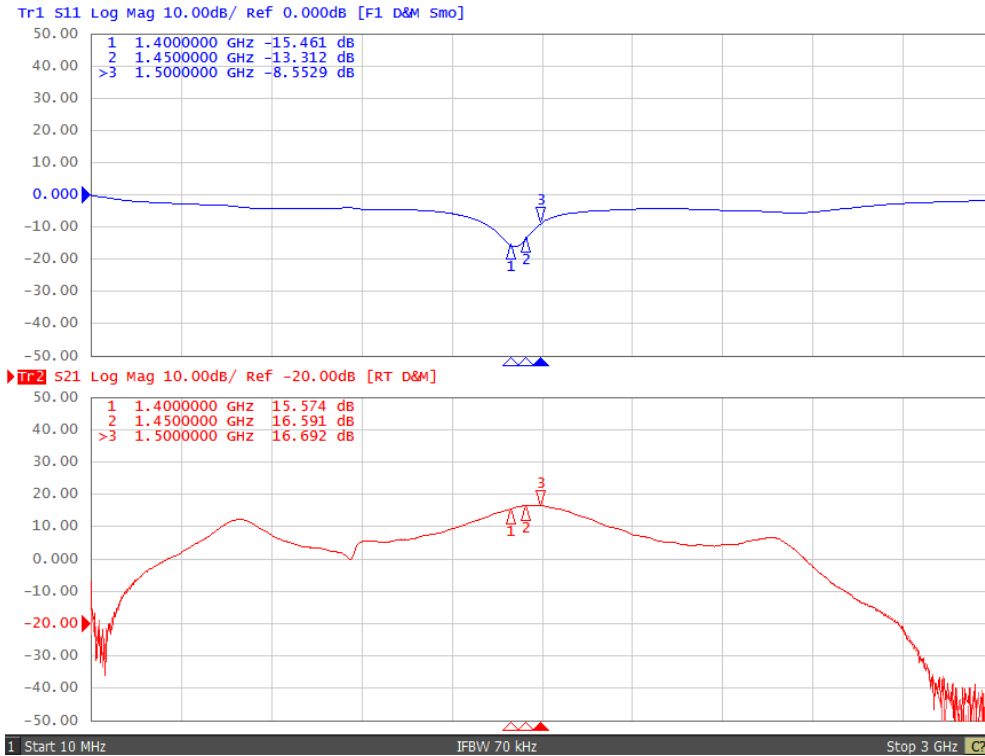


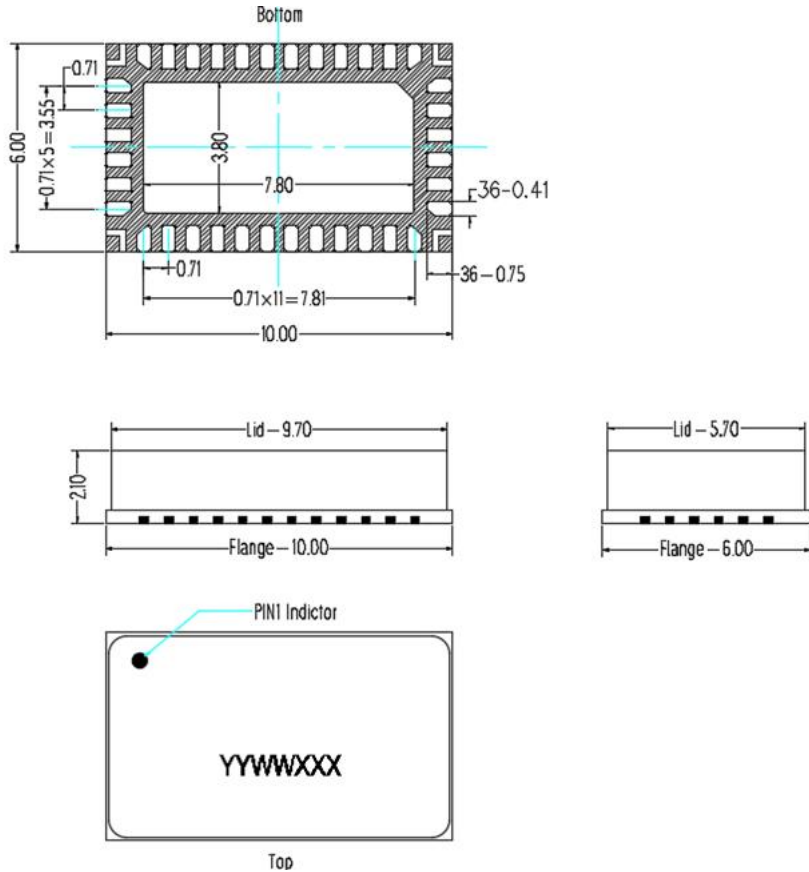
Figure 4: Network analyzer out Pout S11/S21





Package Dimensions

10*6 Plastic Package



Notes:

1. All dimensions are in mm;
2. The tolerances unless specified are ± 0.2 mm.

Revision history

Table 7. Document revision history

Date	Revision	Datasheet Status
2025/8/22	Rev 1.0	Preliminary Datasheet

Application data based on HJ-25-11

Disclaimers

Specifications are subject to change without notice. Innegration believes the information contained within this data sheet to be accurate and reliable. However, no responsibility is assumed by Innegration for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Innegration. Innegration makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose. "Typical" parameters are the average values expected by Innegration in large quantities and are provided for information purposes only. These values can and do vary in different applications and actual performance can vary over time. All operating parameters should be validated by customer's technical experts for each application. Innegration products are not designed, intended or authorized for use as components in applications intended for surgical implant into the body or to support or sustain life, in applications in which the failure of the Innegration product could result in personal injury or death or in applications for planning, construction, maintenance or direct operation of a nuclear facility. For any concerns or questions related to terms or conditions, pls check with Innegration and authorized distributors

Copyright © by Innegration (Suzhou) Co.,Ltd.