



10-12GHz, 20W, GaN Fully matched PA iModule



Description

The XMAH1A1C-20F is a 20-watt, single stage integrated Power Amplifier Module, designed For application with frequencies from 10-12GHz.

The module is 50 Ω input/output matched and requires minimal external components. The total size of die and its matching circuit mounted on a 10*6mm flange with 0.5mm thickness

iModule is a trademark of Innegration, meaning unshielded bare die and its matching attached on flange , to be integrated into customer’s board, additional wire bonding required.

$V_{ds}=28V, V_{gs}=-2.43V, I_{dq}=40mA$					
Pulsed CW and CW					
Freq(MHz)	P-1(dBm)	P-1Gain(dB)	P-3(dBm)	P-3(W)	EFF(%)
10000	41.59	9.0	43.07	20.3	45.1
10200	41.56	8.5	43.02	20.1	42.1
10400	41.77	8.0	43.08	20.3	39.4
10600	41.88	8.1	43.38	21.8	37.6
10800	42.31	8.2	43.92	24.7	40.6
11000	42.44	8.2	43.96	24.9	44.5
11200	42.16	8.8	43.73	23.6	43.1
11400	42.20	8.8	43.86	24.4	43.2
11600	42.06	8.6	43.77	23.8	44.1
11800	41.99	8.1	43.70	23.5	43.4
12000	42.09	8.3	43.73	23.6	43.5

Product Features

- Operating Frequency Range: 10-12GHz
- Operating Drain Voltage(Recommended): +28V (Up to 32V)
- 50 Ω Input/Output (External DC block capacitor needed)
- $P_{sat} \geq 20W$ (CW)
- Small signal gain:>9dB, Power gain:>6dB
- Minimum P_{sat} efficiency:>35%
- **10*6*0.5mm flange**
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

Applications

- Power Amplifiers within X band
- Test Instrumentation
- EMC Amplifier Drivers

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DS}	150	Vdc
Gate--Source Voltage	V_{GS}	-10 to +2	Vdc
Operating Voltage	V_{DD}	+32	Vdc

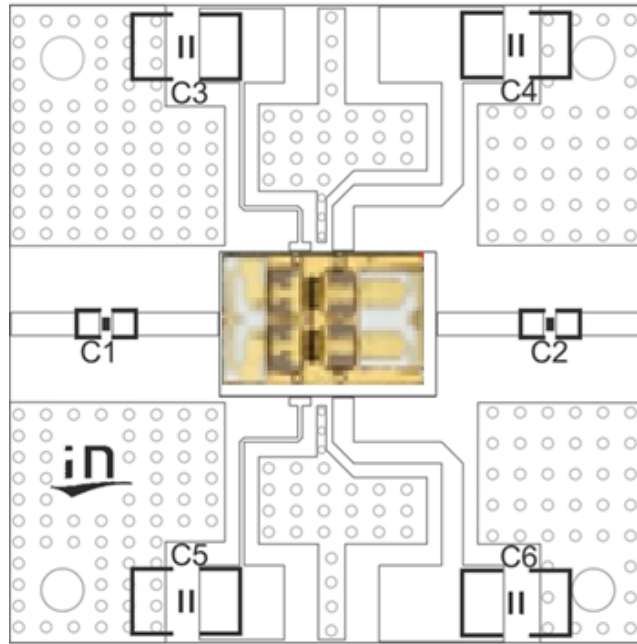


Storage Temperature Range	T _{stg}	-65 to +150	°C
Case Operating Temperature	T _c	+150	°C
Operating Junction Temperature	T _j	+225	°C

Table 2. Thermal Characteristics

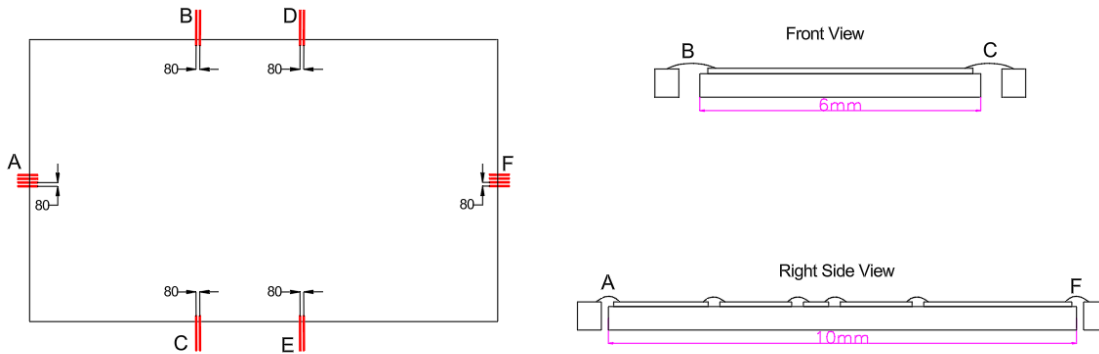
Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case T _c = 25°C, P _{out} =20W, FEA	R _{θJC}	3	°C/W

Typical application circuit



Component	Value	Description
U1	XMAH1A1C-20F	PA 10*6mm
C1、C5	1.1pF	0603
C2、C3、C4、C6	10uF	1206

External wire bonding connection diagram



Wire configuration					
Name	Span (um)	Height (um)	Pitch (um)	Number	WB
A	450	150	80	4	
B	750	150	80	2	
C	750	150	80	2	
D	750	150	80	2	
E	750	150	80	2	
F	450	150	80	4	
			Total NO.	16	

Revision history

Table 6. Document revision history

Date	Revision	Datasheet Status
2026/3/16	Rev 1.0	Advanced Datasheet

Application data based on HJ-26-03

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