WP282P20020MH

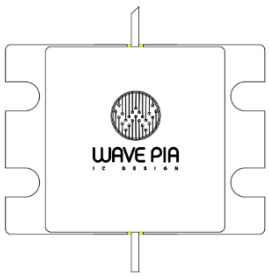
Matched GaN HEMT

Product Features

- 50Ω Matched GaN HEMT for 2.1 to 2.3GHz
- 18dB Small Signal Gain
- 20W Typical P_{SAT}
- 50% Efficiency at P_{SAT}
- 28V Operation

Applications

- Broadband Amplifiers
- Cellular Infrastructure
- Test Instrumentation
- Radar Application



Package Type: One-PKG

Absolute Maximum Rating

Parameter	Symbol	Rating	Units	Conditions
Drain-Source Voltage	V_{DSS}	160	Volts	25˚C
Gate-to-Source Voltage[3]	V_{GS}	-10, +2	Volts	25˚C
Storage Temperature[3]	T_{STG}	-65, +150	˚C	
Operating Junction Temperature[1,3]	T_J	225	˚C	
Maximum Forward Gate Current[3]	I_{GMAX}	30	mA	25˚C
Maximum Drain Current[2]	I_{DMAX}	1	A	Id @ Vd = 10V, Vg = 1V
Soldering Temperature[3]	T_S	245	˚C	

1. Continuous use at maximum temperature will affect MTTF.
2. Current limit for long term, reliable operation.
3. After additional updates.

DC Characteristics[1] (TA=25˚C)

Parameter	Symbol	MIN	TYP	MAX	Units	Conditions
Gate Threshold Voltage	$V_{GS(th)}$		-3.0		V_{DC}	VDS = 28V, ID = 1mA
Gate Quiescent Voltage	$V_{GS(Q)}$		-2.22		V_{DC}	VDS = 28V, ID = 150mA
Saturated Drain Current[1]	I_{DS}		1000		mA/mm	VDS = 10V, VGS = 1V
Drain-Source Breakdown Voltage	V_{BR}	160			V_{DC}	ID = 1mA/mm

1. Scaled from PCM data.

RF Characteristics (TA=25˚C, F0 = 2.2GHz, unless otherwise noted)

Parameter	Symbol	MIN	TYP	MAX	Units	Conditions
P_{SAT} Gain	G_{PSAT}		14.5		dB	VDD = 28V, IDQ = 150mA, CW
Saturated Output Power	P_{SAT}		44.3		dBm	VDD = 28V, IDQ = 150mA, CW
Drain Efficiency[1]	n		54.0		%	VDD = 28V, IDQ = 150mA, CW

1. Drain Efficiency = P_{OUT} / P_{DC}

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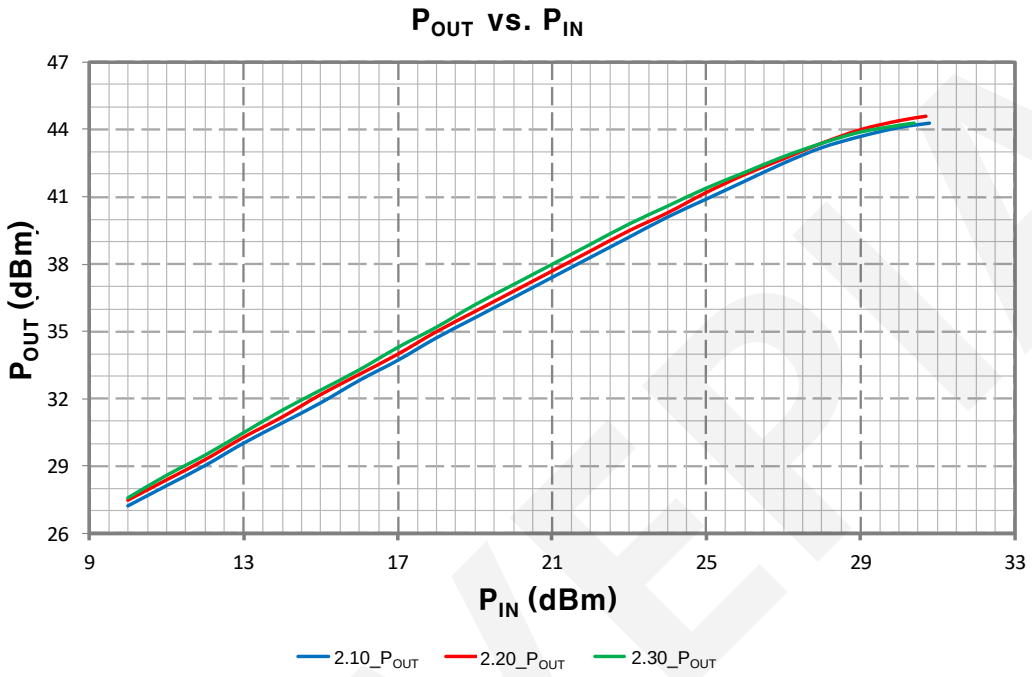
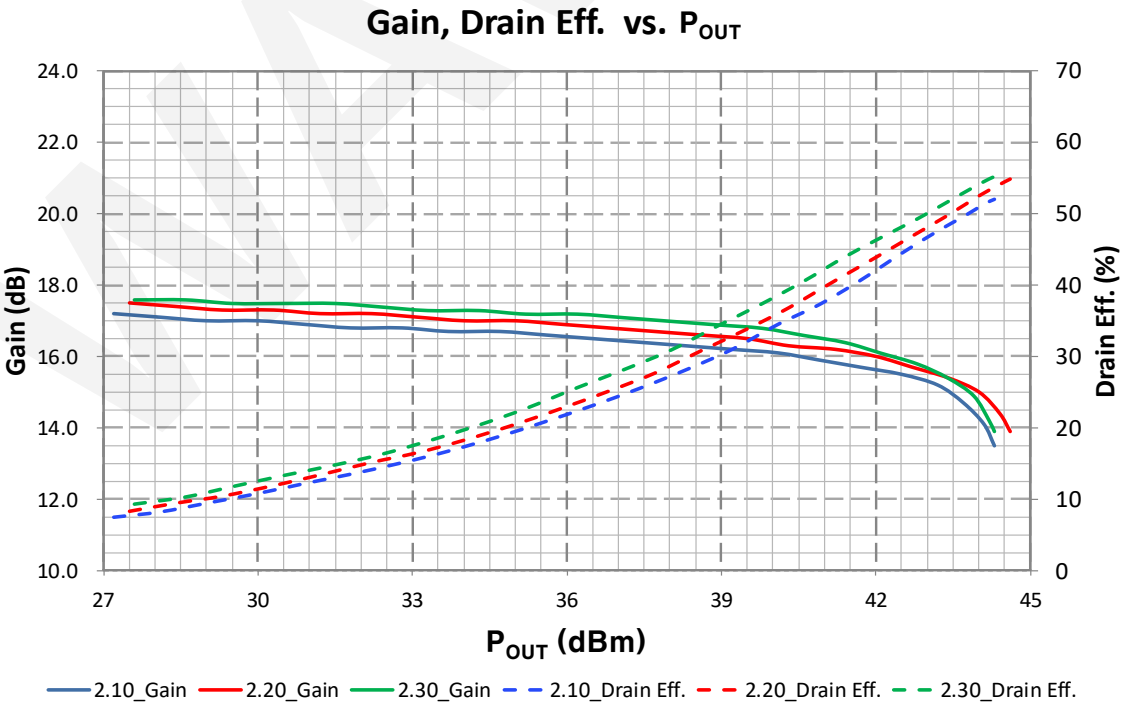
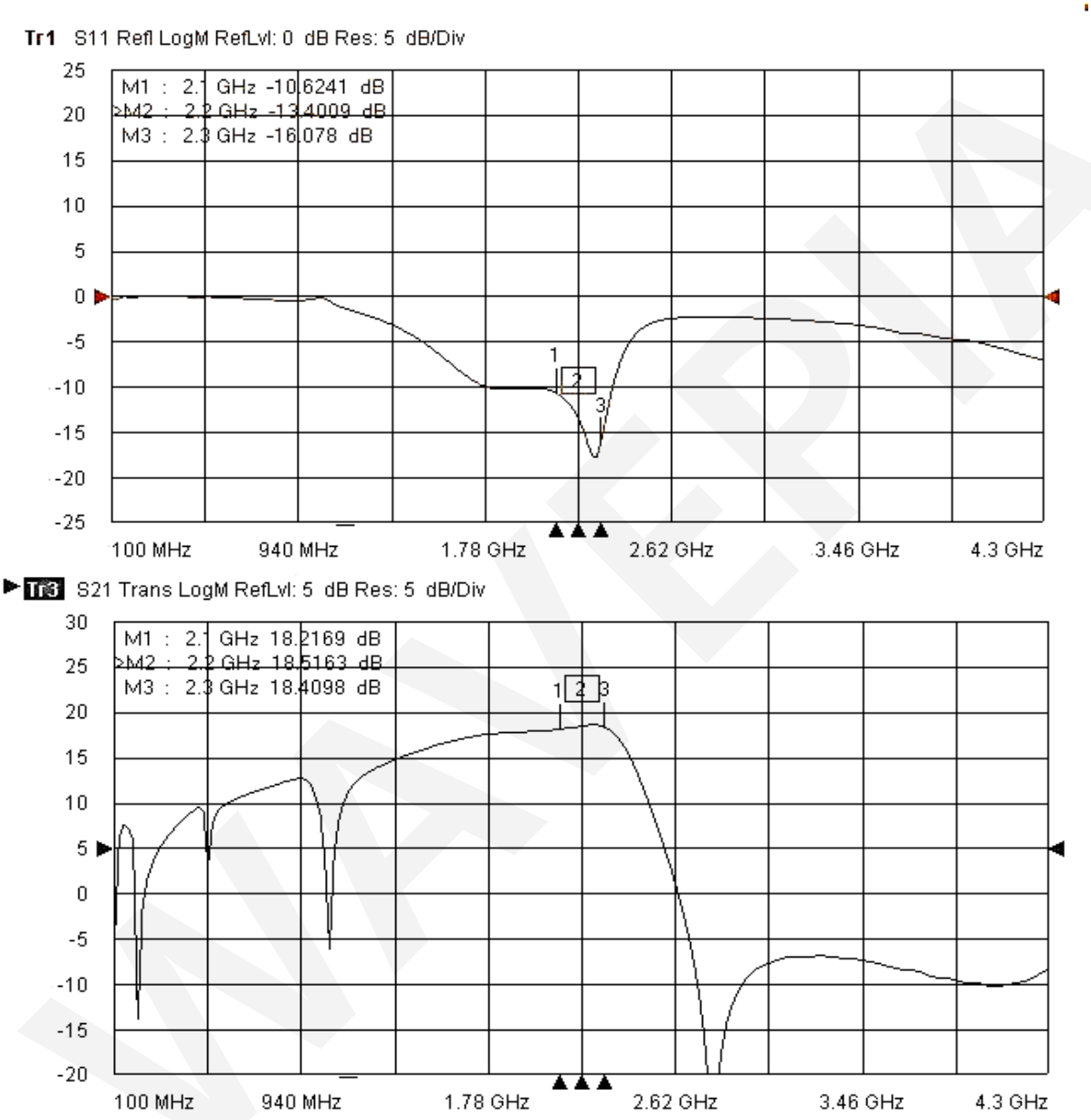
http://www.wavepia.com

CW Signal Performance (TA=25℃, Measured in the test board amplifier circuit)
VDD = 28V, IDQ = 150mA



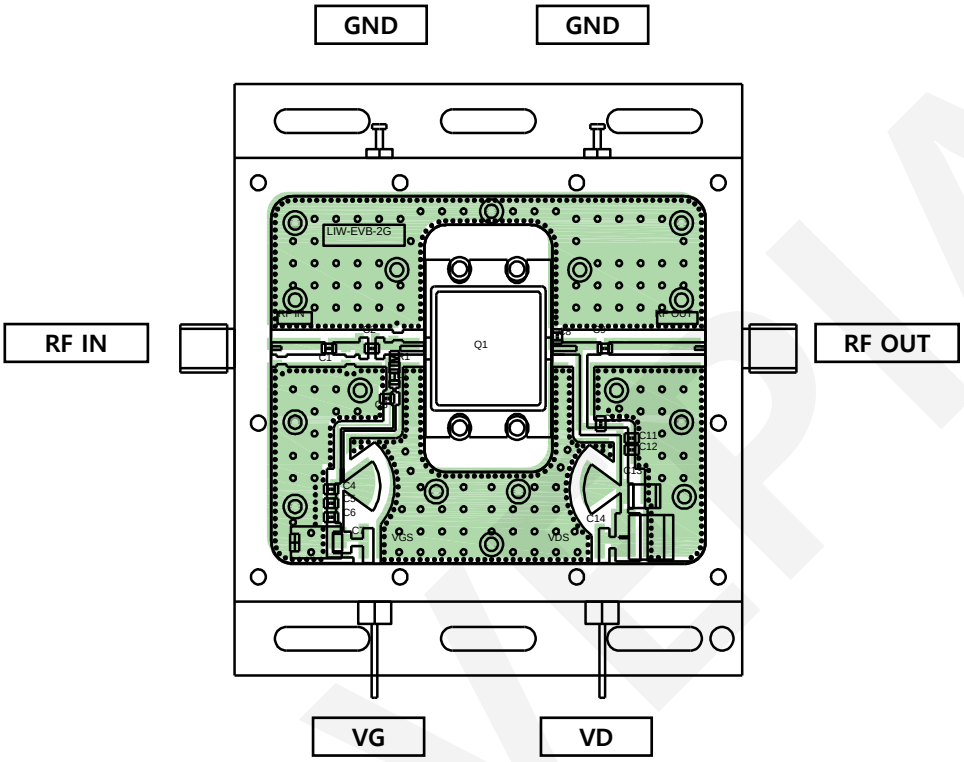


Small Signal Performance (TA=25℃, Measured in the test board amplifier circuit)
VDD=28V, IDQ=150mA



Frequency	S11	S21
2.1GHz	-10.6dB	18.2dB
2.2GHz	-13.4dB	18.5dB
2.3GHz	-16.0dB	18.4dB

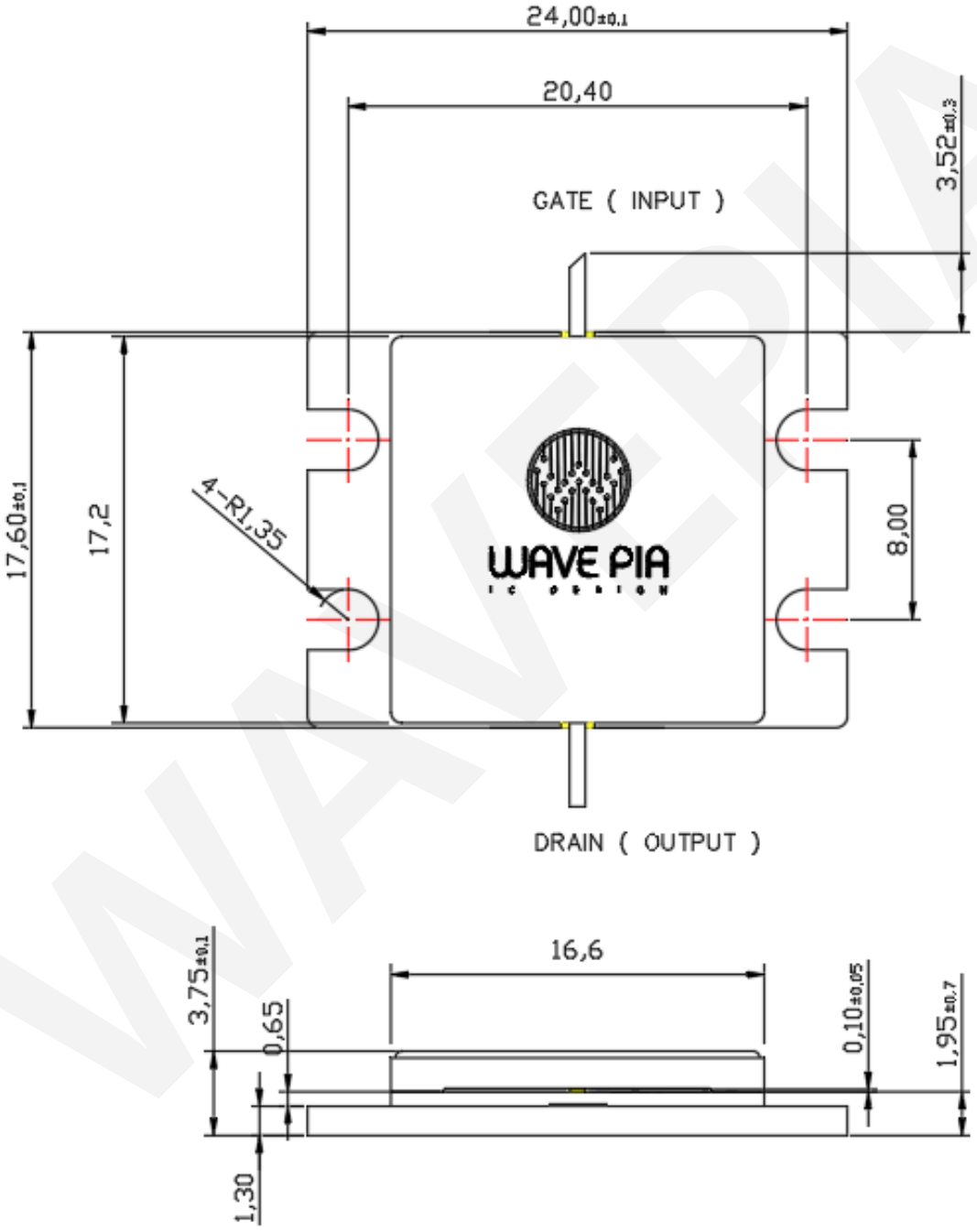
Evaluation Board



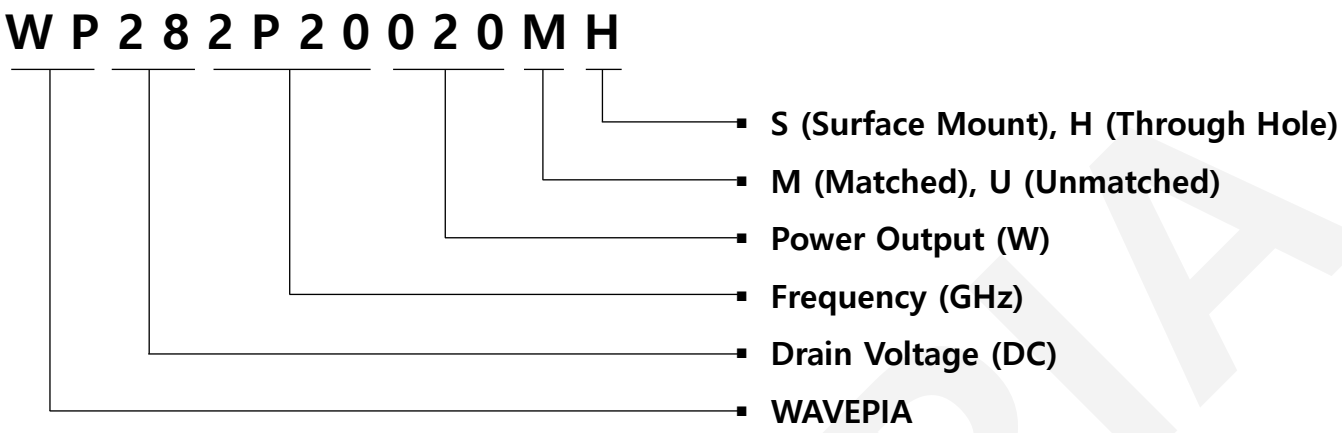
Reference	Value	Description	Package	Manufacturer
C1,C3,C9,C10	10pF	High Q Capacitor	2012	Johanson
C2	2.2pF	High Q Capacitor	2012	Johanson
C4	100pF	Ceramic Capacitor	2012	SAMSUNG
C5	10nF	Ceramic Capacitor	2012	SAMSUNG
C6	1uF	Ceramic Capacitor	2012	SAMSUNG
C7	47uF	Tantalium Capacitor	7343	Vishay
C8	1.3pF	High Q Capacitor	2012	Johanson
C11	100pF	High Q Capacitor	2012	Johanson
C12	200pF	High Q Capacitor	2012	Johanson
C13	470nF	High V Capacitor	4532	Johanson
C14	10uF	Tantalium Capacitor	7360	Vishay
R1	20Ω	Chip Resistor	1608	SAMSUNG
L1	47nH	Coil Inductor	1608	Coilcraft
Q1	20W	WP282P20020MH	One-PKG	WAVEPIA
PCB		RO4350B 30mil 1oz		Rogers

Product Dimension

- Package Type: One-PKG
- Unit: mm



Part Number System



Parameter	Value	Units
Drain Voltage	28	V
Lower Frequency	2.1	GHz
Upper Frequency	2.3	GHz
Output Power	20	W
Transistor Type	Matched	-
Package	Through Hole	-