WAVE PIA

WP483P3100UH(S)

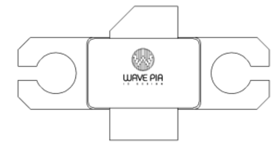
Unmatched GaN HEMT

Product Features

- High Power GaN HEMT for DC to 5GHz
- 12.0 dB Small Signal Gain at 3.3GHz
- 50.8 dBm Typical P_{SAT} at 3.3GHz
- 58.8% Efficiency at P_{SAT} at 3.3GHz
- 48V Operation

Applications

- Broadband Amplifiers
- Cellular Infrastructure
- Test Instrumentation
- WiMAX, LTE, WCDMA, GSM
- Radar Application



Package Type: 580BH

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	$V_{GS(th)}$		-3.3		V_{DC}	VDS = 10V, ID = 1mA
Gate Quiescent Voltage	$V_{GS(Q)}$		-2.92		V_{DC}	VDS = 48V, ID = 150mA
Saturated Drain Current[2]	I_{DS}		1000		mA/mm	VDS = 10V, VGS = 1V
Drain-Source Breakdown Voltage	V_{BR}	160			V_{DC}	ID = 1 mA/mm

1. Measured on wafer prior to packaging.
2. Scaled from PCM data.

RF Characteristics (TA=25˚C, F0=3.3GHz, Unless otherwise noted)

Parameter	Symbol	MIN	TYP	MAX	Units	Conditions
Gain	G_{SAT}		10.1		dB	VDD = 48V, IDQ = 150mA, Pulse Width = 100usec, Duty Cycle = 10%
Saturated Output Power	P_{SAT}		50.8		dBm	VDD = 48V, IDQ = 150mA, Pulse Width =100usec, Duty Cycle = 10%
Pulsed Drain Efficiency[1]	n		58.8		%	VDD = 48V, IDQ = 150mA, Pulse Width = 100usec, Duty Cycle = 10%

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

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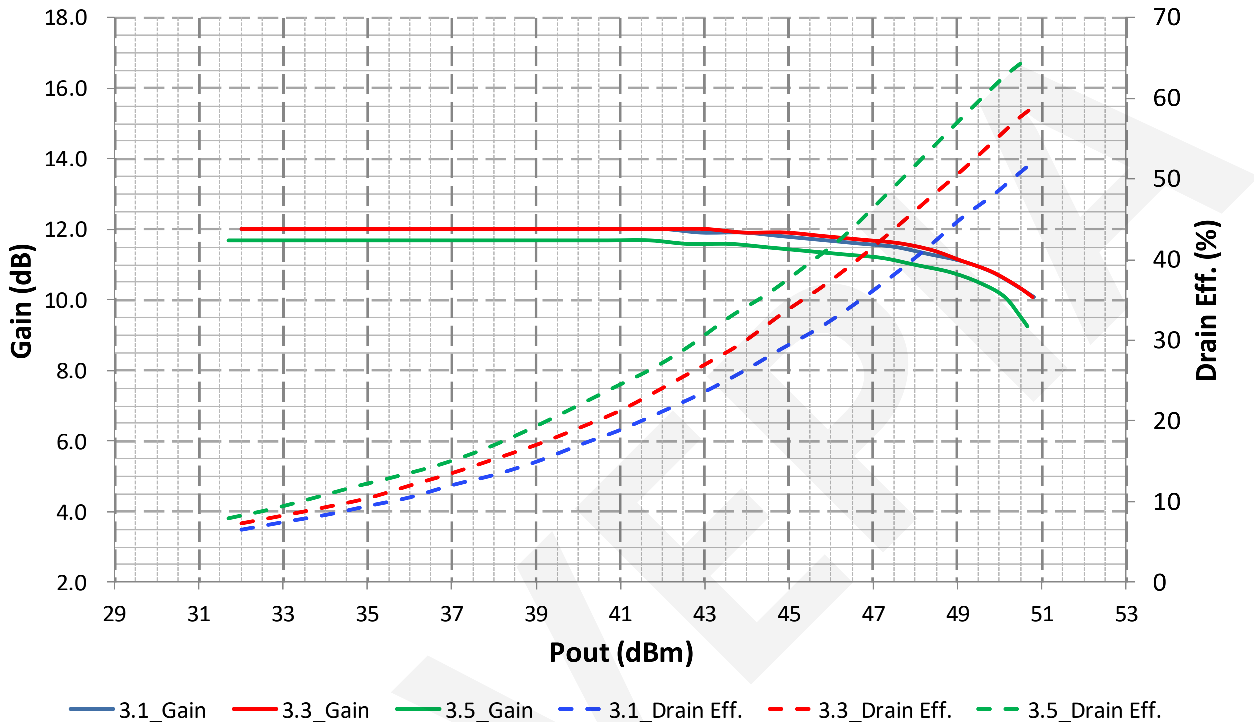
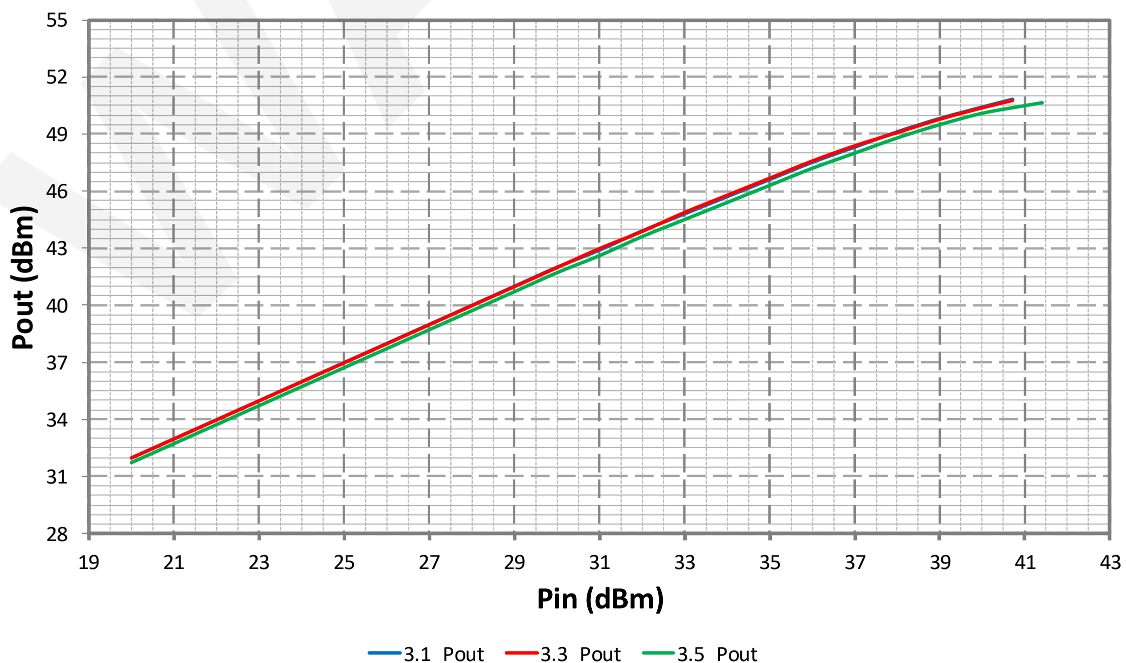
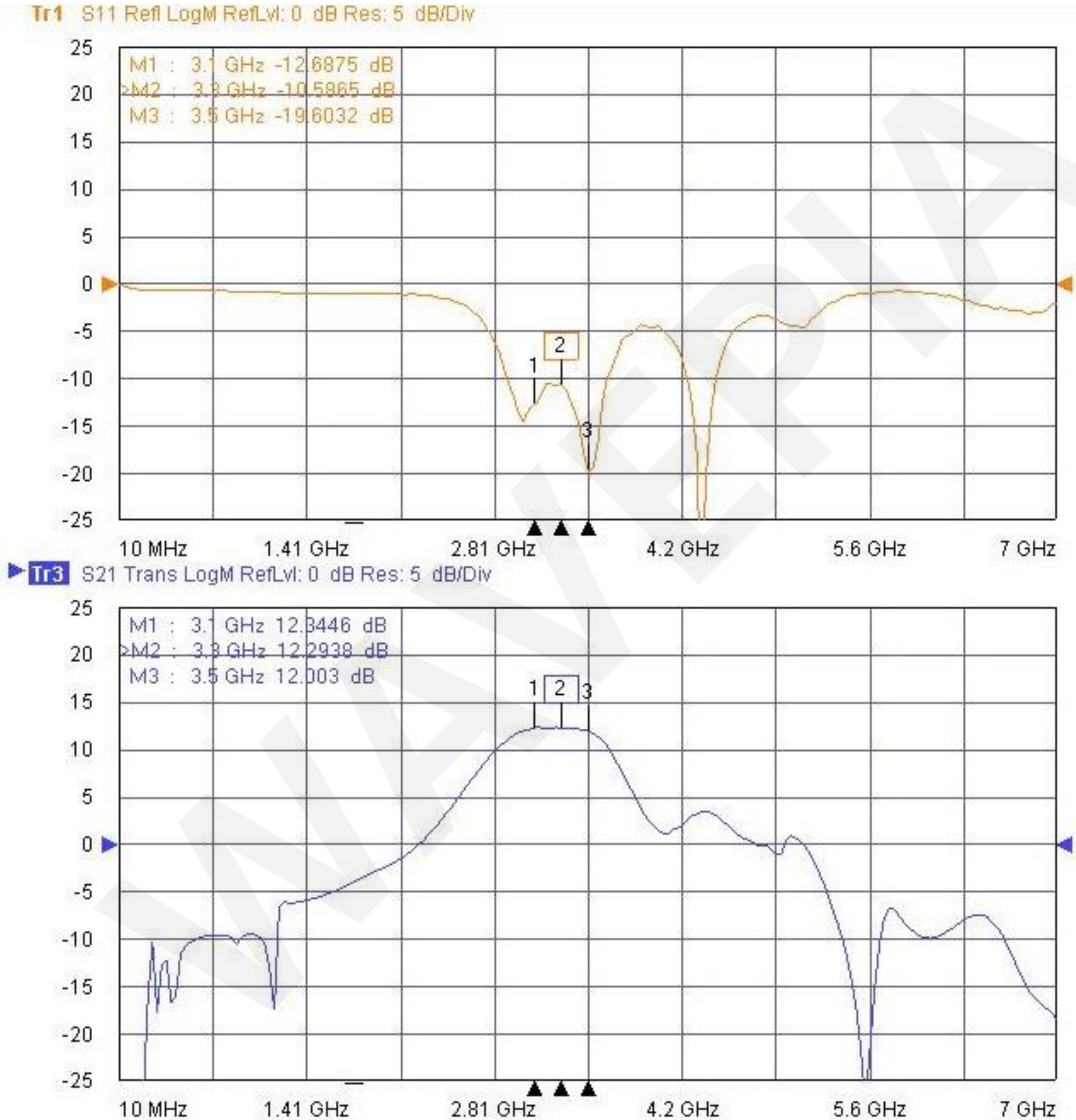
Pulse Signal Performance (TA=25℃, Measured in the test board amplifier circuit)
VDD=48V, IDQ=150mA, Pulse Width=100㎲ec, Duty Cycle=10%

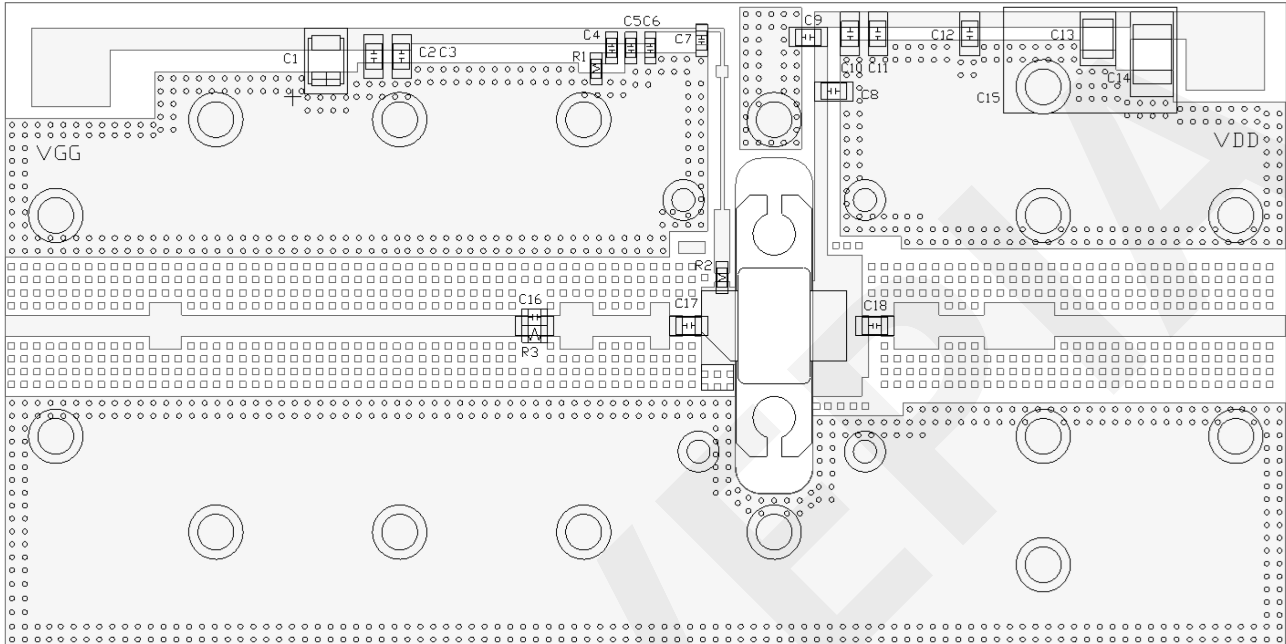




Small Signal Performance (TA=25℃, Measured in the test board amplifier circuit)
VDD=48V, IDQ=150mA



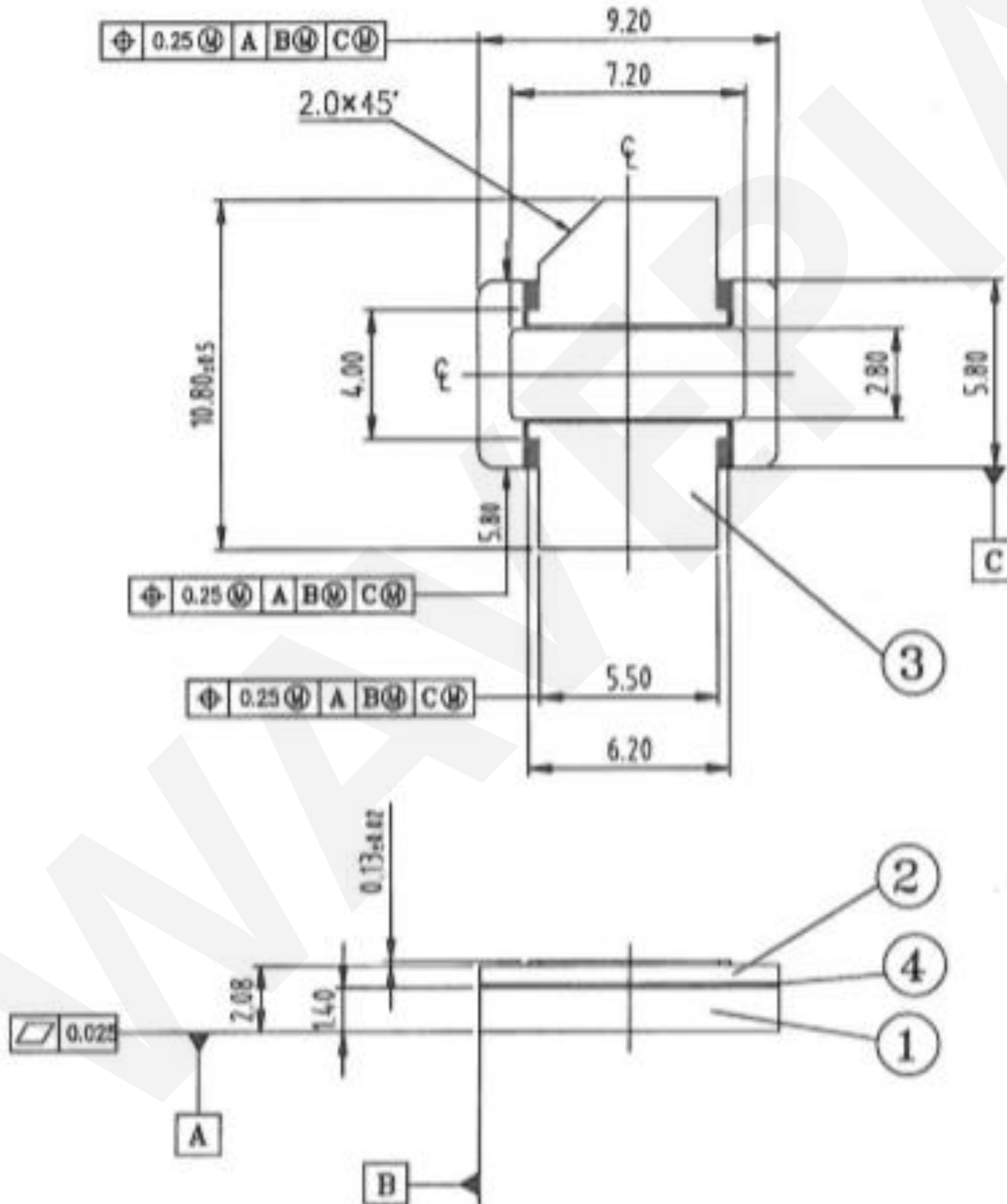
Evaluation Board



Reference Number	Value	Items	Package	Manufacturer
C2	100nF	Ceramic Capacitor	1608	SAMSUNG
C3,C6	100pF	Ceramic Capacitor	1608	SAMSUNG
C5	10nF	Ceramic Capacitor	1608	SAMSUNG
C7	10pF	Ceramic Capacitor	1608	SAMSUNG
C4	1nF	Ceramic Capacitor	1608	SAMSUNG
C17	1.1pF	High Q Capacitor	2012	Johanson
C18	1.3pF	High Q Capacitor	2012	Johanson
C16	3.3pF	High Q Capacitor	2012	Johanson
C9,C10	100pF	High Q Capacitor	2012	Johanson
C8	10pF	High Q Capacitor	2012	Johanson
C11,C12	220pF	High Q Capacitor	2012	Johanson
C13	220nF	High V Capacitor	3225	Johanson
C14	470nF	High V Capacitor	4532	Johanson
C1	22uF/16V	Tantalum Capacitor	3528	SAMSUNG
C15	47uF	Electrolytic Capacitor		
R1	51Ω	Chip Resistor	1608	SAMSUNG
R2	10Ω	Chip Resistor	1608	SAMSUNG
R3	300Ω	Chip Resistor	2012	SAMSUNG

Product Dimension

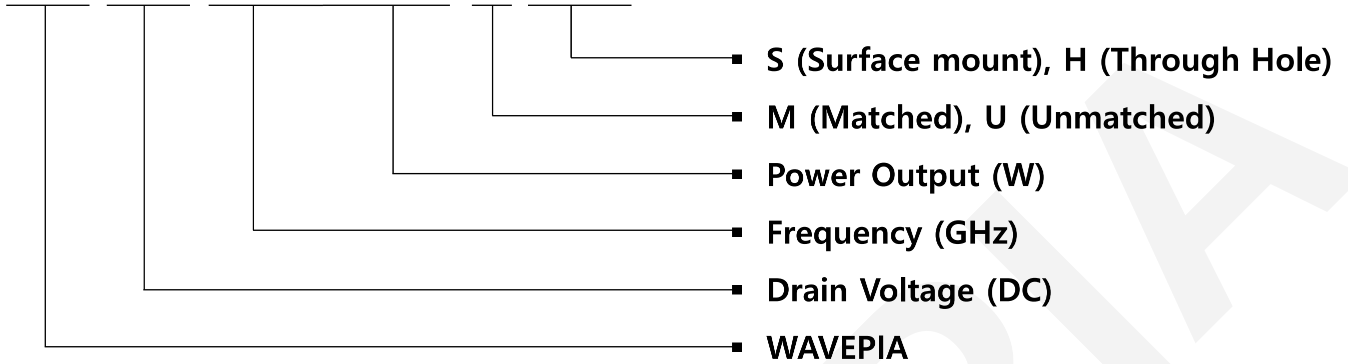
- Package Type: 580BS (Surface mount)
- Unit: mm



Product Dimension

- Package Type: 580BH (Through hole)
- Unit: mm

Part Number System



Parameter	Value	Units
Drain Voltage	48	V
Lower Frequency	DC	GHz
Upper Frequency	5	GHz
Output Power	100	W
Transistor Type	Unmatched	-
Package	S: Surface mount H: Through hole	-

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