WP484P7045UH(S)

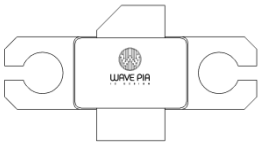
Unmatched GaN HEMT

Product Features

- High Power GaN HEMT for DC to 6GHz
- 14.5 dB Small Signal Gain at 4.7GHz
- 47 W Typical P_{3dB} at 4.7GHz
- 51 % Efficiency at P_{3dB} at 4.7GHz
- 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	$V_{GS(th)}$		-2.9		V_{DC}	VDS = 10V, ID = 1mA
Gate Quiescent Voltage	$V_{GS(Q)}$		-2.8		V_{DC}	VDS = 48V, ID = 210mA
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

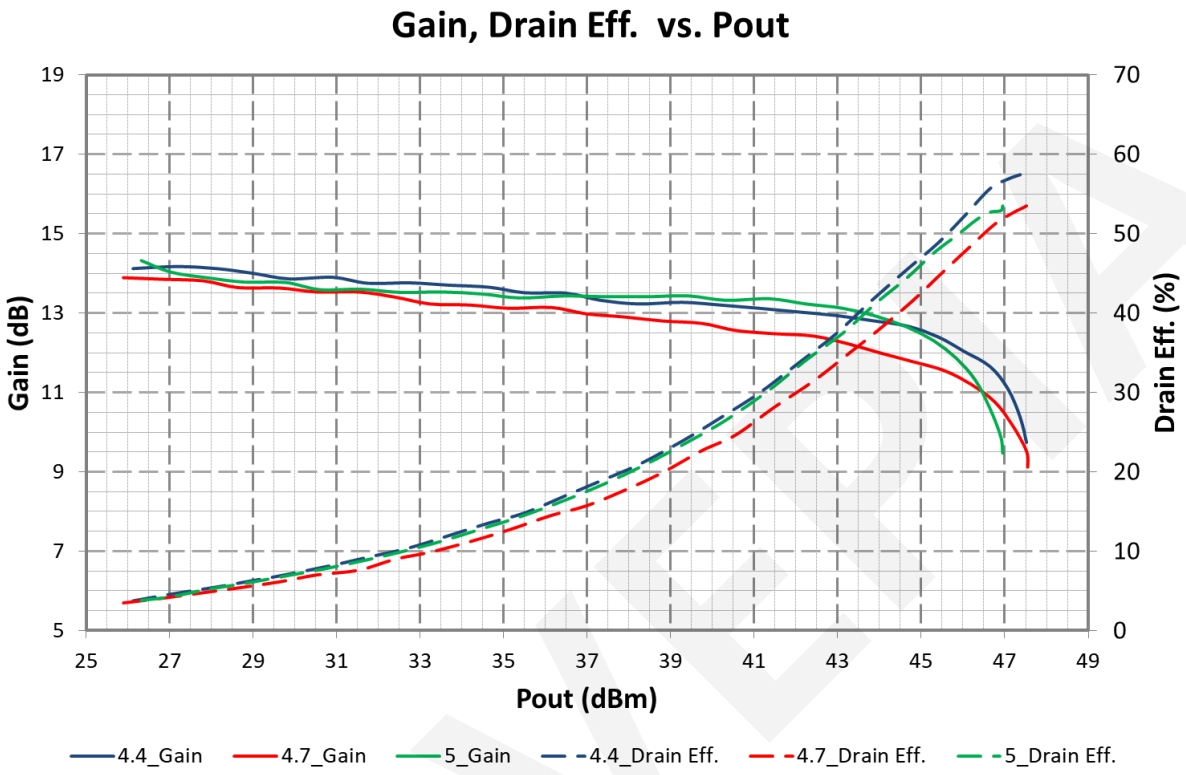
1. Measured on wafer prior to packaging.
2. Scaled from PCM data.

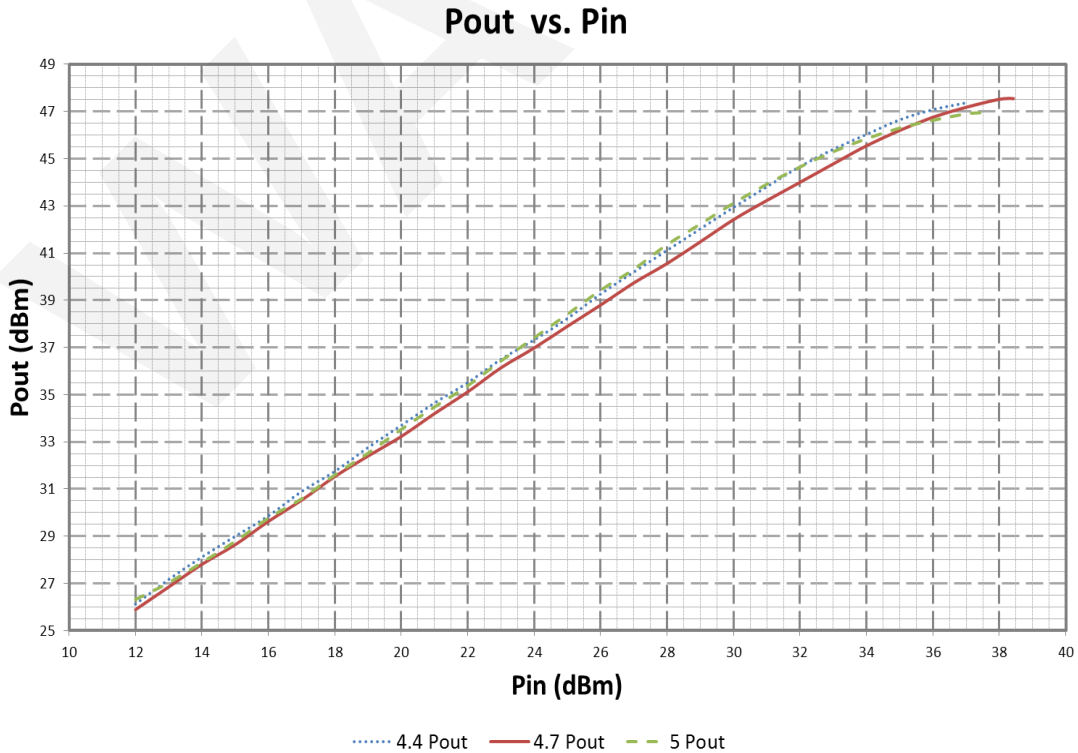
RF Characteristics (TA=25˚C, F0=4.7GHz, Unless otherwise noted)

Parameter	Symbol	MIN	TYP	MAX	Units	Conditions
Power Gain	G_{SS}		9.12		dB	VDD = 48V, IDQ = 210mA, Pulse Width = 100usec, Duty Cycle = 10%
Output Power	P_{OUT}		45		W	VDD = 48V, IDQ = 210mA, Pulse Width = 100usec, Duty Cycle = 10%
Saturated Output Power	P_{SAT}		56.88		W	VDD = 48V, IDQ = 210mA, Pulse Width = 100usec, Duty Cycle = 10%
Pulsed Drain Efficiency[1]	n		53.87		%	VDD = 48V, IDQ = 210mA, Pulse Width = 100usec, Duty Cycle = 10%
Output Mismatch Stress	VSWR	-	-	10:1		No damage at all phase angles, VDD = 48V, IDQ = 210mA

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

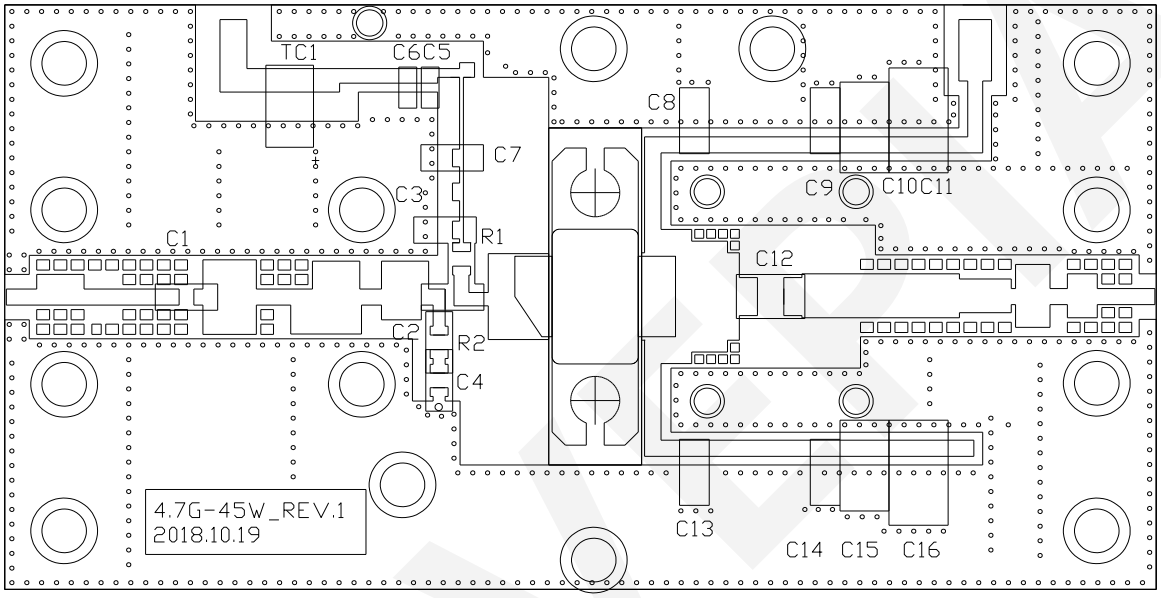
Pulse Signal Performance (TA=25℃, Measured in the test board amplifier circuit)
VDD=48V, IDQ=210mA, Pulse Width=100μsec, Duty Cycle=10%





Small Signal Performance (TA=25℃, Measured in the test board amplifier circuit)
VDD=48V, IDQ=210mA

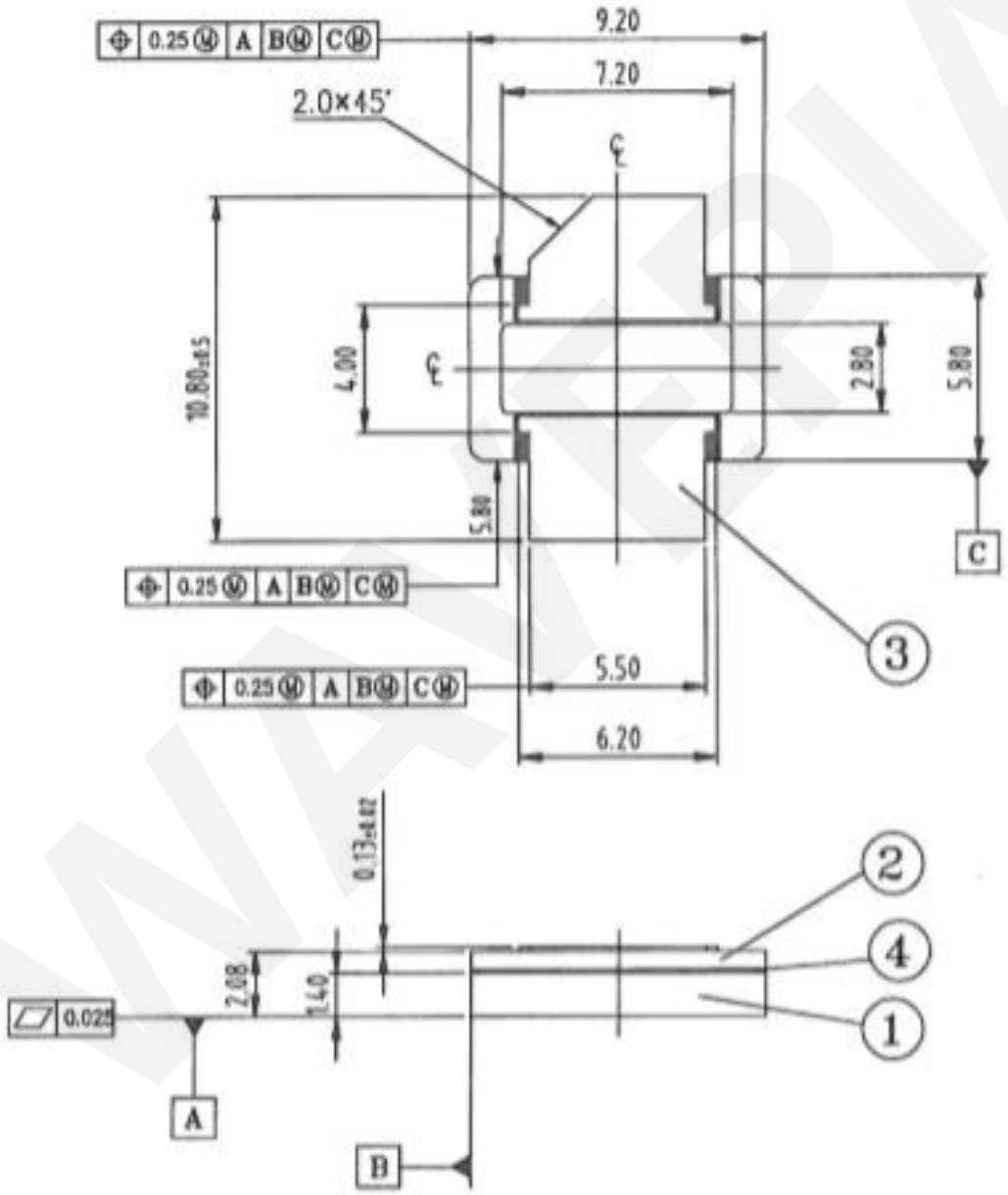
Evaluation Board



Reference Number	Value	Items	Package	Manufacturer
C1	1 pF	High Q Capacitor	0805	Johanson
C2	3 pF	High Q Capacitor	0805	Johanson
C3	10 pF	High Q Capacitor	805	Johanson
C12	3 pF	High Q Capacitor	1111	Johanson
C4	8.2 pF	High Q Capacitor	0603	Johanson
C5	1000 pF	High Q Capacitor	0603	Johanson
C6	1 uF	High Q Capacitor	0805	Johanson
C8,C13	56 pF	High Q Capacitor	0805	Johanson
C7,C9,C14	120 pF	High Q Capacitor	0805	Johanson
C10,C15	220 nF	High Voltage Capacitor	3225	Johanson Dielectrics
C11,C16	470 nF	High Voltage Capacitor	4532	Johanson Dielectrics
C17	470 nF	High Voltage Capacitor	4532	Johanson Dielectrics
R1	11 ohm	Chip Resistor	0603	Samsung
R2	6.2 ohm	Chip Resistor	0805	Samsung

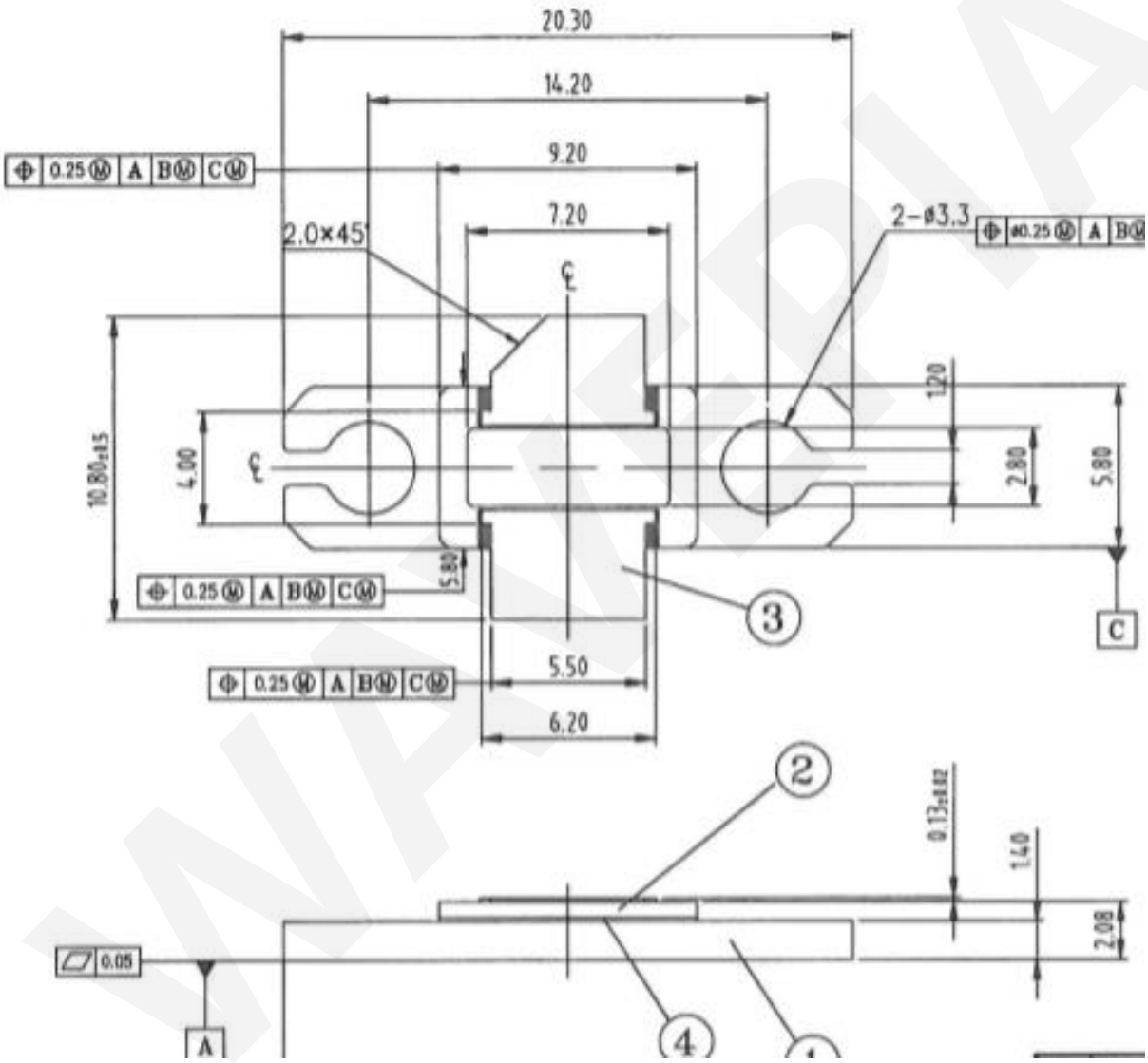
Product Dimension

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

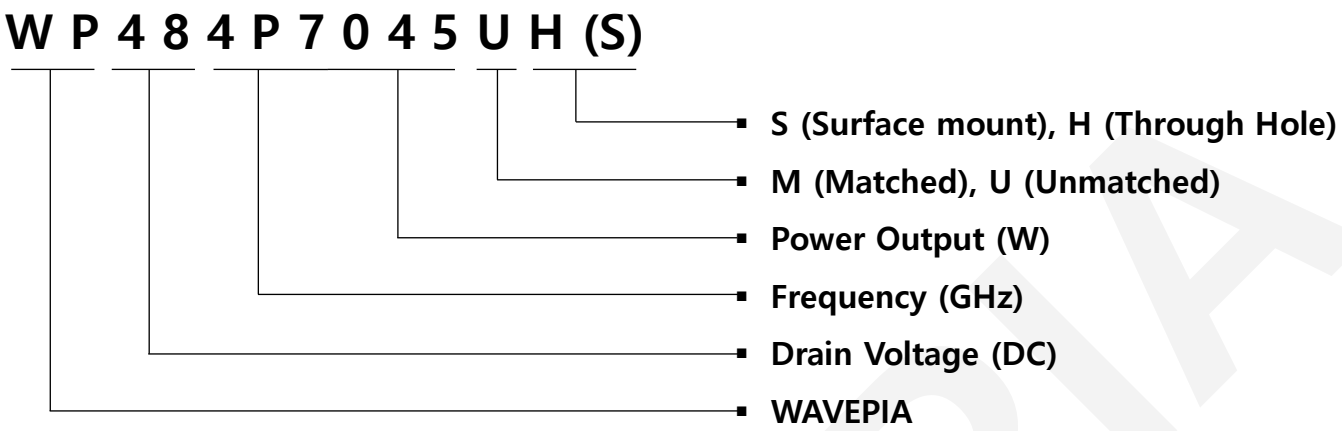


Product Dimension

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



Part Number System



Parameter	Value	Units
Drain Voltage	48	V
Lower Frequency	DC	GHz
Upper Frequency	6	GHz
Output Power	45	W
Transistor Type	Unmatched	-
Package	S: Surface mount H: Through hole	-