WP2806015UH(S)

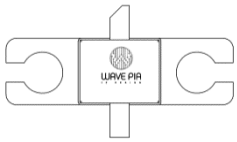
Unmatched GaN HEMT

Product Features

- Up to 6GHz Operation
- 12.7dB Small Signal Gain at 4.6GHz
- 21.6 W Typical P_{SAT} at 4.6GHz
- 60.7% Efficiency at P_{SAT} at 4.5GHz
- 28V Operation

Applications

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



Package Type: 360BH

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	$V_{GS(th)}$		-3.1		V_{DC}	VDS = 10V, ID = 1mA
Gate Quiescent Voltage	$V_{GS(Q)}$		-2.26		V_{DC}	VDS = 28V, 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=4.6GHz, Unless otherwise noted)

Parameter	Symbol	MIN	TYP	MAX	Units	Conditions
Power Gain	G_{SS}		11.6		dB	VDD = 28V, IDQ = 150mA, Pulse Width = 100usec, Duty Cycle = 10%
Output Power	P_{OUT}		8		W	VDD = 28V, IDQ = 150mA, Pulse Width = 100usec, Duty Cycle = 10%
Saturated Output Power	P_{SAT}		21.6		W	VDD = 28V, IDQ = 150mA, Pulse Width = 100usec, Duty Cycle = 10%
Pulsed Drain Efficiency[1]	n		56.1		%	VDD = 28V, IDQ = 150mA, Pulse Width = 100usec, Duty Cycle = 10% @ P_{SAT}
Output Mismatch Stress	VSWR			10:1		No damage at all phase angles, VDD = 28V, IDQ = 150mA, P_{OUT} = 2 WCW

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

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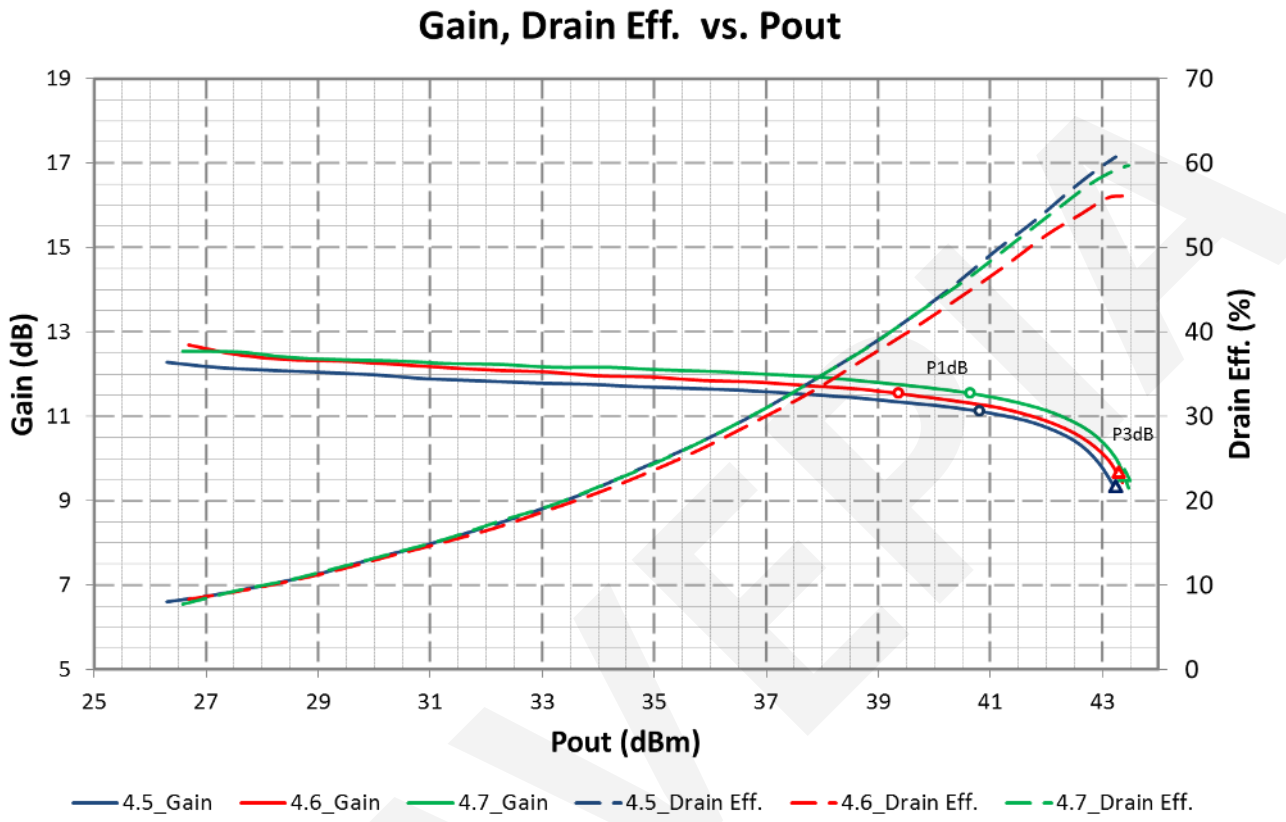
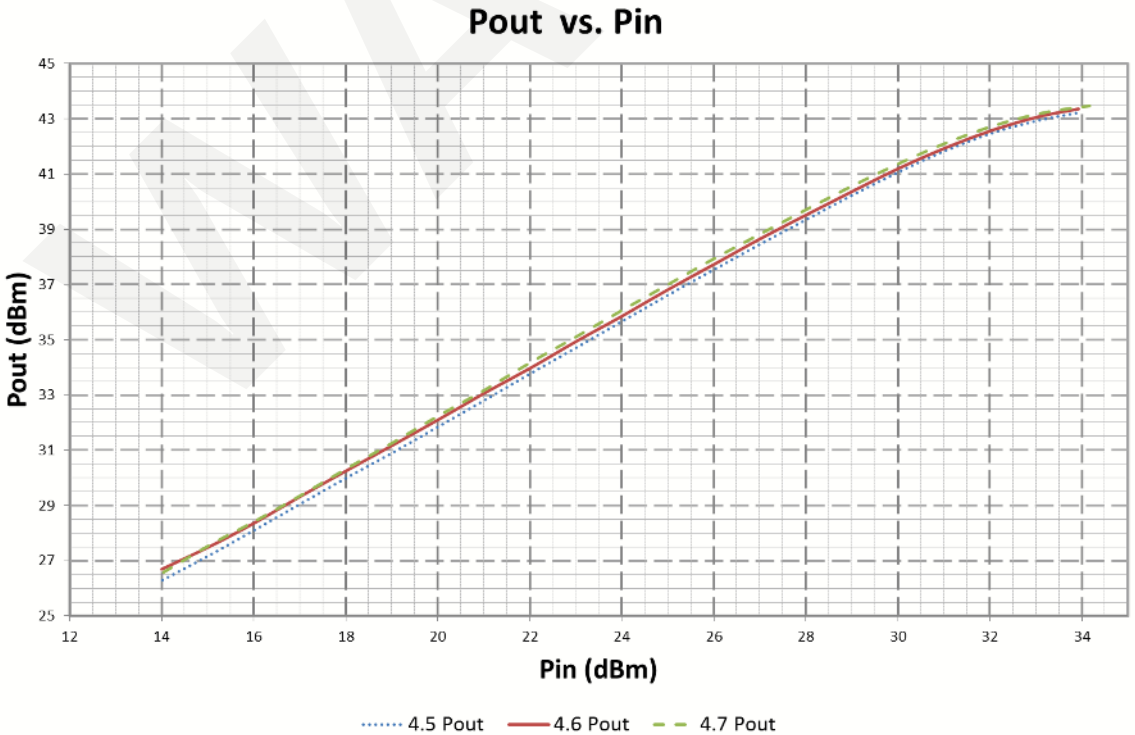
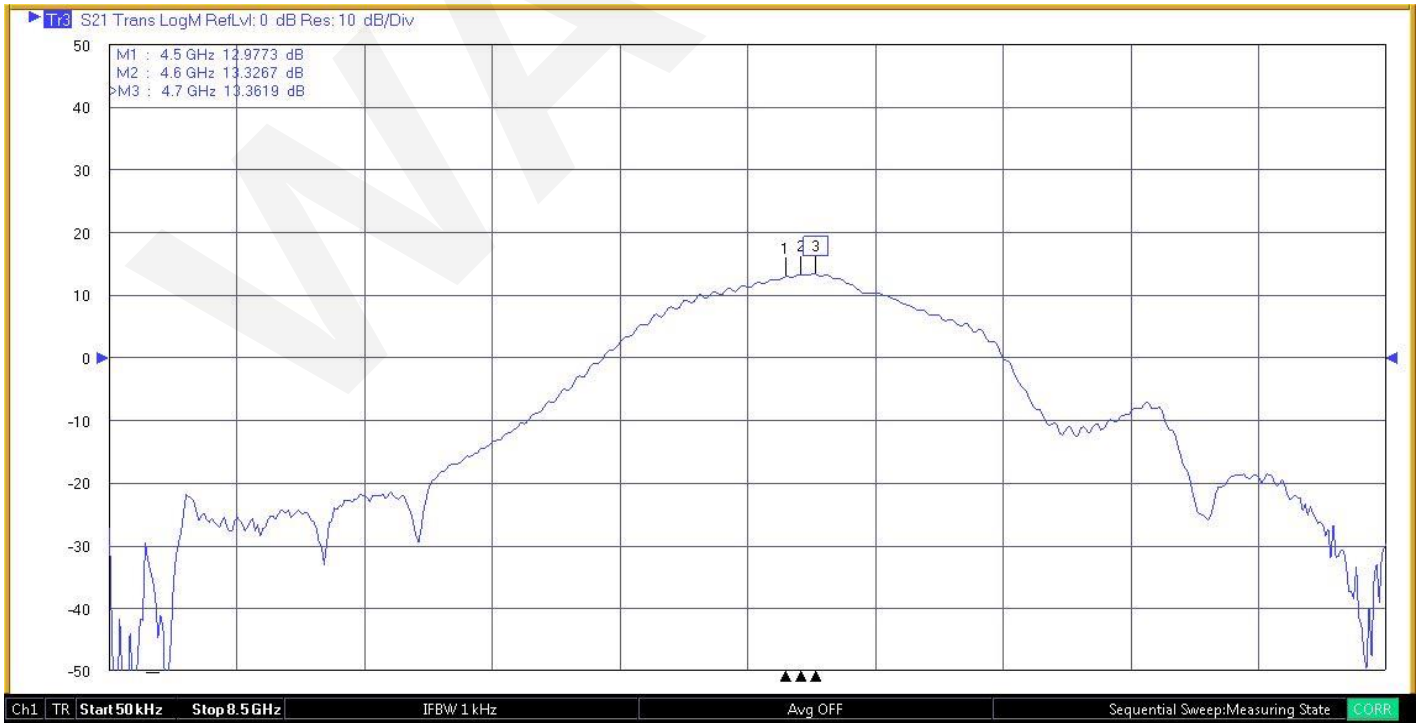
Pulse Signal Performance (TA=25℃, Measured in the test board amplifier circuit)
VDD=28V, IDQ=150mA, Pulse Width=100μsec, Duty Cycle=10%

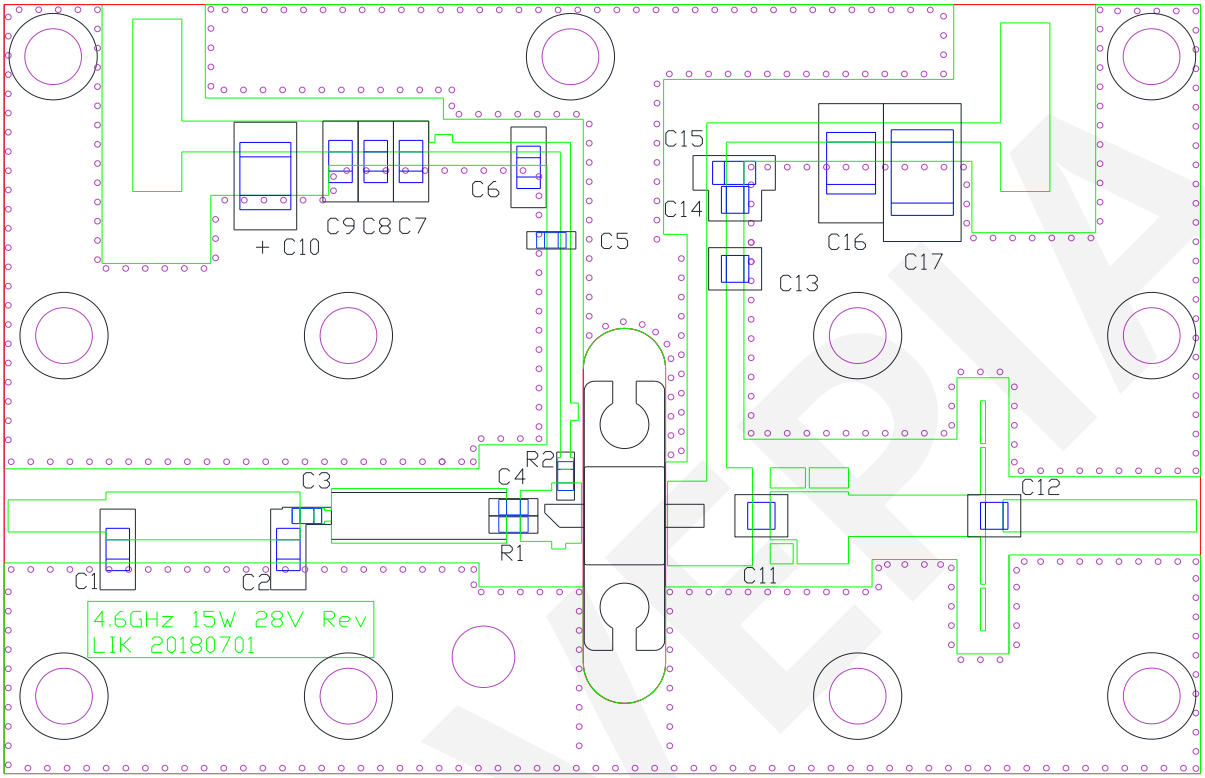




Small Signal Performance (TA=25℃, Measured in the test board amplifier circuit)
VDD=28V, IDQ=150mA



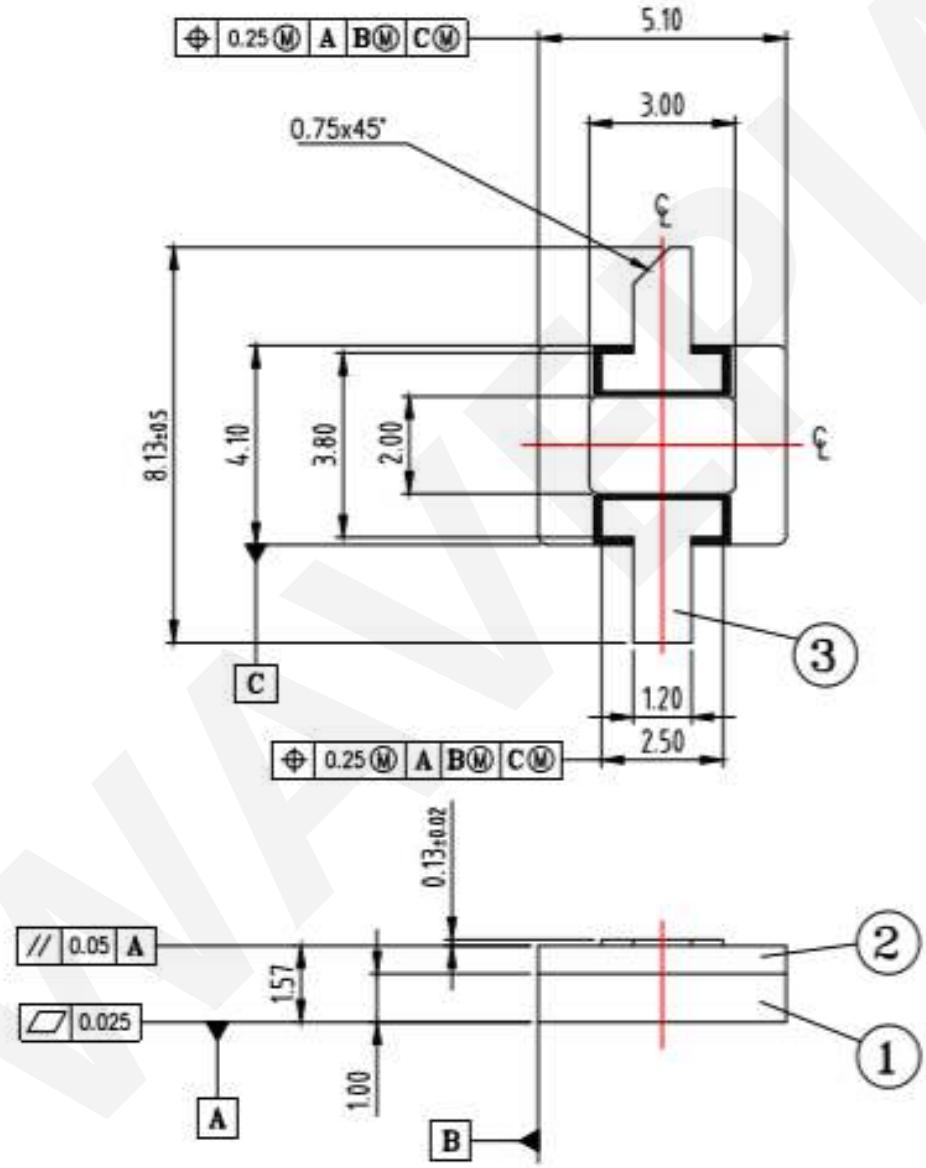
Evaluation Board



Reference Number	Value	Items	Package	Manufacturer
C1	0.5 pF	High Q Capacitor	0805	Johanson
C2	0.3 pF	High Q Capacitor	0805	Johanson
C3	1 pF	High Q Capacitor	0603	Johanson
C12	1 pF	High Q Capacitor	0805	Johanson
C4	0.5 pF	High Q Capacitor	0603	Johanson
C5	10 pF	High Q Capacitor	0603	Johanson
C6,C7	100 pF	High Q Capacitor	0805	Johanson
C8	1 nF	High Q Capacitor	0805	Johanson
C9	1 uF	High Q Capacitor	0805	Johanson
C10	10 uF	Tantalum Capacitor	B	Vishay
C11	0.5 pF	High Q Capacitor	CHA	Temex
C13	3.9 pF	High Q Capacitor	CHA	Temex
C14	15 pF	High Q Capacitor	CHA	Temex
C15	100 pF	High Q Capacitor	CHA	Temex
C16	220 nF	High Voltage Capacitor	3225	Johanson Dielectrics
C17	470 nF	High Voltage Capacitor	4532	Johanson Dielectrics
R1	300 ohm	Chip Resistor	0603	Samsung
R2	11 ohm	Chip Resistor	0603	Samsung

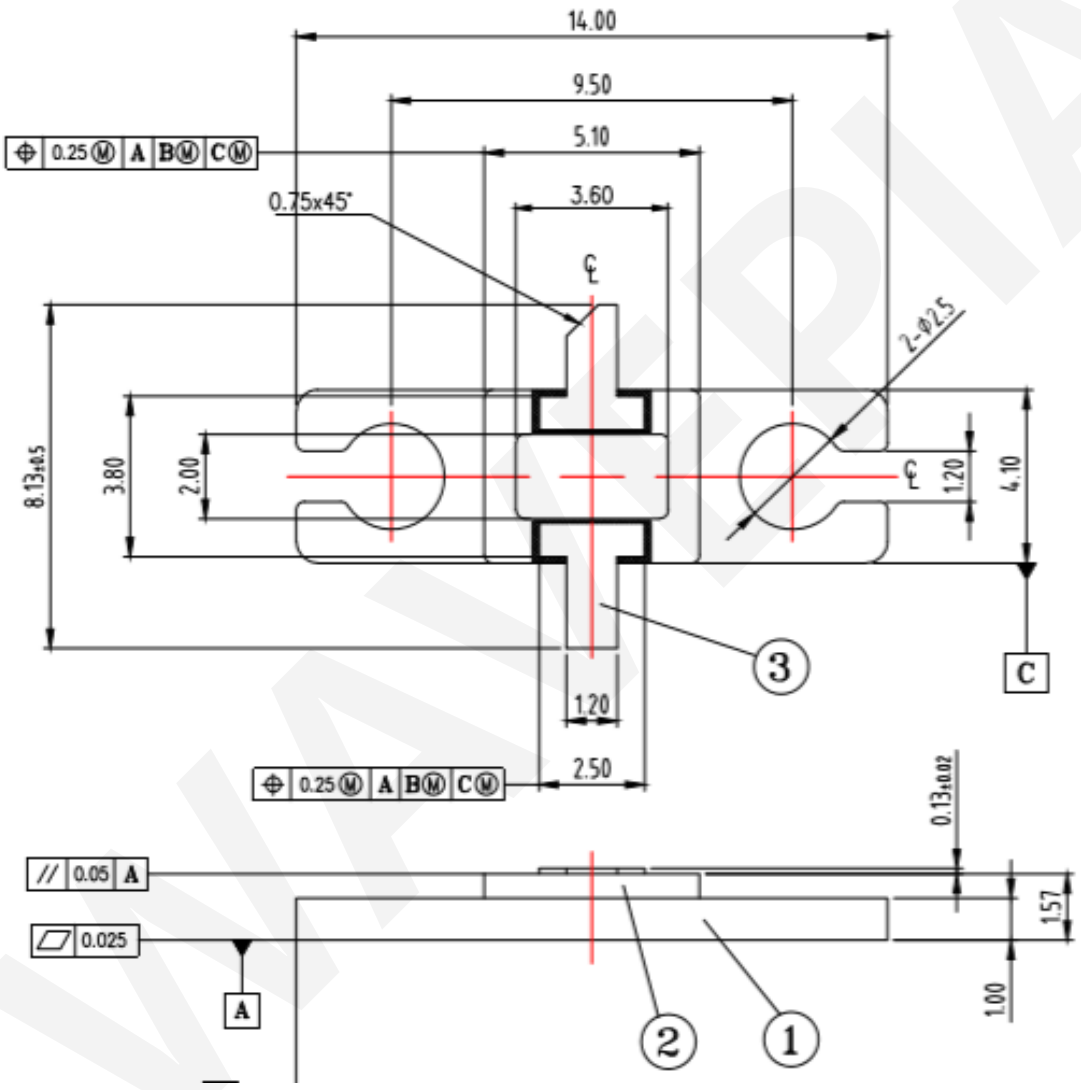
Product Dimension

- Package Type: 360BS (Surface mount)
- Unit: mm

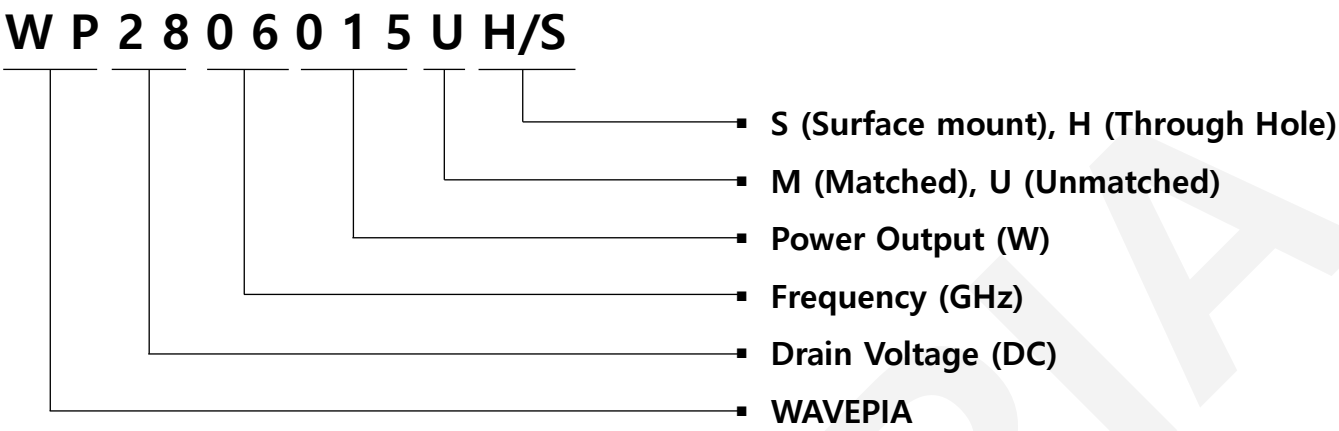


Product Dimension

- Package Type: 360BH (Through hole)
- Unit: mm



Part Number System



Parameter	Value	Units
Drain Voltage	28	V
Lower Frequency	DC	GHz
Upper Frequency	6	GHz
Output Power	15	W
Transistor Type	Unmatched	-
Package	S: Surface mount H: Through hole	-