



Product Features

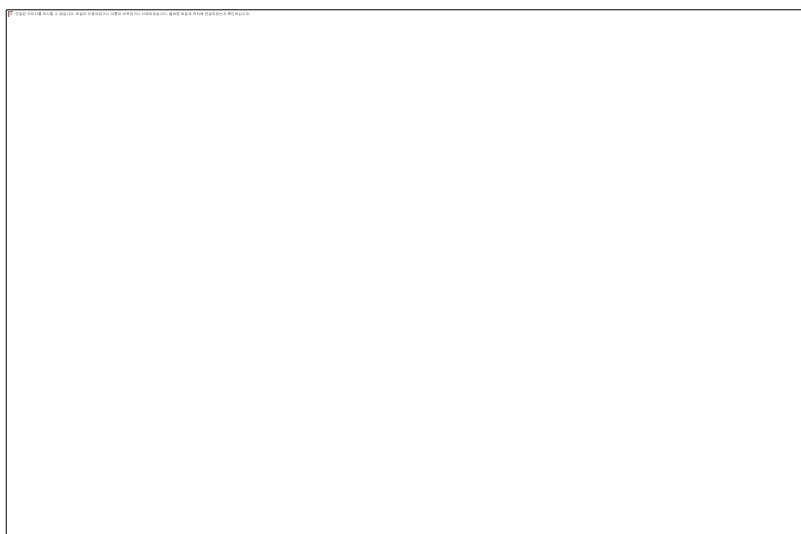
- 2.7-3.8GHz GaN MMIC Power Amplifier
- Typical Small-signal Gain 28.3dB
- Typical Power Gain 23.4dB
- Typical Output Power 53.3dBm
- Typical PAE 48.4%
- 48V-50V operation
- * Above Typical values measured at 3.2GHz and 48V



Applications

- General Purpose
- Communication System
- Radar System
- Satellite Communication

Block Diagram





Absolute Maximum Rating

Parameter	Symbol	Rating	Units	Conditions
Drain Voltage	VD	50	Volts	25°C
Gate Voltage	VS	-8 to 0	Volts	25°C
Drain Current ²	ID	TBC	A	ID @ Vd =50V
Gate Current ³	IG	1	mA	IG @ Saturation Output Power
Input Power	PIN	TBC	dBm	
Operating Junction Temperature ^{1,3}	TJ	225	°C	
Soldering Temperature ³	TS	245	°C	
Storage Temperature ³	TSTG	-65 to +150	°C	

1. Continuous use at maximum temperature will affect MTTF.

2. Current limit for long term, reliable operation.

3. After additional updates.

Specifications (TA=25°C, F0=3.2GHz, VDD=48V, IDQ=300mA)

Parameter	Symbol	MIN	TYP	MAX	Units	Conditions
Small Signal Gain	G		28.3		dB	Pulse Width=100µsec, Duty Cycle=10%
Power Gain	GP		23.4		dB	Psat @ Igs=1mA
Saturated Output Power	POUT		53.3		dBm	Psat @ Igs=1mA
Power Added Efficiency	PAE		48.4		%	Psat @ Igs=1mA

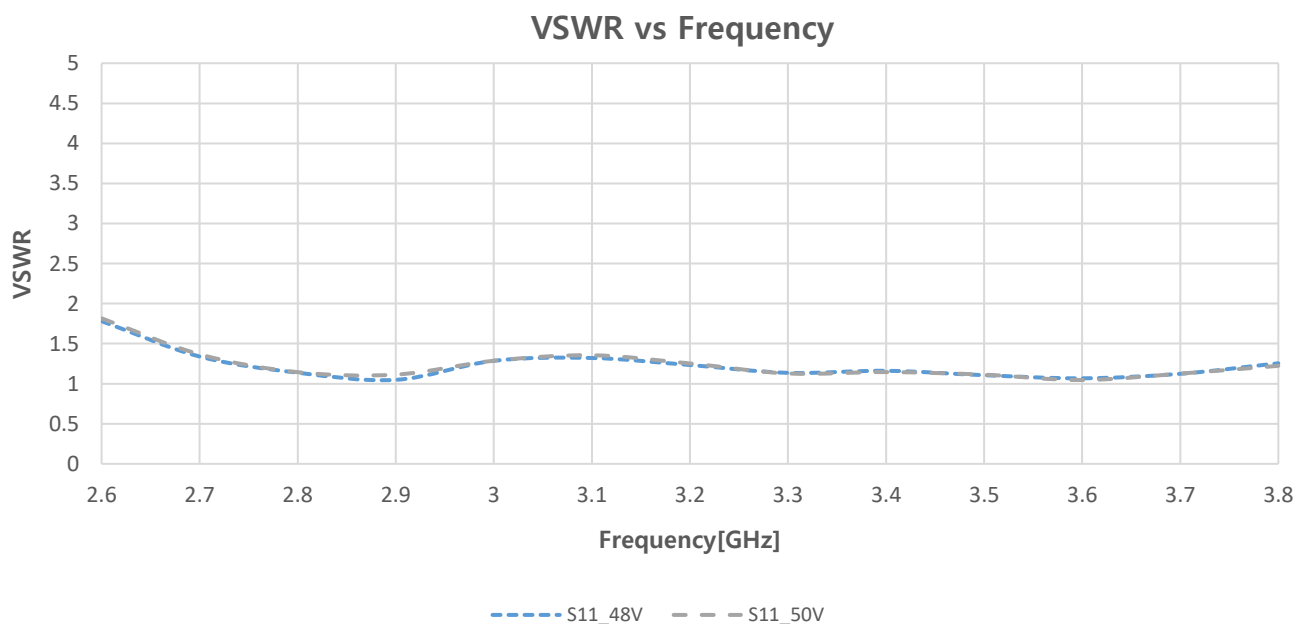
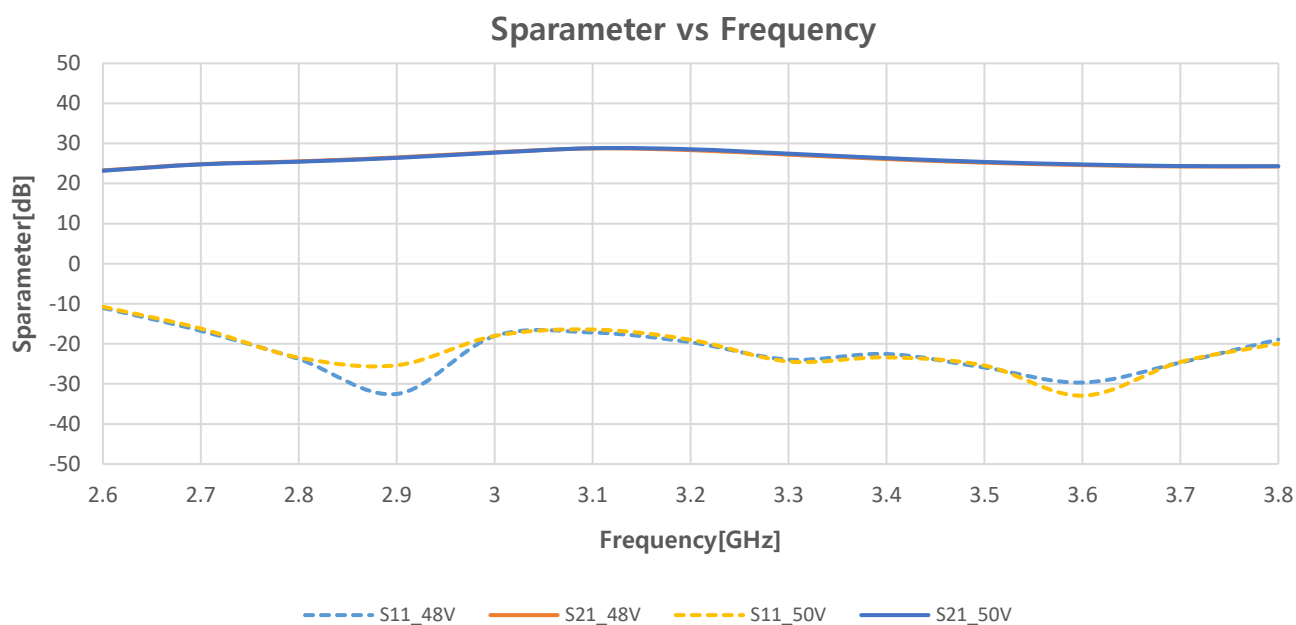
Specifications (TA=25°C, F0=3.2GHz, VDD=50V, IDQ=300mA)

Parameter	Symbol	MIN	TYP	MAX	Units	Conditions
Small Signal Gain	G		28.6		dB	Pulse Width=100µsec, Duty Cycle=10%
Power Gain	GP		23.6		dB	Psat @ Igs=1mA
Saturated Output Power	POUT		53.5		dBm	Psat @ Igs=1mA
Power Added Efficiency	PAE		47.6		%	Psat @ Igs=1mA



Small-Signal Performance ($T_A=25^\circ\text{C}$)

Drain Voltage= (48V $I_{DQ}=300\text{mA}$), (50V $I_{DQ}=300\text{mA}$)

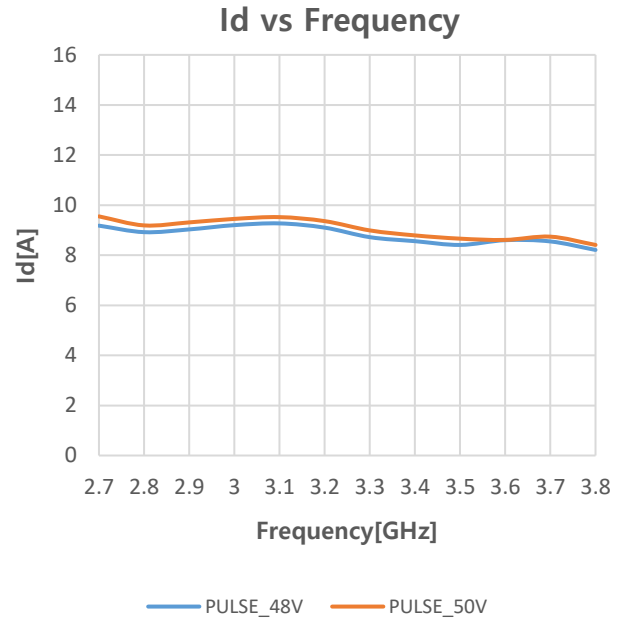
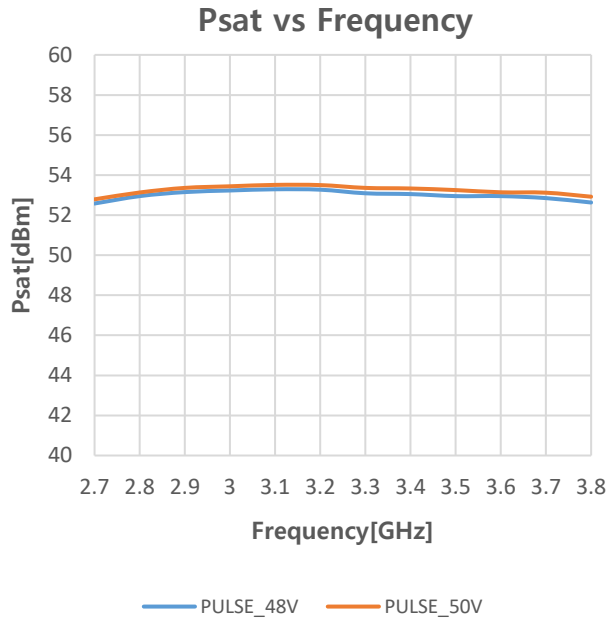




Psat, Id vs Frequency Performance (TA=25°C)

Drain Voltage= (48V IDQ=300mA), (50V IDQ=300mA)

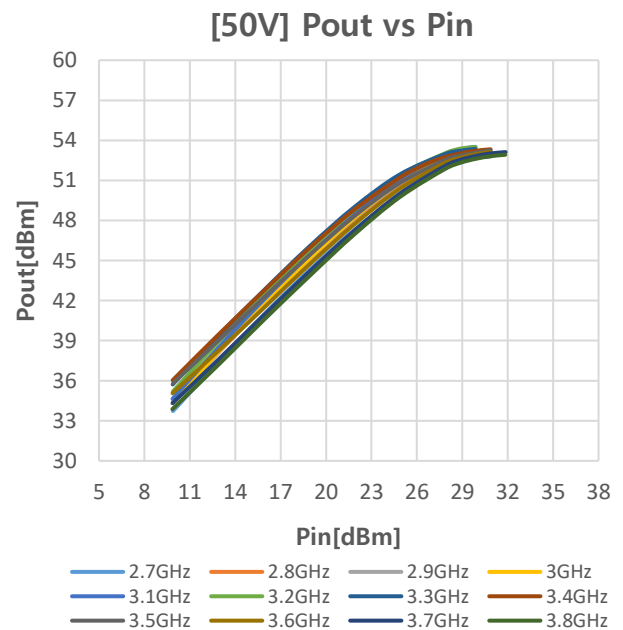
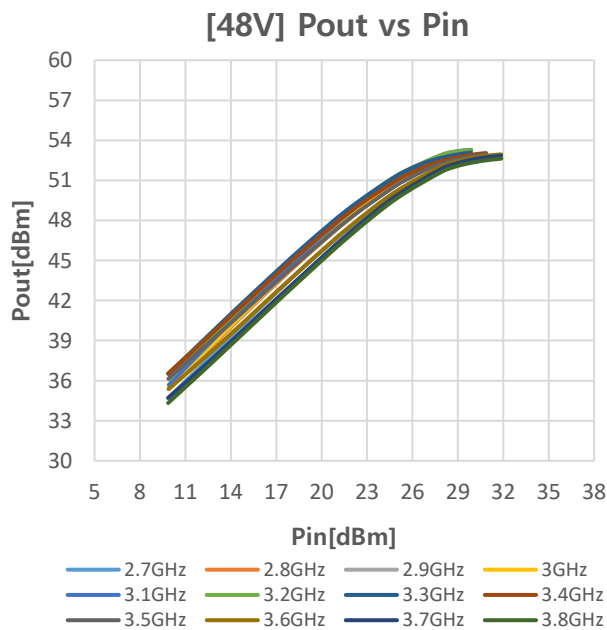
Pulse-Mode(Pulse Width=100μsec, Duty Cycle=10%)



Output Power (Pout) vs Input Power (Pin) Performance (TA=25°C)

Drain Voltage= (48V IDQ=300mA), (50V IDQ=300mA)

Pulse-Mode(Pulse Width=100μsec, Duty Cycle=10%)

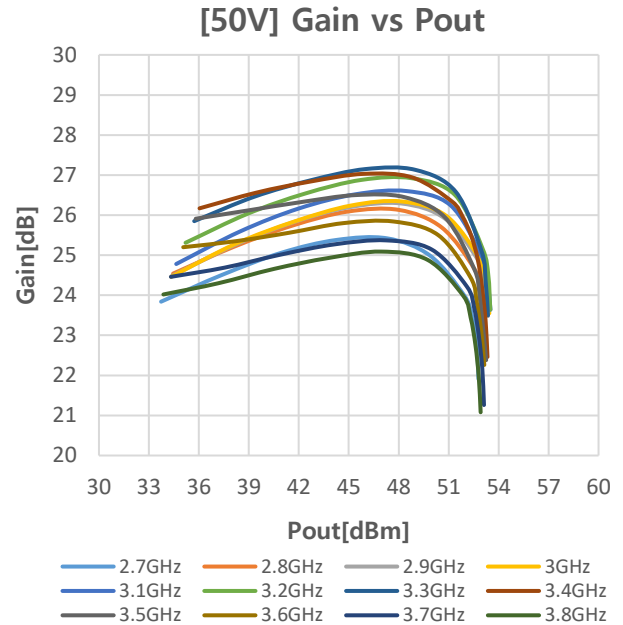
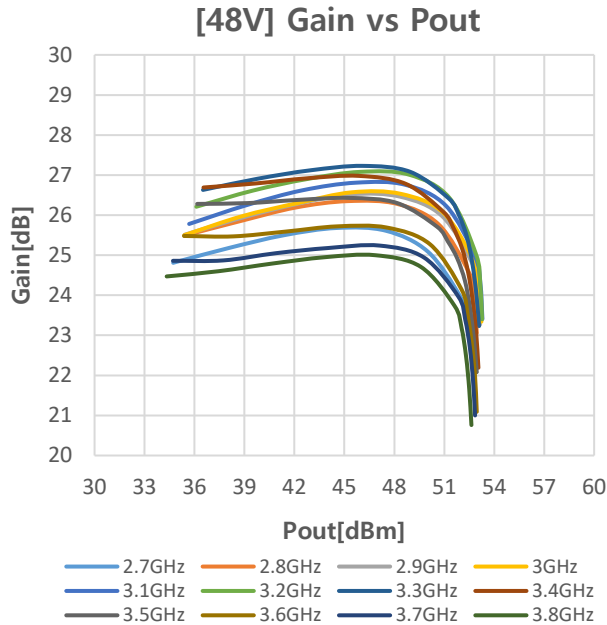




Gain vs Output Power (Pout) Performance (TA=25°C)

Drain Voltage= (48V IDQ=300mA), (50V IDQ=300mA)

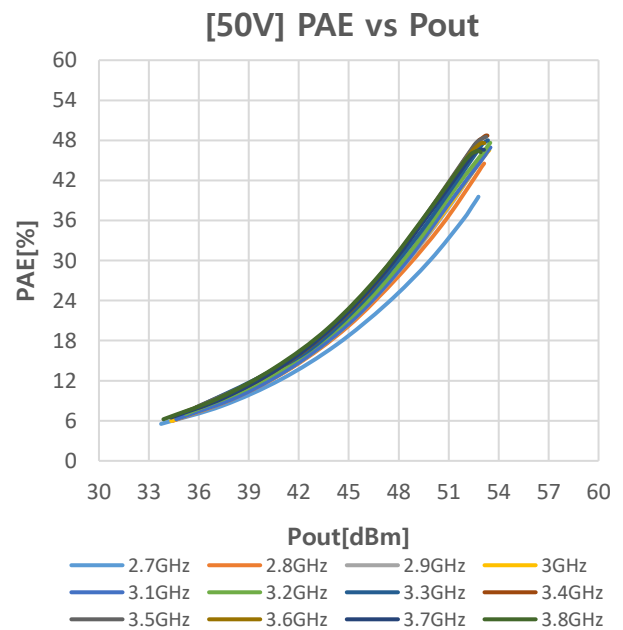
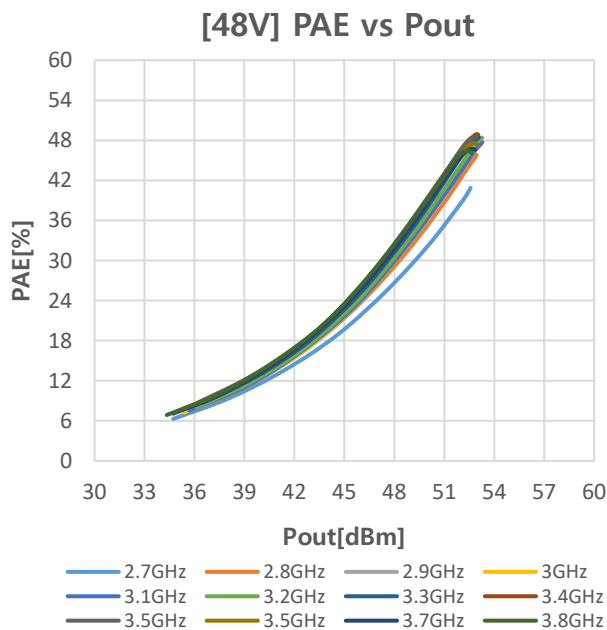
Pulse-Mode(Pulse Width=100μsec, Duty Cycle=10%)



PAE vs Output Power (Pout) Performance (TA=25°C)

Drain Voltage= (48V IDQ=300mA), (50V IDQ=300mA)

Pulse-Mode(Pulse Width=100μsec, Duty Cycle=10%)

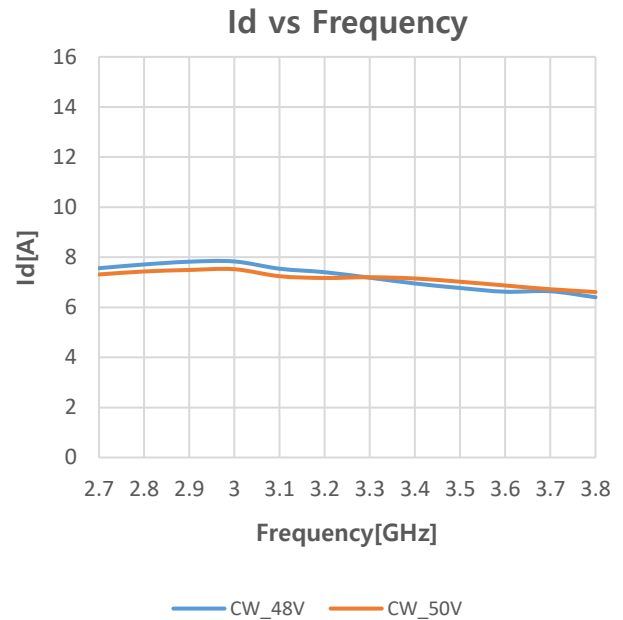
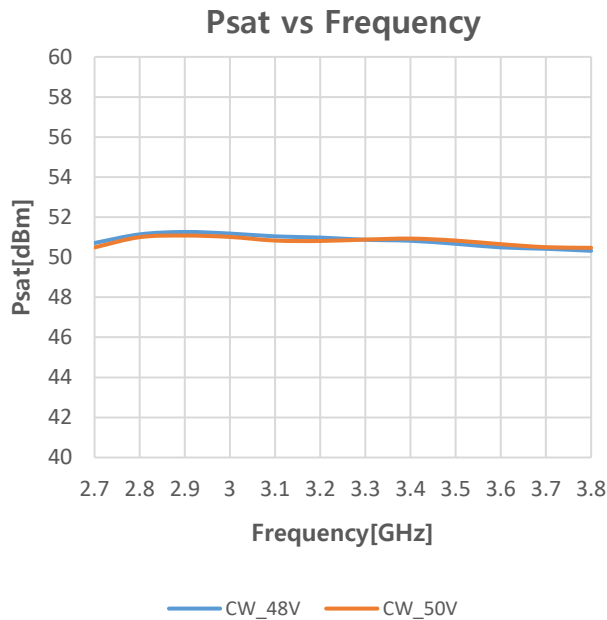




Psat, Id vs Frequency Performance (TA=25°C)

Drain Voltage= (48V IDQ=300mA), (50V IDQ=300mA)

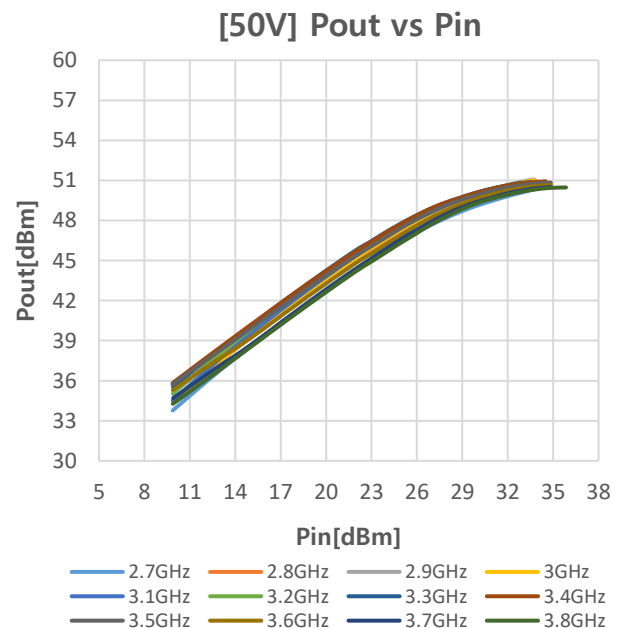
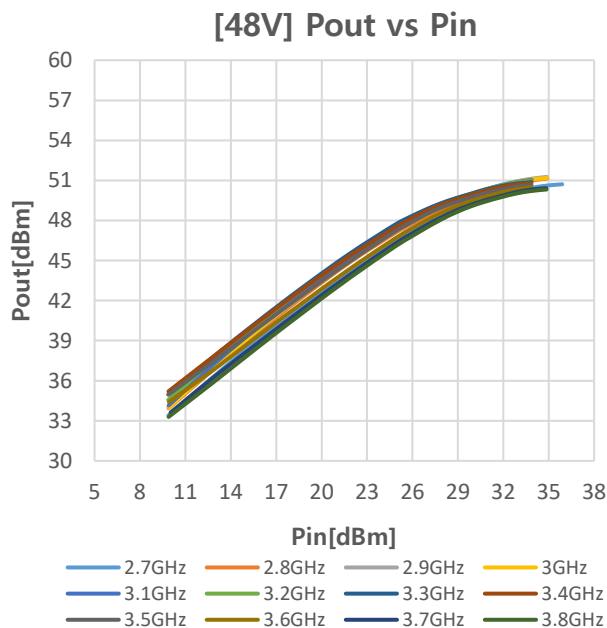
CW-Mode



Output Power (Pout) vs Input Power (Pin) Performance (TA=25°C)

Drain Voltage= (48V IDQ=300mA), (50V IDQ=300mA)

CW-Mode

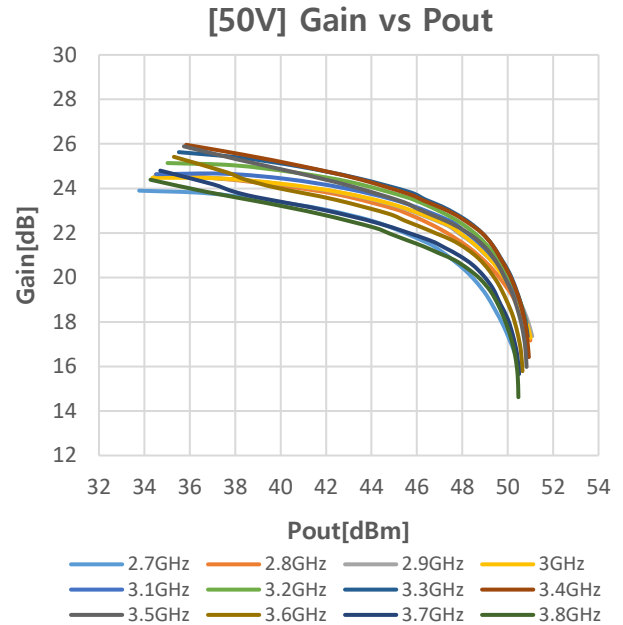
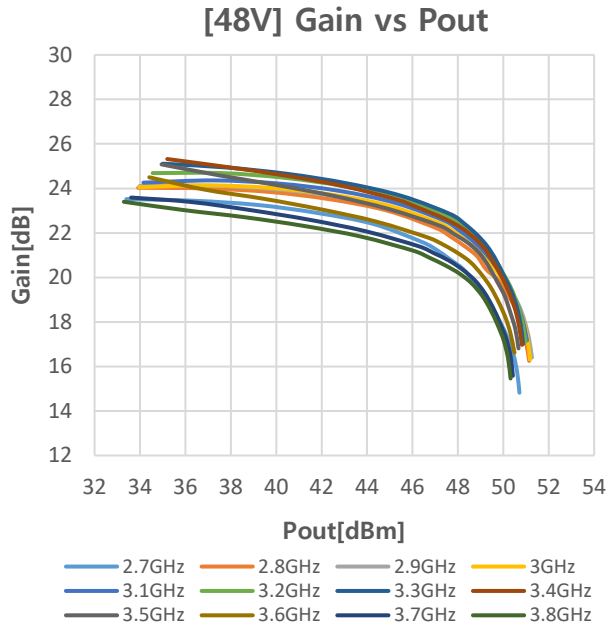




Gain vs Output Power (Pout) Performance (T_A=25°C)

Drain Voltage= (48V IDQ=300mA), (50V IDQ=300mA)

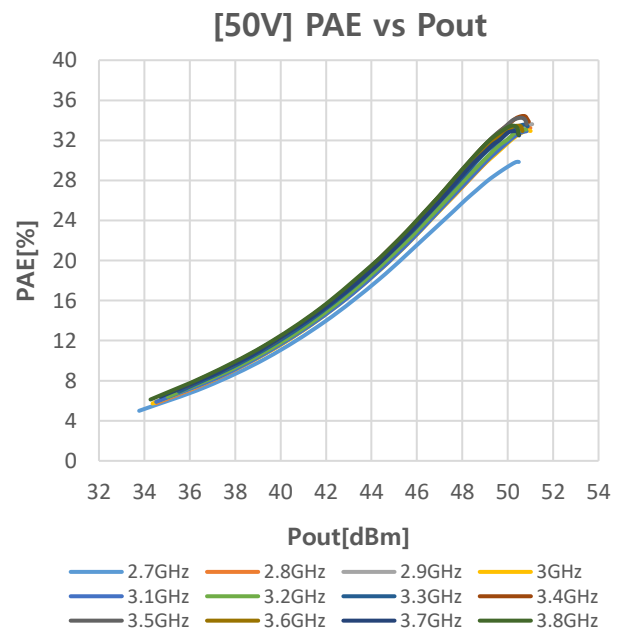
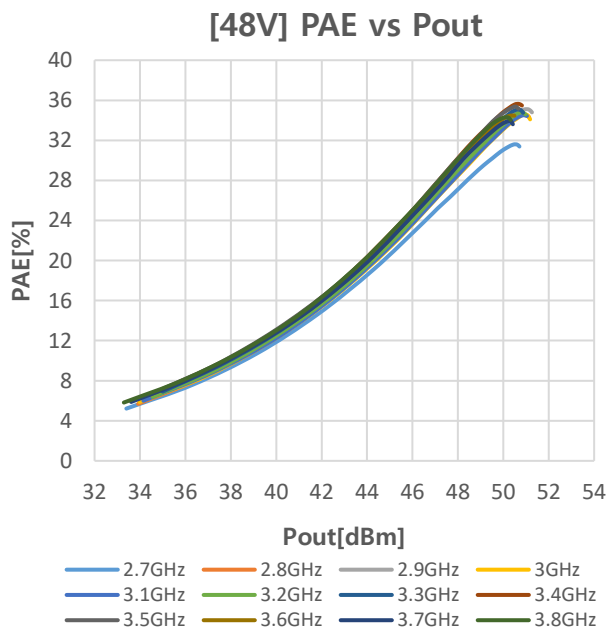
CW-Mode



PAE vs Output Power (Pout) Performance (T_A=25°C)

Drain Voltage= (48V IDQ=300mA), (50V IDQ=300mA)

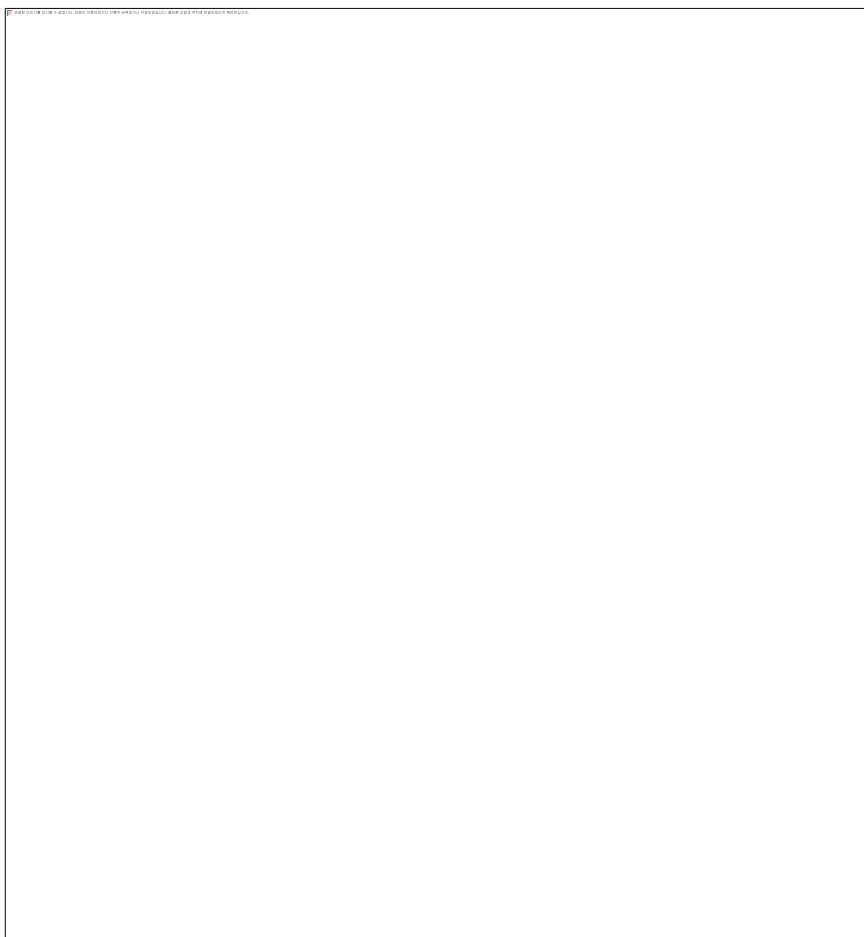
CW-Mode





Product Dimension

- Product Type: MPKG, 10-lead bolt-down
- Unit: mm



Pin No.	Function	Description
1, 5	VG	Gate Bias, bias must be applied to both pins
2, 4	No Connect	Pin can be open circuit
3	RF IN	50 ohm RF input, included DC Blocking Capacitors
6, 10	VD	Drain, Bias, bias must be applied to both pins
7, 9	No Connect	Pin can be open circuit
8	RF OUT	50 ohm RF output, included DC Blocking Capacitors
Flange	Ground	RF and DC Ground



Bias Sequence

1. Both sides must be connected to VG.
2. Both sides must be connected to VD.
3. VG bias must be applied before VD.

Bias On Sequence

1. Ensure RF is turned-off
2. Apply pinch-off voltage of -5V to the gate (V_g)
3. Apply nominal drain voltage (V_d)
4. Adjust V_g to obtain desired I_{dq}
5. Apply RF

Bias Off Sequence

1. Turn RF off
2. Apply pinch-off V_g to the gate ($V_g = -5V$)
3. Turn off drain voltage (V_d)
4. Turn off gate voltage (V_g)

Test Condition

1. $V_D=48V$, $I_{DQ}=300mA$, $V_G=-2.87V$
2. $V_D=50V$, $I_{DQ}=300mA$, $V_G=-2.93V$



Evaluation Board

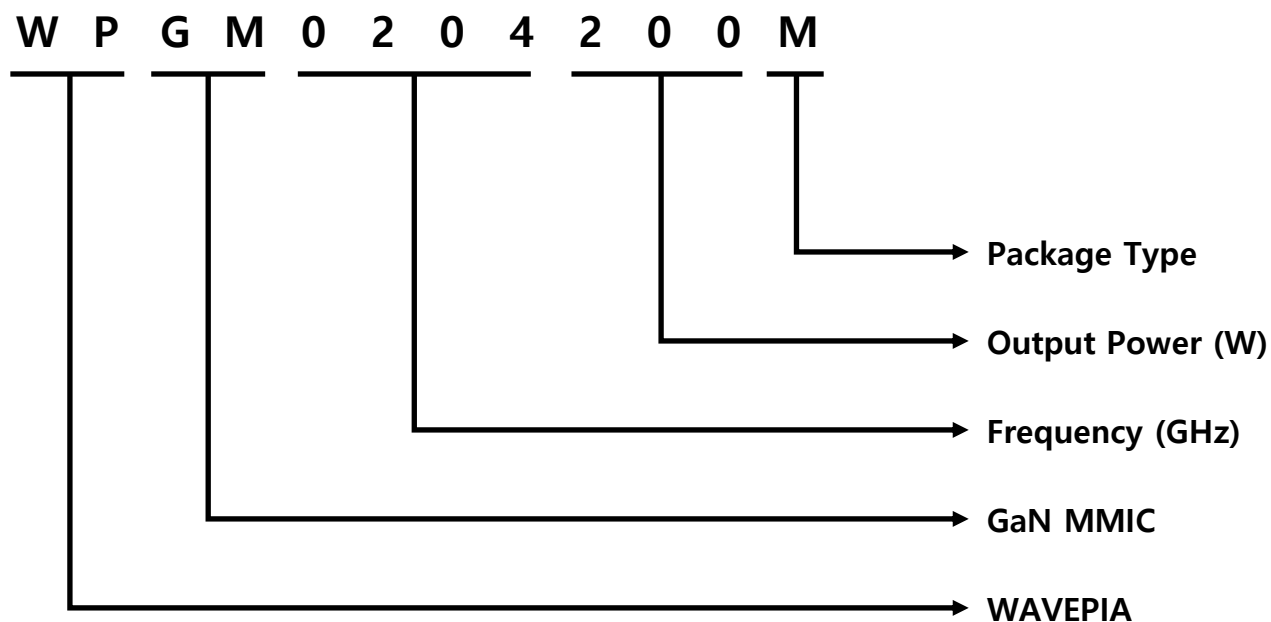


Evaluation Board Circuit Bill of Materials

No	Reference	Value	Description	Manufacturer	EA
1	C1, C2	47uF	Cap, 7343, 16V, ±10%, -55 to 125 degC, RoHS, Tape and Reel	Various	2
2	C3, C4	10uF	Cap, 35V, 7343, ±10%, 1Ω, SMD	Various	2
3	C9, C10, C11, C12	10nF	Cap, 2012, 250V, ±5%, 125°C, High-Q	Various	4
4	C7, C8, C13, C14	100pF	Cap, MLCC, 2012, 100V, ±10%, X7R, SMD/SMT	Various	4
5	C5, C6, C15, C16	470nF	Cap, MLCC, 2012, 100V, ±10%, X7S, T:1.25mm SMD/SMT	Various	4
6	C17, C18	2.2uF	Cap, 4532, 100V, 10%, 10Ω, X7R, 15%	Various	2
7	C19, C20	10uF	Cap, 5750, 10uF, 50V, ±10%, 10Ω, X5R, SMD	Various	2
9	C21, C22	47uF	Cap, KMG, 1608, 100V, 47uF, 6.3*11	Various	2
8	R1, R2	10Ω	Resistor,SMD, 1608, 10R, 5%, LeadFree	Various	2



Part Number System



Parameter	Value	Units
Lower Frequency	2.7	GHz
Upper Frequency	3.8	GHz
Output Power	200	W
Transistor Type	GaN MMIC	-
Package	MPKG	-



Handling Precautions

Parameter	Classification	Standard
ESD - Human Body Model (HBM)	Class 1A	ANSI/ESDA/JEDEC JS-001-2017
ESD - Charge Device Model (CDM)	Class C2	ANSI/ESDA/JEDEC JS-002-2018
MSL - Moisture Sensitivity Level	N/A	



ATTENTION
Electrostatic
Sensitive Device

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations:

Web : www.wavepia.com
Tel : 82 - (0)31 - 8058 - 3374
Email : sales@wavepia.com

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