

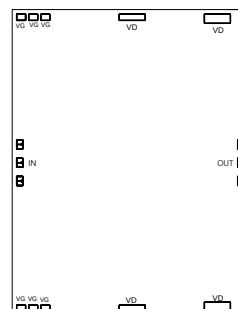
Product Features

- 9.2-9.8GHz GaN MMIC Power Amplifier
- Typical Small-signal Gain 31.1dB
- Typical Power Gain 24.1dB
- Typical Output Power 49.8dBm
- Typical PAE 38.6%
- 28V-32V operation

* Above Typical values measured at 9.5GHz and 28V

Applications

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



Absolute Maximum Rating

Parameter	Symbol	Rating	Units	Conditions
Drain-Source Voltage	V _{DSS}	120	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}	10	mA	25°C
Maximum Drain Current ²	I _{DMAX}	1.04	A	I _d @ V _d =10V, V _g = 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.

Specifications (TA=25°C, F0=9.5GHz, VDD=28V, IDQ=560mA)

Parameter	Symbol	MIN	TYP	MAX	Units	Conditions
Small Signal Gain	G		31.1		dB	Pulse Width=100μsec, Duty Cycle=10%
Power Gain	G _P		24.1		dB	Psat @ I _{gs} =1mA
Saturated Output Power	P _{OUT}		49.8		dBm	Psat @ I _{gs} =1mA
Power Added Efficiency	PAE		38.6		%	Psat @ I _{gs} =1mA

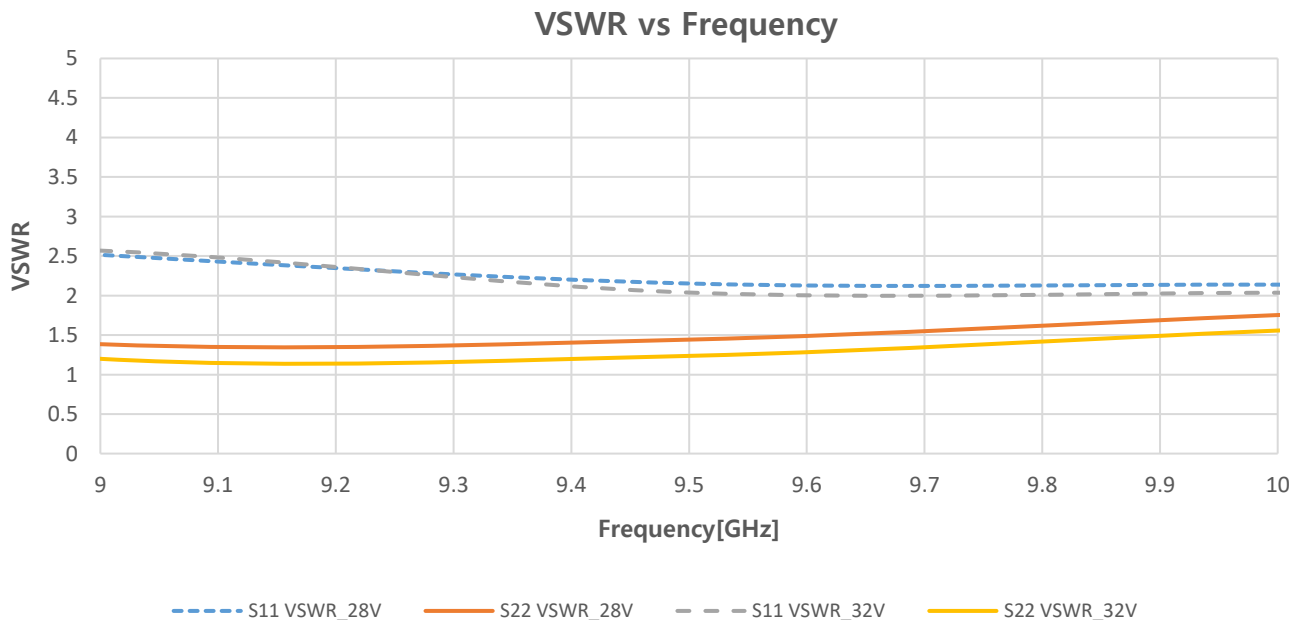
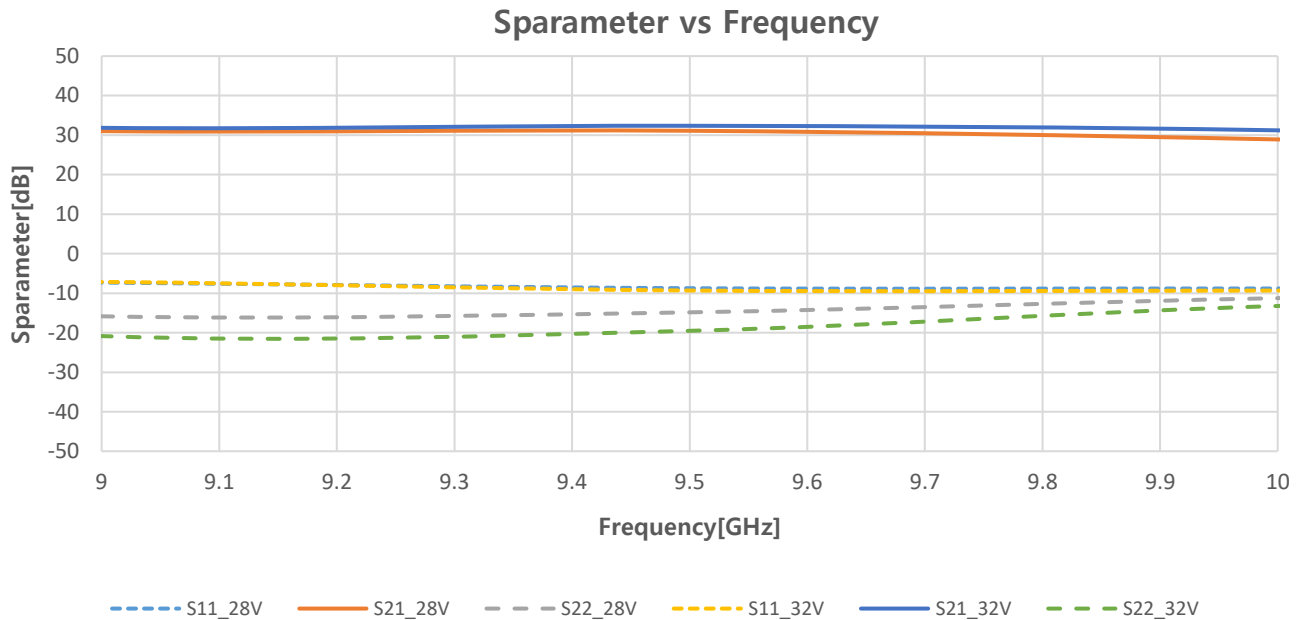
Specifications (TA=25°C, F0=9.5GHz, VDD=32V, IDQ=610mA)

Parameter	Symbol	MIN	TYP	MAX	Units	Conditions
Small Signal Gain	G		32.4		dB	Pulse Width=100μsec, Duty Cycle=10%
Power Gain	G _P		25.1		dB	Psat @ I _{gs} =1mA
Saturated Output Power	P _{OUT}		50.9		dBm	Psat @ I _{gs} =1mA
Power Added Efficiency	PAE		41.6		%	Psat @ I _{gs} =1mA



Small-Signal Performance (TA=25°C)

Drain Voltage= (28V IDQ=560mA), (32V IDQ=610mA)

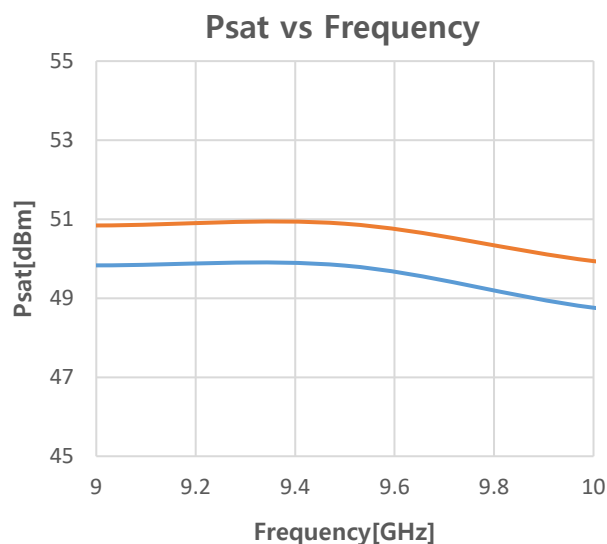




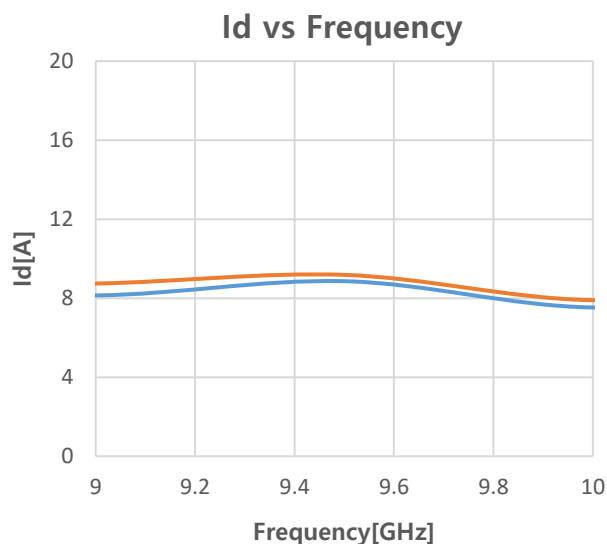
Psat, Id vs Frequency Performance (TA=25°C)

Drain Voltage= (28V IDQ=560mA), (32V IDQ=610mA)

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



— PULSE_28V — PULSE_32V

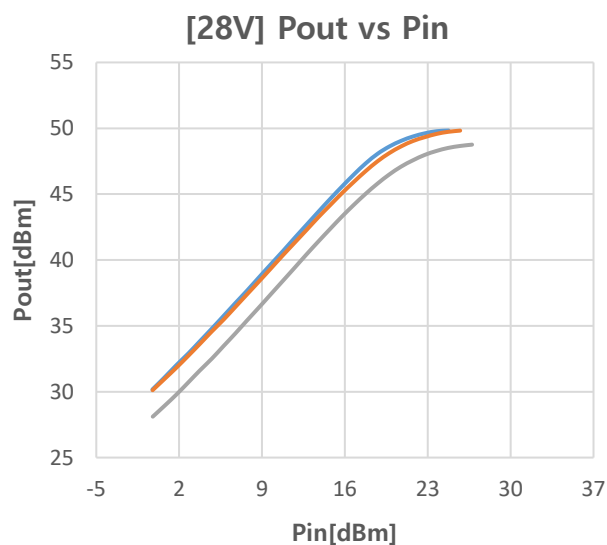


— PULSE_28V — PULSE_32V

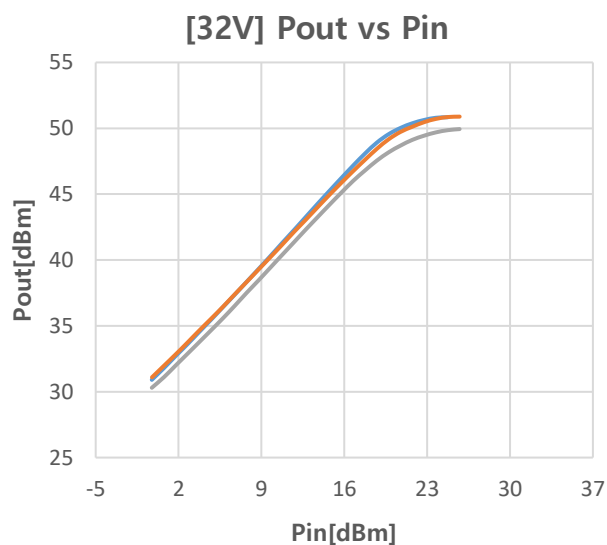
Output Power (Pout) vs Input Power (Pin) Performance (TA=25°C)

Drain Voltage= (28V IDQ=560mA), (32V IDQ=610mA)

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



— 9 — 9.5 — 10



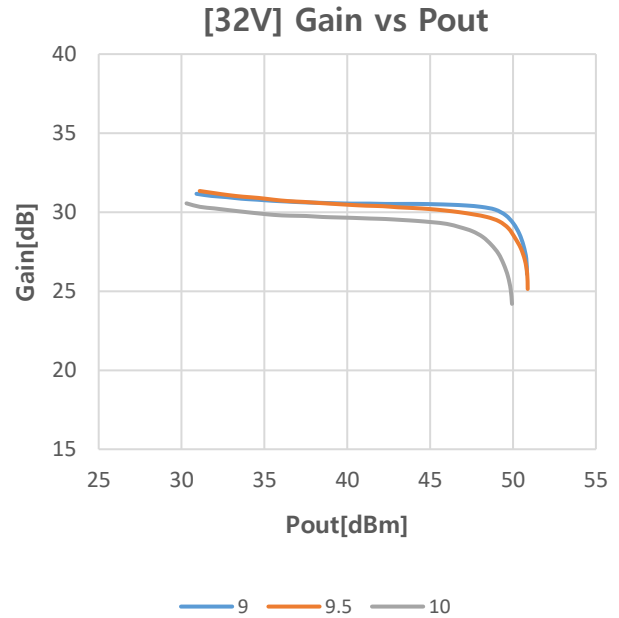
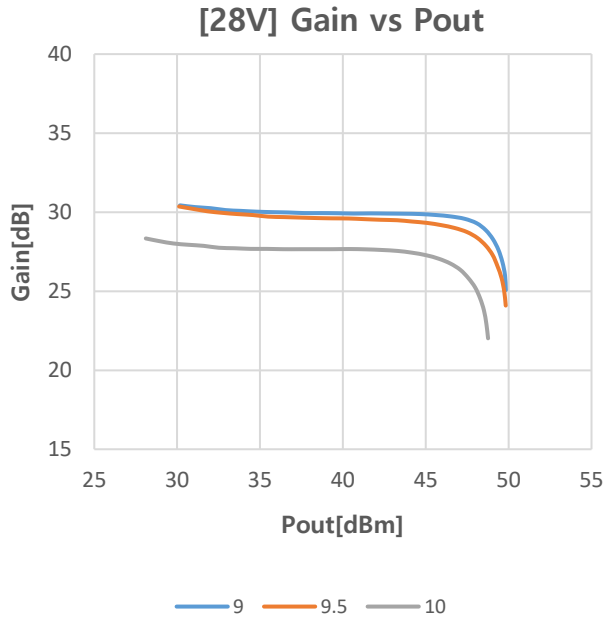
— 9 — 9.5 — 10



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

Drain Voltage= (28V IDQ=560mA), (32V IDQ=610mA)

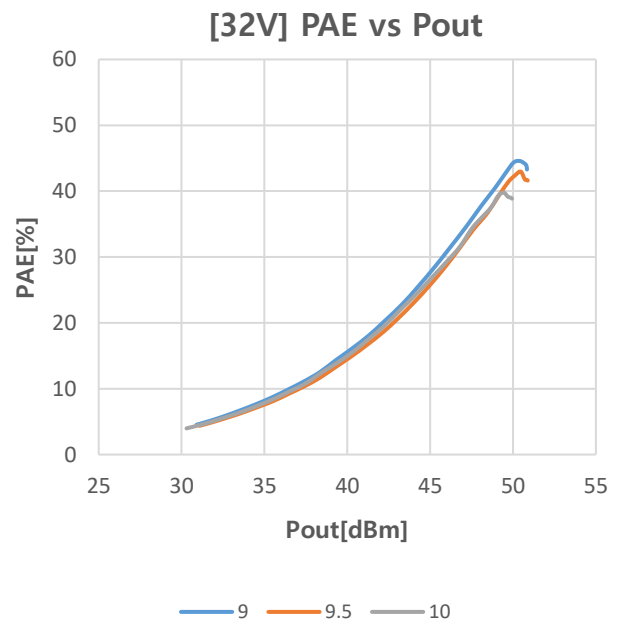
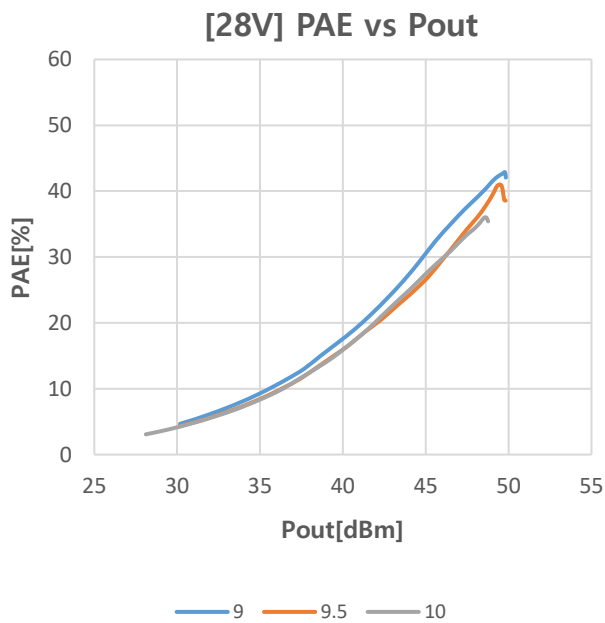
Pulse-Mode(Pulse Width=100μsec, Duty Cycle=10%)



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

Drain Voltage= (28V IDQ=560mA), (32V IDQ=610mA)

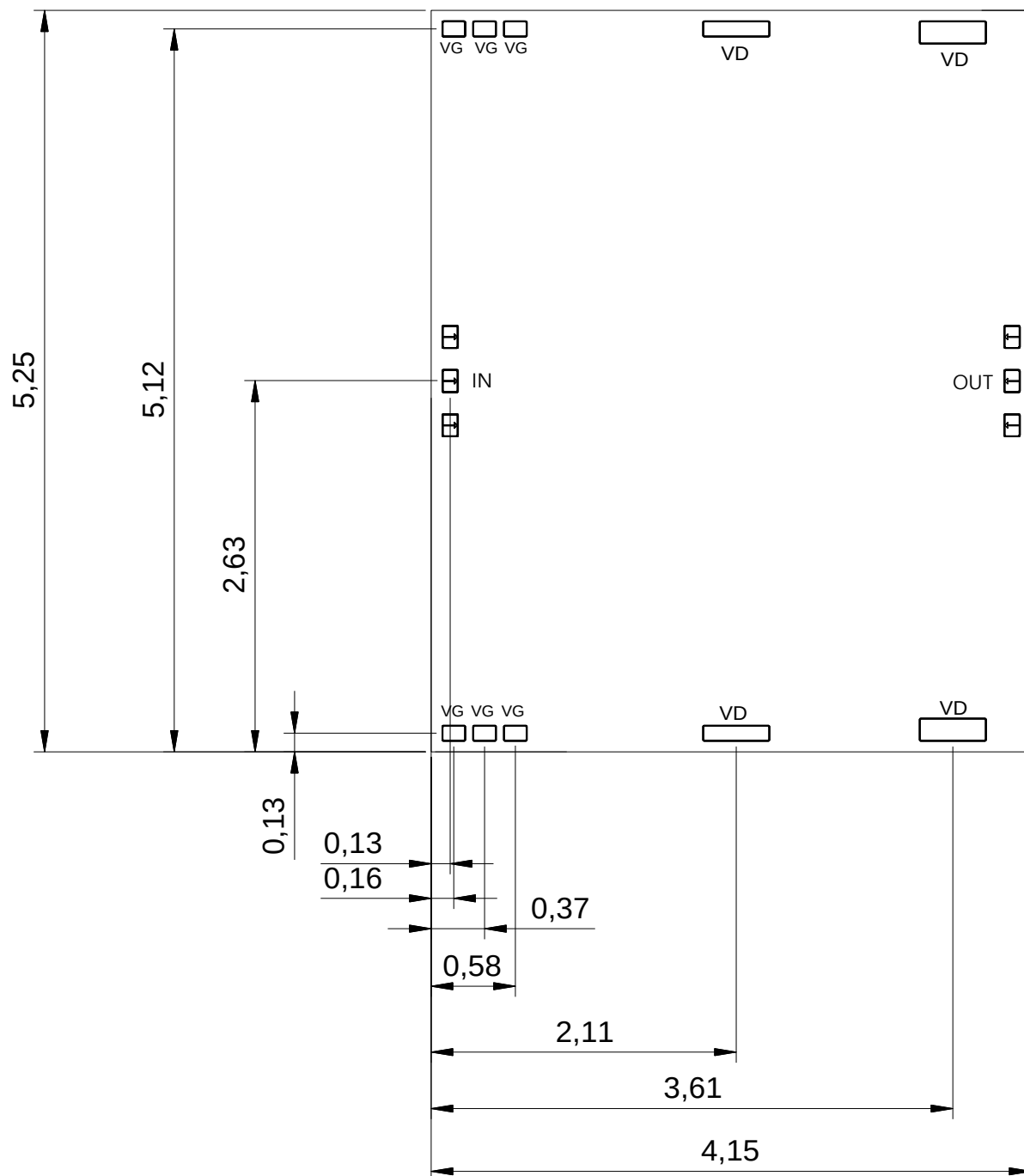
Pulse-Mode(Pulse Width=100μsec, Duty Cycle=10%)





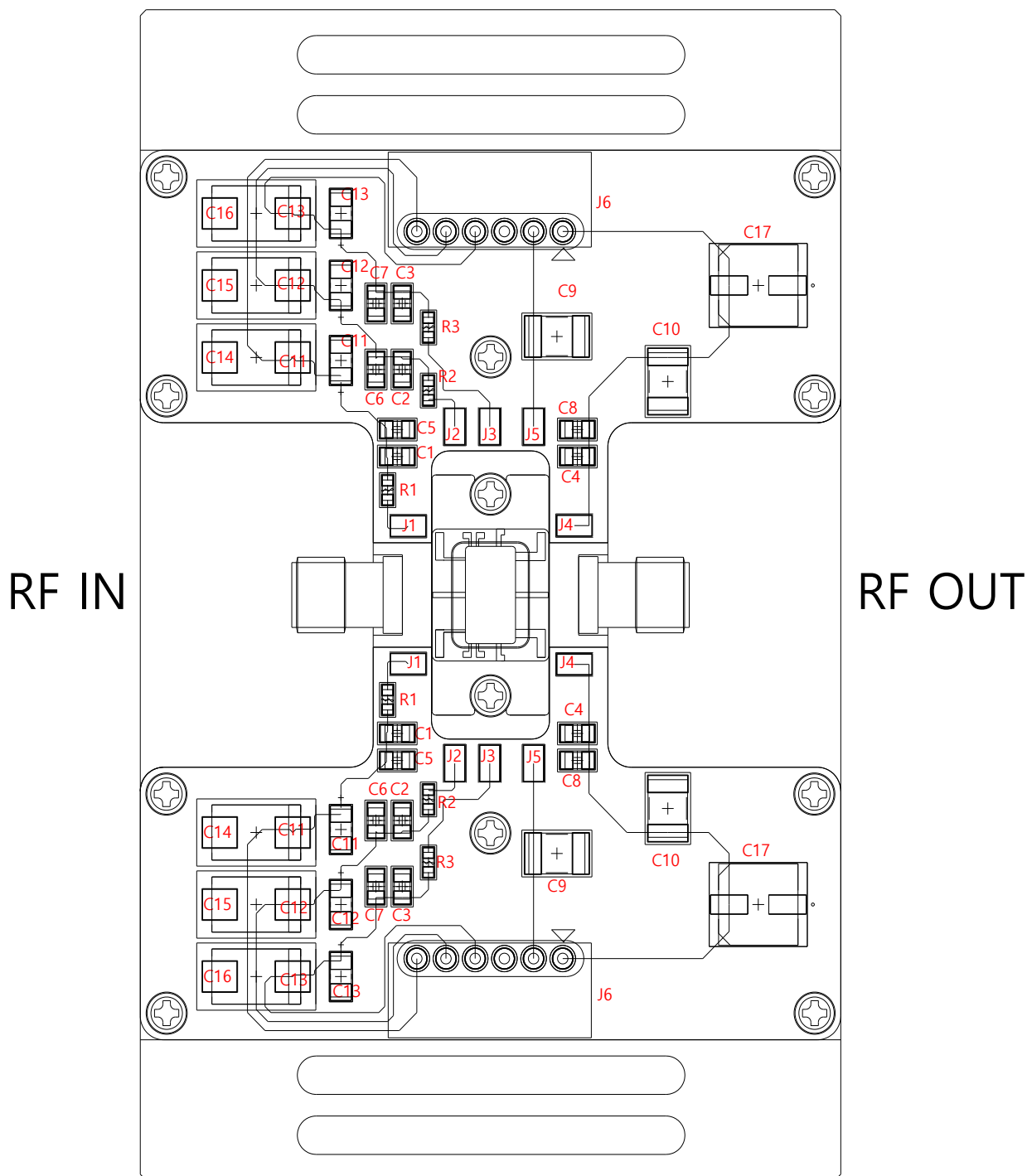
Product Dimension

- Product Type: Bare Die, leadless
- Unit: mm





Evaluation Board Circuit Outline





Bias Sequence

1. VG connection must be biased from both sides.
2. VD connection must be biased from both sides.
3. VG bias must be applied before VD

Test Condition

1. VD=28V, IDQ=560mA, VG=-2.58V
2. VD=32V, IDQ=610mA, VG=-2.58V

Evaluation Board Circuit Bill of Materials

Reference	Part Number	Value	Description	Package	Manufacturer	EA
C1, C2, C3, C4	251R15S101JV4E	100pF	High Q Capacitor	2012	Johanson	4
C5, C6, C7, C8	CL21B103KBANNNC	10nF	Ceramic Capacitor	2012	SAMSUNG	4
C9, C10	201S41W224KV4E	220nF/250V	Ceramic Capacitor	4532	Johanson	2
C11, C12, C13	TAJA106K016RNJ	10uF/16V	Tantalium Capacitor	3216	KYOCERA	3
C14, C15, C16	293D476X9016D2TE3	47uF/16V	Tantalium Capacitor	7343	Vishay	3
C17	KMG 50V 47uF 6.3*11	47uF/50V	Aluminum Capacitor	-	SamYoung	1
R1, R2, R3	RC1608J100SC	10Ω	Chip Resistor	1608	SAMSUNG	3
P2	DC PCB	-	RO4003C 12mil	-	Rogers	2
Q1	G22M2TTKP	-	GaN MMIC	-	WAVEPIA	1



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	



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Electrostatic
Sensitive Device

Contact Information

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

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