

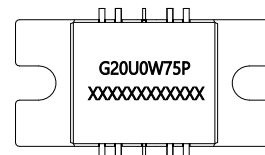
Product Features

- 2.9-3.1GHz GaN MMIC Power Amplifier
- Typical Small-signal Gain 15.5dB
- Typical Power Gain 12.1dB
- Typical Output Power 54dBm
- Typical PAE 55.5%
- 28V-32V operation

* Above Typical values measured at 3GHz and 28V

Applications

- General Purpose
- Weather Radar
- Air Traffic Control Radar
- Maritime Surveillance Radar



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 (T_c=25°C, F₀=3GHz, VDD=28V, IDQ=1000mA)

Parameter	Symbol	MIN	TYP	MAX	Units	Conditions
Small Signal Gain	G		15.5		dB	Pulse Width=100μsec, Duty Cycle=10%
Power Gain	G _P		12.1		dB	Psat @ I _{gs} =1mA
Saturated Output Power	P _{OUT}		54		dBm	Psat @ I _{gs} =1mA
Power Added Efficiency	PAE		55.5		%	Psat @ I _{gs} =1mA

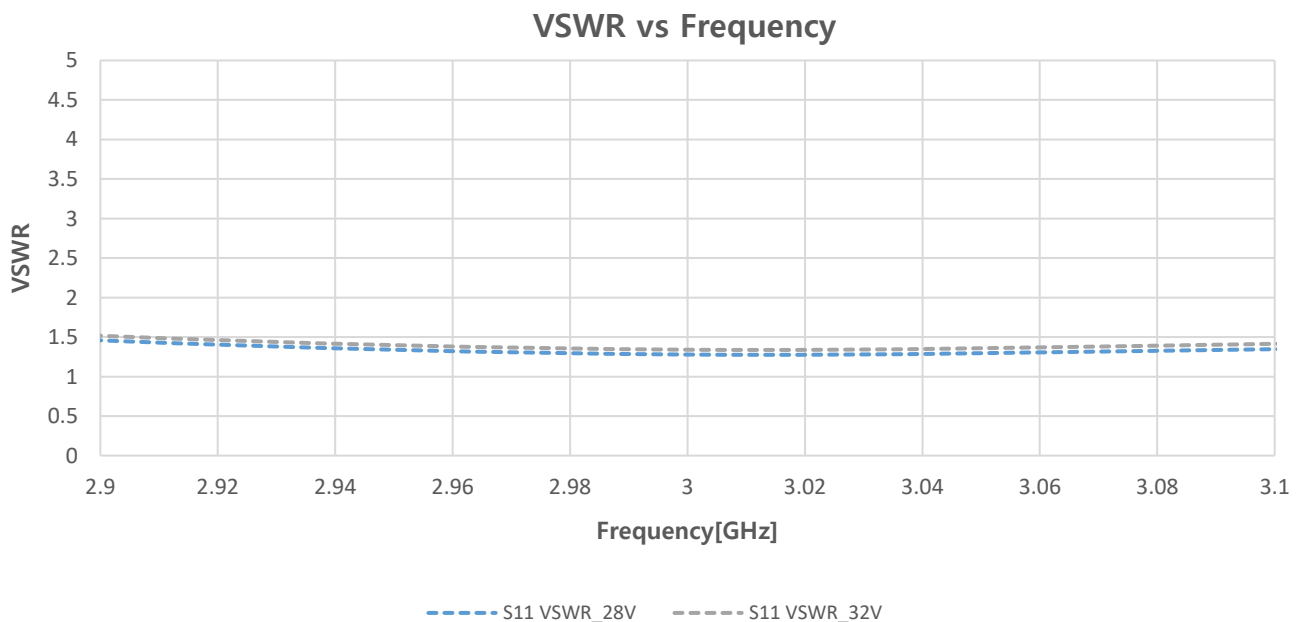
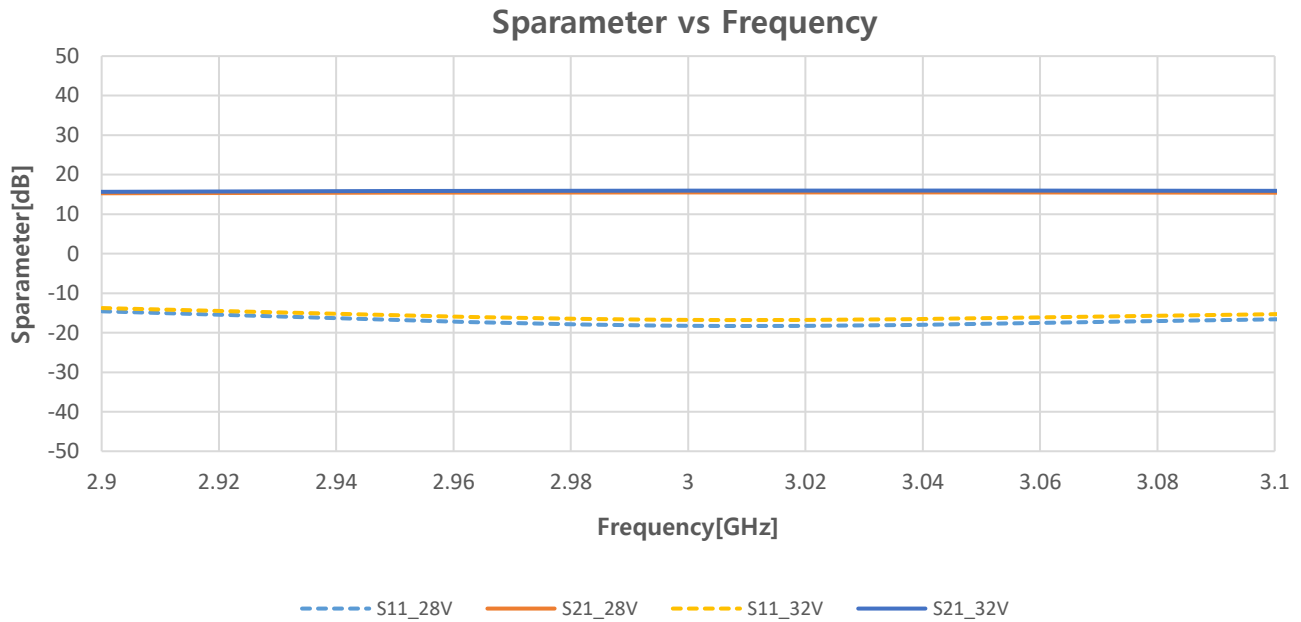
Specifications (T_c=25°C, F₀=3GHz, VDD=32V, IDQ=1300mA)

Parameter	Symbol	MIN	TYP	MAX	Units	Conditions
Small Signal Gain	G		16		dB	Pulse Width=100μsec, Duty Cycle=10%
Power Gain	G _P		12.2		dB	Psat @ I _{gs} =1mA
Saturated Output Power	P _{OUT}		55.1		dBm	Psat @ I _{gs} =1mA
Power Added Efficiency	PAE		51.1		%	Psat @ I _{gs} =1mA



Small-Signal Performance (Tc=25°C)

Drain Voltage= (28V IDQ=1000mA), (32V IDQ=1300mA)

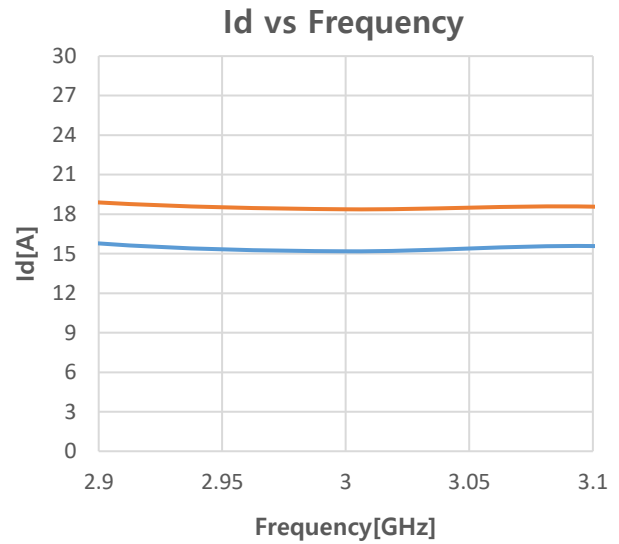
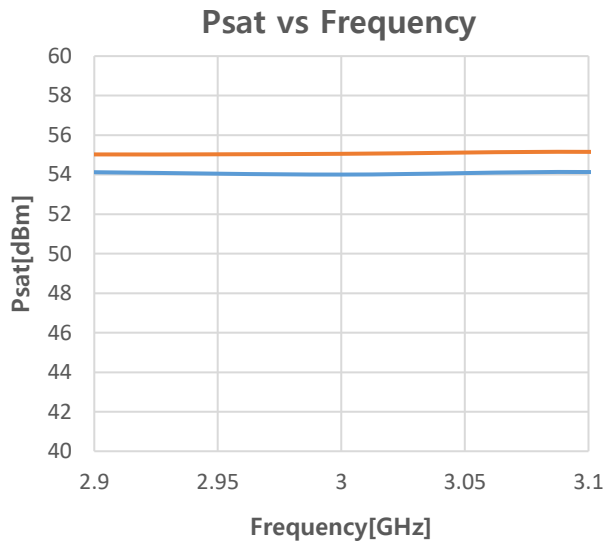




Psat, Id vs Frequency Performance (Tc=25°C)

Drain Voltage= (28V IDQ=1000mA), (32V IDQ=1300mA)

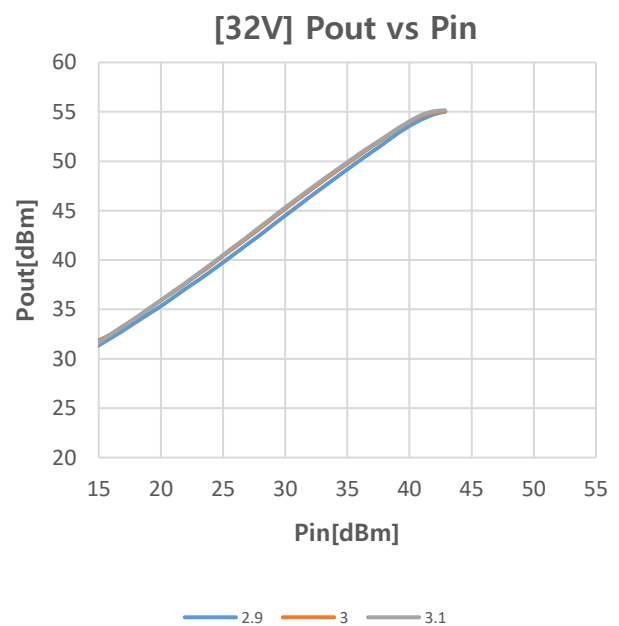
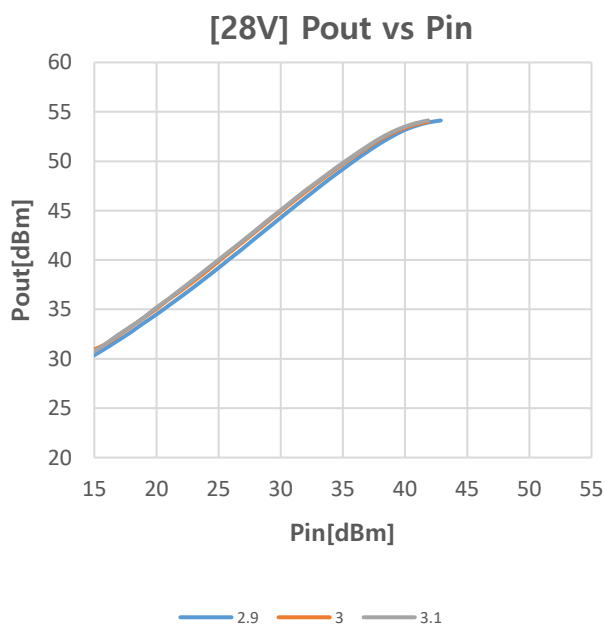
Pulse-Mode(Pulse Width=100μsec, Duty Cycle=10%)



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

Drain Voltage= (28V IDQ=1000mA), (32V IDQ=1300mA)

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

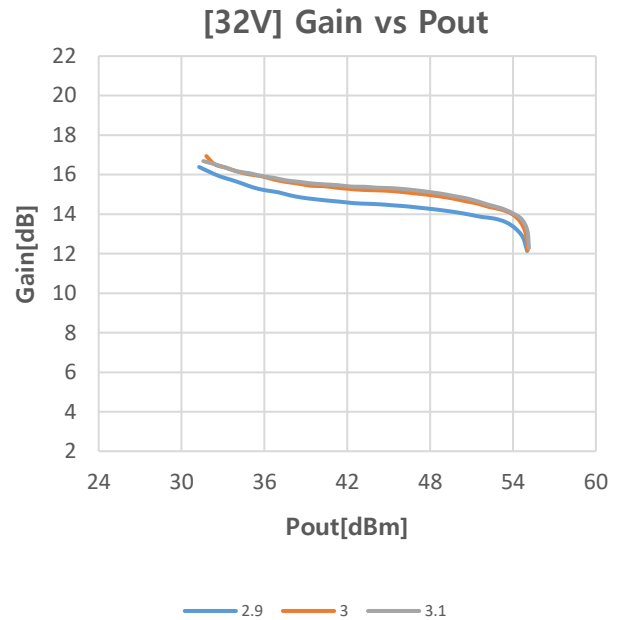
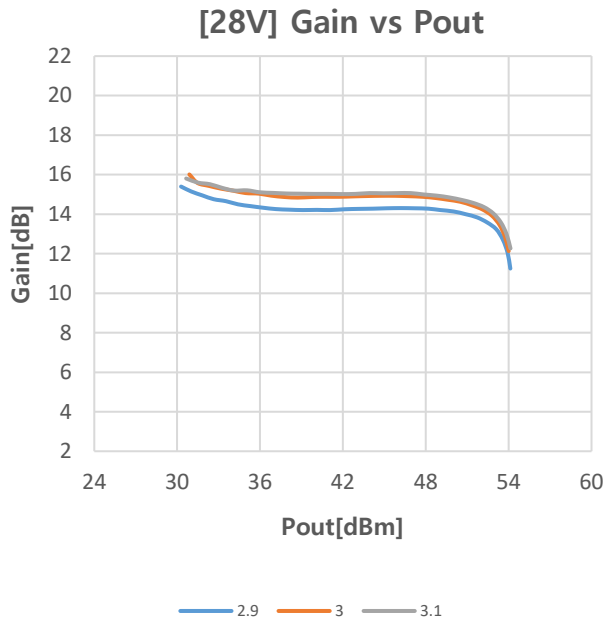




Gain vs Output Power (Pout) Performance (Tc=25°C)

Drain Voltage= (28V IDQ=1000mA), (32V IDQ=1300mA)

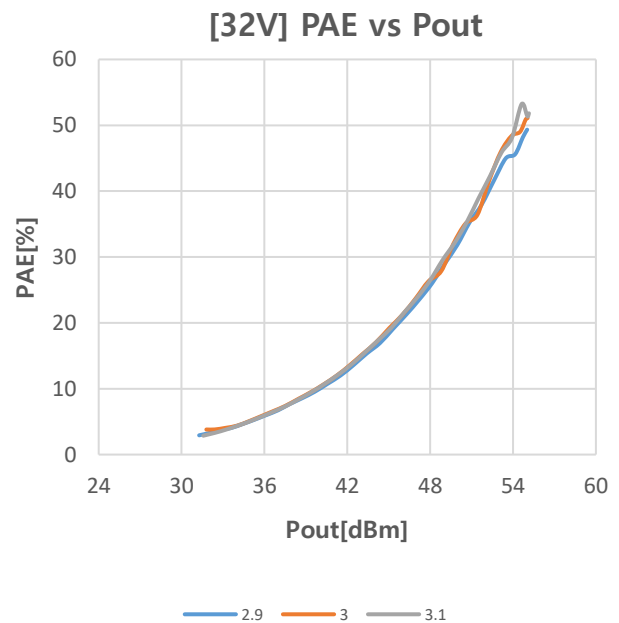
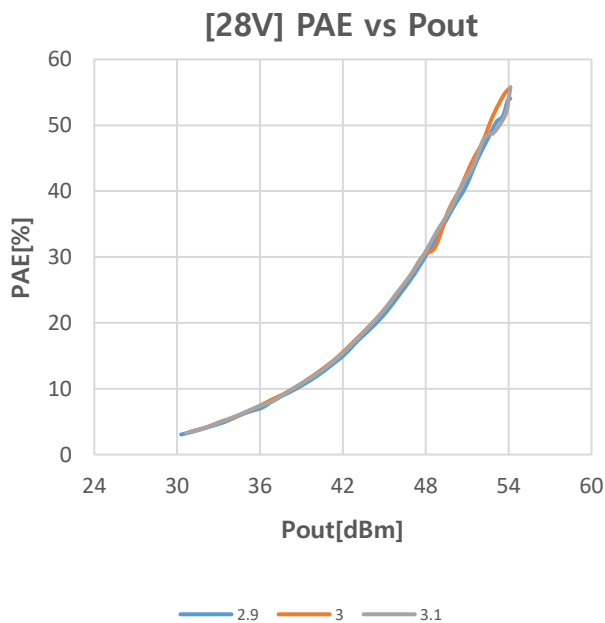
Pulse-Mode(Pulse Width=100μsec, Duty Cycle=10%)



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

Drain Voltage= (28V IDQ=1000mA), (32V IDQ=1300mA)

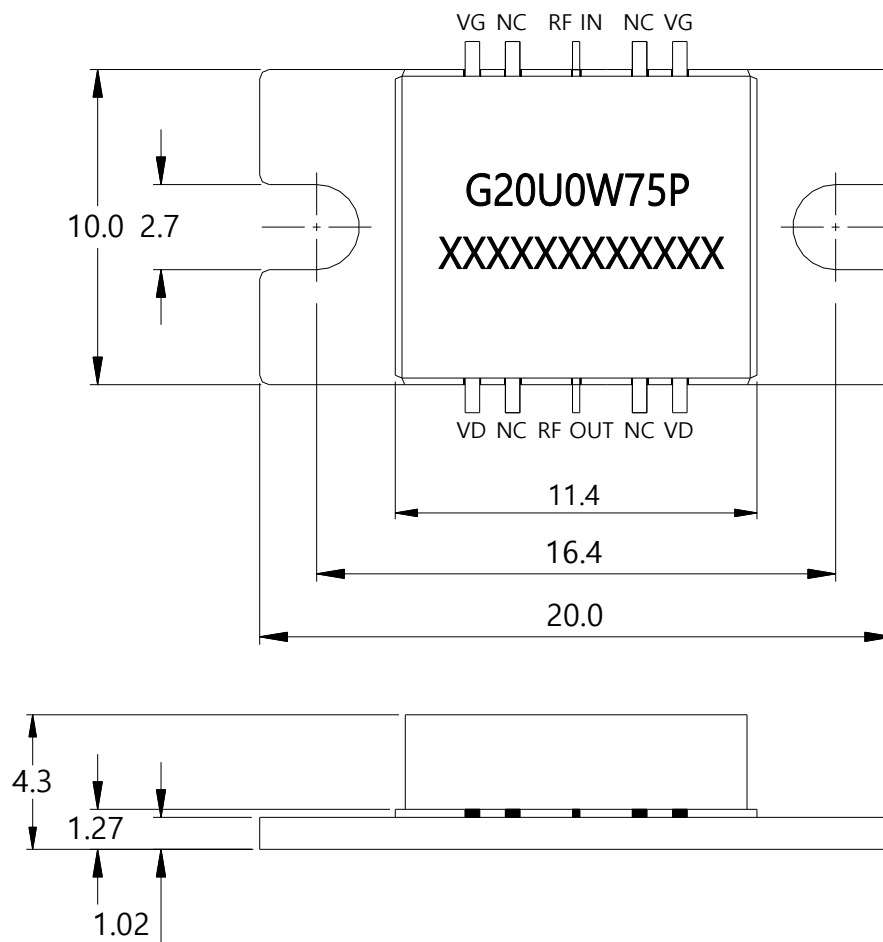
Pulse-Mode(Pulse Width=100μsec, Duty Cycle=10%)





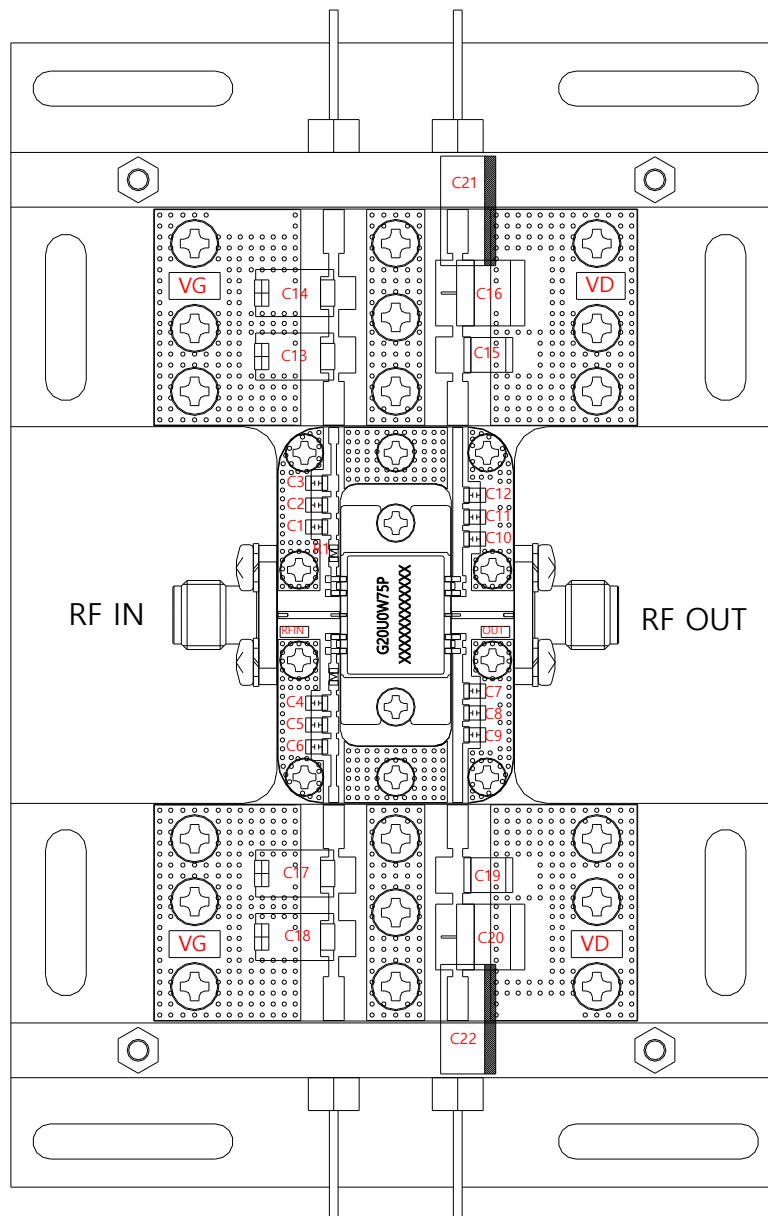
Product Dimension

- Product Type: MPKG, 10-lead bolt-down
- 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=1000mA, VG=-2.46V
2. VD=32V, IDQ=1300mA, VG=-2.46V

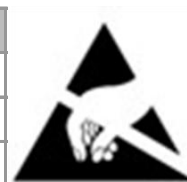
Evaluation Board Circuit Bill of Materials

Reference	Part Number	Value	Description	Package	Manufacturer	EA
C1, C2	293D476X9016D2TE3	47uF / 16VDC	Tantal Capacitor	2917	VISHAY	2
C3, C4	TAJD106K035RNJ	10uF / 35VDC	SMD Tantal Capacitor	2917	KYOCERA	2
C9, C10, C11, C12	251R15S101JV4E	100pF	Multilayer Ceramic Capacitors	2012	JOHANSON	4
C7, C8, C13, C14	CL21B103KCANNNC	10nF	Multilayer Ceramic Capacitors	2012	SAMSUNG	4
C5, C6, C15, C16	C2012X7S2A747K125AB	470nF	Multilayer Ceramic Capacitors	2012	TDK	4
C17, C18	251S43W474KV4E	470nF	General Purpose Ceramic Capacitor	1812	JOHANSON	2
C19, C20	22201C106KAT2A	10uF	Multilayer Ceramic Capacitors	2220	KYOCERA	2
R1, R2	WR06X100JTL	10 Ohm	Chip Resistor	0603	WALSIN	2
C21,22	KMG 50V 47uF V 6.3*11	E-Cap (Dip Type)	electrolytic capacitor	-	SAMYOUNG	2
-	SM06FS064	DC To 26.5 GHz	SMA 4 Hole	-	WITHWAVE	2
-	FTA302ED101S-S	100pF	Feed through Capacitor	-	MARUWA	4
-	36-1595-2-ND	-	Terminals / Turret Connectors	-	KEystone	4
Q1	G20U0W75P	-	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	



ATTENTION
Electrostatic
Sensitive Device

Contact Information

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

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