

Product Features

- Doherty amplifier design
- GaN on SiC HEMT
- Small and light weight
- 50 Ohm Input/Output impedance matched
- Highly reliable and rugged design
- High efficiency
- 28W typical P_{AVG}

Applications

- WCDMA & LTE DPD amplifier
- General purpose RF amplifier



Description

The RTP21028-20 is designed for RF system application frequencies from 2110 ~ 2170MHz, with high gain. This Pallet Amplifier uses GaN on SiC HEMT technology which performs high breakdown voltage, high linearity, and high efficiency. The RTP21028-20 is a DPD application amplifier.

Electrical Specifications @ VDD= 48V, 50Ω System

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Frequency Range	MHz	2110	-	2170	f ₀
Operating Bandwidth	MHz	-	60	-	OBW
Average Output Power	dBm	44	44.5	-	P _{out}
Peak Output Power (Pulse duty 10%)	dBm	51.5	52	-	P _{sat}
ACPR (LTE 10MHz 1FA ^{*1}) @ P _{out} =44.5dBm Avg.	Pre-DPD	-	-24	-	ACPR
	Post-DPD ^{*2}	-	-52	-	
RF Gain @ 25°C	dB	43.5	44.5	45.5	G _p
Gain Variation	dB	± 3dB @ operating temperature			ΔG
Gain Flatness	dB	-	± 0.5	±1	G _F
Input Return Loss	dB	-	-	-12	S ₁₁
Output Return Loss	dB	-	-	-17	S ₂₂
Operating Voltage	V	V _{DC1} : 5.6±3%			VDC
		V _{DC2} : 48 ±1V			
Current Consumption	5.6V	-	0.16	0.19	IDD
	48V	-	1.32	1.43	
Efficiency @ 44.5dBm	%	40	43	-	Eff
Feedback Output level @ 44.5dBm	dBm	5	7	9	FB

Note

1. Signal source condition : LTE 10MHz 1FA, PAPR 7.5dB@0.01% probability on CCDF
2. DPD Solution : Broadcom OP6180

Absolute Maximum Ratings

PARAMETER	UNIT	RATING	SYMBOL
Input Overdrive	Max.	+4dBm	P _{OD}
Load VSWR	Nom.	∞ : 1 (All Phase & Amplitude)	Ψ
Operating Case Temperature	°C	95	T _c

Environmental Characteristics

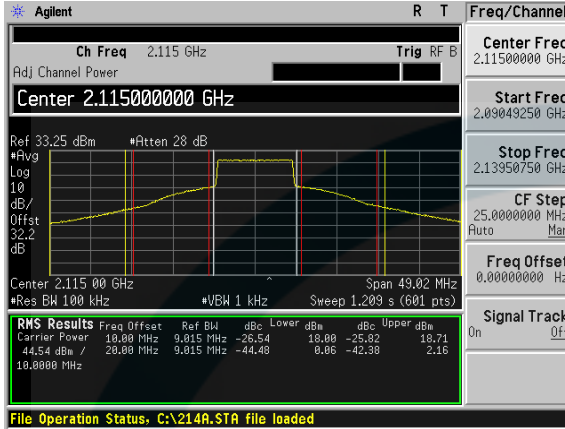
PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Ambient Temperature	°C	-30	-	60	T _a
Storage Temperature	°C	-40	-	100	T _{stg}
Relative humidity w/o condensation	%	-	-	95	RH

Mechanical Specifications

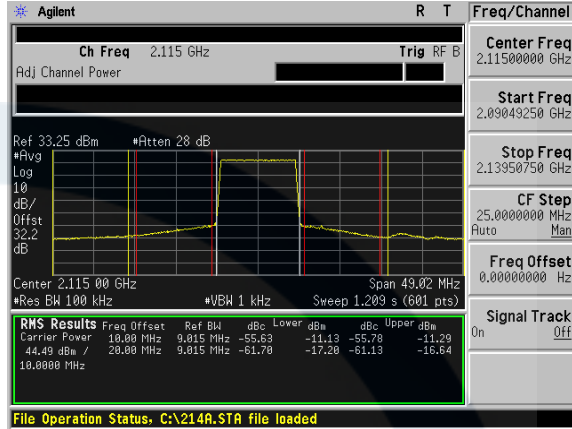
PARAMETER	UNIT	VALUE
Dimensions (L x W x H)	mm	125 x 90 x 20
Weight	Kg	0.37
RF Input Connector	-	SMA (Female)
RF Coupling Connector	-	SMA (Female)
RF Output Connector	-	SMA (Female)
I/O Connector	-	SMAW250-07(Yeonho Electronics)
Cooling	-	External Heat-sink + Airflow

Typical Output Spectrum @ LTE 10MHz 1FA, PAPR 7.5dB

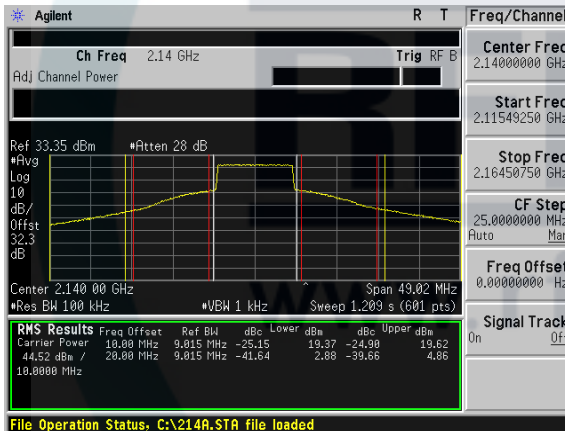
Pre – DPD @ 2115MHz, LTE 10MHz 1FA, PAPR 7.5dB



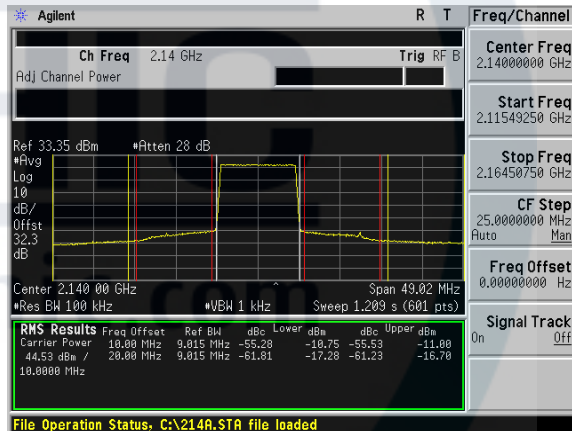
Post – DPD @ 2115MHz, LTE 10MHz 1FA, PAPR 7.5dB



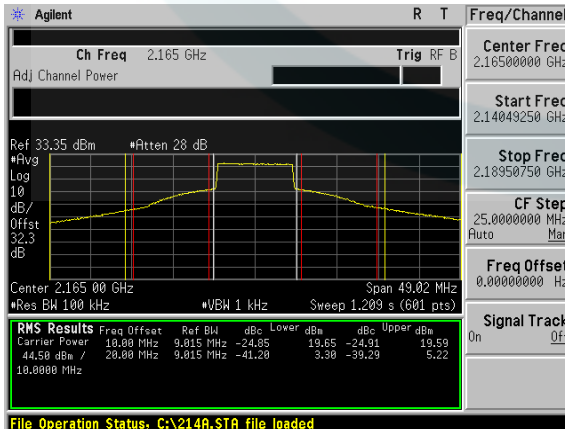
Pre – DPD @ 2140MHz, LTE 10MHz 1FA, PAPR 7.5dB



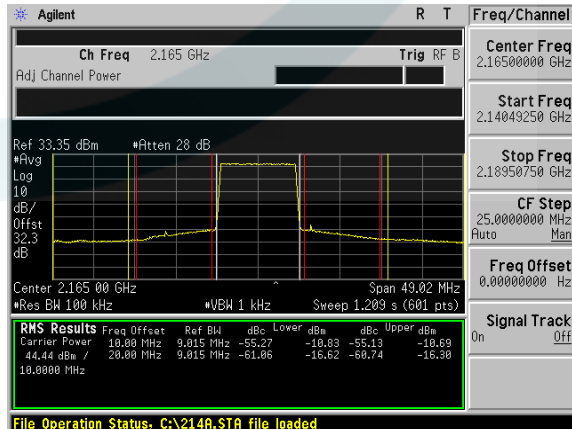
Post – DPD @ 2140MHz, LTE 10MHz 1FA, PAPR 7.5dB



Pre – DPD @ 2165MHz, LTE 10MHz 1FA, PAPR 7.5dB

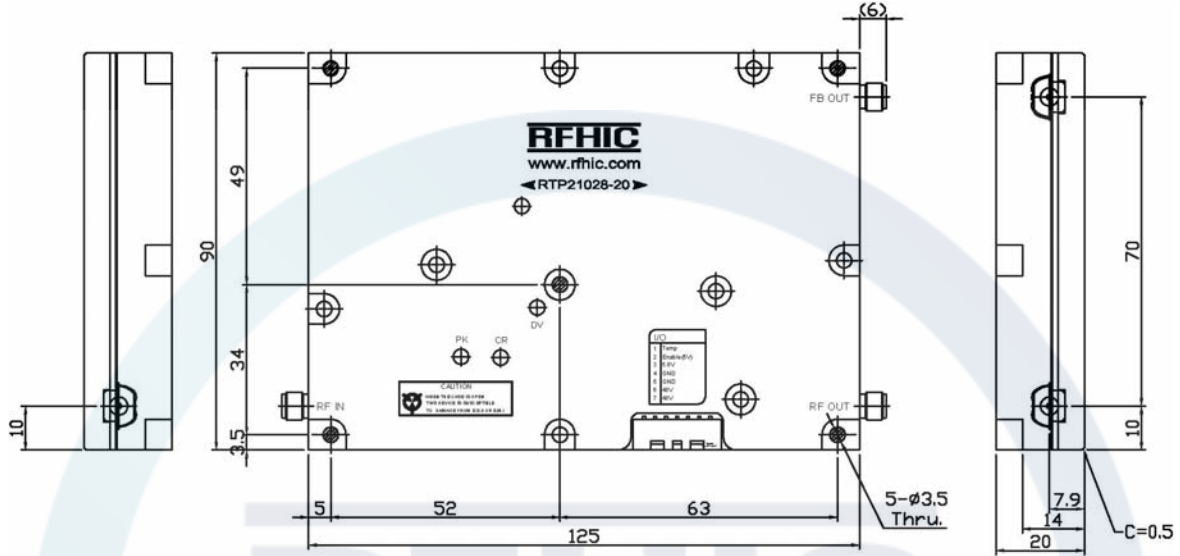


Post – DPD @ 2165MHz, LTE 10MHz 1FA, PAPR 7.5dB



Outline Drawing

* Unit: mm | Tolerance: ±0.2



Note
Connector positions and module mount holes may be subjected change.

Interface Connector

7 Pin-Control (SMAW250-07)

Pin No	Description	Specification
1	Temp Monitor	Reporting Temperature data [0.75V/25°C (10mV/°C)]
2	Enable / Disable	Amp Enable(+5.0V) / Amp Disable(0V)
3	V _{PD}	+5.6 V (Pre-Drive and Drive stage and bias voltage)
4	GND	Ground
5	GND	Ground
6	V _{DD}	+48 V (PA Drain Supply)
7	V _{DD}	+48 V (PA Drain Supply)

Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RTP21028-20	2014.05.26	1.0	-	Initial



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