Preliminary
Wideband Power Amplifier
RWM0105050-47

Product Features

- GaN on SiC Broadband High Power Amplifier
- 20 ~ 520MHz Operation Bandwidth
- Power Gain Typical 47dB.
- 50W Typical. @PIN = 0dBm
- Designed with Class A, AB
- Designed with a compact form factor

Applications

- General Purpose

Description

The power amplifier module is designed for Broadcasting, Telecommunication, Medical and Other markets.
Operating frequency range is from 20 ~ 520MHz.
Gallium Nitride on SiC technology is used and attached on an aluminum sub carrier. Full in/out matching for broadband performance is already applied.
Improved thermal handling by patented technology.

Electrical Specifications @ V_{CC} = 32V; Tc = 45°C; Z_S = Z_L = 50Ω

PARAMETER		UNIT	MIN	TYP	MAX	CONDITION
Operating Frequency		MHz	20	-	520	-
Small Signal Gain		dB	-	58.0	-	@PIN = -30dBm
Power Gain		dB	-	47.0	-	@PIN = 0dBm
Gain Flatness		dBpp	-	±0.75	±1.5	@PIN = 0dBm
POUT		dBm	46.5	47.0	-	@PIN = 0dBm
OIP3 @ Po = +37dBm/Tone (100kHz spacing, CW 2-Tone)		dBm	50	56	-	-
Input Return Loss		dB	-	-15	-9.5	-
Harmonic suppression	2nd	dBc	-	-40	-30	CW 1-tone @Po = +43dBm
	3rd	dBc	-	-35	-20	
Noise Figure		dB		8.0		-
Supply Voltage		V		32.0		Vcc(=Vds)
Quiescent Current consumption		A		3.0	3.2	-
Current Consumption		A	-	3.8	4.4	@PIN = 0dBm
Switch On/Off – PIN No 4. Switching Time*		uS	-	3	5	
Shut Down(+5V) – PIN No 3. Switching Time		mS	-	500	-	Mute
Shut Down or Switch On/Off TTL Voltage		V	0	-	0.5	On : TTL “Low”(Enable)
			2.5	5	5.5	Off : TTL "High"(30mA@Disable)

Note.
*. Gate On/Off : High speed switching

Absolute Maximum Ratings

PARAMETER	UNIT	RATING
Input RF Power	dBm	2
Supply Voltage	V	36.0
Load Mismatch Value	-	3 : 1 @all load phase

* Input Signal Condition : CW 1-Tone

Environmental Characteristics

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Case Temperature	℃	-20	-	70	Tc
Storage Temperature	℃	-40	-	85	Tstg
Relative Humidity	%			95	RH

Ordering Information

Part Number	Package
RWM0105050-47	Connector : D-Sub(7W2), SMA Type

Mechanical Specifications

PARAMETER	UNIT	TYP
Dimension	㎜	117.5(L) x 75(W) x 25(H)
Weight	g	380
RF IN/OUT Connector	-	SMA Female
Cooling	-	External Heat-sink

Typical Performance @ 45°C

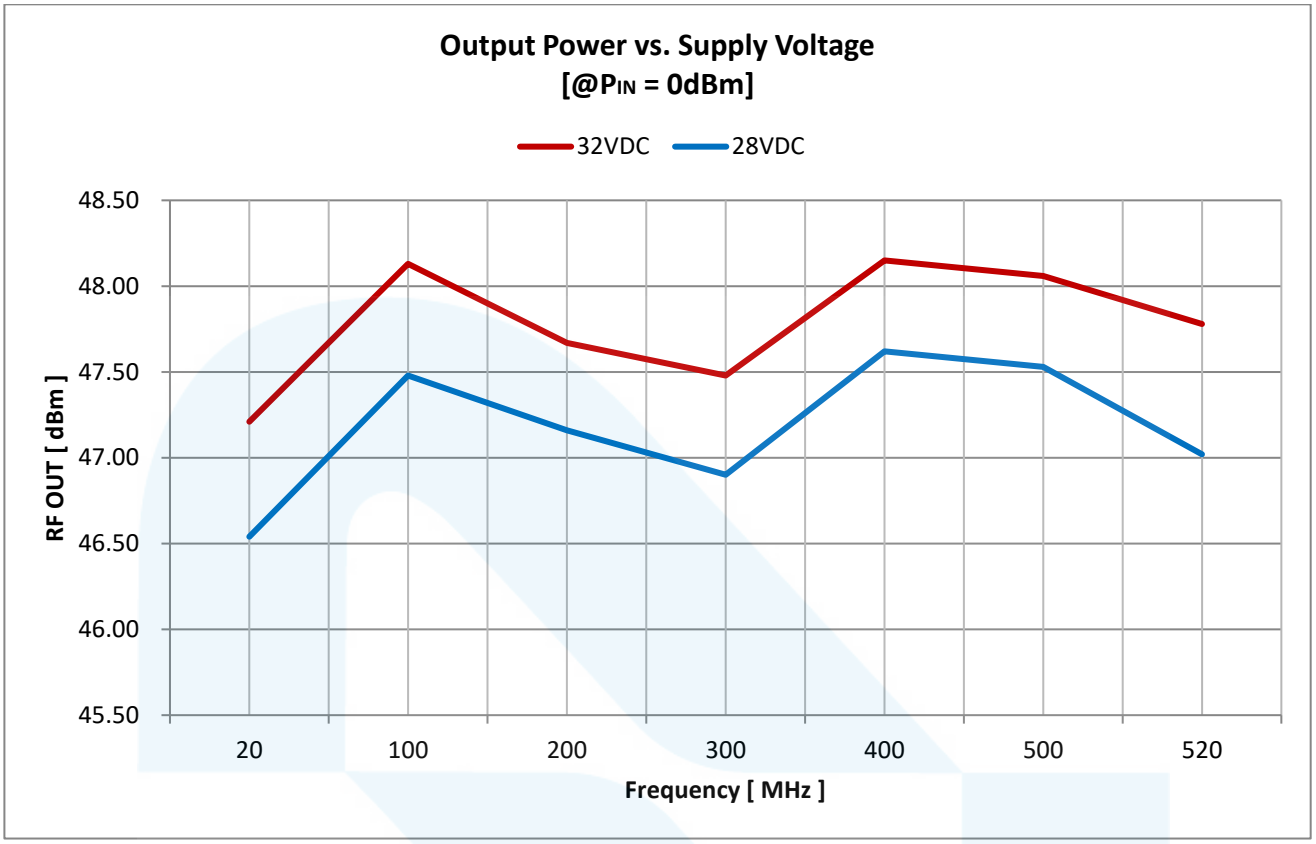
Frequency (MHz)	RF Input Power (dBm)	RF Output Power (dBm)	RF Output Power (W)	Power Gain (dB)	Current Consumption (A)	Supply Voltage (V)	Efficiency (%)
20	0	46.54	45.08	46.54	3.01	28	53.49
100		47.48	55.98	47.48	3.51	28	56.96
200		47.16	52.00	47.16	3.84	28	48.36
300		46.90	48.98	46.90	3.68	28	47.53
400		47.62	57.81	47.62	3.91	28	52.80
500		47.53	56.62	47.53	3.98	28	50.81
520		47.02	50.35	47.02	3.70	28	48.60

Frequency (MHz)	RF Input Power (dBm)	RF Output Power (dBm)	RF Output Power (W)	Power Gain (dB)	Current Consumption (A)	Supply Voltage (V)	Efficiency (%)
20	0	47.21	52.60	47.21	3.24	32	50.73
100		48.13	65.01	48.13	3.75	32	54.18
200		47.67	58.48	47.67	4.05	32	45.12
300		47.48	55.98	47.48	3.85	32	45.43
400		48.15	65.31	48.15	4.13	32	49.42
500		48.06	63.97	48.06	4.19	32	47.71
520		47.78	59.98	47.78	3.94	32	47.57

< Table 1. Typical Performance (28 Vs 32 VDC) >

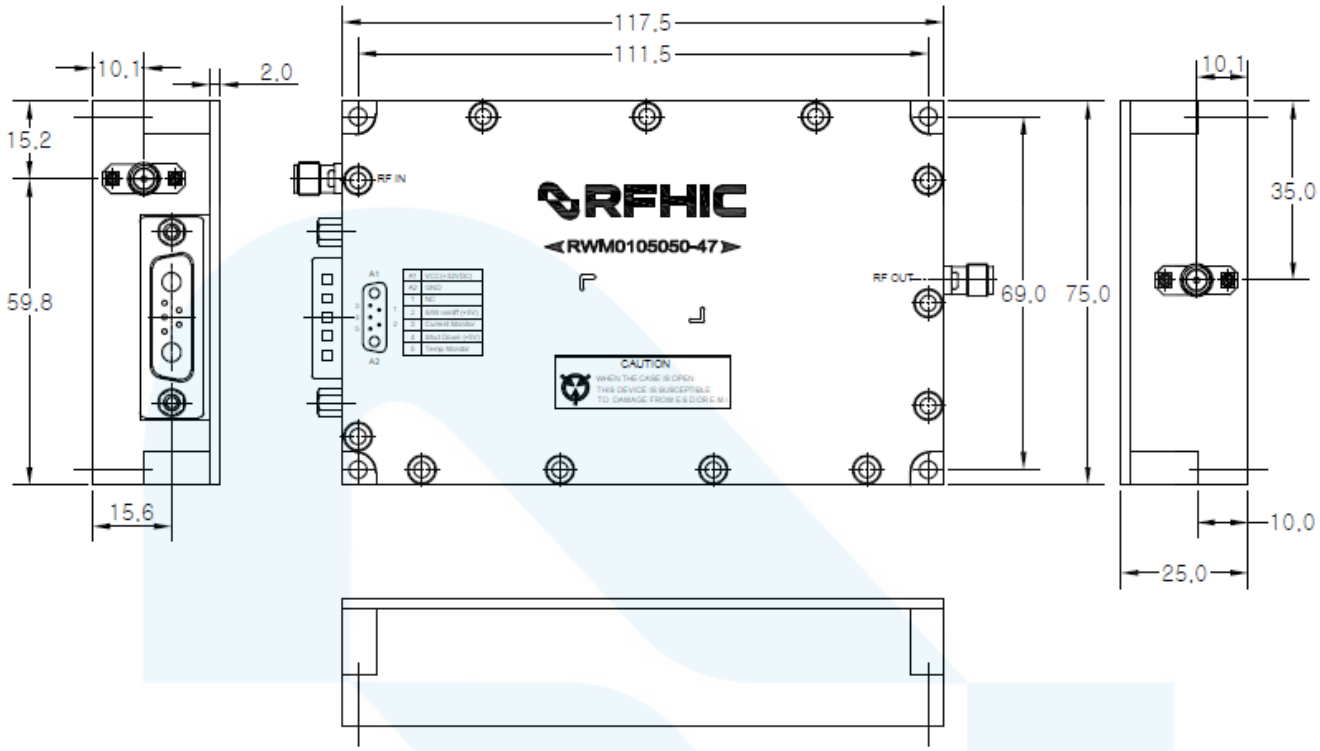
Frequency (MHz)	Harmonic @43dBm 2nd [dBc]	Harmonic @43dBm 3rd [dBc]	IMD @37dBm/tone (dBc)	OIP3 @37dBm/tone (dBm)	Noise Figure (dB)
20	-38	-35	36	58.0	10.1
100	-51	-31	38	59.0	8.1
200	-47	-30	36	58.0	7.7
300	-38	-28	32	56.0	7.6
400	-44	-32	33	56.5	7.3
500	-40	-39	32	56.0	7.0
520	-39	-40	32	56.0	7.1

< Table 2. Typical Performance >



< Chart 1. Typical Performance (RF OUT : 28 Vs 32 VDC) >

Package Dimensions



Type1. SMA Connectorized Module [With D-SUB 7W2 male Type]

Pin Description (7W2 / D-SUB / Male type)			
Pin No	**Description**	**I/O**	**Specifications**
A1	Vcc	I	+32VDC
A2	GND	I	Ground
1	NC	-	OPEN
2	S/W On/off (+5V)*	I	Enable : TTL “Low”, Disable : TTL “High” (Low : 0 ~ 0.5V, High : 2.5 ~ 5V)
3	Current Monitor	O	Reference voltage : 500mV @ 0A Analog voltage relative to IDD @20mV / 100mA
4	Shut Down (+5V)*	I	Enable : TTL “Low”, Disable : TTL “High” (Low : 0 ~ 0.5V, High : 2.5 ~ 5V)
5	Temp Monitor	O	Reference voltage : 750mV @ 25℃, Scale : 10mV/℃

*. Internal pull-down resistor included

Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RWM0105050-47	2026.04.15	0.1	Preliminary	-

Certification

This product is manufactured by a company that is certified for the AS9100D quality management system.