

Preliminary

Wideband Power Amplifier

RWM0112040-46



Product Features

- GaN on SiC Broadband High Power Amplifier
- 20 ~ 1200MHz Operation Bandwidth
- Power Gain Typical 52dB. @ P_{OUT}
- 40W Typical. @ P_{SAT}
- Designed with Class AB
- Designed with a compact form factor

Applications

- Broadcasting
- Telecommunication Systems
- Medical RF Systems
- RF Test & Measurement
- EMC / Immunity Testing



Description

The power amplifier module is designed for Broadcasting, Telecommunication, Medical and other markets.

Operating frequency range is from 20 ~ 1200MHz.

Gallium Nitride on SiC technology is used and attached to an aluminum sub carrier. Full in/out matching for broadband performance is already applied.

Thermal handling is improved by patented technology.

Electrical Specifications @ V_{CC} = 28V; T_c = 45°C; Z_s = Z_L = 50Ω

PARAMETER		UNIT	MIN	TYP	MAX	CONDITION
Operating Frequency		MHz	20	-	1200	-
Small Signal Gain		dB	50	-	-	-
Power Gain		dB	-	52	-	@P _{OUT}
Gain Flatness		dBpp	-	±1.5	±2.0	@P _{IN} = 0dBm
P _{OUT}		dBm	44.0	-	-	-
P _{SAT}		dBm	-	46.0	-	@P _{IN} = 0dBm
OIP3 @ P _o = +38dBm/Tone (100kHz spacing, CW 2-Tone)		dBm	46	50	-	-
Input Return Loss		dB	-	-15	-9.5	-
Harmonic suppression	2 nd	dBc	-	-35	-20	CW 1-tone @P _o = +44dBm
	3 rd	dBc	-	-25	-10	
Supply Voltage		V	27.5	28.0	30.0	V _{cc} (=V _{ds})
Quiescent Current Consumption		A	-	1.2	1.8	-
Current Consumption		A	-	2.8	3.8	CW 1-tone @ P _o =+44dBm
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

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Absolute Maximum Ratings

PARAMETER	UNIT	RATING
Input RF Power	dBm	2
Supply Voltage	V	30
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	°C	-10	-	80	Tc
Storage Temperature	°C	-40	-	105	Tstg
Relative Humidity	%			95	RH

Ordering Information

Part Number	Package
RWM0112040-46-1H (Type 1)	EMI Connector PIN Type
RWM0112040-46 (Type 2)	D-Sub Connector PIN Type

Mechanical Specifications

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

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Typical Performance @ 45°C

Frequency	Vcc	PIN	Output Power		Power Gain	Current	EFF	Harmonics @Po = 44dBm		Third-Order Intercept Point (OIP3) @Po = 38dBm/Tone, 100kHz
								2nd	3rd	
[MHz]	[V]	[dBm]	[dBm]	[W]	[dB]	[A]	[%]	[dBc]		[dBm]
20	28	-7.3	44.0	25.1	51.30	2.19	40.96	-23.5	-13.8	52.9
80		-8.2			52.20	2.26	39.69	-31.4	-18.3	53.6
100		-8.4			52.40	2.31	38.84	-32.9	-17.0	55.1
200		-9.3			53.30	2.63	34.11	-36.6	-11.7	54.4
300		-9.1			53.10	2.51	35.74	-37.8	-12.4	52.0
400		-7.1			51.10	2.71	33.10	-32.5	-19.8	51.7
500		-5.8			49.80	2.66	33.73	-29.4	-36.4	53.9
600		-5.6			49.60	2.41	37.22	-23.1	-35.2	53.8
700		-5.0			49.00	2.51	35.74	-20.4	-35.6	51.0
800		-5.6			49.60	2.35	38.17	-22.9	-43.8	49.7
900		-5.3			49.30	2.44	36.77	-36.2	-49.0	49.5
1000		-5.7			49.70	2.57	34.91	-35.1	-51.4	51.5
1100		-4.6			48.60	2.96	30.31	-34.4	-39.8	51.4
1200		-5.2			49.20	3.12	28.75	-32.9	-43.3	53.1

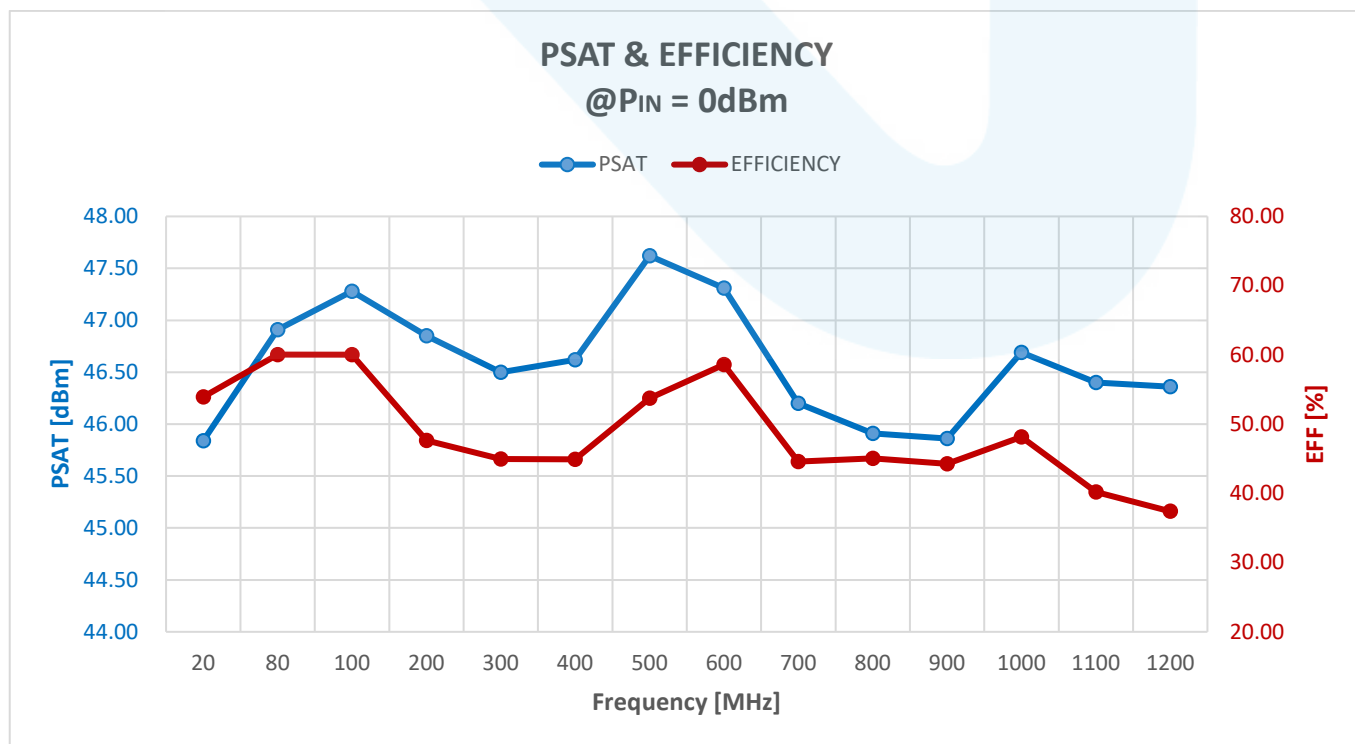
< Table 1. Typical Performance [1] >

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Frequency	V _{cc}	P _{IN}	Psat @Input Power 0dBm		Power Gain	Current	EFF	Small Signal Gain	Input Return Loss
[MHz]	[V]	[dBm]	[dBm]	[W]	[dB]	[A]	[%]	[dB]	[dB]
20	28	0.0	45.84	38.4	45.84	2.54	53.95	54.42	-11.9
80			46.91	49.1	46.91	2.92	60.04	56.05	-14.9
100			47.28	53.5	47.28	3.18	60.04	55.71	-15.5
200			46.85	48.4	46.85	3.63	47.64	55.85	-18.1
300			46.50	44.7	46.50	3.55	44.94	56.06	-19.4
400			46.62	45.9	46.62	3.65	44.93	54.17	-18.2
500			47.62	57.8	47.62	3.84	53.77	52.35	-18.9
600			47.31	53.8	47.31	3.28	58.61	52.30	-21.5
700			46.20	41.7	46.20	3.34	44.58	53.37	-19.4
800			45.91	39.0	45.91	3.09	45.07	54.00	-16.3
900			45.86	38.5	45.86	3.11	44.27	54.31	-17.3
1000			46.69	46.7	46.69	3.46	48.17	54.51	-21.5
1100			46.40	43.7	46.40	3.88	40.18	54.08	-21.8
1200			46.36	43.3	46.36	4.13	37.40	53.03	-19.7

< Table 2. Typical Performance [2] >



< Chart 1. @P_{IN}=0dBm Performance >

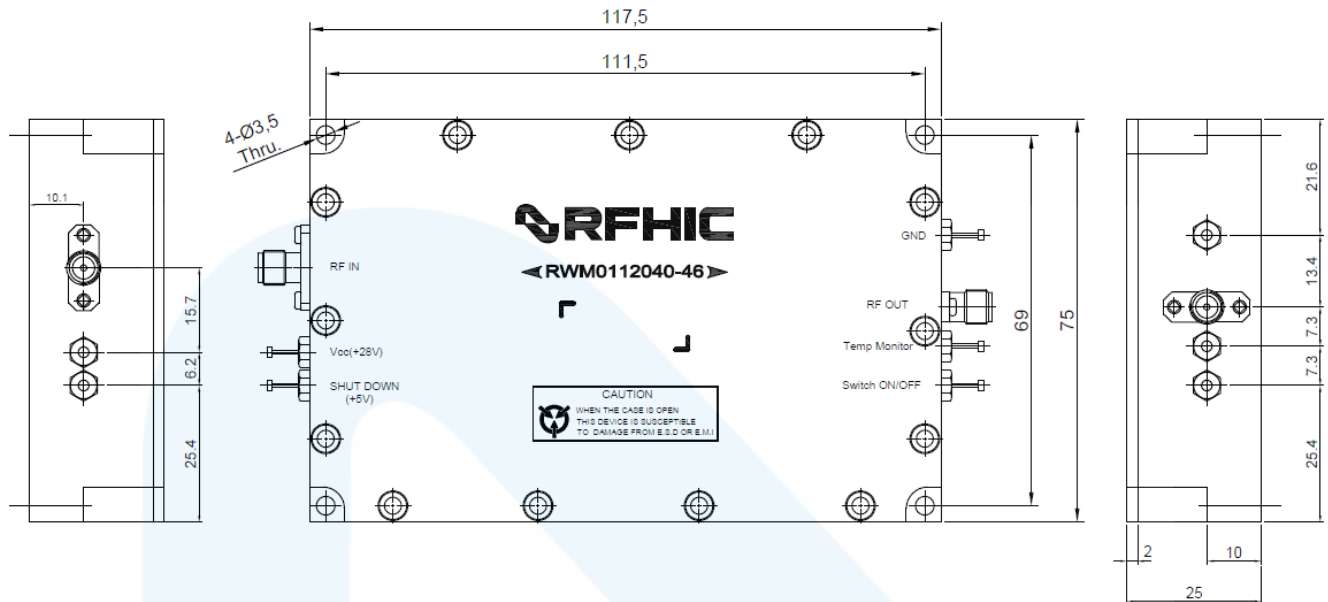
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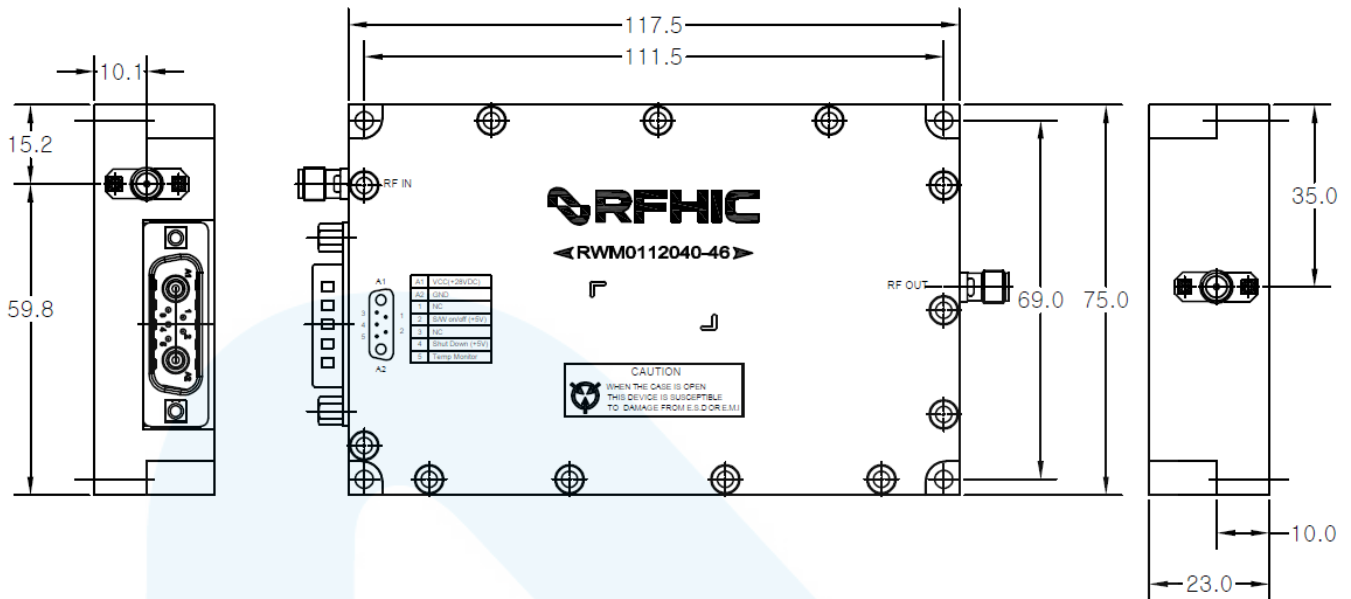
Package Dimensions



Type1. SMA Connectorized Module [With Built-in EMI Filter]

Pin Description			
	Left Side	Right Side	
Pin No	Function	Pin No	Function
1	RF IN	4	GND
2	Vcc(+28V)	5	RF OUT
3	Shut Down(+5V)	6	Temp Monitor
		7	Switch ON/OFF

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Type2. 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	+28VDC
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	-	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°C, Scale : 10mV/°C

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Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RWM0112040-52	2025.04.08	0.1	-	Preliminary
RWM0112040-46	2025.05.14	0.2	Part number updated	Preliminary
RWM0112040-46	2026.08.05	0.3	Noise Figure Deleted Order Info Updated Operating Frequency Extended (Min 80MHz -> 20MHz) Power Gain Flatness : Condition Updated	Preliminary
RWM0112040-46	2026.08.12	0.4	Harmonic suppression Updated Quiescent Current Consumption Updated Current Consumption Updated	Preliminary



Certification

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

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