Wideband Power Amplifier RWP0427100-53

Product Features

- GaN on SiC Broadband High Power Amplifier
- 400 ~ 2700MHz Operation Bandwidth
- Gain Flatness : Max ±2dB
- Output Power : Typical 49dBm(80Watt)

Applications

- Aerospace & Defense
- Military
- Electronic Warfare
- Rader
- SATCOM
- Communication
- EMI/RFI
- Jamming Systems

Description

The power amplifier module is designed for Broadcasting, Telecommunication, Medical and Other markets.
Operating frequency range is from 400 ~ 2700MHz.
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_{DD} = 32V; Tc = 45°C; Z_S = Z_L = 50Ω

PARAMETER		UNIT	MIN	TYP	MAX	CONDITION
Operating Frequency		MHz	400	-	2700	-
Small Signal Gain		dB	-	58	-	@ Pin -20dBm
Power Gain		dB	47.0	49.0	-	@ Pin 0dBm
Gain Flatness(p-p)		dB	-	±1.5	±2.0	@ Pin 0dBm
Output Power (Pout)		dBm	47	49.0	-	@ Pin 0dBm
Harmonic suppression	2nd	dBc	10	-	-	CW 1-tone @ Pin = 0dBm
	3rd					
Third-Order Intercept Point(OIP3)		dBm	-	54	-	2-Tone @ 40dBm/Tone, 1MHz Spacing
Spurious Level		dBc	50			-
Input VSWR		VSWR	-	-	2.5:1	-
Supply Voltage		V	-	32.0	-	V_{DD}(=V_{DS})
Power Added Efficiency		%		30		@ Pin 0dBm
Quiescent Current consumption(I_{DQ})		A	-	1.7	2.0	-
Current Consumption(I_{DD})		A	-	8	11	@ Pin = 0dBm

Absolute Maximum Ratings

PARAMETER	UNIT	RATING
Input RF Power	dBm	3
Supply Voltage	V	36
Load Mismatch Value	-	3 : 1 @all load phase

* Input Signal Condition : CW 1-Tone

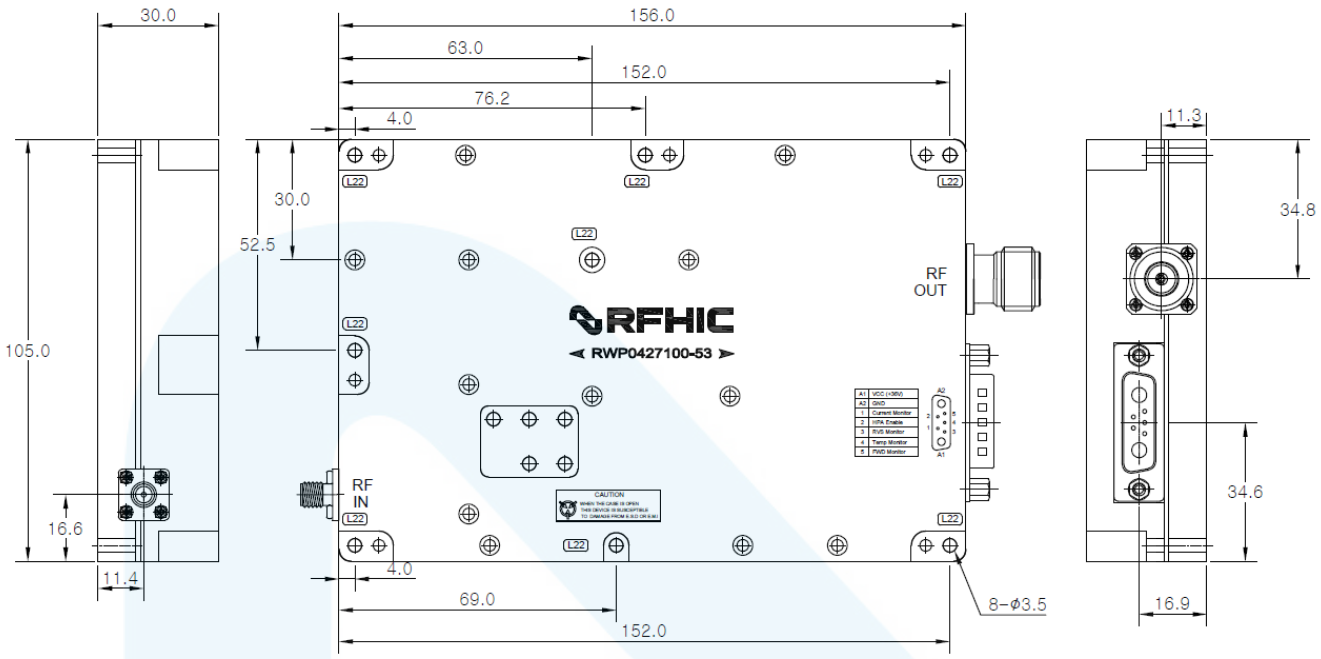
Environmental Characteristics

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Flange Temperature	℃	-20	-	70	Tc
Storage Temperature	℃	-40	-	85	Tstg

Typical Performance @ V_{DD} = 32V; Tc = 45°C; Z_S = Z_L = 50Ω

Frequency	Input VSWR	Small Signal Gain @Input Power -20dBm	Output Power @Input Power 0dBm		Efficiency @Input Power 0dBm	Current & Power Consumption @Input Power 0dBm		Third-Order Intercept Point (OIP3)	Harmonics @Input Power 0dBm	
									2nd	3rd
[MHz]	-	[dB]	[dBm]	[W]	[%]	[A]	[W]	[dBm]	[dBc]	
400	1.03	59.0	47.9	61.7	37.1	5.20	166	53.0	12.0	18.0
500	1.42	58.3	48.8	75.9	34.0	6.97	223	55.6	14.0	26.0
600	1.67	58.5	49.1	81.3	32.3	7.87	252	55.0	15.0	18.0
700	1.94	59.0	49.5	89.1	31.8	8.76	280	53.2	13.0	21.0
800	1.95	58.4	50.8	120.2	43.5	8.63	276	52.8	13.0	20.0
900	1.99	57.6	48.9	77.6	31.1	7.80	250	52.8	23.0	20.0
1000	1.92	57.1	49.1	81.3	35.3	7.19	230	51.8	15.0	25.0
1100	1.86	56.3	49.0	79.4	31.2	7.95	254	55.1	14.0	34.0
1200	1.92	55.4	48.6	72.4	26.0	8.72	279	55.9	14.0	39.0
1300	1.90	55.7	48.8	75.9	25.1	9.45	302	56.9	19.0	49.0
1400	1.82	57.2	49.5	89.1	30.1	9.24	296	56.1	24.0	46.0
1500	1.91	56.6	48.5	70.8	27.0	8.19	262	53.7	30.0	42.0
1600	1.78	56.4	48.5	70.8	30.3	7.30	234	53.3	29.0	71.0
1700	1.50	59.2	49.6	91.2	32.0	8.91	285	51.8	32.0	70.0
1800	1.42	60.2	49.0	79.4	27.7	8.95	286	52.6	41.0	52.0
1900	1.36	60.1	50.0	100.0	32.2	9.71	311	52.3	43.0	47.0
2000	1.51	59.9	49.6	91.2	30.4	9.36	300	52.1	56.0	50.0
2100	1.69	59.7	49.5	89.1	32.3	8.61	276	51.7	52.0	44.0
2200	1.90	59.4	49.1	81.3	32.6	7.78	249	51.3	52.0	41.0
2300	1.93	57.8	49.3	85.1	35.5	7.50	240	51.2	45.0	54.0
2400	2.07	56.7	49.2	83.2	36.1	7.21	231	52.1	66.0	60.0
2500	2.21	56.9	48.9	77.6	34.2	7.10	227	52.6	78.0	58.0
2600	2.12	58.3	48.6	72.4	30.4	7.45	238	52.9	56.0	47.0
2700	1.76	58.3	49.0	79.4	29.2	8.50	272	52.7	45.0	36.0

Product Dimensions



Pin Description (7W2 / D-SUB / Male type)			
Pin No	**Description**	**I/O**	**Specigications**
A1	Vcc	I	+32VDC
A2	GND	I	Ground
1	Current Monitor	O	Reference voltage : 500mV @ 0A Analog voltage relative to IDD @20mV / 100mA
2	HPA Enable	I	Enable : TTL “High”, Disable : TTL “Low” (Low : 0 ~ 0.5V, High : 2.5 ~ 5V) Disable Status : 200mA Current consumption
3	NC	-	-
4	Temp Monitor	O	Reference voltage : 750mV @ 25℃, Scale : 10mV/℃
5	NC	-	-

Mechanical Specifications

PARAMETER	UNIT	TYP
Dimension	㎜	156(L) x 105(W) x 30(H)
Weight	g	740
RF Connector	-	RF Input : SMA Female
		RF Output : N-Type Female
DC Connector	-	C7W2 / D-SUB / Male type
Cooling	-	External Heat-sink

* Recommended Screw Torque : 8.0kgf.cm±1 using SEMS M3 22mm Bolt

Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RWP0427100-53	2025.11.03	0.1	-	Preliminary
RWP0427100-53	2026.05.12	0.2	Typical Performance update	Preliminary
RWP1027200-53	2026.06.02	0.3	Storage Temperature specification changed	Preliminary

Precautions

1. This product is designed to be used for broadband amplification. Heat generation is higher when there is RF signal in the device.
   Therefore, the worst case scenario is when there is RF signal.
   The temperature must be calculated properly.
   Case temperature must maintain below 70°C.
2. Thermal Grease or Metal Thermal Interface Materials are recommended for heat dissipation. An example would be spreading thermal grease on the bottom of the device.

KS Q 9100:2018
AS9100 D

Certification

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