Wideband Power Amplifier RWP06040-10

Product Features

GaN on SiC Broadband High Power Amplifier 450 to 880MHz Operation Bandwidth Small Signal Gain 38dB min 40W Typical. P3dB

Application

UHF Television



RFHIC

Description

The RWP06040-10 is designed for Wideband Power Amplifier application frequencies from 450 to 880MHz. This module uses GaN HEMT technology which performs high breakdown voltage, high linearity, wide bandwidth and high efficiency.

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.

Typical Specifications

Typical Specifications					$V_{CC} = +28V; T = 25$ °C; $Z_{S} = Z_{L} = 50\Omega$			
No	Item	Conditions		Min	Тур	Max	Unit	
1	Bandwidth			450		880	MHz	
2	Small Signal Gain			38	40	42	dB	
3	Gain Variation vs Temperature	-20°C t	to 60°C	-2.0		+2.0	dB	
4	Gain Variation vs Frequency				±1	±2	dBpp	
5	P _{3dB}	450MHz to	o 880MHz	44	45		dBm	
6	OIP3 @ Po = +33dBm (1MHz Tone spacing, CW 2- Tone)	450MHz to 880MHz		49	51		dBm	
7	Input Return Loss				-12	-10	dB	
8	Output Return Loss				-11	-7	dB	
	ACLR@Pout=28dBm W-CDMA,64PCH,4FA Spectrum Analyzer Setting : RBW=30KHz, VBW=10KHz	450MHz	△=5MHz	45	48		dBa	
9		450MHZ	△=10MHz	48	51			
		Spectrum Analyzer Setting : RBW=30KHz, VBW=10KHz	880MHz	△=5MHz	44	45		ubc
			△=10MHz	47	48			
10	Supply voltage	Vcc(=Vds)		27.5	28	30	V	
11	Quiescent Current consumption				2.5	2.7	А	
12	On/Off Switch Time	On: TTL "Low" Off: TTL "High"(300mA@Disable)			3.0	5.0	uS	
13	Shut Down or Switch On/Off	On : TTL "Low"(Enable)		0		0.5	v	
15	TTL Voltage	Off : TTL "High"		2.5	5	5.5		

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Environmental Characteristics

No	Item	Min	Тур	Max	Unit
1	Operating Temperature	-20		+60	°C
2	Storage Temperature	-40		+105	°C
3	Vibration	MIL-STD-810G Method 514.6 ANNEX C			NEX C

Absolute Maximum Ratings

No	Item	Rating	Unit
1	Operating Flange Temperature	+85	°C
2	Input RF Power	+12	dBm
3	Supply Voltage	+30	V
4	Load Mismatch Value	3 : 1 @ all load phase	

* Input Signal Condition : CW 1-Tone

Ordering Information

No	Part Number	Package
1	RWP06040-10	Pallet
2	RWP06040-1H	Module assembled with RWP06040-10

* RWP06040-1H is a SMA connectorized housing version of RWP06040-10. Electrical parameters are all same as RWP06040-10.

For more information, please contact RFHIC.

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Frequency	PldR	P3dR	Current	Current	OIP3	W-0	CDMA 64CH	I 4FA @ 280	lBm
rrequency	TTUD	TSub	@P1dB	@P3dB	(30dBm/Tone)	-5MHZ	+5MHZ	-10MHZ	+10MHZ
(MHz)	(dBm)	(dBm)	(A)	(A)	(dBm)	(dBc)	(dBc)	(dBc)	(dBc)
450MHz	44.4	45.6	2.3	2.4	51.6	-48.0	-48.1	-50.8	-51.0
550MHz	42.5	44.9	2.4	3.1	50.8	-46.3	-46.4	-49.1	-49.3
650MHz	42.5	44.9	2.4	3.2	50.2	-45.4	-45.7	-48.1	-48.6
750MHz	43.0	45.4	2.5	3.0	50.5	-45.7	-46.1	-48.4	-48.9
880MHz	43.1	45.4	2.5	3.0	50.3	-45.5	-46.0	-48.2	-48.8

RWP06040-10 Typical Performance @ 25°C







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W-CDMA, 64PCH, 4FA ACLR, PAPR 11.3dB



🔆 Agilent 15:44:54 Apr 22, 2009	Meas Setup			
Ch Freq 550.244 MHz Trig Free Multi-Carrier Power Averages: 6	Avg Number 10 0n Off Avg Mode Exp Repeat			
Ref 8.415 dBm #Atten 14 dB #Avg				
dB/ Offst 30.7 dB	Offset/Limits			
Center 550.24 MHz Span 48.84 MHz 1 *Res BW 30 kHz **VBW 10 kHz Sweep 431.4 ms (601 pts)				
Total Carrier Power 27.99 dBm / 15.3600 MHz RRC Filter: Off Filter Alpha 0.22 Ref Carrier Power 22.18 dBm / 3.84000 MHz 1 23 40 dPm Offset Freq Integ BW dBc Lower dBm dBc Upper dBm				
22.18 dBm 5.000 MHz 3.840 MHz -47.71 -25.53 -48.34 -26.16 3 21.83 dBm 10.00 MHz 3.840 MHz -50.37 -28.20 -51.29 -29.12 4 21.40 dBm 15.00 MHz 3.840 MHz -54.50 -32.33 -55.85 -33.68	More 1 of 2			

File Operation Status, A:\SCREN209.GIF file saved

ዡ Agilent 15:45:31 Apr 22, 2009	Meas Setup			
Ch Freq 650 MHz Trig Free Multi-Carrier Power Averages: 5	Avg Number 10 <u>On</u> Off			
Center 650.0000000 MHz	Avg Mode Exp Repeat			
Ref 9.65 dBm #Atten 12 dB #Avg	Carrier Setup•			
10 1	Offset/Limits⊦			
dB Center 650.00 MHz Span 48.84 MHz	Carrier Result			
#Res BW 30 kHz #VBW 10 kHz Sweep 431.4 ms (601 pts) Total Carrier Power 27.98 dBm / 15.3600 MHz RRC Filter: Off Filter Alpha 0.22 Ref Carrier Power 22.24 dBm / 3.84000 MHz RRC Filter: Off Filter Alpha 0.22 Ref Carrier Power 22.24 dBm / 3.84000 MHz Ref Leve Ref Leve				
1 22.24 dBm 5.000 MHz 3.840 MHz -46.63 -24.39 -47.29 -25.05 2 22.04 dBm 10.00 MHz 3.840 MHz -49.43 -27.19 -50.17 -27.93 3 21.88 dBm 15.00 MHz 3.840 MHz -53.74 -31.49 -54.61 -32.36 4 21.65 dBm	More 1 of 2			
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🔆 Agilent 15:46:24 Apr 22, 2009	Meas Setup		
Ch Freq 750 MHz Trig Free Multi-Carrier Power Averages: 9	Avg Number 10 <u>On</u> Off		
Sweep Time 431.4 ms			
Ref 9.879 dBm #Atten 14 dB #Avg	Carrier Setup•		
10 dB/ 0ffst 30.7	Offset/Limits,		
dB Center 750.00 MHz Span 48.84 MHz	Carrier Result		
#Res BW 30 kHz #VBW 10 kHz Sweep 431.4 ms (601 pts) Optimiz Total Carrier Power 28.16 dBm / 15.3600 MHz RRC Filter: Off Filter Alpha 0.22 Optimiz Ref Carrier Power 22.23 dBm / 3.84000 MHz RRC Filter: Off Filter Alpha 0.22 Optimiz Ref Carrier Power 22.23 dBm / 3.84000 MHz RRC Filter: Off Filter Alpha 0.22 Optimiz			
1 22.27 dBm 5.000 MHz 3.840 MHz -46.19 -23.97 -46.56 -24.34 2 22.23 dBm 10.00 MHz 3.840 MHz -48.92 -26.69 -49.37 -27.14 3 22.11 dBm 15.00 MHz 3.840 MHz -53.12 -30.89 -53.63 -31.41 4 21.96 dBm	More 1 of 2		
File Operation Status, A:\SCREN211.GIF file saved			

₩ Agilent 15:47:14 Apr 22, 2009	Sweep			
Ch Freq 850 MHz Trig Free Multi-Carrier Power Averages: 10	Sweep Time 431.4 ms <u>Auto</u> Man			
Sweep Time 431.4 ms	Sweep Single <u>Cont</u>			
Ref 9.543 dBm #Atten 12 dB #Avg Log	Auto Sweep Time Norm Accy			
10 10<	Gate On <u>Off</u>			
dB Center 850.00 MHz Span 48.84 MHz Gate Setup				
*Kes BW 30 KHz *VEW 10 KHz Sweep 431.4 ms (601 pts) Total Carrier Power 28.01 dBm / 15.3600 MHz RRC Filter: Off Filter Alpha 0.22 Ref Carrier Power 22.01 dBm / 3.84000 MHz RC Filter: Off Filter Alpha 0.22 Offset Freq Integ BW dBc Lower dBm dBc Upper				
1 22.21 dBm 5.000 MHz 3.840 MHz -45.54 -23.52 -46.02 -24.00 2 22.01 dBm 10.00 MHz 3.840 MHz -48.15 -26.13 -48.77 -26.75 3 21.94 dBm 15.00 MHz 3.840 MHz -48.15 -30.33 -52.92 -30.90 4 21.78 dBm				
File Operation Status, A:\SCREN212.GIF file saved				

Precautions

1. This product is designed to be used for broadband amplification.

Heat generation is higher when there is no RF signal in the

device. Therefore, the worst case scenario is when there is

no RF signal, and the amplifier is "on" with current draw.

The temperature must be calculated properly.

Case temperature must maintain below 85°C.

Right side drawing notes how to use a temperature monitoring

function to protect against overheating.

 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.



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Package Dimensions (Type: DP-75)

(Unit : mm/[inch], Tolerance : ±0.2/[.008])



How to connect the amplifier to a target PCB

Method-I (with Pin)

Method-II (without Pin) - If you cut out the pin



Pin Description

Pin No	Port Name	Function
1	RF IN	RF Input
2	Vcc (+28V)	DC Supply
3	Shut Down (+5V)	Shut Down @ TTL High, Enable @ TTL Low
4	Switch ON/OFF	Disable @ TTL High (Switch Status : Off)
5	Temp Monitor	0.85V @ 25 °C, Scale : 10mV/°C (Accuracy : ±3 °C)
6	RFOUT	RF Output

* Terminal Pin Information : <u>ASK206091,AA</u> (Acethink, Pin) , <u>ASK20556,AA-1(</u>Acethink, Pin Socket)

* Recommended Screw Torque : 8.0kgf.cm±1 using SEMS M3 10mm Bolt

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