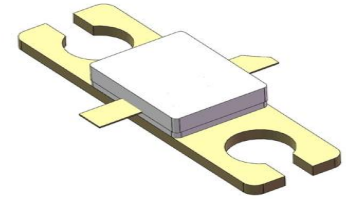


Performance characteristics.

- ◆ Frequency range: 5.7~5.9GHz
- ◆ Power gain: >11dB
- ◆ Output power: >45dBm
- ◆ Drain efficiency: >58%
- ◆ Package: RF0302



Product Description.

The CWBT-0060P30 is a GaN pre-matched power tube with an operating frequency range of DC~6.0GHz. Frequency 5.7~5.9GHz, 28V test conditions, continuous wave output power up to 45dBm, and Efficiency greater than 58%. It is characterized by high efficiency, high power and high reliability.

Table 1. Typical Performance Parameters (T_c=25°C)

norm	notation	test condition	minimum value	typical value	maximum values	unit (of measure)
output power	P _{sat}	f=5.7~5.9GHz	45		45.5	dBm
power gain (of an electrical device etc)	G _p	Pulse (1mS/100uS)V V _{DS} =28V, I _{DQ} =200mA		11		dB
Drainage efficiency	E _{ff}		60		64	%
output power	P _{sat}		f=5.7~5.9GHz	45		45.2
power gain (of an electrical device etc)	G _p	CW V _{DS} =28V, I _{DQ} =200mA		11		dB
Drainage efficiency	E _{ff}		57		62	%

Table 2. Maximum Ratings

parameters	notation	limit value	unit (of measure)
drain-source voltage	V _{DSS}	60	V
gate source voltage	V _{GS}	-8, +2	V
Drain Operating Voltage	V _{DD}	36	V
Storage temperature	T _{stg}	-65 to 175	°C
channel temperature	T _{ch}	225	°C
Gate Maximum Current @T _c =25°C	I _{gmax}	8	mA

Table 3 Thermal resistance parameters

parameters	notation	value	unit (of measure)
Thermal resistance (infrared measurement), chip surface to flange $T_c=85^{\circ}\text{C}$, $P_d=25\text{W}$	R_{qjc}	3.1	$^{\circ}\text{C}/\text{W}$

Table 4 Electrical parameters

DC Parameters

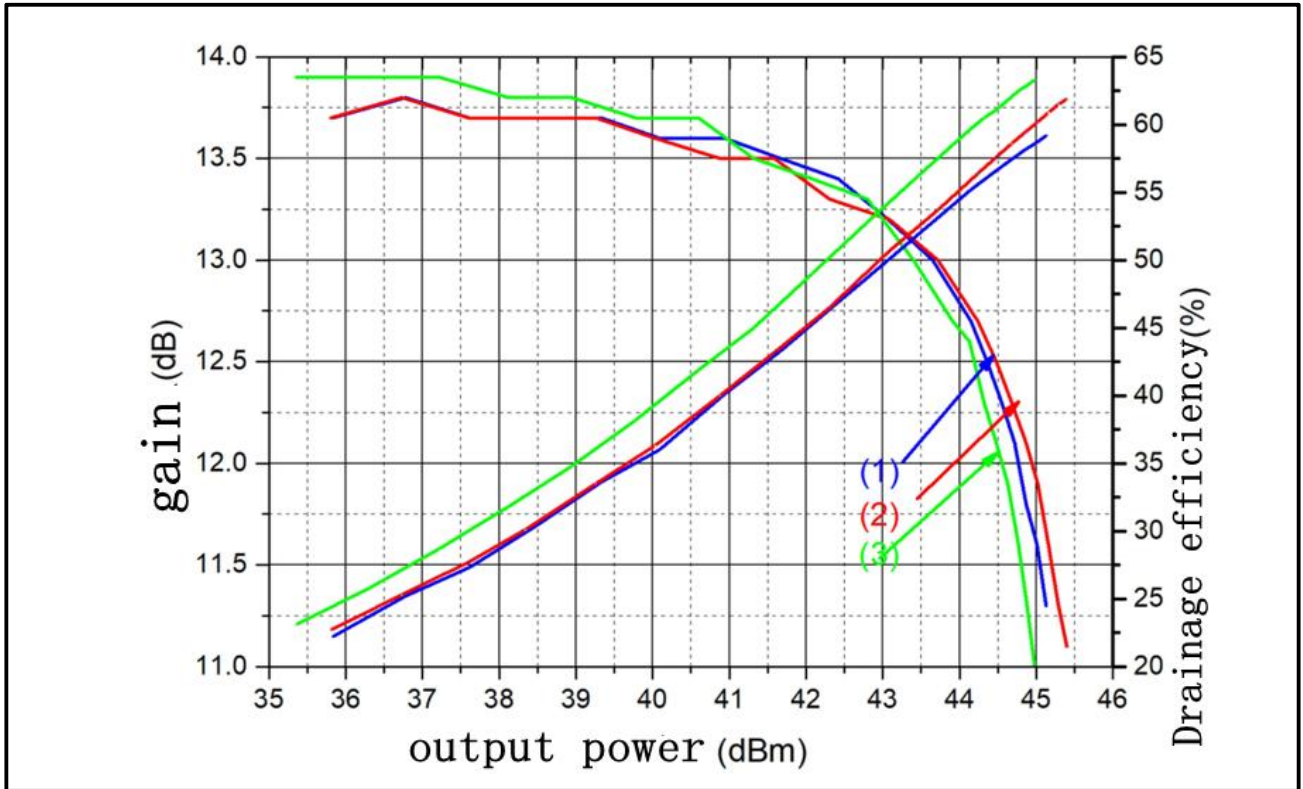
parameters	notation	minimum value	typical value	maximum values	unit (of measure)
source-drain breakdown voltage ($V_g=-8\text{V}$, $I_d=1\text{mA}$)	BV_{dss}		120		V
Gate turn-on voltage ($V_d=28\text{V}$, $I_d=7\text{mA}$)	$V_{\text{GS}}(\text{th})$		-3		V
Gate Static Voltage ($V_d=28\text{V}$, $I_d=200\text{mA}$)	$V_{\text{GS}}(\text{Q})$		-2.7		V
Gate-Source Leakage Current ($V_{\text{DS}}=0\text{V}$, $V_{\text{GS}}=-5\text{V}$)	I_{GSS}			0.1	mA
drain-source leakage current ($V_{\text{DS}}=28\text{V}$, $V_{\text{GS}}=-5\text{V}$)	I_{DSS}			1	mA

RF parameters ($T_c = 25^{\circ}\text{C}$, $F_0 = 5.8\text{GHz}$)

parameters	notation	minimum value	typical value	maximum values	unit (of measure)
Small Signal Gain ($V_{\text{DS}}=28\text{V}$, $I_{\text{DQ}}=200\text{mA}$)	G_{SS}	14			dB
output power ($V_{\text{DS}}=28\text{V}$, $I_{\text{DQ}}=200\text{mA}$)	P_{OUT}		45 (32)		dBm (W)
Drainage efficiency ($V_{\text{DS}}=28\text{V}$, $I_{\text{DQ}}=200\text{mA}$, P_{SAT})	η		60		%
VSWR	VSWR		10:1		$V_{\text{DD}} = 28\text{V}$, $I_{\text{DQ}} = 200\text{mA}$, $P_{\text{OUT}} = 30\text{W CW}$

Remarks: $V_{\text{DS}}=28\text{V}$, CW signal, open-circuit test under saturated power for 30 minutes, no damage to the tube. 2/6

Typical test curves:



$V_{DS} = 28V$, $I_{DQ} = 200mA$

(1) $f=5.7GHz$, (2) $f=5.8GHz$, (3) $f=5.9GHz$

CW test

Figure 1

GaN Device Handling Precautions:

- 1 When adding power, please strictly follow the order of negative first and then positive; when powering up, please add the gate voltage first and then add the leakage voltage; when de-energizing, please lower the leakage voltage first and then lower the gate voltage.
- 2 Pay attention to the heat dissipation during use, the lower the temperature of the tube shell, the longer the service life of the device.
- 3 It is recommended that the operating temperature of the device should not exceed $75^{\circ}C$. Excessive temperatures will cause deterioration of the device performance and shorten its service life.
- 4 In the process of use, devices, instruments, etc. should be well grounded, this product is a static-sensitive device, storage and use of anti-static.

Reference Circuit Diagram at **5.7~5.9GHz** Application Frequency

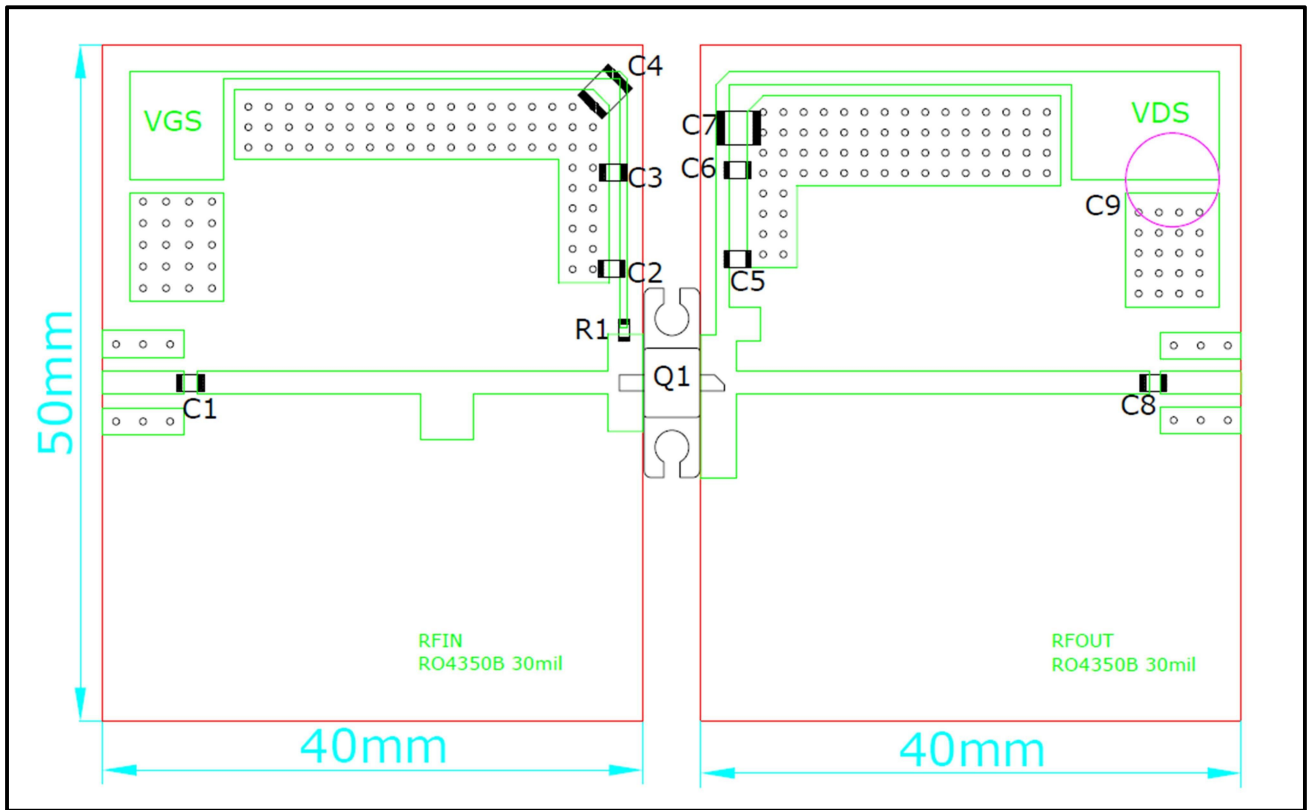


Figure 2

Table 5.

subassemblies	descriptive	value	note
R1	Resistors 0805	5.1 Ω	
C1, C2, C5	Ceramic Capacitor 0805	3.9pF	ATC600F
C8	Ceramic Capacitor 0805	2.7pF	ATC600F
C3, C6	Ceramic Capacitor 0805	10nF	TDK
C4, C7	Ceramic Capacitor 0805	10uF	TDK
C9	electrolytic capacitor	470uF, 63V	
Q1	CWBT-0060P30	30W	

Table 6. Other Application References

attachment (email)	Application frequency (GHz)	Min~Max Power (W)	Min~Max Gain (dB)	Minimum~Maximum efficiency (%)	note
1	5.3 to 5.9	30	10~11	55~60	

