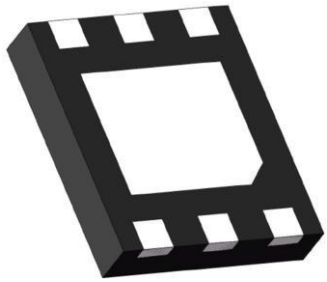
Product Profile:



CWDT8005 is a GaN HEMT plastic packaged power tube with a product size of 4 * 4.5 mm. The device is welded with high thermal conductivity solder and packaged with high thermal conductivity resin material, so that the device can be well applied in continuous wave test conditions. The power will not decrease, and the operating frequency covers DC ~ 8.0 GHz. It has the characteristics of high efficiency, high power and high gain.

Table 1. Typical performance parameters (TC = 25 °C)

Freq (MHz)	Gain @ P_{1dB} (dB)	POUT @ P_{1dB} (dBm)	Eff @ P_{1dB} (%)	POUT @ P_{3dB} (dBm)	Eff @ P_{3dB} (%)	Note
	V_{DS} = 28V, I_{DQ} = 20mA, 1mS/100uS					
5700	12.1	36.6	66	38	74.5	
5800	12.3	36.6	65	38	71	
5900	12.1	36.1	64	37.9	71	
	V_{DS} = 28V, I_{DQ} = 20mA, CW					
5700	12	36.5	62	37.9	69	
5800	12.2	36.5	61	38	68	
5900	12	36	58	37.9	67	
	V_{DS} = 48V, I_{DQ} = 20mA, CW					
4800	15.5	40.6	65	41.7	68	
4900	15.9	39.8	58	41	64	
5000	15.9	39.6	59	41	65	

Table 2. Maximum rating

Parameter	Symbol	Limit value	Unit
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 ~ 175	℃
Channel temperature	T_{ch}	225	℃
Maximum gate current @ TC = 25 °C;	I_{gmax}	2	mA

Table 3 Thermal resistance parameters

Parameter	Symbol	Value	Unit
Thermal resistance [infrared measurement] T_C = 85 °C, P_D = 5W;	R_{QJC}	10.1	℃/W

Table 4 Electrical parameters

DC parameter

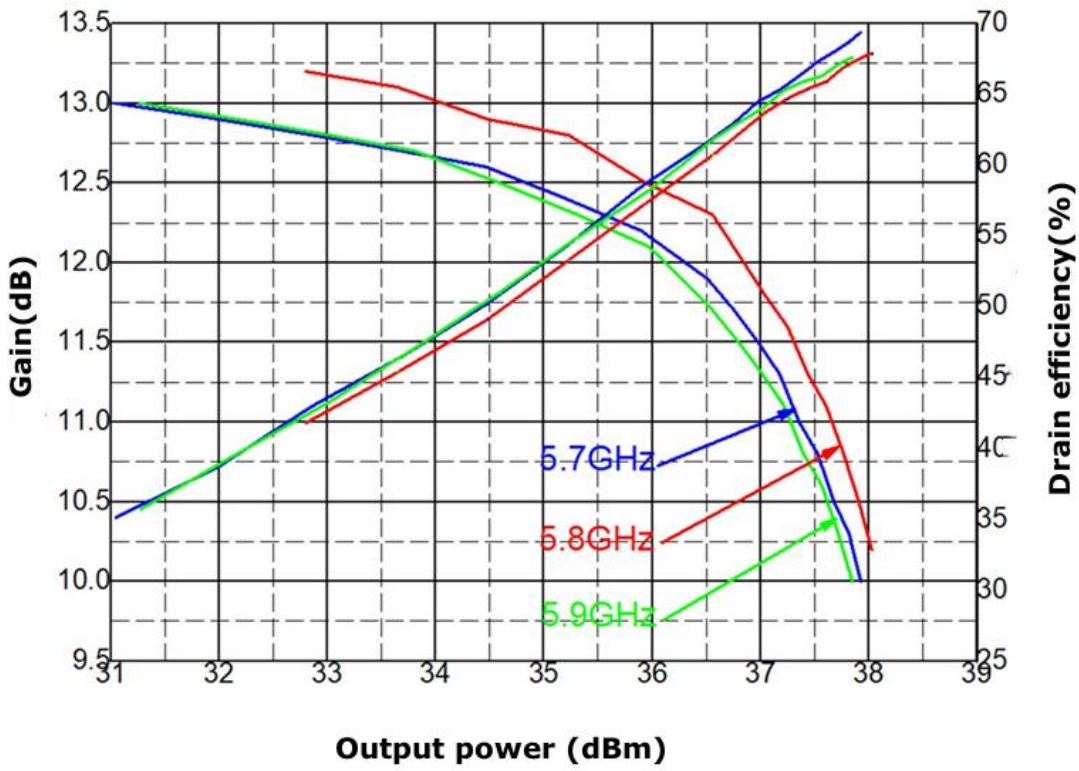
Parameter	Symbol	Minimum value	Typical value	Maximum	Unit
Source-drain breakdown voltage (Vg =-8V, Id = 1mA)	BV_{dss};		120		V
Gate opening voltage (Vd = 28V, Id = 5mA);	V_{GS} (th)		-3.1		V
Gate static voltage (Vd = 28V, Id = 20mA)	V_{GS} (Q)		-2.8		V
Gate-source leakage current (V_{DS} = 0V, V_{GS} =-5V)	I_{GSS}			0.1	mA
Drain-source leakage current (V_{DS} = 28V, V_{GS} =-5V)	I_{DSS}			0.1	mA

RF parameter (TC = 25 ℃, F0 = 5.8 GHz, CW signal)

Parameter	Symbol	Minimum value	Typical value	Maximum	Unit
Small signal gain (VDS = 28V, IDQ = 20mA)	G_{SS}	13			dB
Output power (VDS = 28V, IDQ = 20mA)	P_{OUT}		38(6)		dBm (W)
Drain efficiency (VDS = 28V, IDQ = 20mA, PSAT)	η		69		%
VSWR @ 1	VSWR		10: 1		

V_{DS} = 28V, CW signal, saturated power, RF performance will not be affected after 30 minutes of open circuit test (good heat dissipation must be maintained).

Typical test curve:



F = 5.7 ~ 5.9 GHz, VDS = 28V, IDQ = 20mA, CW

Figure 1

Precautions for GaN device operation:

1 When power-on, please strictly follow the order of negative first and then positive; When power-on, please add the grid voltage first and then add the leakage voltage; When de-energizing, first reduce the leakage voltage and then reduce the gate voltage.

2 Pay attention to the heat dissipation during use. The lower the temperature of the shell, the longer the service life of the device.

3 It is recommended that the working case temperature of the device should not exceed 75 °C. If it is too high, the performance of the device will deteriorate and the service life will be shortened.

4 In the process of use, devices, instruments, etc. should be grounded well. This product is an electrostatic sensitive device. Pay attention to anti-static when storing and using.

Table 5. Other application references (complete DEMO test)

Attachment	Application frequency (GHz)	Minimum to maximum power (W)	Lowest-highest gain (dB)	Minimum-maximum efficiency (%)	Remarks

Product size (Package: DFN4x4.5) **Unit: mm**

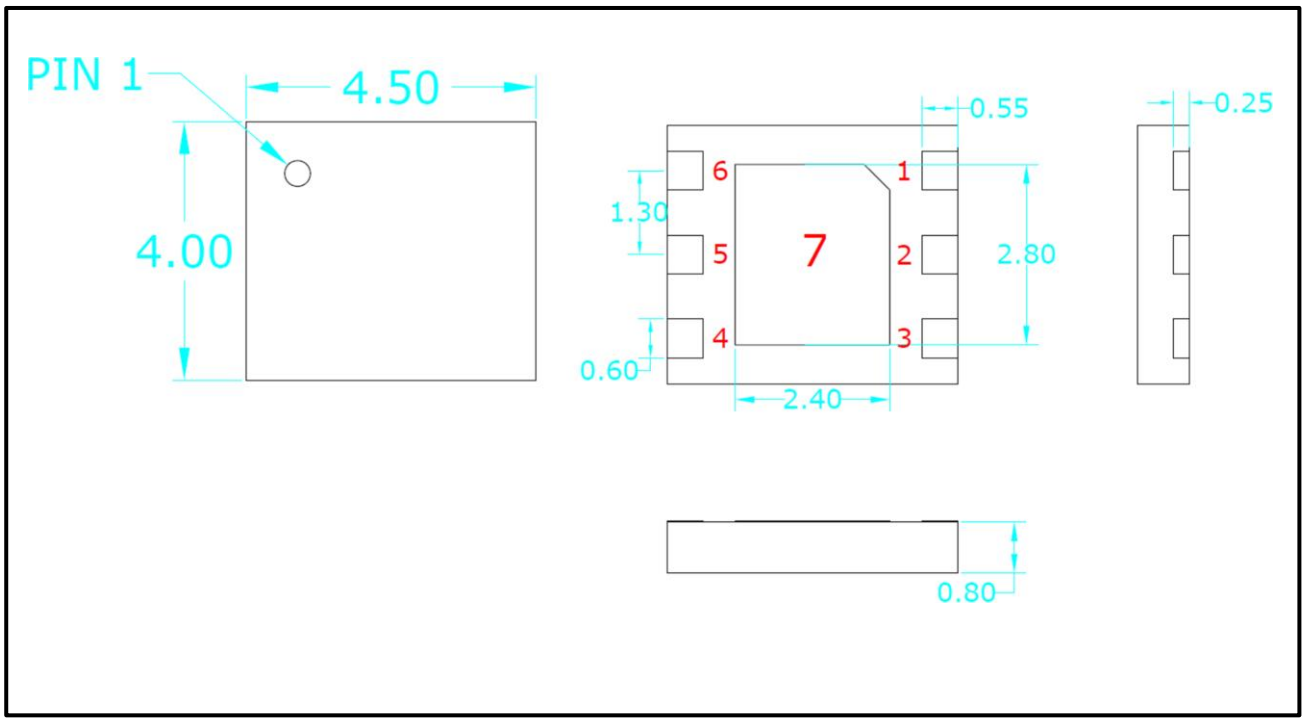


Figure 2

PIN 1: n.c
PIN 2: gate
PIN 3: n.c
PIN 4: n.c
PIN 5: drain
PIN 6: n.c
PIN 7: GND

Table 6. Specifications and revision history

Version	Description of modifications to specifications
V0.1	
V0.2	Modify PIN description, PIN2 is defined as gate