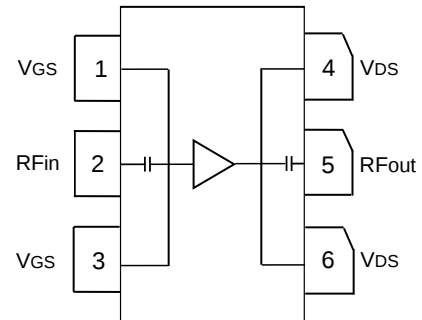


1. Product Introduction

1.1 Features

- Frequency Range: 0.7-6.2 GHz
- 50 Ω Impedance Matching, Easy for Cascade
- Typical Operating Voltage: 28 V
- 100% RF Test
- Excellent Thermal Stability
- RoHS Compliant



PIN Description (Front view)

★ Chamfered corner indicates signal output
Internal DC blocking integrated at Input Output

1.2 Overview

The HXN42023 is a high-power, internally matched GaN power transistor. It operates in the frequency range of 0.7 to 6.2 GHz under pulsed operation and can provide optimal power and gain performance in a 50 Ω system at saturation power.

1.3 Typical Performance¹

Operating Frequency (MHz)	Output Power ² (dBm)	Drain Effi ² (%)	Power Gain ² (dB)
700	49.45	52.33	8.45
1000	50.23	62.04	9.23
1500	49.50	55.00	8.50
2000	50.19	57.75	9.19
2500	49.30	44.96	8.30
3000	49.27	47.39	8.27
3500	49.63	40.94	8.63
4000	48.93	43.13	7.93
4500	49.68	43.57	8.68
5000	49.18	44.74	8.18
5500	49.46	40.25	8.46
6000	49.20	50.39	8.20
6200	49.11	48.67	8.11

¹ Test conditions: VDS = 28 V, IDQ = 1 A, CW test, Input power Pin = 41 dBm.

² Test data is based on typical application circuits and is for reference.

2. Maximum Ratings

Parameter	Symbol	Rating	Unit
Drain-Source Breakdown Voltage	V_{DSS}	90	V
Gate-Source Voltage	V_{GS}	-10 ~ +2	V
Drain-Source Voltage	V_{DS}	0 ~ +28	V
Max. Forward Gate Current	I_{GMAX}	20.88	mA
Storage Temperature	T_{STG}	-65 ~ +150	°C
Channel Temperature	T_{CH}	225	°C

3. Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance (Case Temp. 50°C, Power Dissipation 114.4 W, CW)	R_{thjc}	1.25	°C/W

4. Electrical Specifications (TA = 25°C)

4.1 DC Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Drain-Source Leakage Current ($V_{GS} = -10\text{ V}$, $V_{DS} = 90\text{ V}$)	I_{DSS}	-	-	20.88	mA
Drain-Source Breakdown Voltage ($V_{GS} = -10\text{ V}$, $I_D = 20.88\text{ mA}$)	$V_{(BR) DSS}$	90	-	-	V
Gate Threshold Voltage ($V_{DS} = 28\text{ V}$, $I_D = 20.88\text{ mA}$)	$V_{GS (TH)}$	-4.0	-2.9	-1.0	V
Gate Static Bias Voltage ($V_{DS} = 28\text{ V}$, $I_D = 1000\text{ mA}$)	$V_{GS (Q)}$	-	-2.7	-	V

4.2 RF Characteristics (6000 MHz Typ. Performance¹)

Parameter	Symbol	Min	Typ	Max	Unit
Peak Output Power	P_{sat}	-	TBD	-	dBm
Drain Efficiency	η_D	-	TBD	-	%
Power Gain	G_P	-	TBD	-	dB

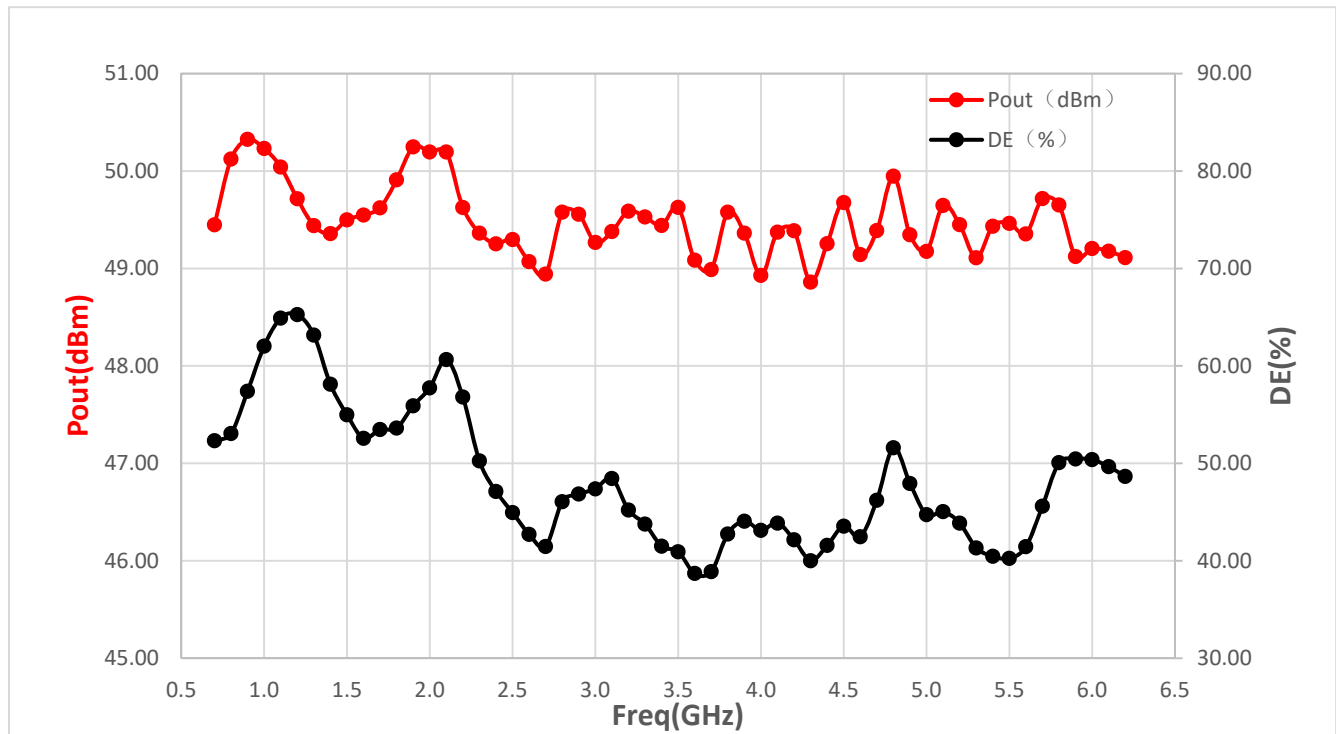
¹ Based on HXN42023 test fixture, test conditions: $V_{DS} = 28\text{ V}$, $I_{DQ} = 1\text{ A}$, CW

4.3 Load Adaptability

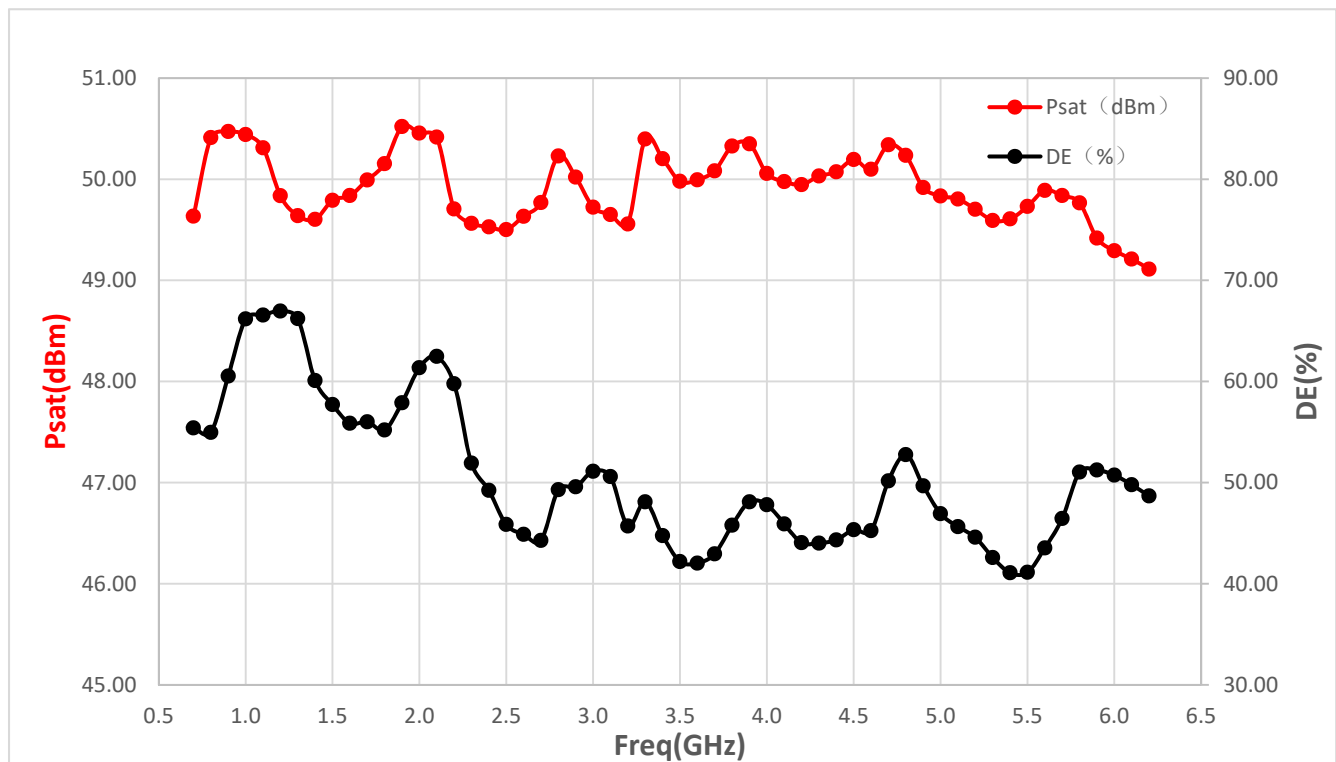
Parameter	Result
VSWR 5:1 Freq. = 1G, 5G, 6G Test Conditions: $V_{DS} = 28\text{ V}$, P_{sat} , CW	PASS

5. Test Information

5.1 CW Performance

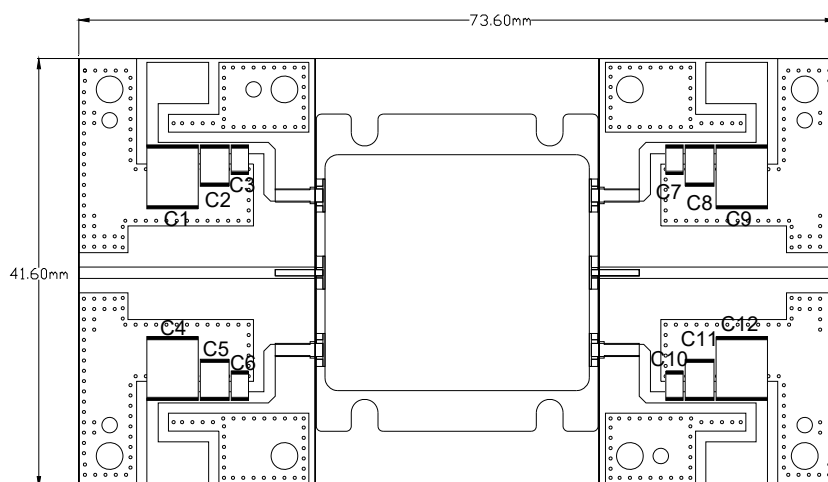


¹ Test Conditions: $V_{DS} = 28$ V, $I_{DQ} = 1$ A, CW, $P_{in} = 41$ dBm



¹ Test Conditions: $V_{DS} = 28$ V, $I_{DQ} = 1$ A, CW, P_{sat}

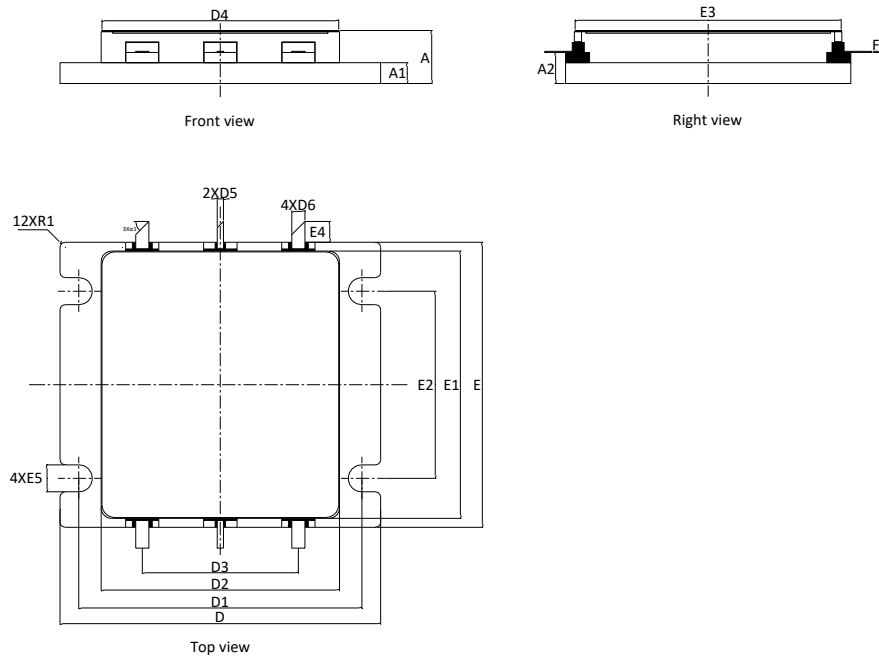
5.2 PCB Layout



5.3 BOM

S/N	Type	Designator	Description	Value	Vendor
1	Cap	C1,C4, C9, C12	GRM31CZ72A225KE	2.2uF	Murata
2	Cap	C2,C5, C8, C11	GRM31CZ72A106KE	10uF	Murata
3	Cap	C3,C6,C7,C10	ATC600F101JT250XT	100pF	ATC
4	Transistor	V1	HXN42023	80W	Hisiwell
5	PCB	/	Rogers 4350B	20mil	Rogers

6. Package Dimensions



No.	Inch			Millimeter		
	Min	Typ	Max	Min	Typ	Max
A	0.19	0.20	0.21	4.82	5.10	5.37
A1	0.07	0.08	0.08	1.85	2.00	2.15
A2	0.11	0.12	0.13	2.80	3.00	3.20
D	1.20	1.21	1.22	30.60	30.80	31.00
D1	1.06	1.07	1.08	27.05	27.20	27.35
D2	0.90	0.90	0.91	22.75	22.90	23.05
D3	0.58	0.59	0.60	14.85	15.00	15.15
D4	0.89	0.90	0.90	22.70	22.75	22.80
D5	0.02	0.02	0.03	0.55	0.60	0.65
D6	0.05	0.05	0.05	1.22	1.27	1.32
E	1.07	1.08	1.09	27.20	27.40	27.60
E1	1.01	1.01	1.02	25.55	25.70	25.85
E2	0.70	0.71	0.71	17.85	18.00	18.15
E3	1.00	1.01	1.01	25.50	25.55	25.60
E4	0.07	0.08	0.09	1.70	2.00	2.30
E5	0.10	0.10	0.11	2.45	2.60	2.75
F	0.00	0.00	0.01	0.07	0.10	0.13
R1	0.01	0.02	0.03	0.35	0.50	0.65
α1	45° REF			45° REF		