



GaN HEMT 28V, HF-1.5GHz 70W, RF Power Transistor

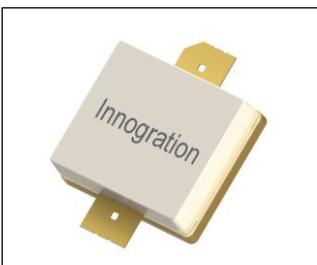
Description

The YTAH15070A2C is a 70W GaN HEMT, designed for multiple application up to 1.5GHz

It can be used in CW, Pulse and any other modulation modes. There is no guarantee of performance when this part is used in applications designed Outside of these frequencies.

- Typical class AB 1.5-1.6GHz RF Performance with device soldered

Vds=28V, Idq=100mA, CW



Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff (%)	P1dB Gain (dB)	P3dB (dBm)	P3dB (W)	P3dB Eff (%)
1500	48.62	72.78	59.4	18.54	49.86	96.83	67.0
1550	48.54	71.45	61.2	19.01	49.8	95.5	69.4
1600	48.21	66.22	62.0	19.1	49.47	88.5	70.9

Applications

- L band power amplifier
- P band power amplifier
- ISM/RF Energy power amplifier

Important Note: Proper Biasing Sequence for GaN HEMT Transistors

Turning the device ON

- Set VGS to the pinch-off (VP) voltage, typically -5 V
- Turn on VDS to nominal supply voltage
- Increase VGS until IDS current is attained
- Apply RF input power to desired level

Turning the device OFF

- Turn RF power off
- Reduce VGS down to VP, typically -5 V
- Reduce VDS down to 0 V
- Turn off VGS

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	+200	Vdc
Gate-Source Voltage	V_{GS}	-8 to +0.5	Vdc
Operating Voltage	V_{DD}	50	Vdc
Maximum gate current	I_{GS}	16	mA
Storage Temperature Range	T_{STG}	-65 to +150	°C
Case Operating Temperature	T_c	+150	°C
Operating Junction Temperature	T_j	+225	°C

Table 2. Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case by FEA $T_c = 85^\circ\text{C}$, at $P_{diss} = 35\text{W}$	$R_{\theta JC}$	3.0	°C /W

Table 3. Electrical Characteristics (TA = 25°C unless otherwise noted)

DC Characteristics (measured on wafer prior to packaging)

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = -8\text{V}$; $IDS = 16\text{mA}$	V_{DSS}		200		V

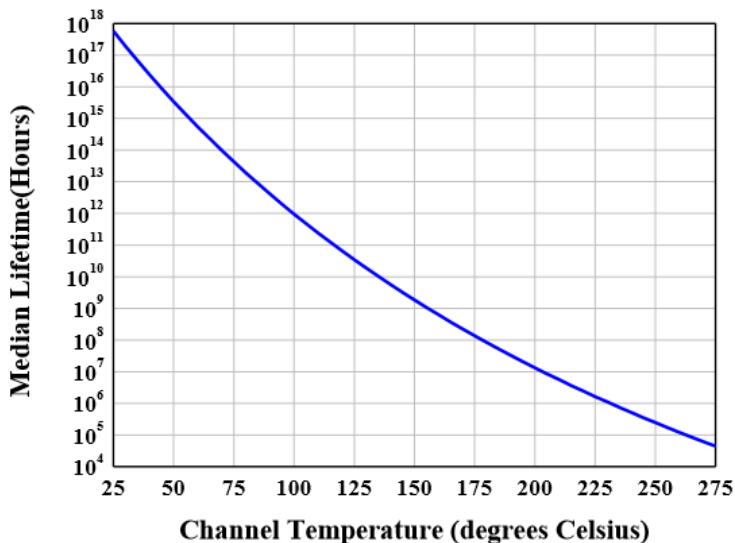


Gate Threshold Voltage	VDS =10V, ID = 16mA	V _{GS(th)}	-4		-2	V
Gate Quiescent Voltage	VDS =28V, IDS=100mA, Measured in Functional Test	V _{GS(Q)}		-2.9		V

Ruggedness Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Load mismatch capability	1.5GHz, Pout=70W Pulsed CW All phase, No device damages	VSWR		10:1		

Figure 2: Median Lifetime vs. Channel Temperature



1.5-1.6GHz Typical performance

Figure 3: Network analyzer output S11/S21



Figure 4: Gain, Efficiency as function of Pout:

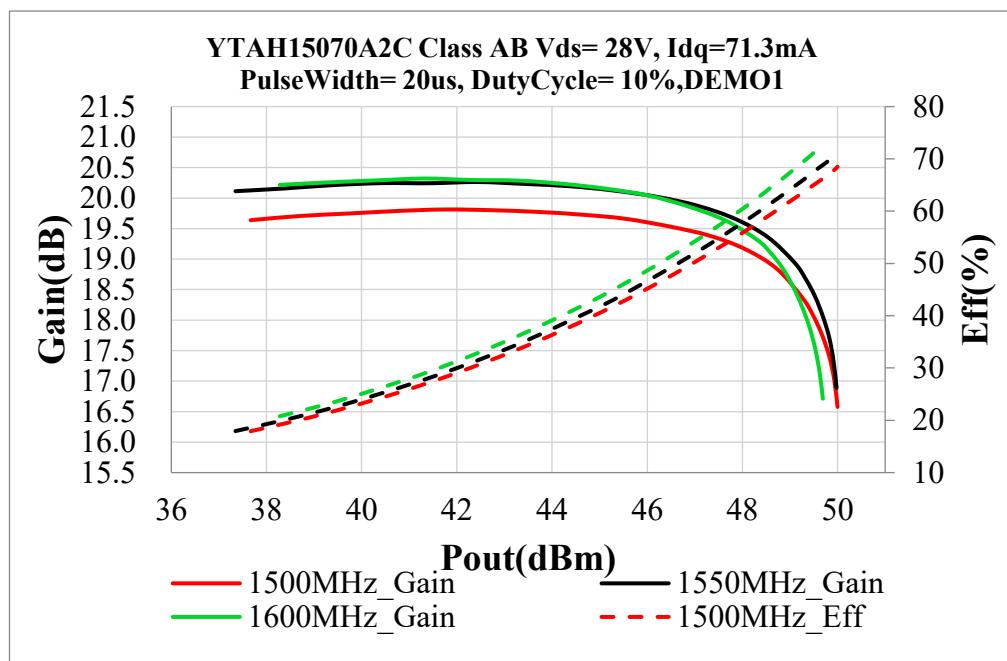
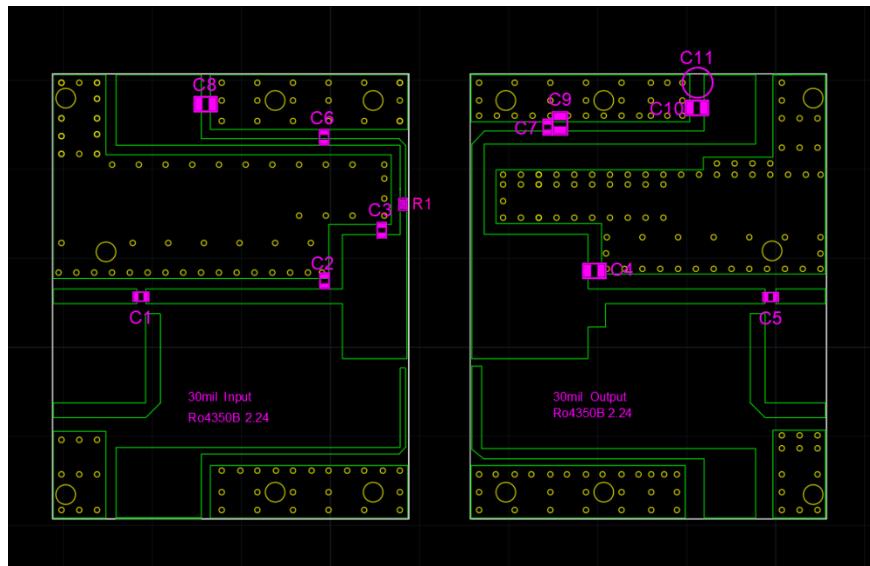


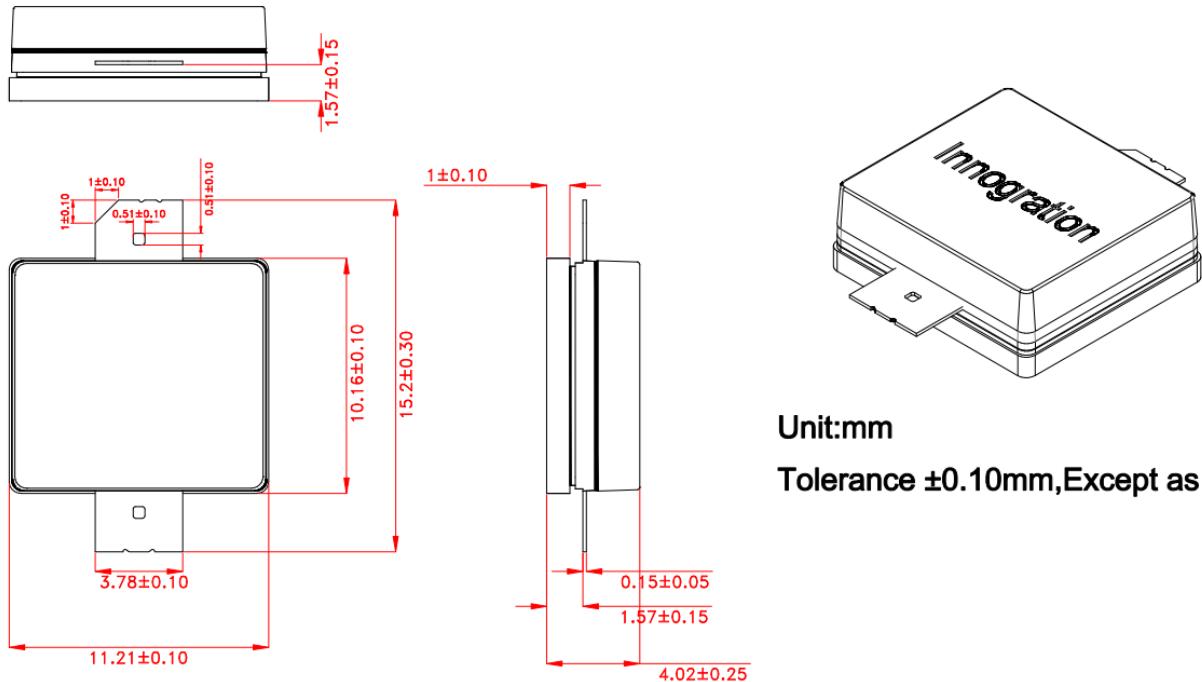
Figure 5: Picture of application board



Component	Value	Suggestion	Quantity
U1	YTAH15070A2C		1
C1, C5, C6, C7	15pF	GQM2195C2E150GB12D	4
C2	2.2pF	GQM2195C2E2R2BB12D	1
C3	2.7pF	GQM2195C2E2R7BB12D	1
C4	1.5pF	C1210C159D5HACAUTO	1
C8, C9, C10,	10uF/63V	GRM32EC72A106KE05	3
C11	470uF/63V	EEVFK1J471M	1
R1	10 Ω	ERJPA3F10R0V	1



Package Dimensions (Unit:mm)



Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2025/12/26	V1.0	Preliminary Datasheet Creation

Application data based on: ZYX-25-50

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