

915MHz ,600W, RF Power GaN HEMT

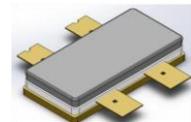
Description

The XTAV10600RB4C is a 600-watt, prematched GaN HEMT, designed for multiple applications with frequencies at 915MHz narrower band.

It can support both CW and pulse operation or any other linear applications

There is no guarantee of performance when this part is used in applications designed outside of these frequencies.

XTAV10600RB4C



- Typical Performance (On Innogration fixture with device soldered):

$V_{DD} = 50$ Volts, $V_{GS} = -4.8$ V

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff (%)	P1dB Gain (dB)	P3dB (dBm)	P3dB (W)	P3dB Eff (%)
915	56.94	494.4	70.0	16.91	58.03	635.3	80

Applications and Features

- Multiple 915MHz RF Energy applications
 - Commercial microwave oven
 - Industry heating
- P band power amplifier
- L band, avionics power amplifier
- Thermally Enhanced Industry Standard Package
- High Reliability Metallization Process
- Excellent thermal Stability and Excellent Ruggedness
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

Important Note: Proper Biasing Sequence for GaN HEMT Transistors

Turning the device ON

- Set V_{GS} to the pinch-off (V_P) voltage, typically -5 V
- Turn on V_{DS} to nominal supply voltage
- Increase V_{GS} until IDS current is attained
- Apply RF input power to desired level

Turning the device OFF

- Turn RF power off
- Reduce V_{GS} down to V_P , typically -5 V
- Reduce V_{DS} down to 0 V
- Turn off V_{GS}

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	+200	Vdc
Gate-Source Voltage	V_{GS}	-10 to +0.5	Vdc
Operating Voltage	V_{DD}	55	Vdc
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 by Finite Element Analysis, Channel--to—Case ,Case Temperature 25°C, $P_D = 180W$ (For reliability estimation)	$R_{\theta CHC}(FEA)$	0.45	°C /W

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

DC Characteristics

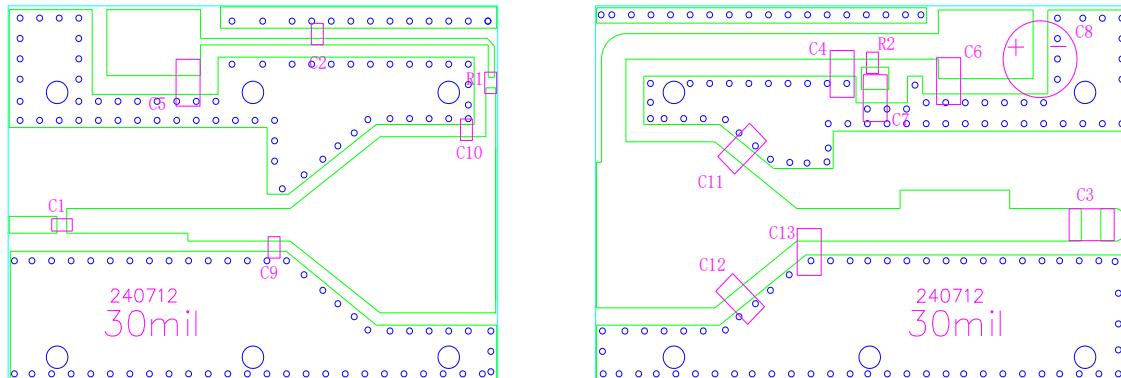
Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=-8V$; $IDS=94.5mA$	V_{DSS}		200		V
Gate Threshold Voltage	$V_{DS} = 10V$, $ID = 94.5mA$	$V_{GS(th)}$		-3.7		V
Gate Quiescent Voltage	$V_{DS} = 50V$, $IDS=500mA$, Measured in Functional Test	$V_{GS(Q)}$		-3.1		V

Functional Tests (In Innogration Test Fixture, 50 ohm system) : $V_{DD} = 50$ Vdc, $V_{GS}=-4.8V$, $f = 915MHz$, Pulsed CW 20us/10%

Characteristic	Symbol	Min	Typ	Max	Unit
Power Gain @ P3dB	G_p		15		dB
3dB Compression Point	P_{3dB}		600		W
Drain Efficiency@P3dB	η_D		80		%
Input Return Loss	IRL	-3	-5		dB

Reference Circuit of Test Fixture Assembly Diagram

PCB materials: **Roger 4350B**,30mils, DXF file upon request



Designator	Footprint	Comment	Quantity
C1	0805	4.7pF/250V	1
C2	0805	47pF/250V	1
C3, C4	1210	47pF/250V	2
C5, C6, C7	1210	10 uF/100V	3
C8		1000 uF/63V	1
C9	0805	6.8 pF/250V	1
C10	0805	10 pF/250V	1
C11, C12, C13	1210	6.8 pF/250V	3
R1, R2	0805	10 Ω	2

TYPICAL CHARACTERISTICS

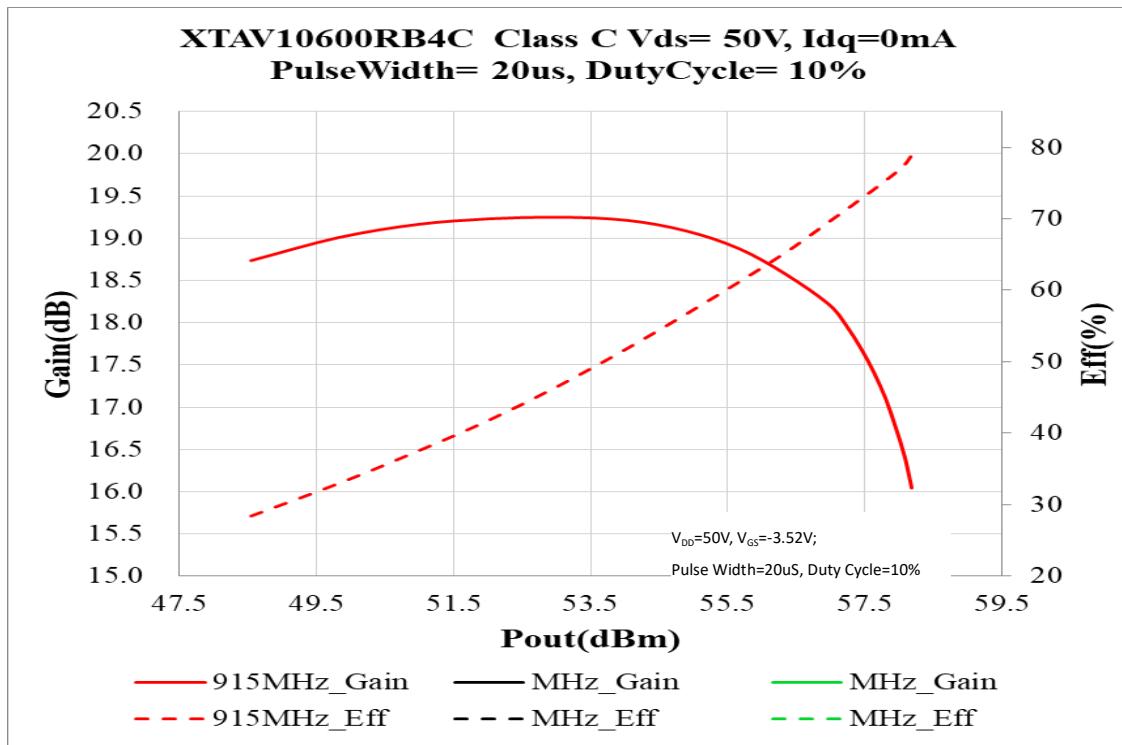


Figure 1. Power gain and drain efficiency as function of CW output power

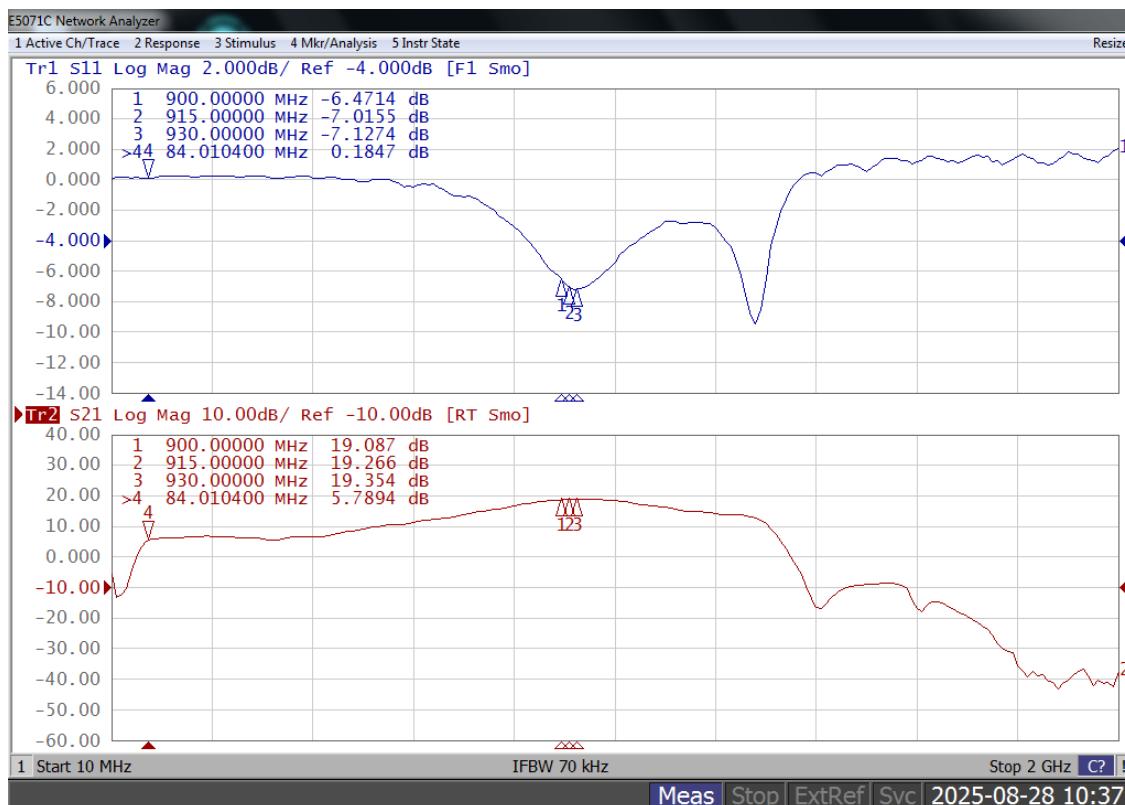
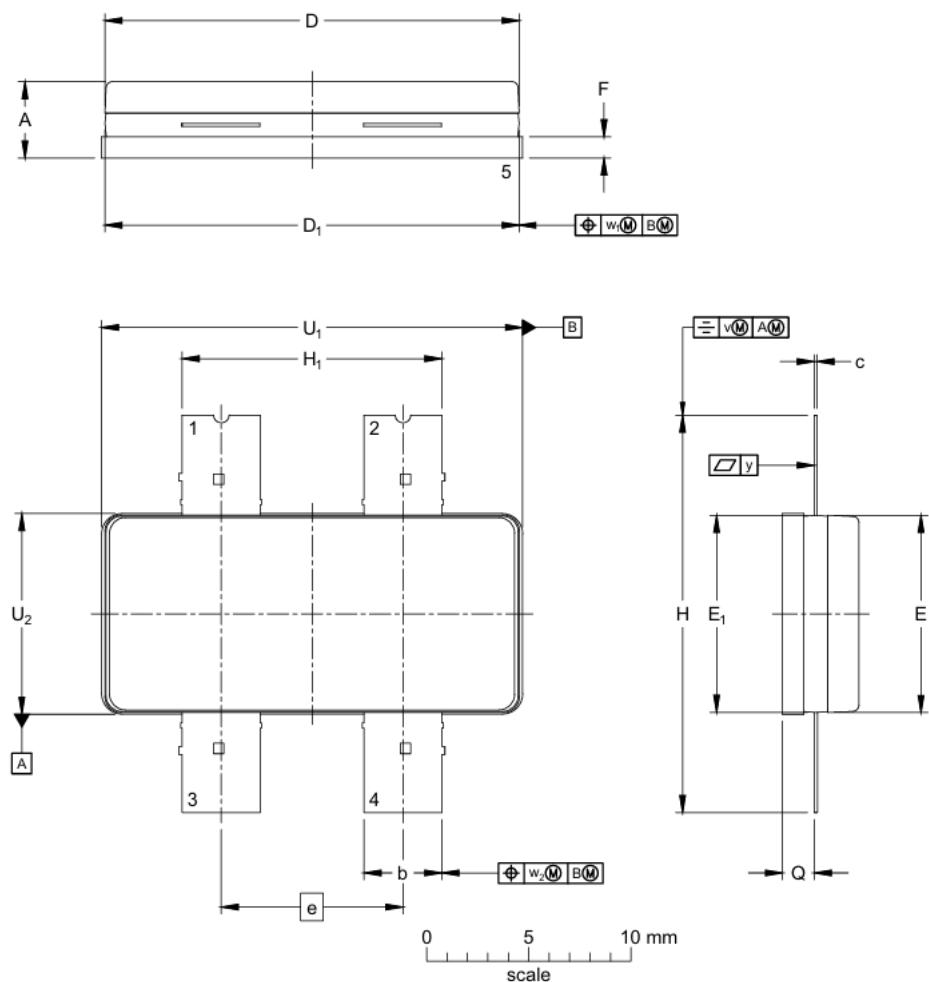


Figure 2. Network analyzer output S11/S21

Earless Flanged Plastic Air Cavity Package; 4 leads



Dimensions

Unit	A	b	c	D	D ₁	E	E ₁	e	F	H	H ₁	Q ⁽¹⁾	U ₁	U ₂	v	w ₁	w ₂	y	
mm	max	4.01	3.91	0.18	20.42	20.37	9.80	9.75		1.14	19.53	12.83	1.68	20.70	9.91	0.50	0.50	0.10	
mm	nom							8.89											
mm	min	3.40	3.71	0.13	20.12	20.17	9.50	9.55		0.94	19.33	12.57	1.45	20.50	9.70				



Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2025/9/22	V1.0	Preliminary Datasheet Creation

Application data based on LSM-25-26

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