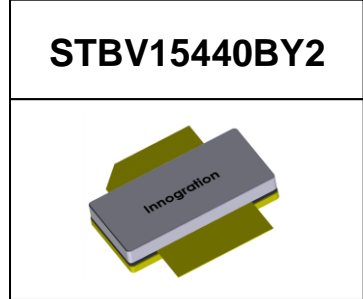




L band ,440W, RF Power GaN HEMT



Description

The STBV15440BY2 is a single ended 440-watt, input matched GaN HEMT, designed for multiple applications with frequencies up to 1.5GHz, mainly for RF energy application at ISM band like 915MHz and 1300MHz etc.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.

•Typical Performance (On Innegration fixture with device soldered):

$V_{DD} = 50$ Volts, $V_{GS} = -3.8$ V

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff (%)	P1dB Gain (dB)	P3dB (dBm)	P3dB (W)	P3dB Eff (%)
915	56.72	470.19	79.30	19.14	57.07	509.80	81.94

Applications and Features

- Suitable for 1.3GHz/915MHz ISM application
- Suitable for L band radar and avionics application
- Suitable for wideband power amplifier
- High Efficiency and Linear Gain Operations
- 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

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

Turning the device OFF

1. Turn RF power off
2. Reduce VGS down to VP, typically -5 V
3. Reduce VDS down to 0 V
4. Turn off VGS

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	Tstg	-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, Pd = 120W (For reliability estimation)	$R_{\theta CHC}(FEA)$	0.38	°C /W



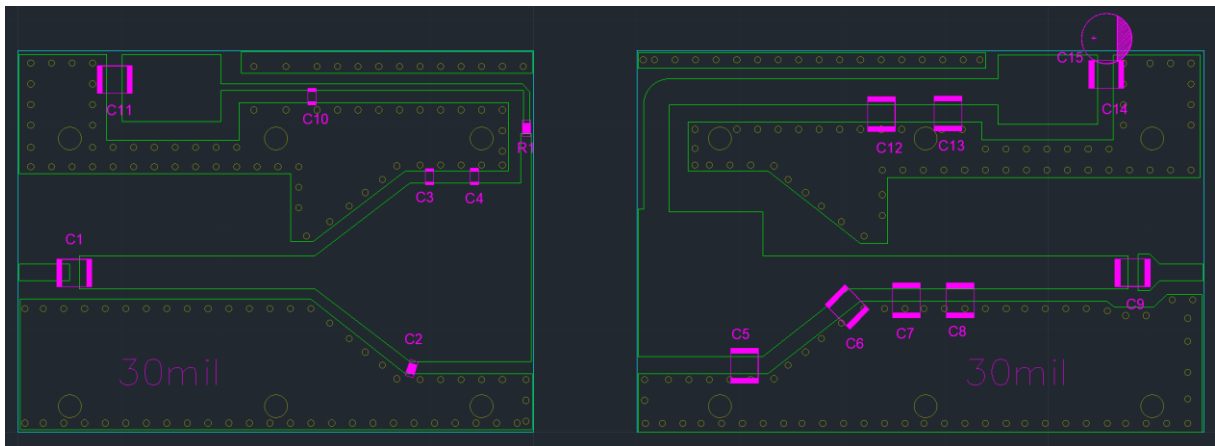
Table 3. Electrical Characteristics (TA = 25°C unless otherwise noted)

DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	VGS=-8V; IDS=67.2mA	V _{DSS}		200		V
Gate Threshold Voltage	VDS =10V, ID = 67.2 mA	V _{GS(th)}		-3.7		V
Gate Quiescent Voltage	VDS =50V, IDS=100mA, Measured in Functional Test	V _{GS(Q)}		-3.4		V

Reference Circuit of Test Fixture Assembly Diagram

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



Reference	Footprint	Value	Quantity
C1,C9,C12	1111	30pF	3
C2	0603	12pF	1
C3	0603	3pF	1
C4	0603	4.7pF	1
C5	1111	7.5pF	1
C6	1111	10pF	1
C7	1111	2pF	1
C8	1111	0.3pF	1
R1	0603	10ohm	1
C10	0603	30pF	1
C11,C13,C14	1210	10uF/63V	3
C14	\	470uF/63V	1
U1	BY2	STBV15440BY2	1



TYPICAL CHARACTERISTICS

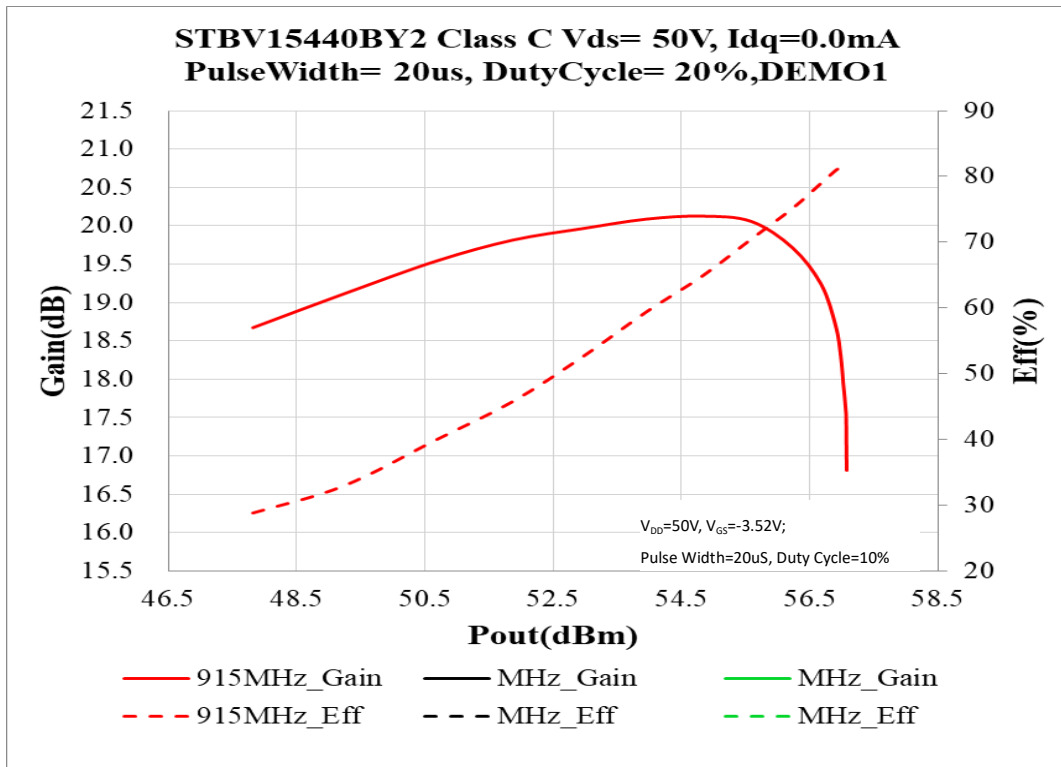


Figure 1. Power gain and drain efficiency as function of CW output power

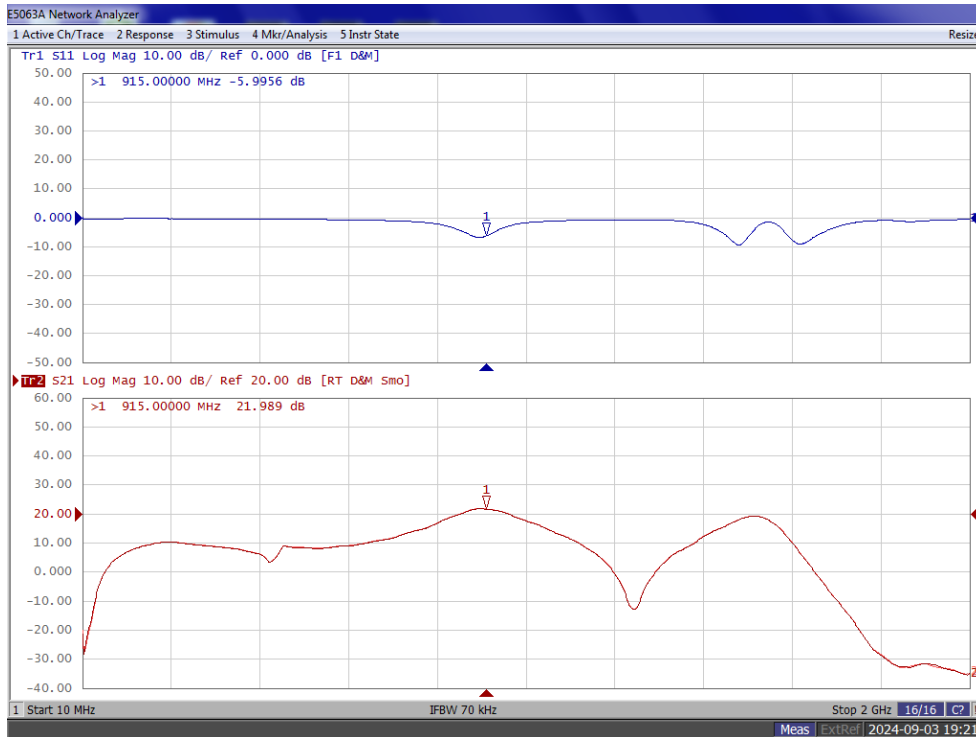
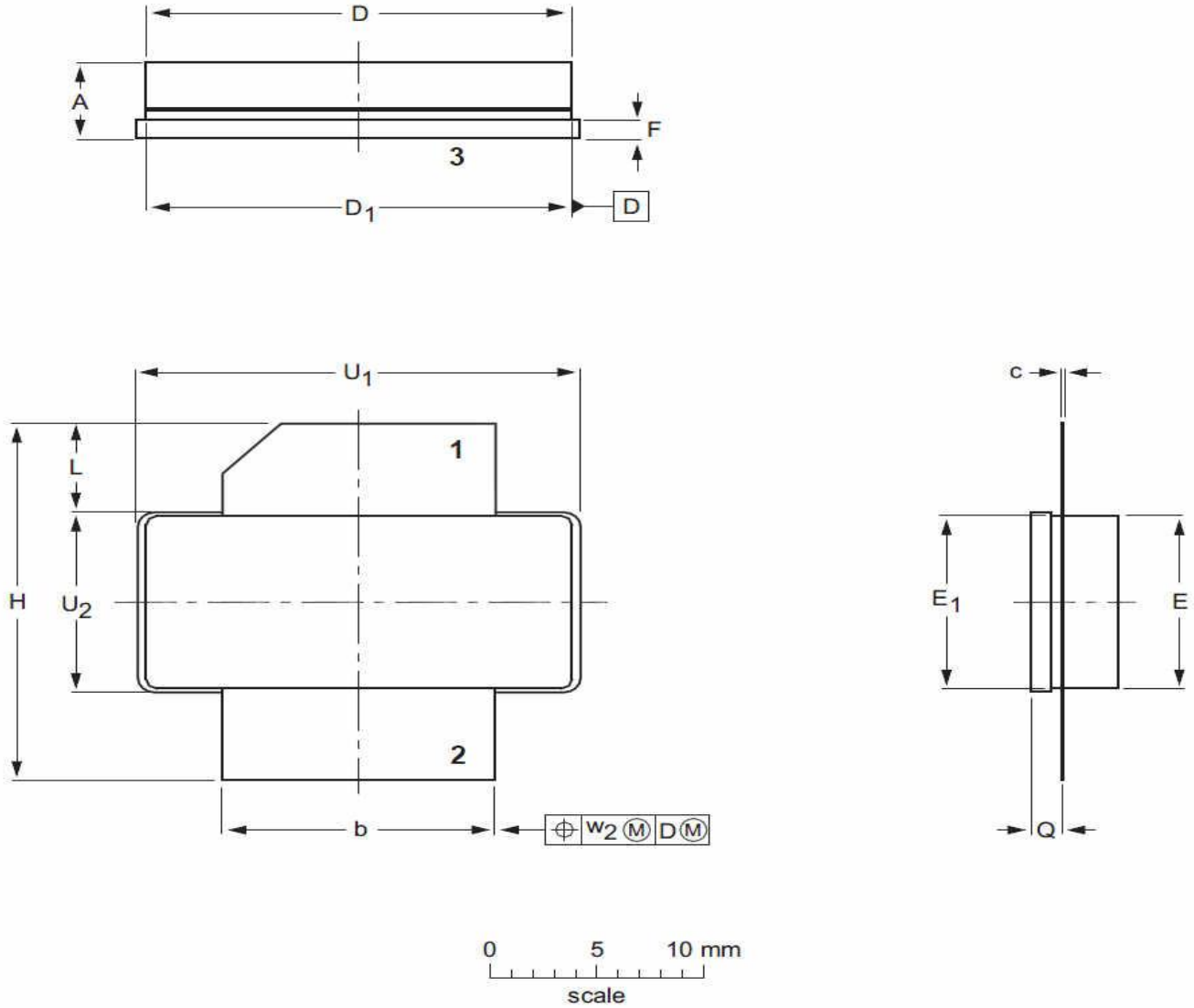


Figure 2. Network analyzer output S11/S21



Package Outline

Earless flanged ceramic package; 2 leads (1—DRAIN、2—GATE、3—SOURCE)



UNIT	A	b	c	D	D ₁	E	E ₁	F	H	L	Q	U ₁	U ₂	W ₂
mm	4.72	12.83	0.15	20.02	19.96	9.50	9.53	1.14	19.94	5.33	1.70	20.70	9.91	0.25
	3.43	12.57	0.08	19.61	19.66	9.30	9.25	0.89	18.92	4.32	1.45	20.45	9.65	
inches	0.186	0.505	0.006	0.788	0.786	0.374	0.375	0.045	0.785	0.210	0.067	0.815	0.390	0.010
	0.135	0.495	0.003	0.772	0.774	0.366	0.364	0.035	0.745	0.170	0.057	0.805	0.380	

OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-B2					03/12/2013



Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2024/9/18	V1.0	Preliminary Datasheet Creation

Application data based on CWZ-24-23

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