

XG1460VS GaN TRANSISTOR

Document Number: XG1460VS
Preliminary Datasheet V1.0

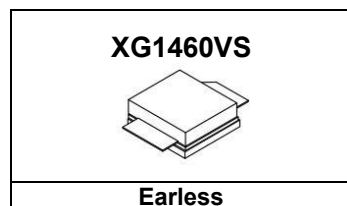
GaN HEMT 50V, 600W, L band RF Power Transistor

Description

The XG1460VS is a 600-watt, internally matched GaN HEMT, designed for pulsed amplifier applications with frequencies from 960MHz to 1400MHz.

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

It is recommended to use this device only at pulse condition, and power rating will be different according to different pulse width and duty cycle



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

$V_{DD} = 50$ Volts, $I_{DQ} = 300$ mA, Pulse CW, Pulse width=100us, Duty cycle=10%.

Freq (MHz)	Pin (dBm)	Pout (dBm)	Pout (W)	IDS (A)	Gain (dB)	Eff (%)
1200	45.43	58.51	709.58	2.58	13.0	55
1300	45.55	58.38	688.65	2.24	12.8	61
1400	45.88	57.87	612.35	1.98	12.0	61

Applications and Features

- Suitable for broad band application in L band data link, Avionics applications.
- 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 (50 V)
- 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_{DS}	+200	Vdc
Gate--Source Voltage	V_{GS}	-8 to +0	Vdc
Operating Voltage	V_{DD}	0 to 55	Vdc
Maximum Forward Gate Current @ $T_C = 25^{\circ}C$	I_{gmax}	80	mA
Storage Temperature Range	T_{stg}	-65 to +150	$^{\circ}C$

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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, $P_{OUT}=600W$ @1.2GHz by FEA 10us/10%, $T_{case}=25^{\circ}C$,	$R_{\theta JC}$	0.38	°C/W

Table 3. Electrical Characteristics ($T_A = 25^{\circ}C$ unless otherwise noted)

DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=-8V$; $I_{DS}=80mA$	V_{DSS}	—	200	—	V
Gate Threshold Voltage	$V_{DS} = 10V$, $I_D = 80mA$	$V_{GS(th)}$	-4		-2	V
Gate Quiescent Voltage	$V_{DS} = 50V$, $I_{DS}=300mA$, Measured in Functional Test	$V_{GS(Q)}$	—	-3.4	—	V

Load Mismatch (In Innogration Test Fixture, 50 ohm system): $V_{DD} = 50 V_{dc}$, $I_{DQ} = 300 mA$, $f = 1200 MHz$

VSWR 10:1 at 600W pulse CW Output Power	No Device Degradation
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TYPICAL CHARACTERISTICS

1200-1400MHz

Figure 2. Network analyzer output S11/S21
VDS=50V IDQ=500mA

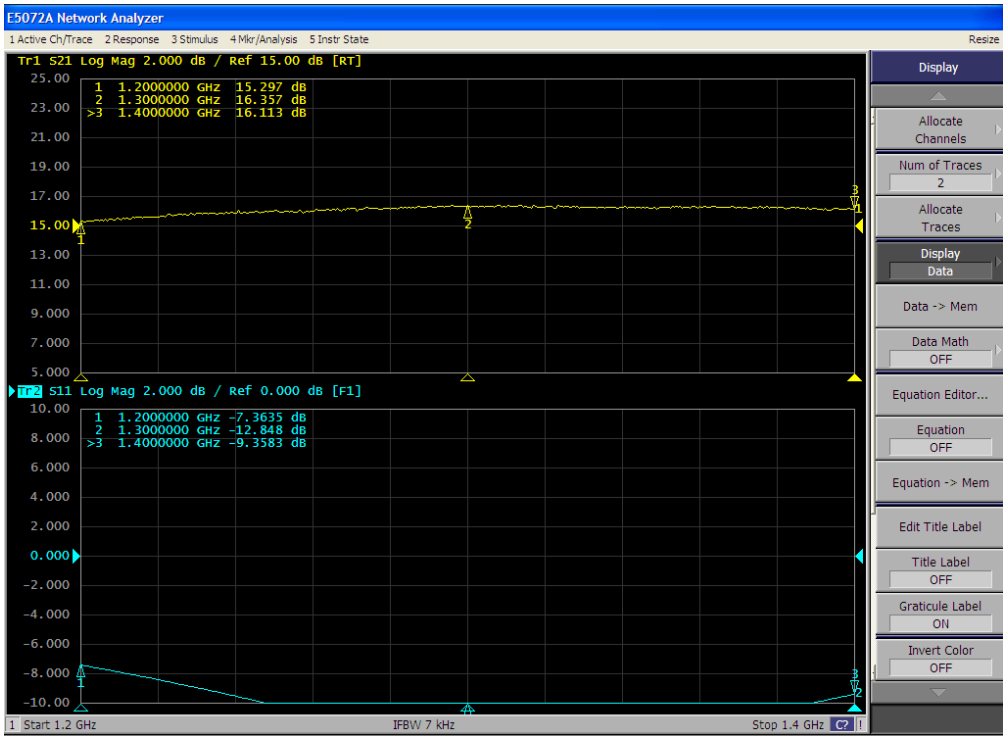
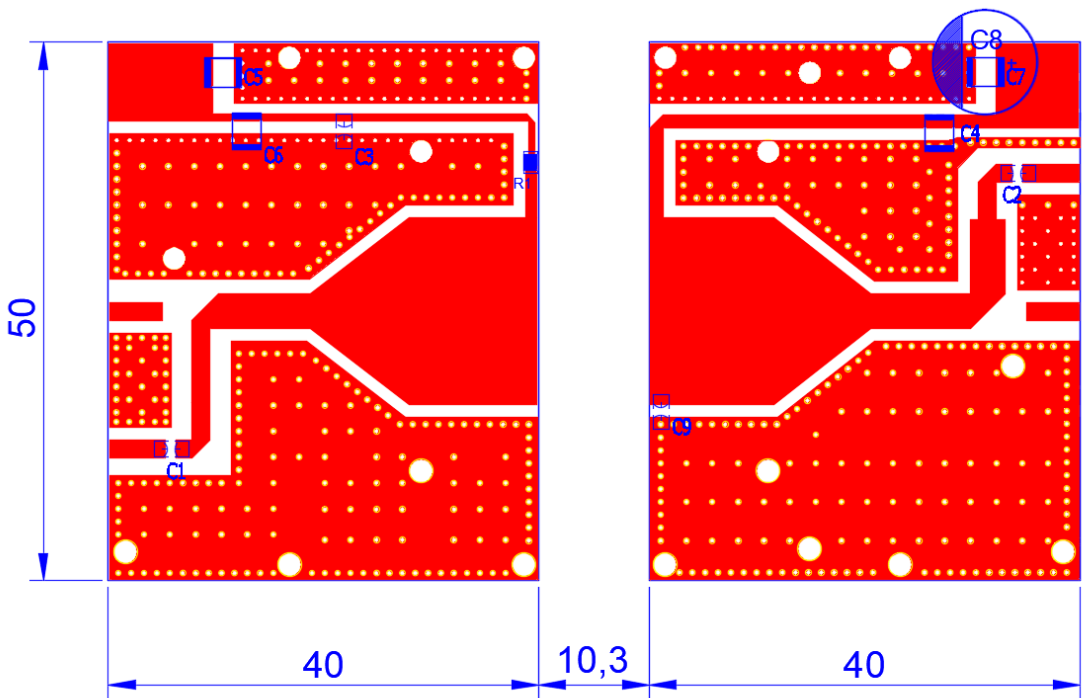


Figure . Test Circuit Component Layout



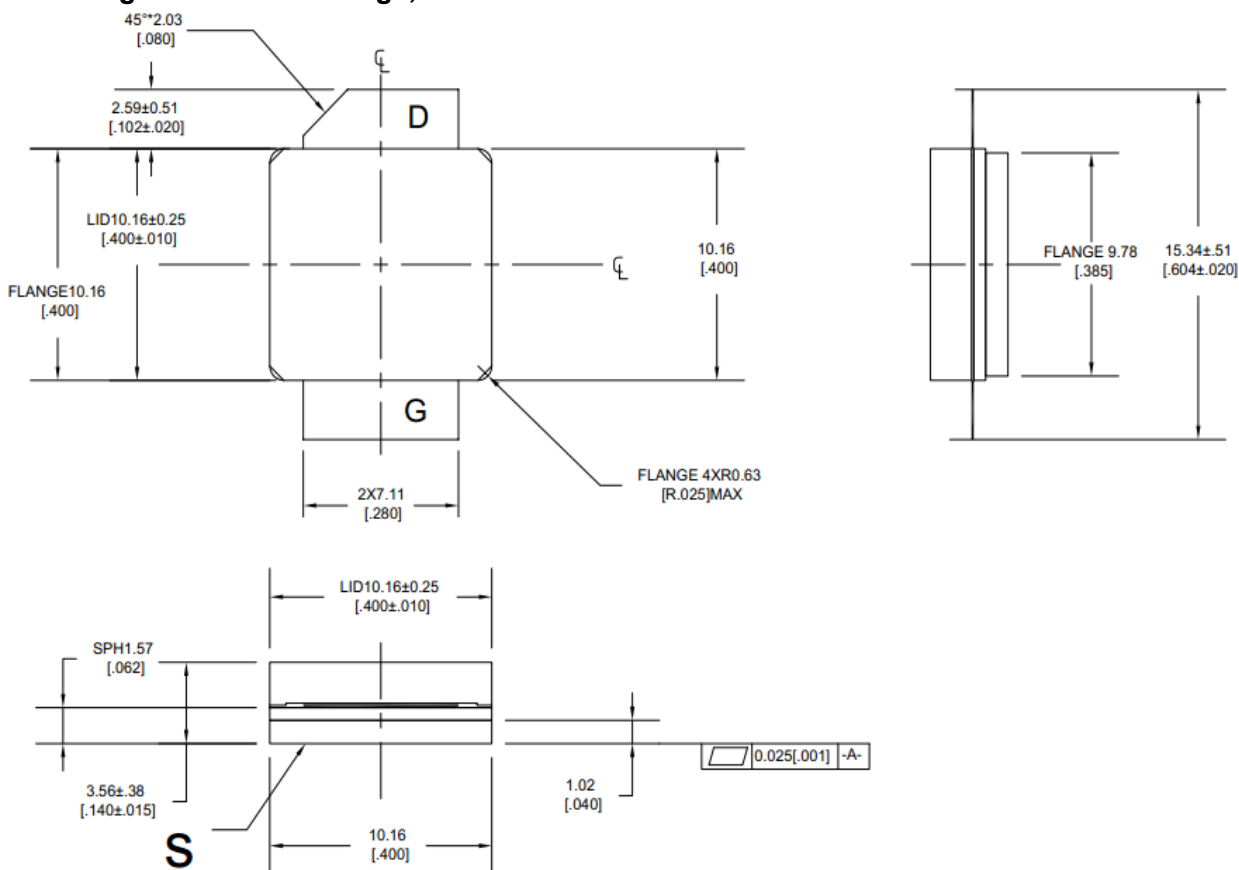
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Table 4. Test Circuit Component Designations and Values

Component	Description	Suggested Manufacturer
C1,C3	20pF/MQ300805	
C8	2000uF	
C5,C6,C7	10uF	
C2, C4,	56pF/ MQ301111	
C9	1pF/ MQ300805	
R1	10ohm/0805	Chip Resistor
PCB	30 Mil RO4350B	

Earless Flanged Ceramic Package; 2 leads



Unit: mm [inch]

Tolerance .xx +/- 0.01 .xxx +/- 0.005 inches

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Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2026/7/21	Rev 1.0	Preliminary Datasheet Creation

Application data based on YHG-26-25

Notice

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