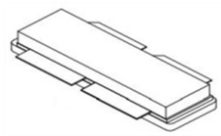
GaN 50V, 600W, 2.4-2.5GHz RF Power Transistor

STBV25601D4



Description

The STBV25601D4 is a 600W capable, internally matched GaN HEMT, ideal for ISM or RF energy applications at 2.4-2.5G full band

There is no guarantee of performance when this part is used outside of stated frequencies.

- Typical RF performance at 2450MHz applications

Vds=50V, Vgs=-4.8V, CW, Tc=25 degree C, Air cooling

Freq (MHz)	Pout (dBm)	Pout (W)	Gain-Pout (dB)	Ids (A)	Pout-Eff(%)
2400	58.08	642	15.77	17.9	72
2450	57.97	627	15.97	17.4	72
2500	57.82	605	16.11	16.9	71

Recommended driver: STAV25035C6

Applications

- 2.45GHz RF Energy
- S band power amplifier

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}	-8 to +0.5	Vdc
Operating Voltage	V_{DD}	55	Vdc
Maximum gate current	Igs	86.4	mA
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, Junction to Case by FEA T_C= 25°C, at Pd=250W	$R_{\theta JC}$	0.45	°C /W

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

DC Characteristics (Each path, measured on wafer prior to packaging)

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	VGS=-8V; IDS=43.2mA	V_{DSS}		200		V
Gate Threshold Voltage	VDS =10V, ID = 43.2mA	$V_{GS(th)}$	-4	-	-2	V

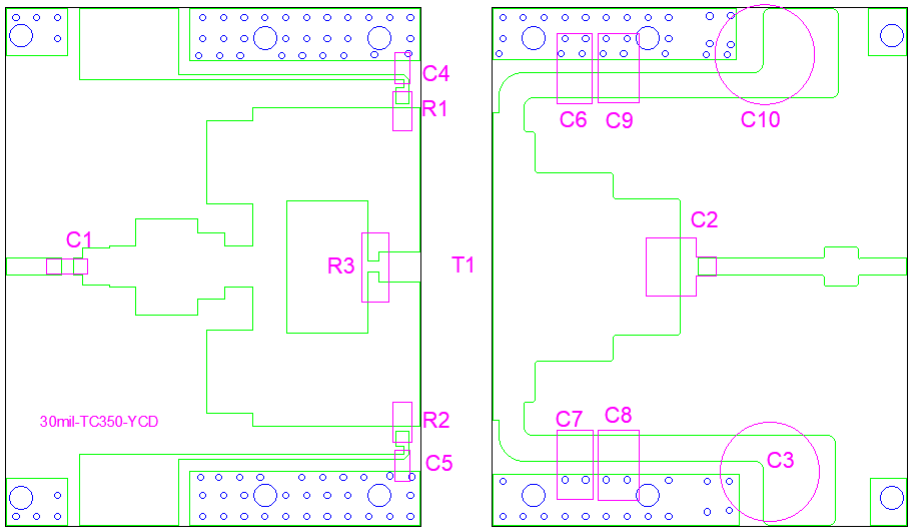
Gate Quiescent Voltage	VDS =50V, IDS=500mA, Measured in Functional Test	$V_{GS(Q)}$		--3.3		V

Ruggedness Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Load mismatch capability	2.45GHz, Pout=600W pulse CW All phase, No device damages	VSWR		10:1		

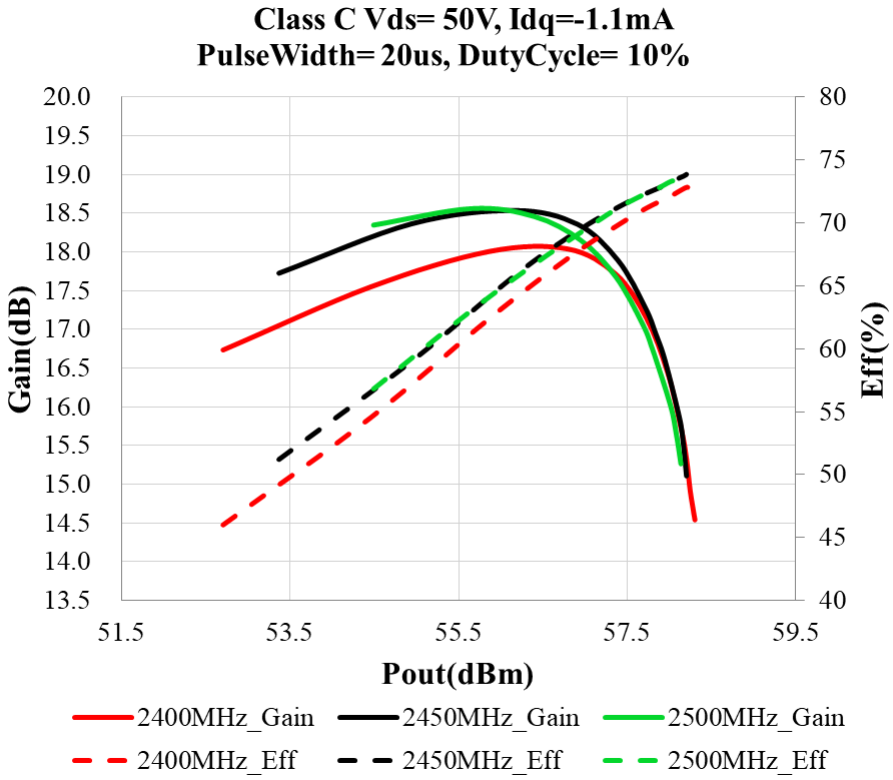
Reference Circuit of Test Fixture Assembly Diagram

DXF file upon request



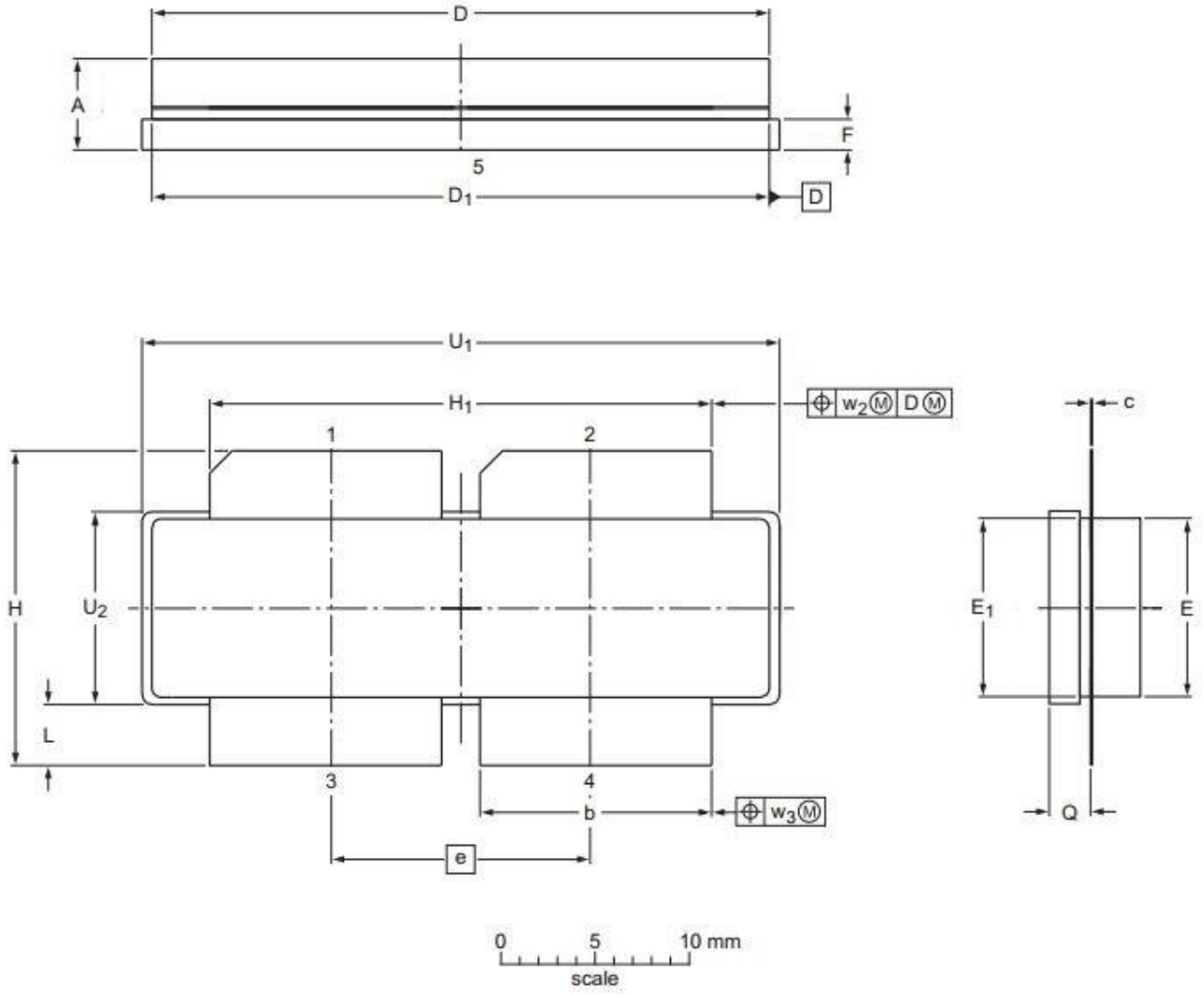
Part	Quantity	Description	Part Number	Manufacture
C1, C4,C5	3	12pFHigh Q Capacitor	251SHF120BSE	TEMEX
C2	1	15pFHigh Q Capacitor	MIN02-002CCQ150J-F,Dubilier-CDE	
C10,C3	2	1000uF/63V		ATC
C8,C9	2	10uF MLCC	RS80R2A106M	MARUWA
C6,C7	2	12pFHigh Q Capacitor	1210-Package	ATC
R1,R2,R3	3	10Ω Power Resistor	ESR03EZPF100	ROHM
T1	1	600W GaN Dual Transistor	STBV25601D4	Innogration

Figure 2: Power gain，Eff as function of Pout



Package Outline

Earless flanged ceramic package; 4 leads（1、2—DRAIN、3、4—GATE、5—SOURCE）



UNIT	A	b	c	D	D_1	e	E	E_1	F	H	H_1	L	Q	U_1	U_2	W_2	W_2
mm	4.7 4.2	11.81 11.56	0.18 0.10	31.55 30.94	31.52 30.96	13.72	9.50 9.30	9.53 9.27	1.75 1.50	17.12 16.10	25.53 25.27	3.48 2.97	2.26 2.01	32.39 32.13	10.29 10.03	0.25	0.25
inches	0.185 0.165	0.465 0.455	0.007 0.004	1.242 1.218	1.241 1.219	0.540	0.374 0.366	0.375 0.365	0.069 0.059	0.674 0.634	1.005 0.995	0.137 0.117	0.089 0.079	1.275 1.265	0.405 0.395	0.01	0.01

OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-D4					03/12/2013

Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2026/2/3	Rev 1.0	Preliminary datasheet creation
2026/3/4	Rev 1.1	Modify data with enlarged heatsink and CDE capacitor used

Application data based on: LWH-26-02

Notice