

BSTFGPA35-0810Q

GaN Internally Matched Power Amplifier

Data Sheet

I. Product Introduction

BSTFGPA35-0810Q is a gallium nitride high electron mobility transistor (GaN HEMT), a high-power internally matched power tube that can operate in pulse mode at saturated power and is used in standard communication and radar frequency bands. Provides optimal power and gain performance in 50 Ω systems.

BSTFGPA35-0810Q is a functional substitute of TGI8596-50 from Toshiba.

II. Application Areas

- Radar
- Communication
- Instruments

III. Key Technical Indicators

- Covered operating frequency band range: 8.5 - 9.6 GHz
- Good 50 Ω impedance matching, easy to cascade
- Metal ceramic tube sealed package
- Welded pill package

IV. Electrical Performance Table

Working conditions: 50Ω test system, $T_A = +25\text{ }^{\circ}\text{C}$, $V_{DS} = +28\text{V}$, $I_{DS} = 50\text{mA}$, CW.

Table 1.

PARAMETER NAME	TEST CONDITIONS		MINIMUM	TYPICAL VALUES	MAXIMUM	UNIT
Saturation power	Freq.=8.5GHz~9.6GHz $V_{GS}=-2.4\sim-3.5\text{V}$ $V_{DS}=+28\text{V}$ $I_{DSq}=50\text{mA}$		-	47.2	-	dBm
Power gain			-	7.2	-	dB
Saturation efficiency			-	42	-	%
Power flatness			-	-	0.5	dB
pinch-off voltage	$V_{DS}=6\text{V}$	$I_{DS} \leq 100\text{mA}$	-8	-	-4	V
Gate-source reverse current	$V_{DS}=0\text{V}$	$V_{GS}=-10\text{V}$	-	-	5	uA

Note: Final technical indicators and dimensions are subject to the technical agreement. Products with similar power specifications, higher efficiency, and wider bandwidth can be customized.

V. Absolute Maximum Ratings

Table 2.

PARAMETER	SYMBOL	LIMIT VALUE	UNIT
Drain-source voltage	V_{DS}	+100	V
Gate-source voltage	V_{GS}	-10	V
Operating temperature		-40~+75	$^{\circ}\text{C}$
Power dissipation	$T_c=25\text{ }^{\circ}\text{C}$	85	w
Storage temperature		-55~+125	$^{\circ}\text{C}$

VI. Main Test Indicators

6.1. Test conditions: $T_A = +25\text{ }^{\circ}\text{C}$, $V_{DS} = +28\text{V}$, $I_{DS} = 50\text{mA}$, CW.

Table 3.

FREQUENCY (GHz)	INPUT POWER (dBm)	OUTPUT POWER (dBm)	GAIN (dB)	EFFICIENCY (%)
8.5	40.0	47.3	7.3	38
8.6	40.0	47.5	7.5	41
8.7	40.0	47.3	7.3	41

FREQUENCY (GHz)	INPUT POWER (dBm)	OUTPUT POWER (dBm)	GAIN (dB)	EFFICIENCY (%)
8.8	40.0	47.5	7.5	42
8.9	40.0	47.3	7.3	43
9.0	40.0	47.6	7.6	43.5
9.1	40.0	47.2	7.2	43
9.2	40.0	47.3	7.3	43
9.3	40.0	47.1	7.1	42
9.4	40.0	47	7	40
9.5	40.0	47	7	39.5
9.6	40.0	47	7	39

6.2. Test Conditions: $T_A = +25\text{ }^{\circ}\text{C}$, $V_{DS} = +28\text{V}$, $I_{DS} = 50\text{mA}$, duty cycle 10%, pulse width 100us.

Table 4.

FREQUENCY (GHz)	INPUT POWER (dBm)	OUTPUT POWER (dBm)	GAIN (dB)	EFFICIENCY (%)
8.5	41.0	48.2	7.3	43
8.6	41.0	48.5	7.5	45
8.7	40.0	48	8	45
8.8	41.0	48.3	7.3	44
8.9	41.0	48	7	45
9.0	41.0	48.3	7.3	46
9.1	41.0	48	7	47
9.2	41.0	48.1	7	45
9.3	41.0	48	7	46
9.4	41.0	48	7	44
9.5	41.0	48	7	44
9.6	41.0	48	7	43

VII. Dimensions, Recommended Circuit Diagram

7.1. Shell and Tube

Note: The unit in the figure is millimeter (mm), polarity: cut-angle end - gate; flat-angle end - drain.

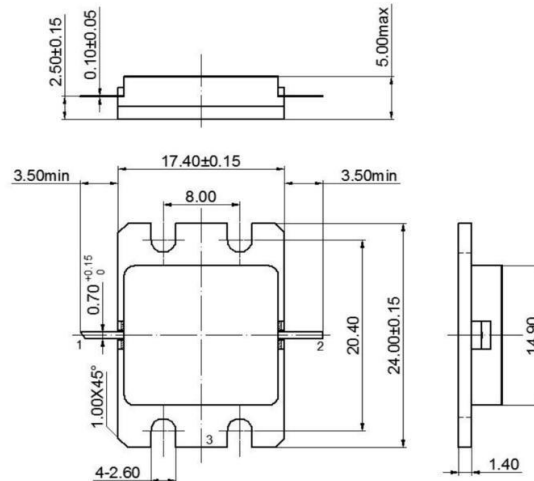


Figure 1.

7.2. Recommended assembly drawing

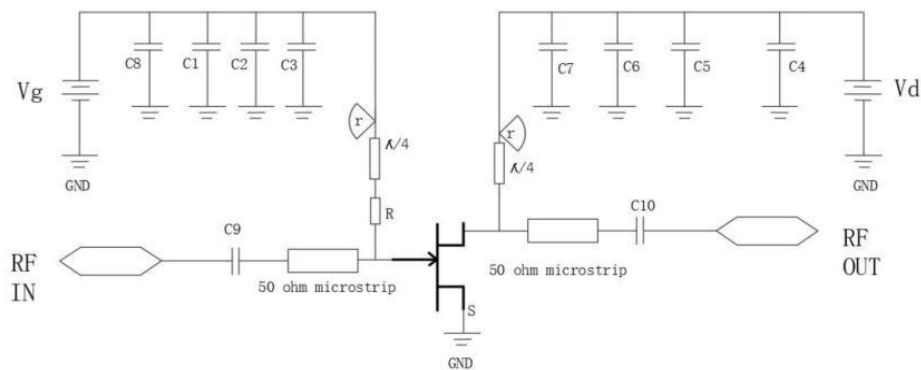


Figure 2.

Table 5.

COMPONENTS	SPECIFICATION	REMARK
C9, C10	1.2pF	0805
C3, C7	1000pF	0805
C2, C6	10nF	0805
C1, C5	4.7uF	0805
C4	470uF	

COMPONENTS	SPECIFICATION	REMARK
C8	47uF	
R	20Ω	0805
Plate	RT/duroid 5880	Rogers
Plate thickness	0.508mm	
Dielectric constant	2.2	

VIII. Recommended installation

- After tightening the housing with screws, the height between the housing pins and the printed circuit board should be $\geq 0.1\text{mm}$. The housing should be installed centered, and the slot width should be $\geq 17.65\text{mm}$. Ensure that the clearance between the input and output ends is $> 0.1\text{mm}$. Otherwise, the pins may fall off. Soldering is also acceptable. The soldering temperature should not exceed $220\text{ }^{\circ}\text{C}$.
- It is recommended to use M2.0 screws, assemble with a torque of 0.6 Nm , and take anti-loosening measures such as spring washers, thread fasteners, or glue on the nail caps.
- When the device is working, the case temperature does not exceed $75\text{ }^{\circ}\text{C}$.

IX. Precautions

- This device is an internally matched device with an input and output impedance of 50Ω .
- When applying power, please strictly follow the order of negative voltage first and then positive voltage; when powering on, increase the grid voltage first and then the drain voltage; when removing power, reduce the drain voltage first and then the grid voltage.
- Pay attention to heat dissipation during use. The lower the shell temperature, the longer the service life of the device.
- During use, instruments and equipment should be well grounded. This product is an electrostatically sensitive device, so please be careful to prevent static electricity during storage and use. Please select a power supply based on the specific modulation method and corresponding requirements.