Thermally Enhanced GaN Amplifier
260 W, 48 V, 1805 - 2170 MHz

GTVB222611FAV1A
Rev. V1

Features

- GaN on SiC HEMT Technology
- Pulsed CW Performance: 2170 MHz, 48 V, 10 µs pulse width, 10% Duty Cycle, Combined Outputs
- Output Power @ P3dB = 260 W
- Efficiency @ P3dB = 72%
- Thermally Enhanced Package
- RoHS* Compliant

Package Type: H-37265J-2

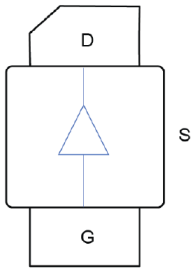
Applications

- Cellular, 5G Infrastructure

Description

The GTVB222611FAV1A is a GaN on Silicon Carbide HEMT amplifier designed for use in multi-standard cellular power amplifier applications. It features high efficiency, and a thermally enhanced package with earless flange.

Functional Schematic



Typical RF Performance[1]

(Tested in Class AB application test circuit)

V_{DD} = 48 V, I_{DQ} = 320 mA, P_{OUT} = 56 W avg, T_C = 25°C, Channel Bandwidth = 5 MHz, Peak/Average = 10 dB @ 0.01% CCDF

Frequency	Gain (dB)	Efficiency (%)	OPAR (dB)	ACPR (dBc)
1805 MHz	17.1	38.2	7.2	-32
1880 MHz	16.5	38.1	7.2	-32
2110 MHz	17.1	42.9	7.3	-29
2170 MHz	17.9	43.5	7.2	-29

1. Measurements taken with the device soldered to a heatsink of the AB application test circuit.

Pin Configuration

Pin #	Function
D	Drain
G	Gate
S	Source (flange)

Ordering Information

Part Number	Package
GTVB222611FAV1A-R0	50 piece reel
GTVB222611FAV1A-R2	250 piece reel

* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

RF Electrical Specifications[2]:
Freq. = 2170 MHz, V_{DD} = 48 V, I_{DQ} = 320 mA, P_{OUT} = 47.5 dBm (56.2 W), T_C = 25°C, Channel Bandwidth = 3.84 MHz, Peak/Average = 10 dB @ 0.01% CCDF

Parameter	Symbol	Min.	Typ.	Max.	Units
Gain	Gps	16.0	17.0	—	dB
Drain Efficiency	Eff	32.0	36.9	—	%
Adjacent Channel Power Ratio	ACPR	—	-31	-26	dBc
Output PAR @ 0.01% CCDF	OPAR	6.7	7.3	—	dB

2. Performance in MACOM Production Test Fixture

DC Electrical Characteristics: T_A = 25°C

Parameter	Test Conditions	Symbol	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	V_{GS} = -8 V, I_D = 10 mA	$V_{BR(DSS)}$	150	—	—	V
Drain-Source Leakage Current	V_{GS} = -8 V, V_{DS} = 10 V	i_{DSS}	—	—	5.1	mA
Gate Threshold Voltage	V_{DS} = 10 V, I_D = 32 mA	$V_{GS(th)}$	-3.8	-2.6	-2.1	V

Recommended Operating Voltages

Parameter	Test Conditions	Symbol	Min.	Typ.	Max.	Units
Drain Operating Voltage	—	V_{DD}	0	—	50	V
Gate Quiescent Voltage	V_{DS} = 48 V, I_D = 320 mA	$V_{GS(Q)}$	-3.8	-2.9	-2.3	V

Absolute Maximum Ratings[3,4,5]

Parameter	Absolute Maximum
Drain Source Voltage	125 V
Gate Source Voltage	-10 V to +2 V
Operating Voltage	55 V
Gate Current	32 mA
Drain Current	12 A
Junction Temperature	+275°C
Storage Temperature	-65°C to +150°C

3. Exceeding any one or combination of these limits may cause permanent damage to this device.
4. MACOM does not recommend sustained operation near these survivability limits.
5. Product's qualification were performed @ +225°C. Operation @ T_J (+275°C) reduces median time to failure.

Thermal Characteristics

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Thermal Resistance ($R_{\theta JC}$)	T_C = +85°C, 96 W DC	°C/W	—	1.2	—

Bias Sequencing

Bias ON
1. Ensure RF is turned off
2. Apply pinch-off voltage of -5 V to the gate
3. Apply nominal drain voltage
4. Bias gate to desired quiescent drain current
5. Apply RF

Bias OFF
1. Turn RF off
2. Apply pinch-off voltage to the gate
3. Turn-off drain voltage
4. Turn-off gate voltage

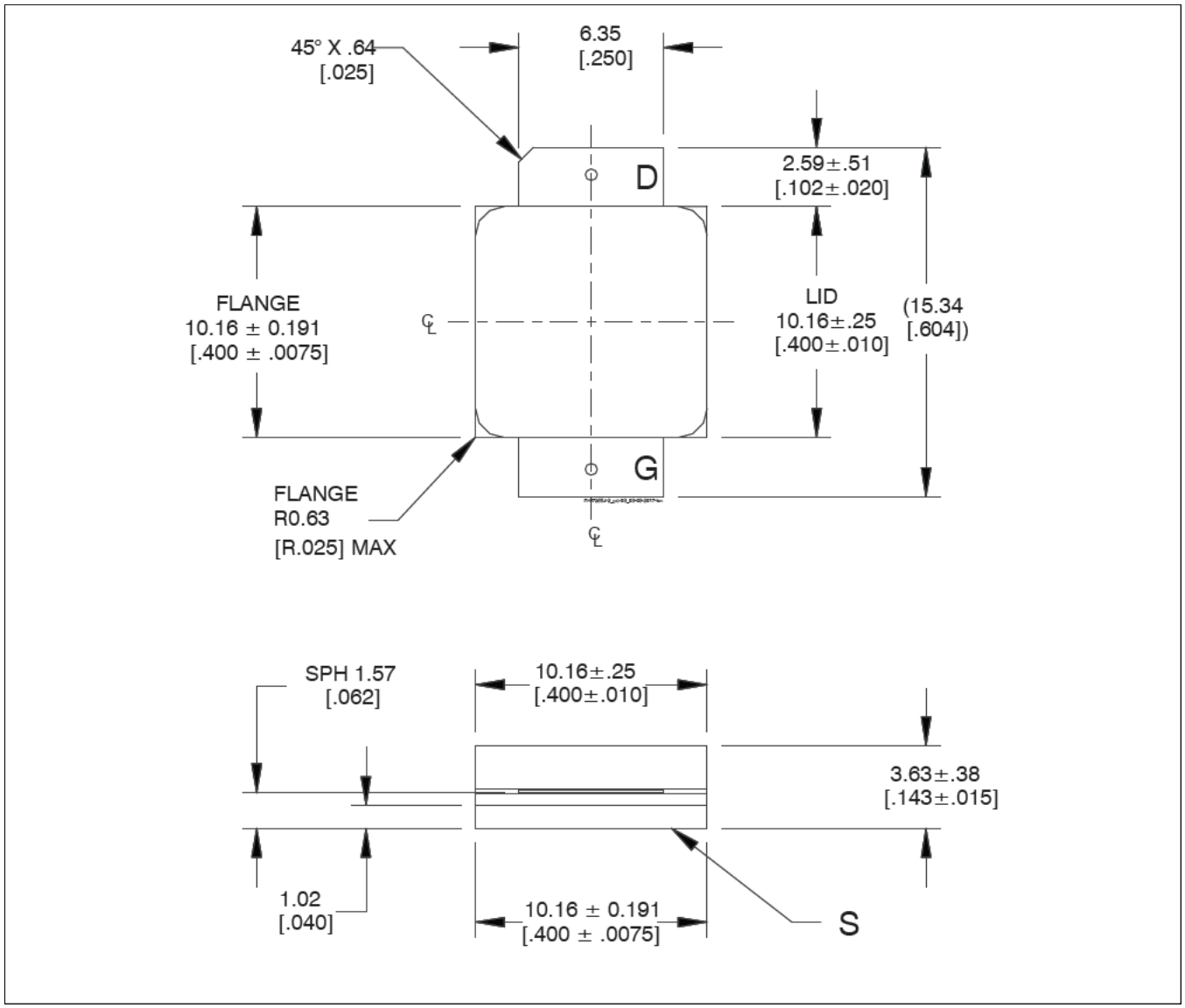
Handling Procedures

Please observe the following precautions to avoid damage:

Static Sensitivity

These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

Lead-Free Outline Drawing H-87265J-2



Meets JEDEC moisture sensitivity level (MSL) 3 requirements.
Plating is Au