Advance GTVA311801FA

Thermally-Enhanced High Power RF GaN on SiC HEMT
180 W, 50 V, 2700 – 3100 MHz

Description

The GTVA311801FA is a 180-watt GaN on SiC high electron mobility transistor (HEMT) for use in the 2700 to 3100 MHz frequecy band. It features input matching, high efficiency, and a thermally-enhanced package with earless flange.

Advance Specification Data Sheets describe products that are being considered by Wolfspeed for development and market introduction. The target performance shown in Advance Specifications is not final and should not be used for any design activity. Please contact Wolfspeed about the future availability of these products.

Features

- GaN on SiC HEMT technology
- Broadband internal input matching
- Typical pulsed CW performance (class AB), 2700 – 3100 MHz, 50 V, 300 µs pulse width, 10% duty cycle
  - Output power at P_{3dB} = 180 W
  - Drain efficiency = 70%
  - Gain (P_{3dB}) = 15 dB
- Pb-free and RoHS compliant

GTVA311801FA
Package H-37265J-2

Target RF Characteristics

Pulsed CW Specifications (tested in Wolfspeed class AB test fixture)
V_{DD} = 50 V, I_{DQ} = 20 mA, P_{OUT} = 180 W, f = 3100 MHz, pulse width = 300 µs, duty cycle = 10%

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	—	15	—	dB
Drain Efficiency	η_D	—	70	—	%

All published data at T_{CASE} = 25°C unless otherwise indicated

ESD: Electrostatic discharge sensitive device—observe handling precautions!

DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-source Breakdown Voltage	V_{GS} = –8 V, I_D = 21 mA	$V_{(BR)DSS}$	150	—	—	V
Drain-source Leakage Current	V_{GS} = –8 V, V_{DS} = 50 V	I_{DSS}	—	—	5	mA
Gate Threshold Voltage	V_{DS} = 10 V, I_D = 21 mA	$V_{GS(th)}$	–3.8	–3.0	–2.3	V

Recommended Operating Conditions

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Drain Operating Voltage		V_{DD}	0	—	55	V
Gate Quiescent Voltage	V_{DS} = 50 V, I_D = 20 mA	$V_{GS(Q)}$	—	–3.17	—	V

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source Voltage	V_{DSS}	125	V
Gate-source Voltage	V_{GS}	–10 to +2	V
Gate Current	I_G	20	mA
Drain Current	I_D	7.5	A
Junction Temperature	T_J	225	°C
Storage Temperature Range	T_{STG}	–65 to +150	°C

Operation above the maximum values listed here may cause permanent damage. Maximum ratings are absolute ratings; exceeding only one of these values may cause irreversible damage to the component. Exposure to absolute maximum rating conditions for extended periods may affect device reliability. For reliable continuous operation, the device should be operated within the operating voltage range (V_{DD}) specified above.

Thermal Chracteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	TBD	°C/W

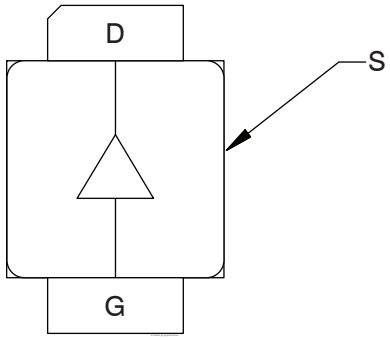
Ordering Information

Type and Version	Order Code	Package and ECCN	Shipping
GTVA311801FA V1 R0	TBD	H-37265J-2, 3A001.b.3a	Tape & Reel, 50 pcs
GTVA311801FA V1 R2	TBD	H-37265J-2, 3A001.b.3a	Tape & Reel, 250 pcs

Evaluation Board

Order Code	Frequency	Description	ECCN
LTN/GTVA311801FA V1	2700 – 3100 MHz	Class AB, RO4350B, 0.508 mm thick	3A001.b.3a

Pinout Diagram (top view)



Pin	Description
D	Drain
G	Gate
S	Source (flange)

See next page for package dimensions

Package Outline Specifications

Package H-37265J-2

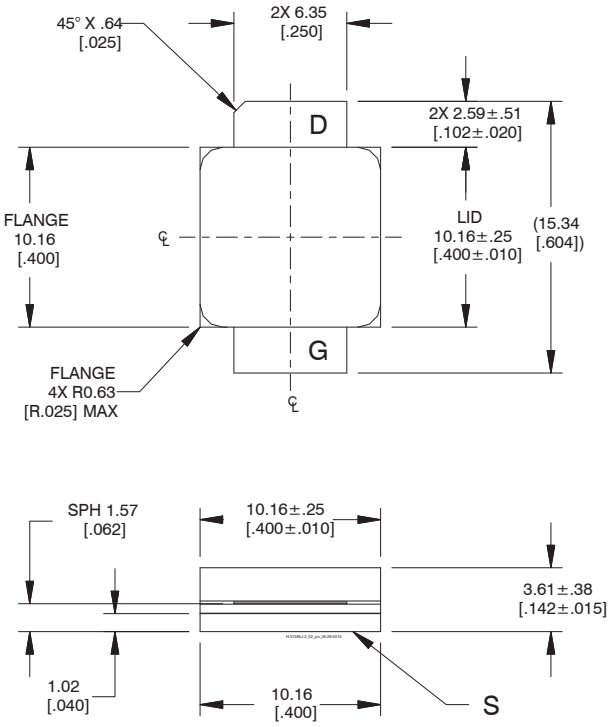


Diagram Notes—unless otherwise specified:

1. Interpret dimensions and tolerances per ASME Y14.5M-1994.
2. Primary dimensions are mm; alternate dimensions are inches
3. All tolerances ± 0.127 [0.005]
4. Pins: G – gate, D – drain, S – source
5. Lead thickness: 0.10 +0.051/–0.025 [0.004 +0.002/–0.001]
6. Gold plating thickness: 1.14 ± 0.38 micron [45 ± 15 microinch]

Revision History

Revision	Date	Data Sheet	Page	Subjects (major changes at each revision)
01	2017-01-26	Advance	all	Advance Specification provides target requirements for product development
01.1	2018-02-01	Advance	1	Updated pulsed CW performance and pulsed CW spec table
02	2018-05-01	Advance	All 2	Converted to Wolfspeed Data Sheet Updated DC Characteristics and max ratings table format

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Notes

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