

Advance GTVA104001FA

Thermally-Enhanced High Power RF GaN on SiC HEMT 400 W, 50 V, 960 – 1215 MHz

Description

The GTVA104001FA is a 400-watt GaN on SiC high electron mobility transistor (HEMT) for use in the 960 to 1215 MHz frequency band. It features input matching, high efficiency, and a thermally-enhanced surface-mount package with earless flange.

Features

- GaN on SiC HEMT technology
- Broadband internal input matching
- Typical Pulsed CW performance, 960 - 1215 MHz, 50V,
 - Output power = 410 W
 - Drain Efficiency = 70 %
 - Gain = 19 dB
 - Pulse width = 128 μ s
 - Duty cycle = 10 %
- Pb-free and RoHS compliant

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.



GTVA104001FA
Package H-37265J-2

Target RF Characteristics

Typical RF Performance (tested in Wolfspeed test fixture)

$V_{DD} = 50$ V, $I_{DQ} = 50$ mA, $P_{OUT} = 400$ W, $f = 960 - 1215$ MHz, Pulse Width = 128 μ s, 10% duty cycle

Characteristic	Symbol	Min	Typ	Max	Unit
Linear Gain	G_{ps}	—	19	—	dB
Drain Efficiency	η_D	—	70	—	%

All published data at $T_{CASE} = 25^\circ\text{C}$ unless otherwise indicated

ESD: Electrostatic discharge sensitive device—observe handling precautions!

DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-source Breakdown Voltage	$V_{GS} = -8\text{ V}$, $I_D = 10\text{ mA}$	$V_{(BR)DSS}$	150	—	—	V
Gate Threshold Voltage	$V_{DS} = 10\text{ V}$, $I_D = 42\text{ mA}$	$V_{GS(th)}$	-6	-3	-2.2	V

Recommended Operating Conditions

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Drain Operating Voltage		V_{DD}	0	—	50	V
Gate Quiescent Voltage	$V_{DS} = 50\text{ V}$, $I_D = 100\text{ mA}$	$V_{GS(Q)}$	—	-3.2	—	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	38	mA
Drain Current	I_D	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 Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction to Case ($f = 1030\text{ MHz}$, $V_{DD} = 50\text{ V}$, $I_{GS} = 100\text{ mA}$, $T_F = 70\text{ °C}$, $P_{OUT} = 400\text{ W}$, Pulse Width = 128 μs , 10% duty cycle)	$R_{\theta JC}$	0.13	°C/W

Ordering Information

Type and Version	Order Code	Package	Shipping
GTVA104001FA V1 R0	TBD	H-37265J-2, earless flange	Tape & Reel, 50 pcs
GTVA104001FA V1 R2	TBD	H-37265J-2, earless flange	Tape & Reel, 250 pcs

Revision History

Revision	Date	Data Sheet Type	Page	Subjects (major changes since last revision)
01	2016-05-03	Advance	All	Data Sheet reflects advance specification for product development
02	2016-05-08	Advance	All	Converted to Wolfspeed Data Sheet, updated DC and thermal characteristics

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Notes

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