

Advance GTRA384802FC

Thermally-Enhanced High Power RF GaN on SiC HEMT 400 W, 48 V, 3600 – 3800 MHz

Description

The GTRA384802FC is a 400-watt (P_{3dB}) GaN on SiC high electron mobility transistor (HEMT) for use in multi-standard cellular power amplifier applications. 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
- Input and output matched
- Asymmetrical Doherty design
 - Main: P_{3dB} = 230 W Typ
 - Peak: P_{3dB} = 360 W Typ
- Typical Pulsed CW performance, 3800 MHz, 48 V, combined outputs, Doherty @ P_{3dB} , 10 μ s, 10% duty cycle
 - Output power = 400 W
 - Drain efficiency = 62%
 - Gain = 12 dB
- Pb-free and RoHS compliant



GTRA384802FC
Package H-37248C-4

Target RF Characteristics

Single-carrier WCDMA Specifications (tested in Wolfspeed Doherty test fixture)

V_{DD} = 48 V, I_{DQ} = 250 mA, P_{OUT} = 63 W avg, V_{GSPEAK} = -6 V, f = 3800 MHz, channel bandwidth = 3.84 MHz, peak/average = 10 dB @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	—	13.7	—	dB
Drain Efficiency	η_D	—	44	—	%
Adjacent Channel Power Ratio	ACPR	—	-31	—	dBc
Output PAR @ 0.01% CCDF	OPAR	—	7.5	—	dB

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 (main)	$V_{GS} = -8\text{ V}, I_D = 10\text{ mA}$	$V_{(BR)DSS}$	150	—	—	V
	(peak) $V_{GS} = -8\text{ V}, I_D = 10\text{ mA}$	$V_{(BR)DSS}$	150	—	—	V
Drain-source Leakage Current	$V_{GS} = -8\text{ V}, V_{DS} = 10\text{ V}$	I_{DSS}	—	—	5	mA
Gate Threshold Voltage (main)	$V_{DS} = 10\text{ V}, I_D = 10\text{ mA}$	$V_{GS(th)}$	—	-3	—	V
	(peak) $V_{DS} = 10\text{ V}, I_D = 10\text{ mA}$	$V_{GS(th)}$	—	-3	—	V

Recommended Operating Conditions

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Drain Operating Voltage		V_{DD}	0	—	50	V
Gate Quiescent Voltage	$V_{DS} = 48\text{ V}, I_D = 250\text{ mA}$	$V_{GS(Q)}$	—	-3	—	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 (main)	I_G	25.2	mA
	(peak) I_G	36	mA
Drain Current (main)	I_D	9.5	A
	(peak) I_D	13.5	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

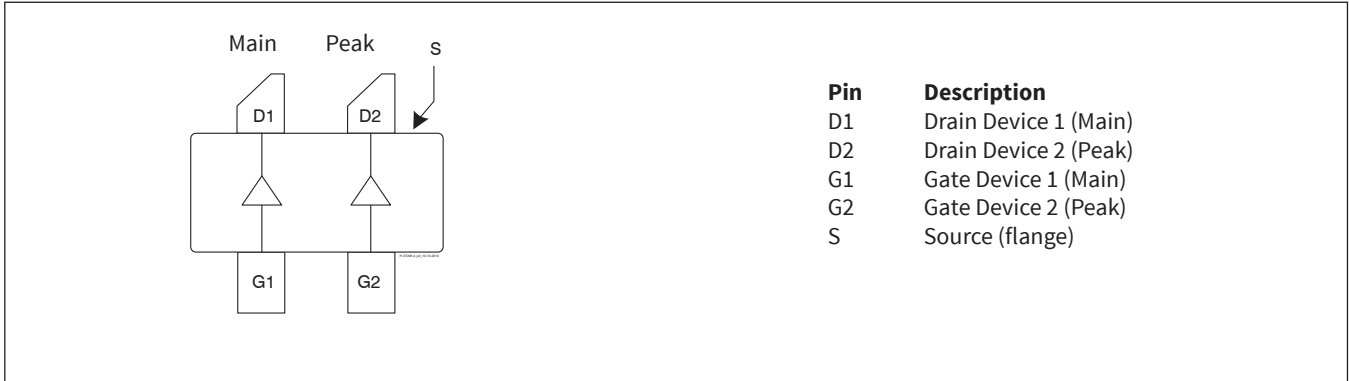
Parameter	Symbol	Value	Unit
Thermal Resistance	$R_{\theta JC}$	TBD	°C/W

Ordering Information

Type and Version	Order Code	Package Description	Shipping
GTRA384802FC V1 R0	TBD	H-37248C-4	Tape & Reel, 50 pcs
GTRA384802FC V1 R2	TBD	H-37248C-4	Tape & Reel, 250 pcs

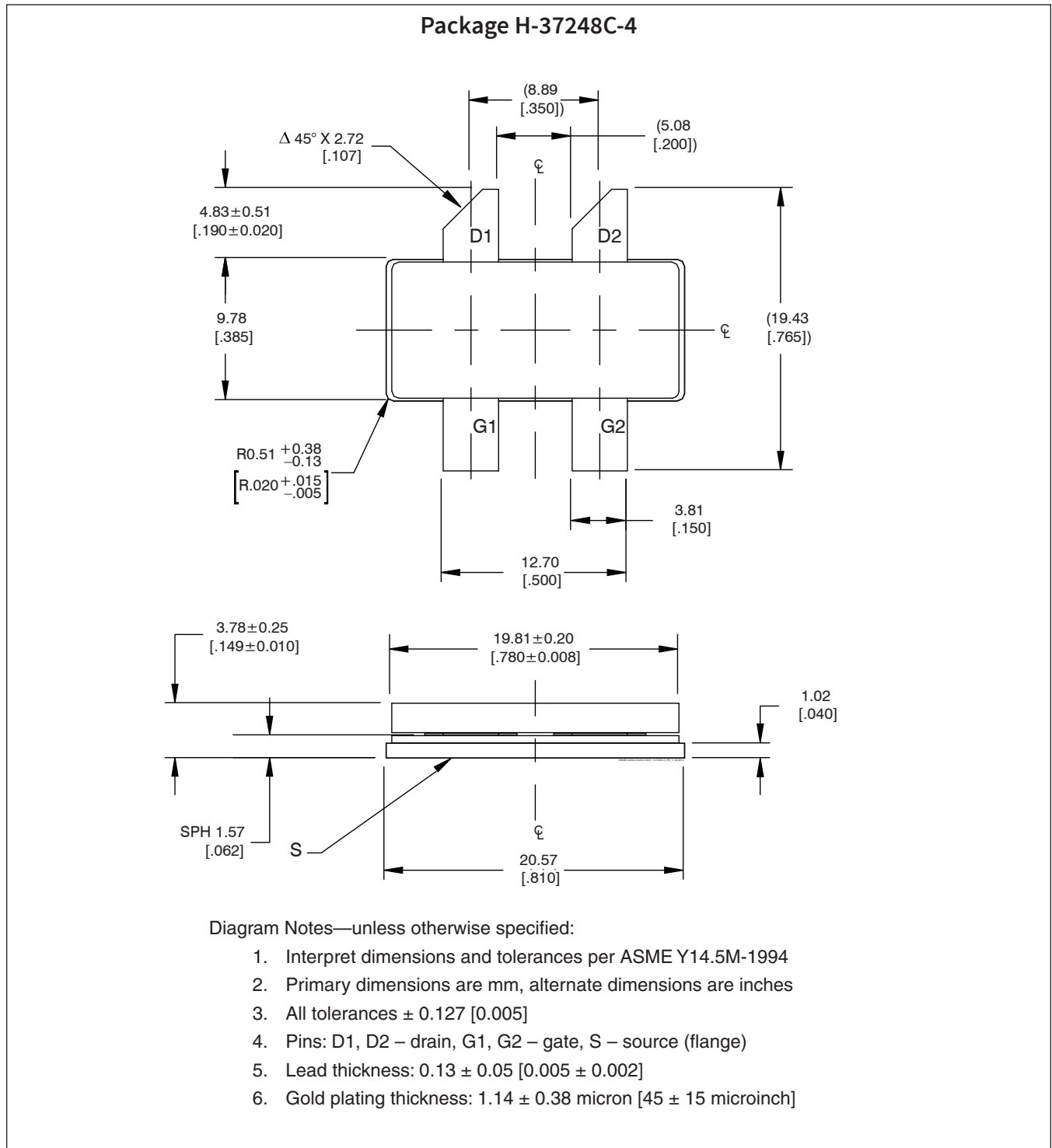


Pinout Diagram (top view)



Lead connections for GTRA384802FC

Package Outline Specifications



Revision History

Revision	Date	Data Sheet Type	Page	Subjects (major changes since last revision)
01	2019-01-23	Advance	All	Data Sheet reflects advance specification for product development

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Notes

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