Advance GTVA101K42EV

Thermally-Enhanced High Power RF GaN on SiC HEMT
1400 W, 50 V, 960 – 1215 MHz

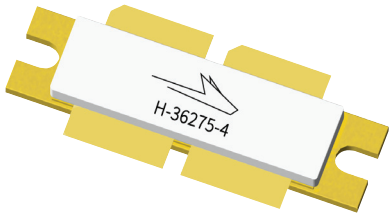
Description

The GTVA101K42EV is a 1400-watt 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 surface-mount package with bolt-down 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 matched
- Typical Pulsed CW performance, 960 – 1215 MHz, 50 V, single side, 128 µs pulse width, 10% duty cycle
  - Output power at P_{3dB} = 1400 W
  - Efficiency = 68%
  - Gain = 17 dB
- Pb-free and RoHS compliant



GTVA101K42EV
Package H-36275-4

Target RF Characteristics

Pulsed CW Specifications (tested in Wolfspeed test fixture)
V_{DD} = 50 V, I_{DQ} = 200 mA, $P_{OUT\ (P3dB)}$ = 1400 W peak, f = 960 to 1215 MHz, pulse width = 128 µs, 10% duty cycle

Characteristic	Symbol	Min	Typ	Max	Unit
Linear Gain	G_{ps}	—	17	—	dB
Drain Efficiency	η_D	—	68	—	%

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

ESD: Electrostatic discharge sensitive device—observe handling precautions!

DDC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-source Breakdown Voltage	V_{GS} = –8 V, I_D = 100 mA	$V_{(BR)DSS}$	150	—	—	V
Drain-source Leakage Current	V_{GS} = –8 V, V_{DS} = 10 V	I_{DSS}	—	—	5	mA
Gate Threshold Voltage	V_{DS} = 10 V, I_D = 200 mA	$V_{GS(th)}$	–3.8	–3.0	–2.7	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 = 200 mA	$V_{GS(Q)}$	—	–3.1	—	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	TBD	mA
Drain Current	I_D	TBD	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

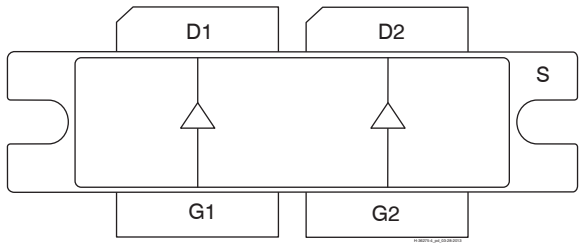
Ordering Information

Type and Version	Order Code	Package Description	Shipping
GTVA101K42EV V1 R0	TBD	H-36275-4, bolt-down	Tape & Reel, 50 pcs
GTVA101K42EV V1 R2	TBD	H-36275-4, bolt-down	Tape & Reel, 250 pcs

Evaluation Boards

Order Code	Frequency	Description
LTN/GTVA101K42EV E1	960 – 1215 MHz	Class AB, combined outputs, RO4350B, 0.508mm thick
LTN/GTVA101K42EV E2	1030 MHz	Class AB, combined outputs, RO4350B, 0.508mm thick

Pinout Diagram (top view)



Pin	Description
D1	Drain Device 1
D2	Drain Device 2
G1	Gate Device 1
G2	Gate Device 2
S	Source (flange)

Package Outline Specifications

Package H-36275-4

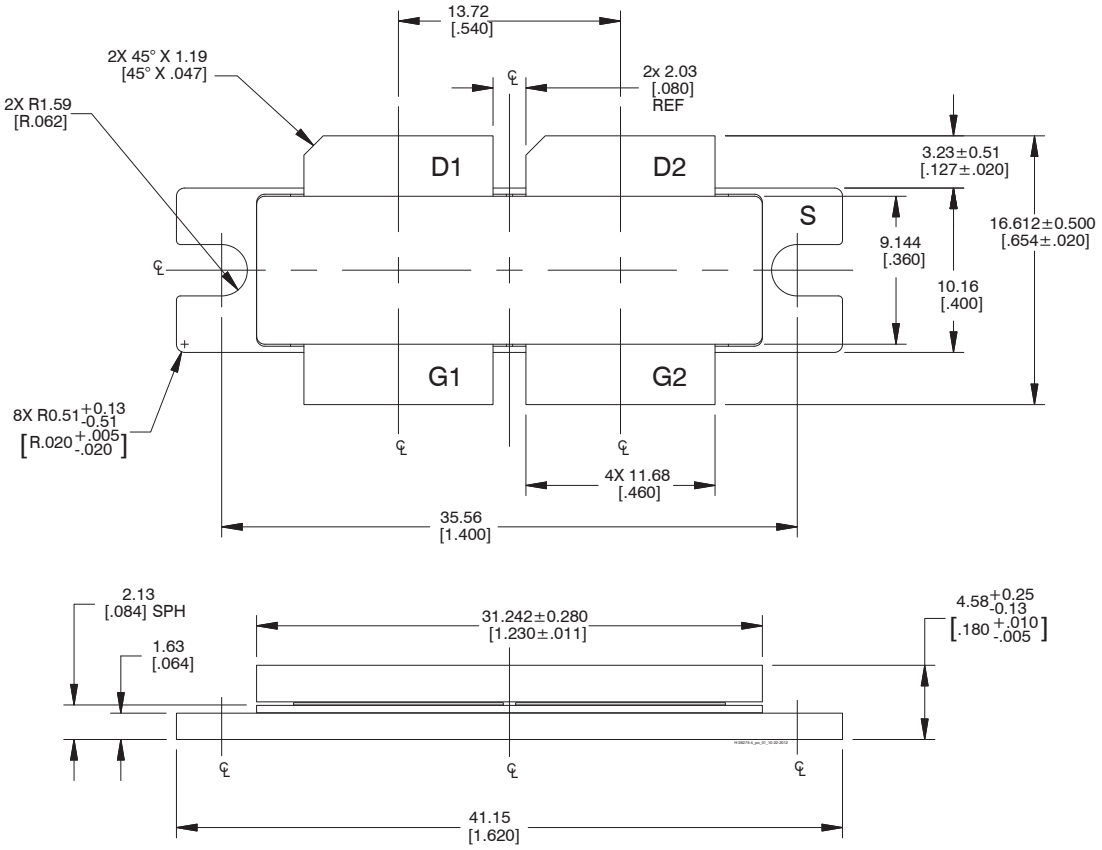


Diagram Notes—unless otherwise specified:

1. Interpret dimensions and tolerances per ASME Y14.5M-1994.
2. Primary dimensions are mm. Alternate dimensions are inches.
3. All tolerances ± 0.127 [.005] unless specified otherwise.
4. Pins: D1, D2 – drains; G1, G2 – gates; S – source.
5. Lead thickness: 0.127 ±0.051 mm [0.005 ±0.002 inch].
6. Gold plating thickness: 1.14 ± 0.38 micron [45 ± 15 microinch].

Revision History

Revision	Date	Data Sheet Type	Page	Subjects (major changes since last revision)
01	2016-10-13	Advance	All	Data Sheet reflects advance specification for product development
01.1	2017-07-31	Advance	2	Added evaluation boards information
02	2018-05-01	Advance	All, 2, 3	Converted to Wolfspeed Data Sheet, updated DC characteristics and max ratings table format, added pinout diagram

For more information, please contact:

4600 Silicon Drive
Durham, North Carolina, USA 27703
www.wolfspeed.com/RF

Sales Contact
RFSales@wolfspeed.com

RF Product Marketing Contact
RFMarketing@wolfspeed.com
919.407.7816

Notes

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