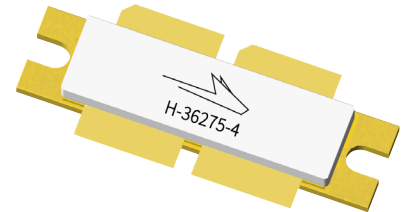


# GTVA101K42EV

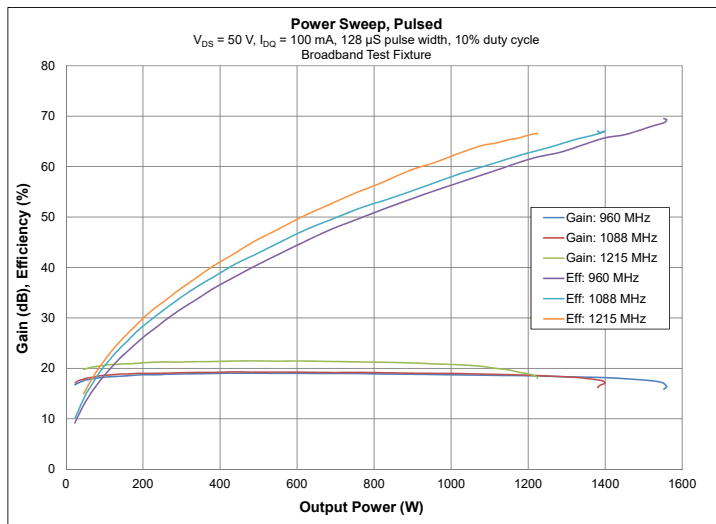
## Thermally-Enhanced High Power RF GaN on SiC HEMT 1400 W, 50 V, 960 – 1215 MHz

### Description

The GTVA101K42EV is a 1400-watt GaN on SiC high electron mobility transistor (HEMT) for use in the 960 to 1215 MHz frequency band. It is a input matched, high efficiency device in a thermally-enhanced package with bolt-down flange.



GTVA101K42EV  
Package H-36275-4



### Features

- GaN on SiC HEMT technology
- Input matched
- Typical Pulsed CW performance, 960 – 1215 MHz, 50 V, single side, 128  $\mu\text{s}$  pulse width, 10% duty cycle
  - Output power at  $P_{3dB} = 1400\text{ W}$
  - Efficiency = 68%
  - Gain = 17 dB
- Pb-free and RoHS compliant

### RF Characteristics

Pulsed CW Specifications (tested in Wolfspeed test fixture)

$V_{DD} = 50\text{ V}$ ,  $I_{DQ} = 75\text{ mA}$ ,  $P_{OUT} (P_{3dB}) = 1400\text{ W}$  peak,  $f = 1030\text{ MHz}$ , Pulse Width = 128  $\mu\text{s}$ , Duty Cycle = 10%

Characteristic	Symbol	Min	Typ	Max	Unit
Linear Gain	$G_{ps}$	17	19	—	dB
Return Loss	R	—	-19	-12	dB
Drain Efficiency	$\eta_D$	65	69	—	%

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	$V_{GS} = -8\text{ V}$ , $I_D = 83.6\text{ mA}$	$V_{(BR)DSS}$	125	—	—	V
Drain-source Leakage Current	$V_{GS} = -6\text{ V}$ , $V_{DS} = 2\text{ V}$	$I_{DSS}$	62.7	75.5	—	A
Gate Threshold Voltage	$V_{DS} = 10\text{ V}$ , $I_D = 83.6\text{ mA}$	$V_{GS(th)}$	-3.8	-3.0	-2.7	V

## Recommended Operating Conditions

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Drain Operating Voltage		$V_{DD}$	0	—	50	V
Gate Quiescent Voltage	$V_{DS} = 50\text{ V}$ , $I_D = 100\text{ mA}$	$V_{GS(Q)}$	—	-3.1	—	V

## Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source Voltage	$V_{DSS}$	150	V
Gate-source Voltage	$V_{GS}$	-10 to +2	V
Gate Current	$I_G$	167	mA
Drain Current	$I_D$	48	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

$T_{CASE} = 70^\circ\text{C}$ ,  $P_{DISS} = 400\text{ W}$ ,  $50\text{ V}$ ,  $I_{DQ} = 100\text{ mA}$ ,  $128\text{ }\mu\text{s}$  pulse width, 10% duty cycle

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.4	°C/W

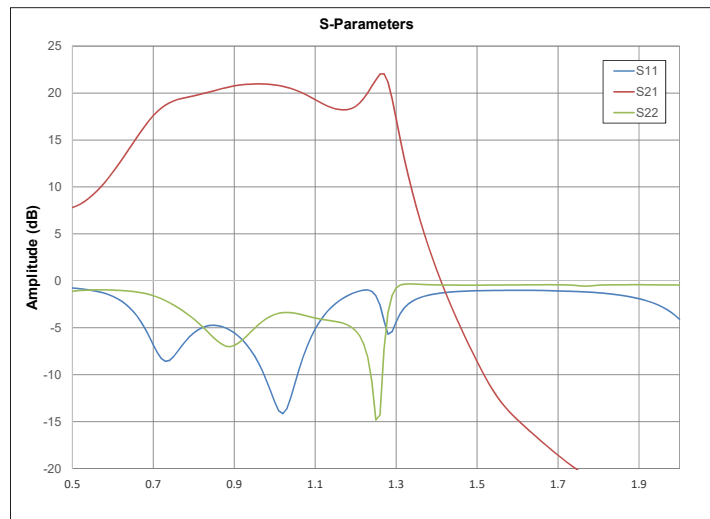
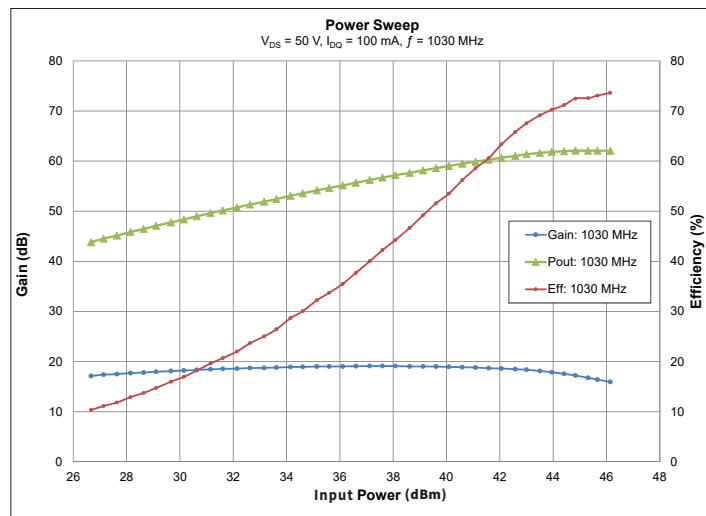
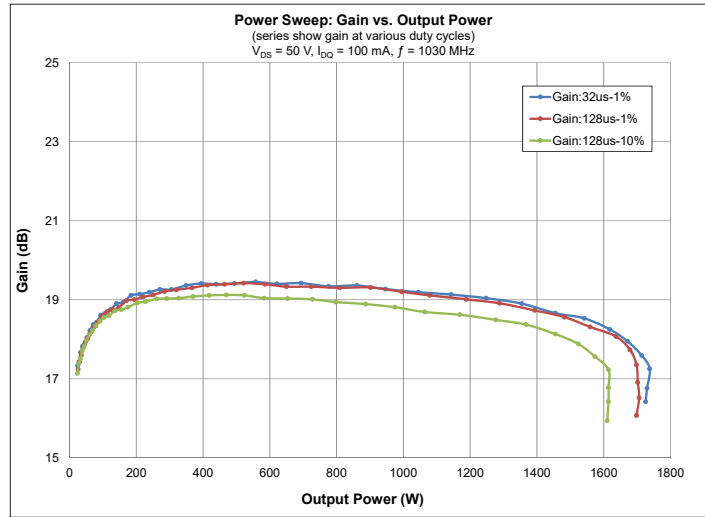
## Ordering Information

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

## Evaluation Boards

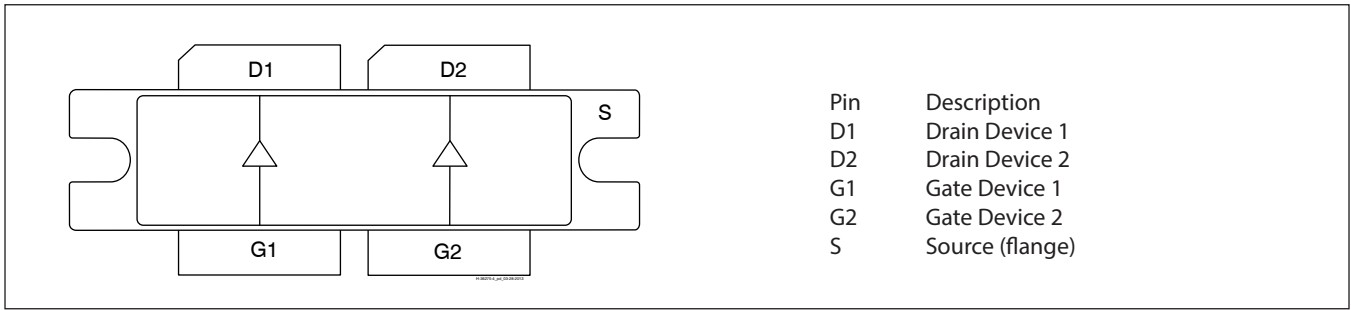
Order Code	Frequency	Description
LTN/GTVA101K42EV V1	1030 MHz	Class AB, combined outputs, RO4350B, 0.508mm thick

Typical Performance (data taken in Wolfspeed production test fixture)

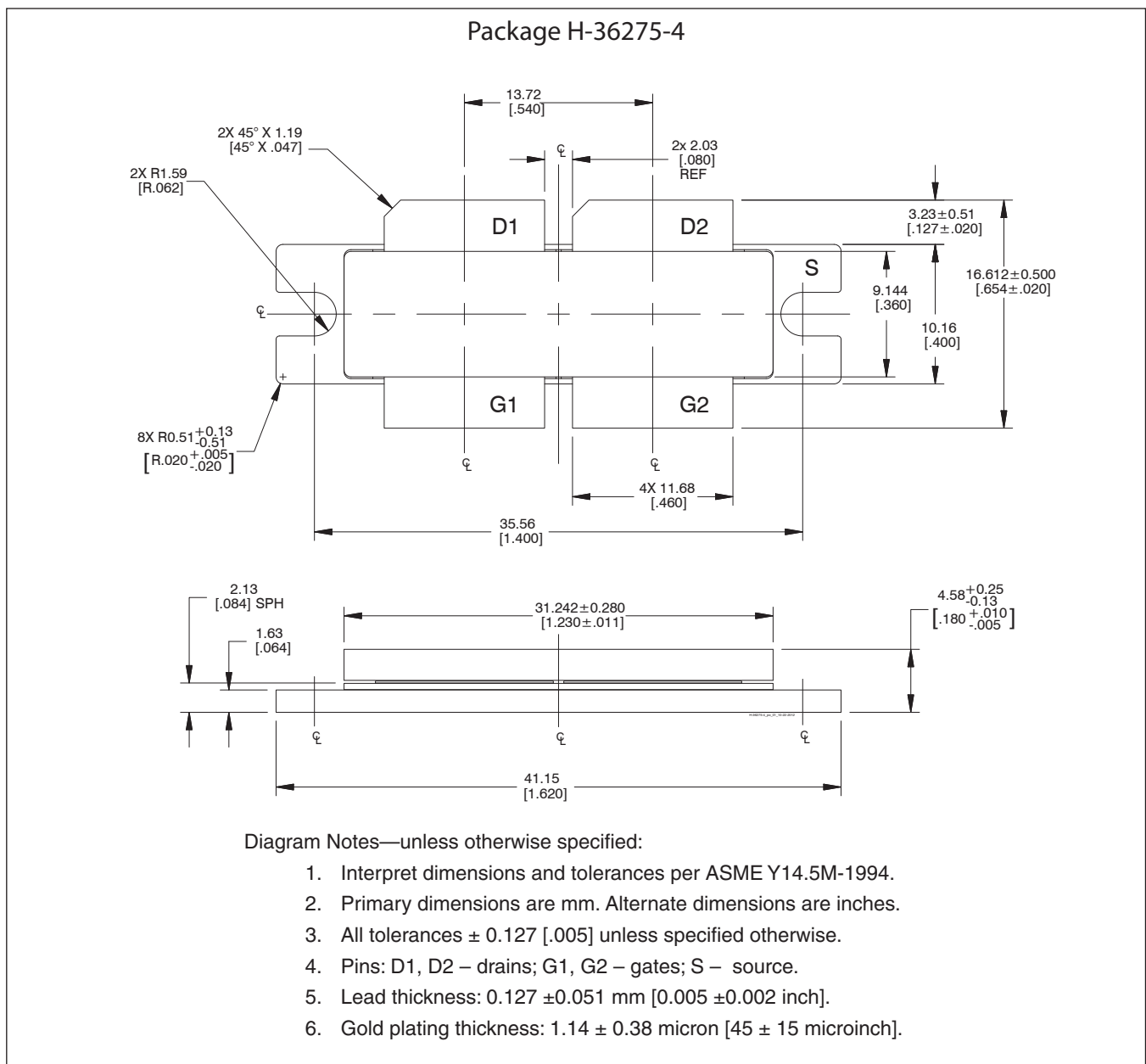




Pinout Diagram (top view)



Package Outline Specifications





For more information, please contact:

4600 Silicon Drive  
Durham, North Carolina, USA 27703  
[www.wolfspeed.com/RF](http://www.wolfspeed.com/RF)

Sales Contact  
[RFSales@wolfspeed.com](mailto:RFSales@wolfspeed.com)

RF Product Marketing Contact  
[RFMarketing@wolfspeed.com](mailto:RFMarketing@wolfspeed.com)  
919.407.7816

## Notes

---

### Disclaimer

Specifications are subject to change without notice. Cree, Inc. believes the information contained within this data sheet to be accurate and reliable. However, no responsibility is assumed by Cree for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Cree. Cree makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose. “Typical” parameters are the average values expected by Cree in large quantities and are provided for information purposes only. These values can and do vary in different applications and actual performance can vary over time. All operating parameters should be validated by customer’s technical experts for each application. Cree products are not designed, intended or authorized for use as components in applications intended for surgical implant into the body or to support or sustain life, in applications in which the failure of the Cree product could result in personal injury or death or in applications for planning, construction, maintenance or direct operation of a nuclear facility.