

***GTMi, Inc.***

*Solution, Service, Performance, and Commitment*

*- Your Trusted Partner*

***Product Data Sheet***

***Model: GT0912-600***

***GaN/SiC High Efficiency Power Transistor***

## ***GaN Transistor Product Features***

*GT0912-600 is an internally pre-matched GaN on SiC HEMT, common source, class AB that capable of providing over 19 dB gain, 600 Watts of pulsed RF output power at 128μS pulse width, 10% duty factor and mode S-ELM across the 960 to 1215 MHz band. This thermally enhanced transistor is designed for Broadband Avionic Data Link applications. It utilizes gold metallization and eutectic die attach to provide highest reliability and superior ruggedness.*

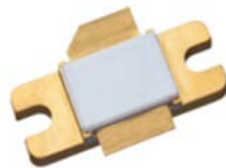
- *High Power >600W*
- *Ultra High Efficiency >65%*
- *Excellent Gain Flatness ~ 0.3dB*
- *Very Compact Size*

## ***Market Application***

- *Avionics ATC*
- *Secondary Radar for IFF & Mode-S Avionics*
- *TCAS, JTIDS, DME, and TACAN*
- *Communication, and Data Links*

## ***Case Outline***

*The following illustrations show the case outline of model GT0912-600*



*1.032"x.390"x.135 (include lid)*

*Case Outline T4*

## Absolute Maximum Ratings

Description	Test Condition	Max	Units
Maximum Power Dissipation	Transistor Dissipation at 25°C	600	W
MVI Maximum Voltage and Current	Drain Source Voltage ( $V_{DSS}$ )	150	V
	Gate Source Voltage ( $V_{GS}$ )	-8 to 0	V
MT Maximum Temperature	Storage Temperature	-55 to 125	°C
	Operating Junction Temperature	200	°C

## RF Specifications, $T=25^{\circ}C$

Symbol	Description	Test Condition	Min	Typical	Max	Units
Po	Output Power	Pin=7W Freq=960, 1030, 1215 MHz	600	680		Watts
Gp	Power Gain	Pin=7W Freq=960, 1030, 1215 MHz	19.3	19.9		dB
$n_d$	Drain Efficiency	Pin=7W Freq=960, 1030, 1215 MHz	60	68		%
IRL	Input Return Loss	Pin=7W Freq=960, 1030, 1215 MHz		-9	-7	dB
VSWR-T	Mismatch Tolerance	Pin=7W Freq=960MHz, 128μS, 10%			3:1	
$\theta_{jc}$	Thermal Resistance	128μS, 10% Condition		.23		°C/W

• Bias Condition: Vdd = 50V, Idq = 100mA (Vgs = -2 to -4V typical)

## DC Characteristics, $T=25^{\circ}C$

Symbol	Description	Test Condition	Min	Typical	Max	Units
$I_{D(off)}$	Drain Leakage Current	$V_{GS} = -8V, V_{DD} = 150V$			16	mA
$I_{G(off)}$	Gate Leakage Current	$V_{GS} = -8V, V_{DD} = 0V$			6	mA

## Product Classification

**EAR-99**

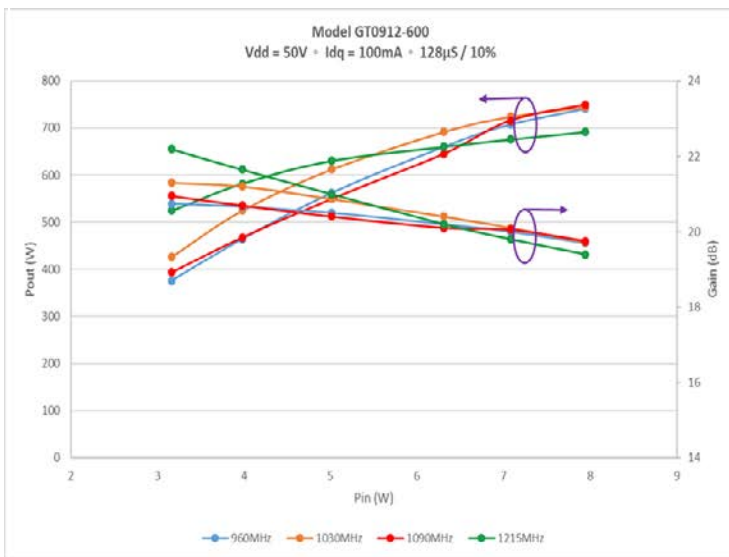
**Typical Performance Data**

**Pulse Format 128µS – 10%**

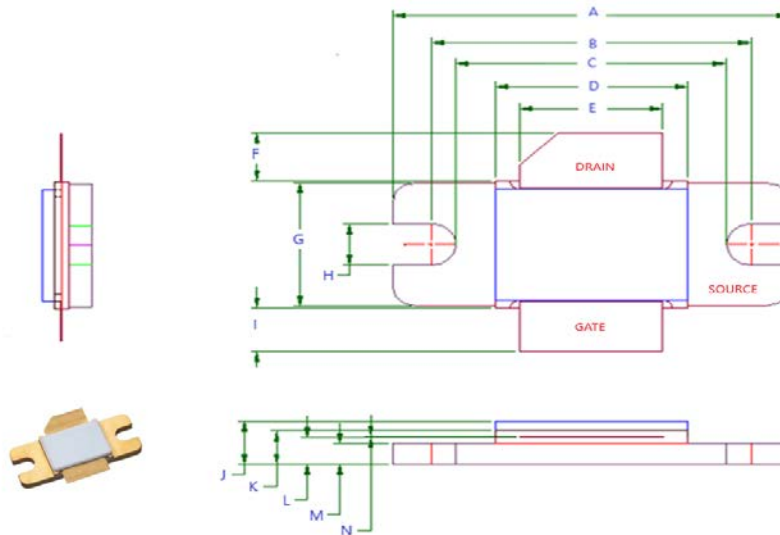
Freq (MHz)	Pin (W)	Pout (W)	Id (A)	Eff (%)	RL (dB)	Droop (dB)	Gain (dB)
960	7	708	2.16	69	-8.5	.15	20.0
1030	7	724	2.08	73	-14.0	.15	20.1
1090	7	716	2.18	69	-7.8	.15	20.1
1215	7	676	1.82	77	-7.6	.15	19.8

**Mode-S ELM (32µS ON 18µS OFF, N=48 pulses, DF = 6.4%)**

Frequency (MHz)	Pin (W)	Pout (W)	Id (A)	RTL (dB)	Nd (%)	Gp @ Pulse 1 (dB)	Gp @ Pulse 48 (dB)
960	7	740	1.48	-8.5	64	20.2	19.2
1030	7	676	1.37	-14.0	63	19.8	19.8
1090	7	691	1.36	-7.8	65	19.9	19.0
1215	7	660	1.36	-7.6	62	19.7	19.2



**Package Dimensions**



Label	Inches	Tolerance	Millimeter	Tolerance
A	1.03	.010	26.18	.25
B	.830	.004	21.10	.10
C	.700	.004	17.82	.10
D	.498	.002	12.60	.05
E	.370	.002	9.42	.05
F	.152	.002	3.86	.05
G	.385	.004	8.82	.10
H	.130	.004	3.34	.10
I	.152	.004	3.86	.10
J	.136	.002	3.48	.02
K	.105	.002	2.70	.02
L	.086	.002	2.20	.02
M	.065	.002	1.68	.02
N	.004	.001	0.12	.05

## *Test Circuit Information*

(Contact GTMi for Details)

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### **Revision History**

<b>Revision Level / Date</b>	<b>Para. Affected</b>	<b>Description</b>
Rev 1 / 06-16-2020	-	Initial Preliminary Release