

GTMi, Inc.

Solution, Service, Performance, and Commitment

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Product Data Sheet

Model: MA0912-250

GaN/SiC High Efficiency Transistor

GaN Transistor Product Features

MA0912-250 is designed for application of drop-in replacement of MAGX-000912-250L00. This is an internally pre-matched GaN on SiC HEMT, common source, class AB that capable of providing 250 Watts of pulsed RF output power at 128 μ S pulse width, 10% duty factor 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 >250W*
- *High Efficiency >55%*
- *Drop-in Replacement MAGX-000912-250L00*

Market Application

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

Case Outline

The following illustrations show the case outline of model MA0912-250



.800"x.385"x.162" (include lid)

Case 1: Case Outline T6

Absolute Maximum Ratings

Description	Test Condition	Max	Units
Maximum Power Dissipation	Transistor Dissipation at 25°C	500	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
Pin	Input Power	Pout=250W Freq=960, 1090, 1215 MHz		2.5	5	Watts
Gp	Power Gain	Pout=250W Freq=960, 1090, 1215 MHz	17	19.5		dB
n_d	Drain Efficiency	Pout=250W Freq=960, 1090, 1215 MHz	52	59		%
IRL	Input Return Loss	Pout=250W Freq=960, 1090, 1215 MHz		-10	-7	dB
VSWR-T	Mismatch Tolerance	Po=250W Freq=960MHz, 128μS, 10%			5:1	
θ_{jc}	Thermal Resistance	128μS, 10% Condition		0.25		°C/W

• Bias Condition: Vdd = 50V, Idq = 80mA (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	$V_{GS} = -8V, V_{DD} = 150V$			10	mA
$I_{G(off)}$	Gate Leakage Current	$V_{GS} = -8V, V_{DD} = 0V$			4	mA

Product Classification

EAR-99

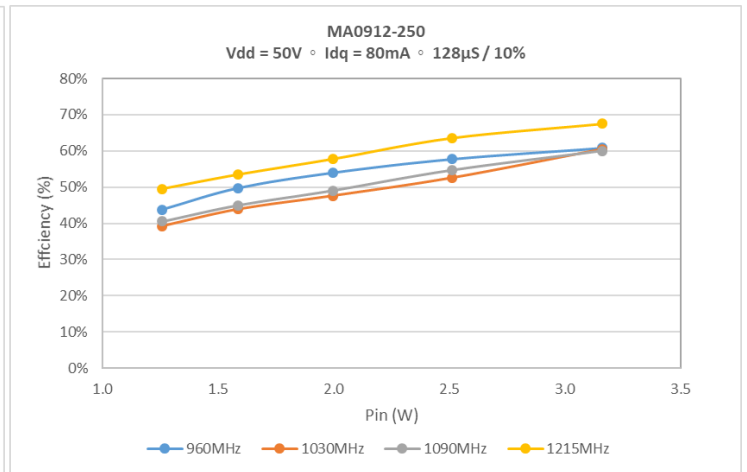
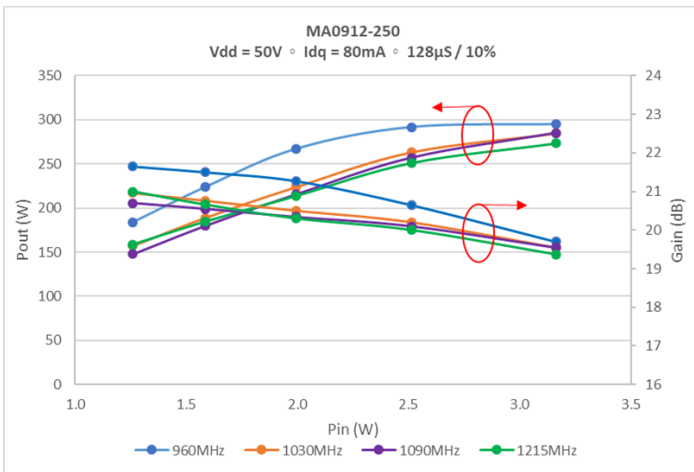
Typical Performance Data

Pulse Format 128μS – 10% - Po=250W

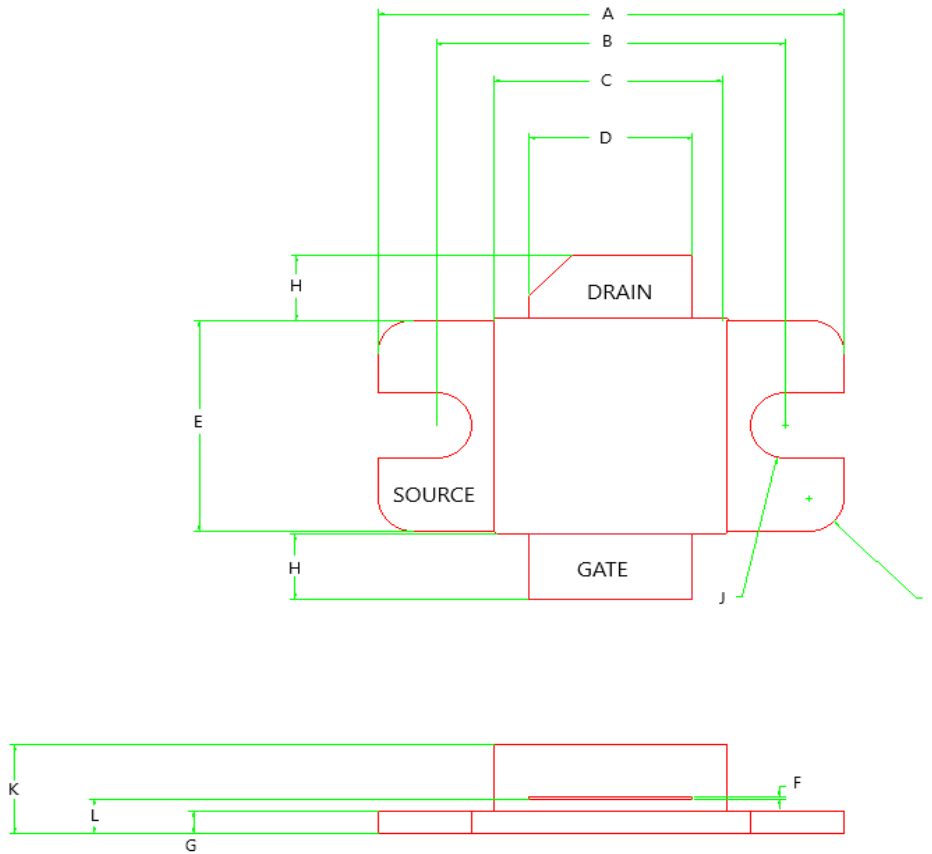
Freq (MHz)	Pin (W)	Pout (W)	Id (A)	Eff (%)	RL (dB)	Droop (dB)	Gain (dB)
960	1.78	250	1.00	54	-9.0	.40	21.5
1030	2.24	250	1.03	53	-7.4	.35	20.5
1090	2.45	250	0.98	56	-7.0	.30	20.1
1215	2.63	250	0.87	63	-9.2	.20	19.8

Pulse Format 128μS – 10% - Pin=3.16W

Freq (MHz)	Pin (W)	Pout (W)	Id (A)	Eff (%)	RL (dB)	Droop (dB)	Gain (dB)
960	3.16	296	1.05	61	-9.0	.40	19.7
1030	3.16	284	1.03	60	-7.4	.35	19.5
1090	3.16	285	1.03	60	-7.0	.30	19.6
1215	3.16	274	0.89	68	-9.2	.20	19.4



Package Dimensions



Dimension	Min (mil)	Min (mm)	Max (mil)	Max (mm)
A	800	20.32	806	20.47
B	600	15.24	606	15.39
C	400	10.16	406	10.31
D	280	7.11	286	7.26
E	385	9.78	400	10.16
F	005	.127	006	.152
G	040	1.02	041	1.04
H	102	2.59	122	3.10
I	R = 025	.635	-	-
J	R = 060	1.52	-	-
K	162	4.11	168	4.26
L	062	1.57	064	1.63

Test Circuit Information

Test Circuit is equivalent to MAGX-000912-250L00 Test Fixture

(Contact GTMi for Details)

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Revision History

Revision Level / Date	Para. Affected	Description
Rev 2 / 05-10-2020	-	Initial Preliminary Release