

GENERAL DESCRIPTION

The 0912GN-650V is an internally matched, COMMON SOURCE, class AB GaN on SiC HEMT transistor capable of providing over 17dB gain, 650 Watts of pulsed RF output power at 128 μ s pulse width, 10% duty factor across the 960 to 1215 MHz band. The transistor has internal pre-match for optimal performance. This transistor can be used for broadband L-band Avionics applications including DME, IFF, Transponders, and TCAS. It utilizes gold metallization and eutectic attach to provide highest reliability and superior ruggedness.

ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation

Device Dissipation @ 25°C 1400 W

Maximum Voltage and Current

Drain-Source Voltage (V_{DS}) 65 V

Gate-Source Voltage (V_{GS}) -8 to +0 V

Maximum Temperatures

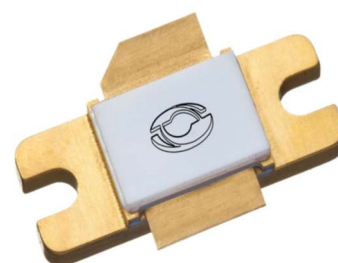
Storage Temperature (T_{STG}) -55 to +150 °C

Operating Junction Temperature +225 °C

CASE OUTLINE

55-KR

Common Source



ELECTRICAL CHARACTERISTICS @ 25°C

Symbol	Characteristics	Test Conditions	Min	Typ	Max	Units
P_{OUT}	Output Power	Freq=960, 1090, 1215 MHz	650			W
G_P	Power Gain	Pout=650W, Freq=960, 1090, 1215 MHz		17.5		dB
η_D	Drain Efficiency	Pout=650W, Freq=960, 1090, 1215 MHz		60		%
Dr	Droop	Pout=650W, Freq=960, 1090, 1215 MHz			0.7	dB
VSWR-T	Load Mismatch Tolerance	Pout=650W, Freq= 1215MHz			3:1	
Θ_{JC}	Thermal Resistance	Pulse Width=128uS, Duty=10%			0.16	°C/W

- Bias Condition: V_{dd} =+50V, I_{dq} =100mA average current (V_{gs} = -2.0 ~ -4.5V) with constant gate bias

FUNCTIONAL CHARACTERISTICS @ 25°C

$I_{D(off)}$	Drain leakage current	$V_{GS} = -8V$, $V_D = 50V$			30	mA
$I_{G(off)}$	Gate leakage current	$V_{GS} = -8V$, $V_D = 0V$			22	mA

Export Classification: EAR-99



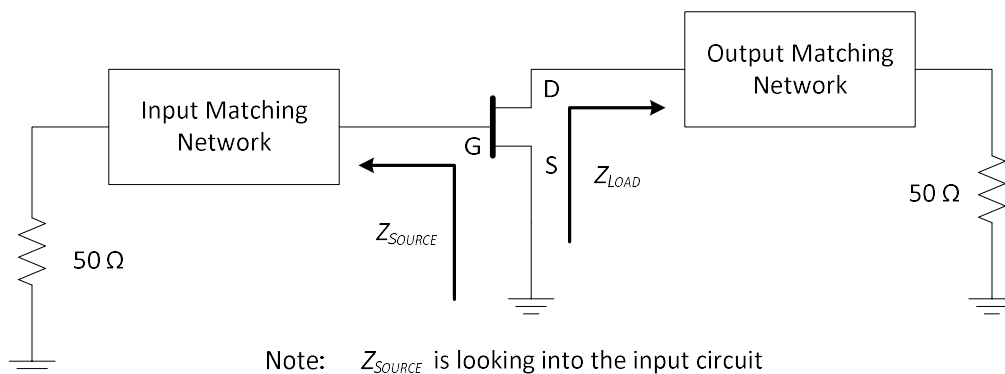
0912GN-650V

650 Watts • 50 Volts • 128 μ S, 10%
960 - 1215 MHz Avionics

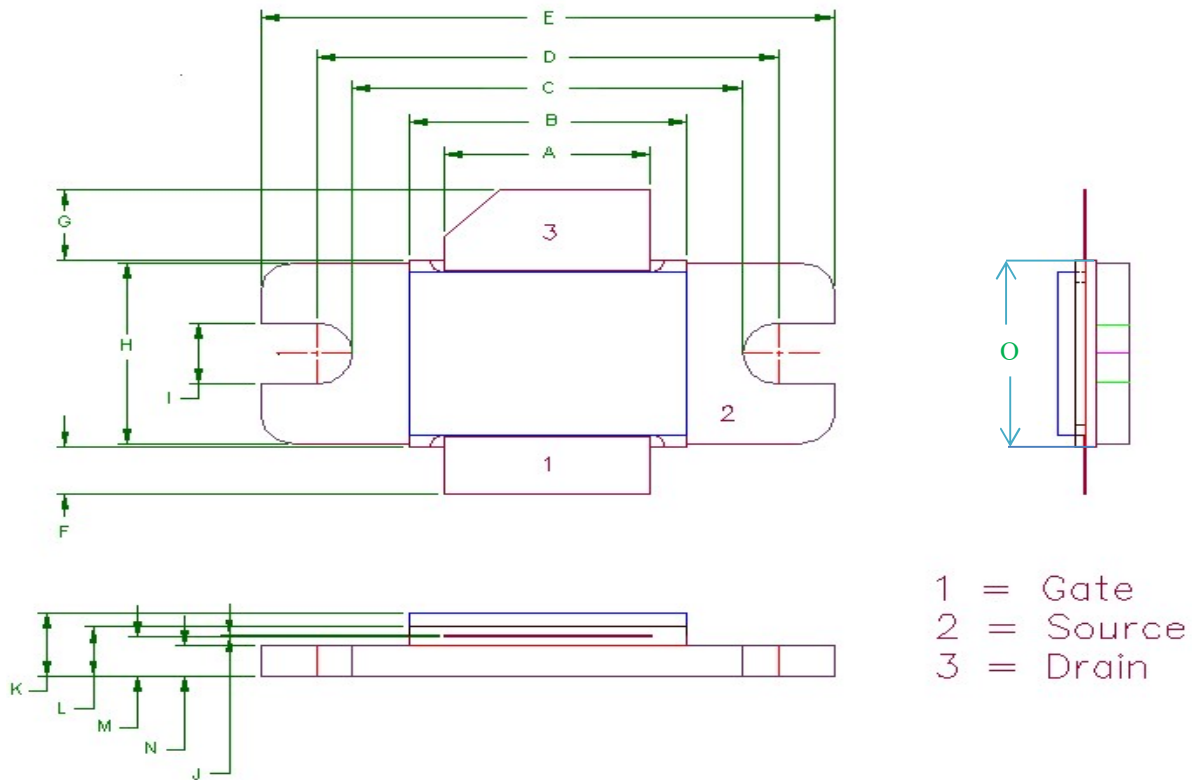
TYPICAL BROAD BAND PERFORMACE DATA

Frequency	P _{IN} (W)	P _{OUT} (W)	I _D (A)	IRL (dB)	η D (%)	G _P (dB)	Droop (dB)
960 MHz	11.2	712	2.98	-10.5	59.1	17.5	0.5
1090 MHz	11.2	693	2.83	-8.0	60.5	17.4	0.4
1215 MHz	11.2	751	2.74	-15.6	67.9	17.8	0.3

TRANSISTOR IMPEDANCE INFORMATION



Impedance Data		
Freq	Z_{SOURCE}	Z_{LOAD}
960 MHz	0.895 – j0.630	1.070 + j0.887
1090 MHz	0.988 + j0.180	1.329 + j1.342
1215 MHz	1.138 + j0.765	1.080 + j1.520

55-KR PACKAGE DIMENSION


Dimension	Min (mil)	Min (mm)	Max (mil)	Max (mm)
A	370	9.40	372	9.44
B	498	12.65	500	12.7
C	700	17.78	702	17.83
D	830	21.08	832	21.13
E	1030	26.16	1032	26.21
F	101	2.56	102	2.59
G	151	3.84	152	3.86
H	385	9.78	387	9.83
I	130	3.30	132	3.35
J	003	.076	004	0.10
K	135	3.43	137	3.48
L	105	2.67	107	2.72
M	085	2.16	86	2.18
N	065	1.65	66	1.68
O	396	10.05	404	10.27



0912GN-650V

650 Watts • 50 Volts • 128 μ S, 10%
960 - 1215 MHz Avionics

Microsemi makes no warranty, representation, or guarantee regarding the information contained herein or the suitability of its products and services for any particular purpose, nor does Microsemi assume any liability whatsoever arising out of the application or use of any product or circuit. The products sold hereunder and any other products sold by Microsemi have been subject to limited testing and should not be used in conjunction with mission-critical equipment or applications. Any performance specifications are believed to be reliable but are not verified, and Buyer must conduct and complete all performance and other testing of the products, alone and together with, or installed in, any end-products. Buyer shall not rely on any data and performance specifications or parameters provided by Microsemi. It is the Buyer's responsibility to independently determine suitability of any products and to test and verify the same. The information provided by Microsemi hereunder is provided "as is, where is" and with all faults, and the entire risk associated with such information is entirely with the Buyer. Microsemi does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other IP rights, whether with regard to such information itself or anything described by such information. Information provided in this document is proprietary to Microsemi, and Microsemi reserves the right to make any changes to the information in this document or to any products and services at any time without notice.

About Microsemi

Microsemi Corporation (Nasdaq: MSCC) offers a comprehensive portfolio of semiconductor and system solutions for communications, defense & security, aerospace and industrial markets. Products include high-performance and radiation-hardened analog mixed-signal integrated circuits, FPGAs, SoCs and ASICs; power management products; timing and synchronization devices and precise time solutions, setting the world's standard for time; voice processing devices; RF solutions; discrete components; enterprise storage and communication solutions, security technologies and scalable anti-tamper products; Ethernet solutions; Power-over-Ethernet ICs and midspans; as well as custom design capabilities and services. Microsemi is headquartered in Aliso Viejo, Calif., and has approximately 4,800 employees globally. Learn more at www.microsemi.com.

©2017 Microsemi Corporation. All rights reserved. Microsemi and the Microsemi logo are registered trademarks of Microsemi Corporation. All other trademarks and service marks are the property of their respective owners.

Microsemi Corporate Headquarters

One Enterprise, Aliso Viejo, CA 92656 USA
Within the USA: +1 (800) 713-4113
Outside the USA: +1 (949) 380-6100
Sales: +1 (949) 380-6136 Fax: +1 (949) 215-4996
E-mail: sales.support@microsemi.com

Revision History

Revision Level / Date	Para. Affected	Description
02 / August 2017	-	Preliminary Release