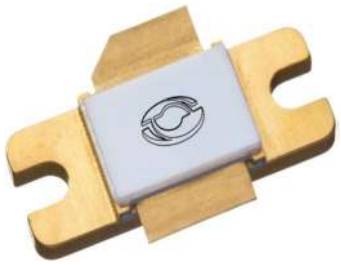
0912GN-650V

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

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 128µs 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.

CASE OUTLINE
55-KR
Common Source



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

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: Vdd=+50V, Idq=100mA average current (Vgs= -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 • 128µS, 10%
960 - 1215 MHz Avionics

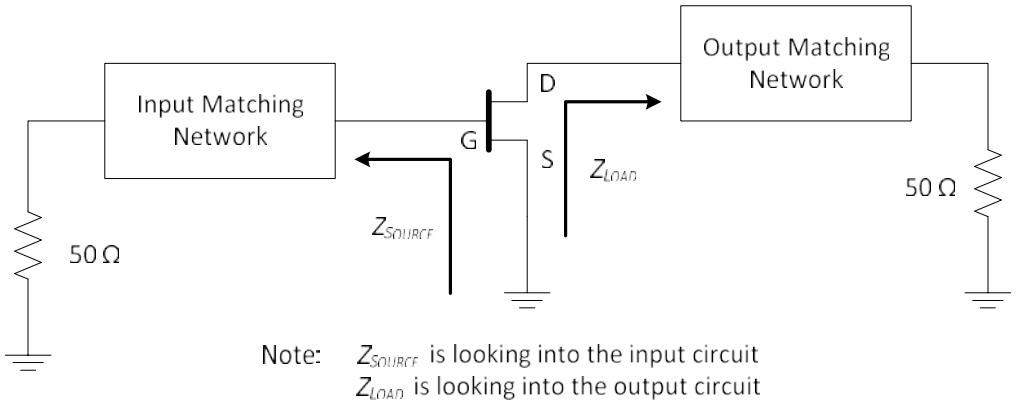
TYPICAL BROAD BAND PERFORMACE DATA

Frequency	P_{IN} (W)	P_{OUT} (W)	I_D (A)	IRL (dB)	ηD (%)	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

0912GN-650V

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

TRANSISTOR IMPEDANCE INFORMATION



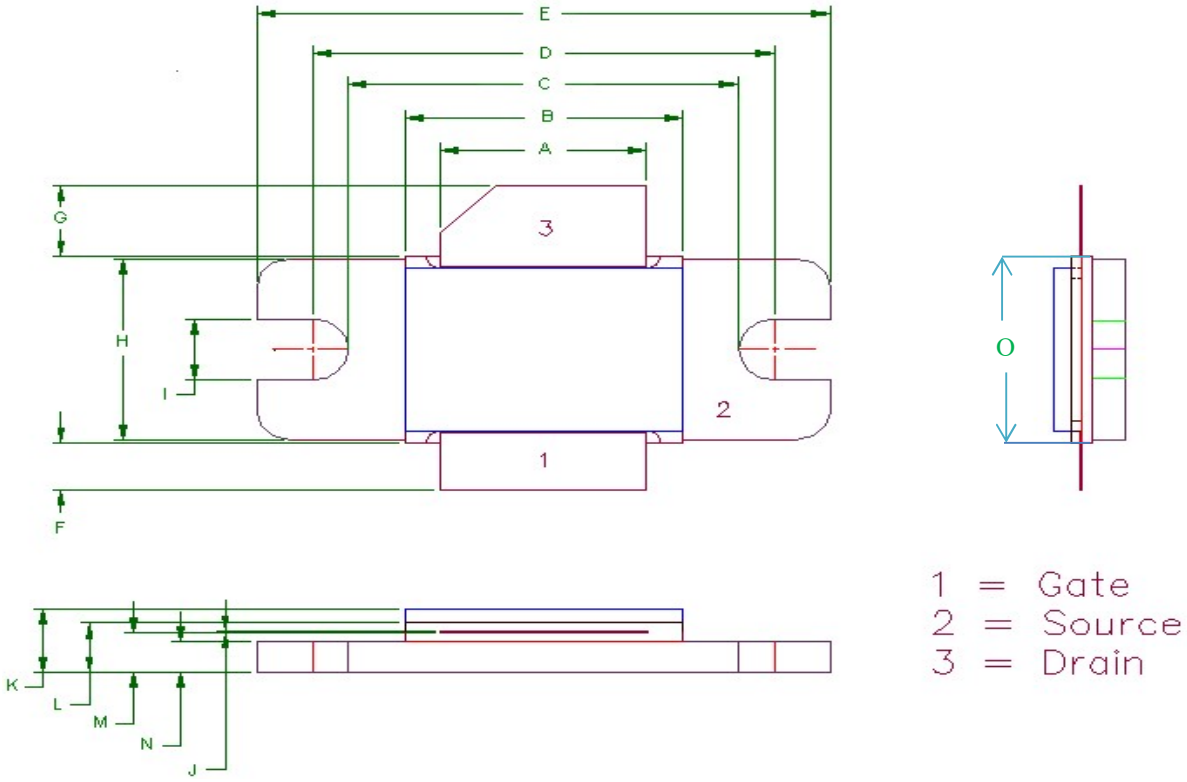
Note: Z_{SOURCE} is looking into the input circuit
Z_{LOAD} is looking into the output circuit

Impedance Data		
Freq	***ZSOURCE***	***ZLOAD***
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

0912GN-650V

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

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 • 128µS, 10%
960 - 1215 MHz Avionics

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.

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