

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

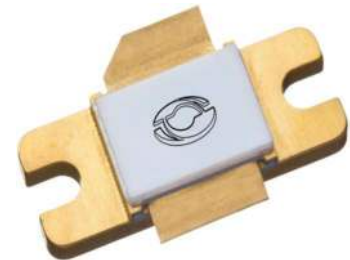
Gate-Source Voltage (V_{GS}) -8 to +0 V

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		%
D_r	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 ($V_{GS}= -2.0 \sim -4.5V$) 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



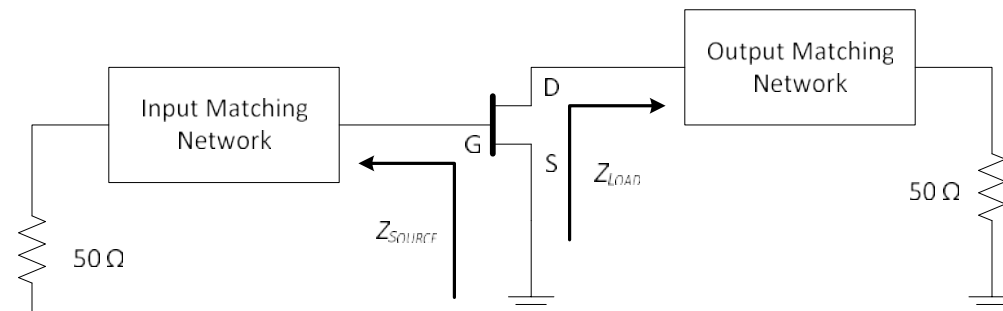
0912GN-650V

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

TYPICAL BROAD BAND PERFORMANCE DATA

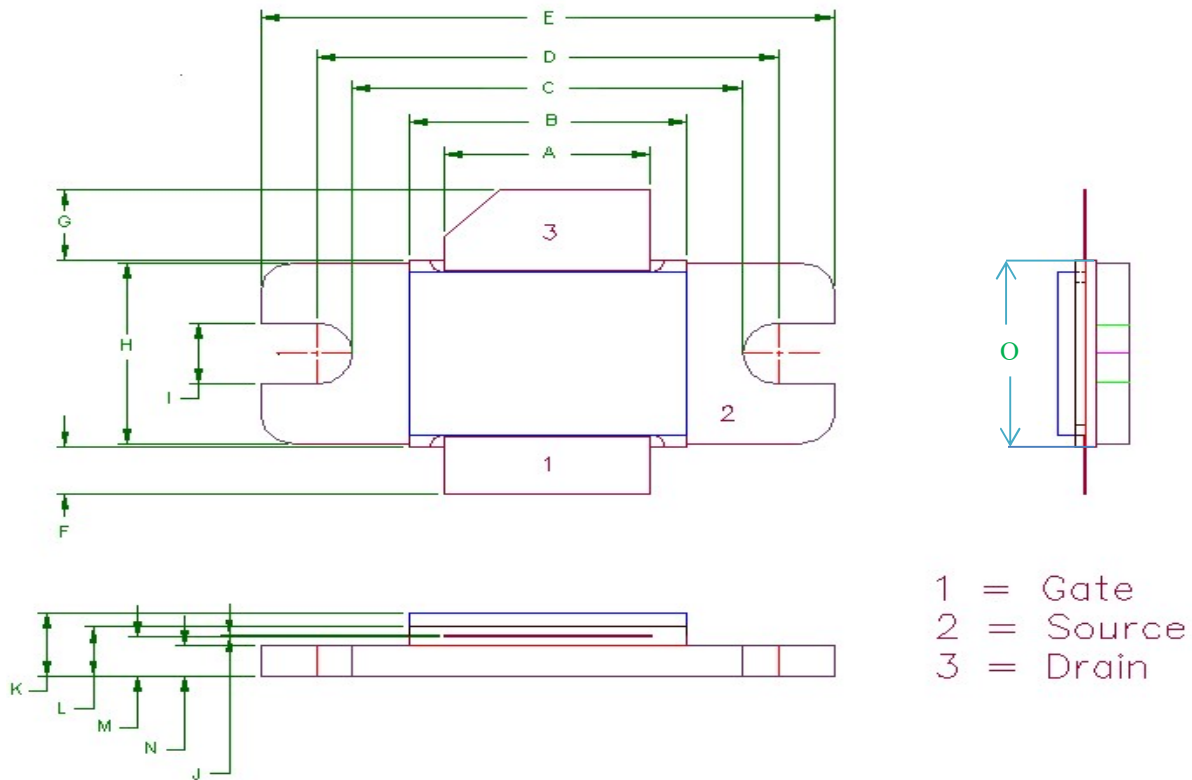
Frequency	P _{IN} (W)	P _{OUT} (W)	I _D (A)	IRL (dB)	η D (%)	G _P (dB)	Droop (dB)
960 MHz	11.2	712	2.98	-10.5	59.1	17.5	0.5
1090 MHz	11.2	693	2.83	-8.0	60.5	17.4	0.4
1215 MHz	11.2	751	2.74	-15.6	67.9	17.8	0.3

TRANSISTOR IMPEDANCE INFORMATION



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

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



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960 - 1215 MHz Avionics

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Revision History

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