

1214GN-650V

650 Watts - 50 Volts, 150 μ s, 10%
Broad Band 1200 - 1400 MHz

GENERAL DESCRIPTION

The 1214GN-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 150 μ s pulse width, 10% duty cycle across the 1200 to 1400 MHz band. The transistor has internal pre-match for optimal performance. This hermetically sealed transistor can be used for Broadband Avionics Data Link applications. 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 1300 W

Maximum Voltage and Current

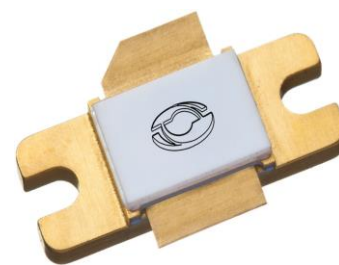
Drain-Source Voltage (V_{DSS}) 150 V

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

Maximum Temperatures

Storage Temperature (T_{STG}) -55 to +125 °C

Operating Junction Temperature +250 °C



ELECTRICAL CHARACTERISTICS @ 25°C

Symbol	Characteristics	Test Conditions	Min	Typ	Max	Units
Pout	Output Power	Pout=650W, Freq=1200, 1300, 1400 MHz	650			W
Gp	Power Gain	Pout=650W, Freq=1200, 1300, 1400 MHz	17			dB
η_d	Drain Efficiency	Pout=650W, Freq=1200, 1300, 1400 MHz	60	69		%
Dr	Droop	Pout=650W, Freq=1200, 1300, 1400 MHz			0.8	dB
VSWR-T	Load Mismatch Tolerance	Pout=650W, Freq=1400 MHz			3:1	
Θ_{jc}	Thermal Resistance	Pulse Width=150uS, Duty=10%			0.21	°C/W

- Constant Gate Bias Condition: $V_{dd}=+50V$, $I_{dq}=100mA$ average current ($V_{gs}=-2.0 \sim -4.5V$)

FUNCTIONAL CHARACTERISTICS @ 25°C

$I_{D(Off)}$	Drain leakage current	$V_{gs} = -8V$, $V_D = 50V$			64	mA
$I_{G(Off)}$	Gate leakage current	$V_{gs} = -8V$, $V_D = 0V$			20	mA
BV_{DSS}	Drain-source breakdown voltage	$V_{gs} = -8V$, $I_D = 64mA$	150			V

Export Classification: EAR-99

For the most current data, consult MICROSEMI's website: www.MICROSEMI.com
Specifications are subject to change, consult the RFIS factory at (408) 986-8031 for the latest information

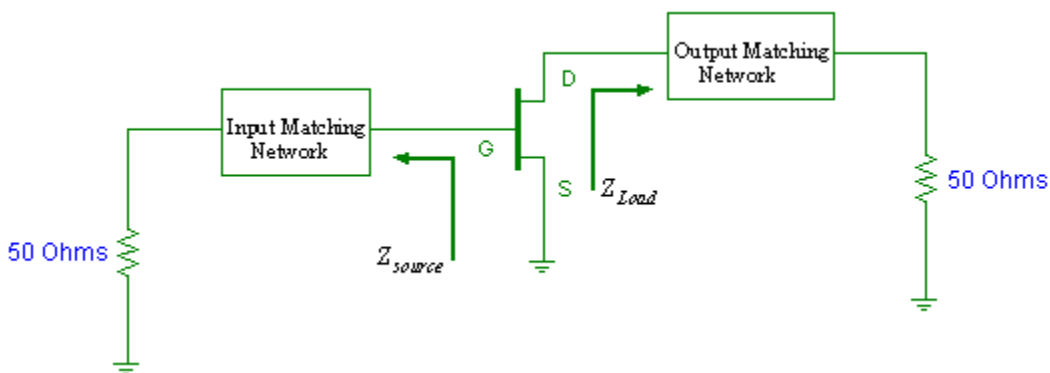
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TYPICAL BROAD BAND PERFORMANCE DATA

Freq (GHz)	Pin (W)	Pout (W)	Id (A)	RL (dB)	Eff (%)	G (dB)	Droop (dB)
1.2	11.2	711	2.12	-11.3	67%	18.03	0.4
1.3	11.2	701	2.00	-11.1	70%	17.97	0.3
1.4	11.2	716	1.88	-24.1	76%	18.06	0.25

TRANSISTOR IMPEDANCE INFORMATION



Note: Z_{source} is looking into the input circuit;
 Z_{Load} is looking into the output circuit.

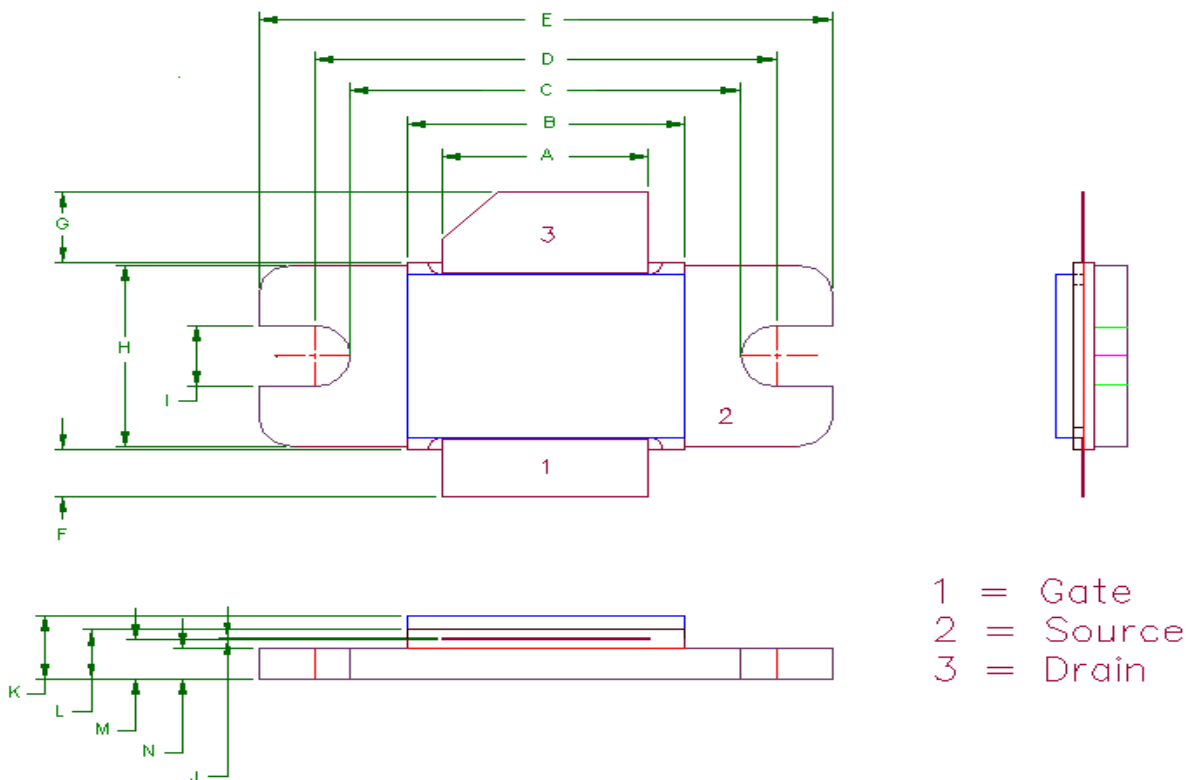
Impedance Data		
Freq (GHz)	Z_{source}	Z_{Load}
1.2	1.16 - j1.80	1.5 - j1.18
1.3	1.18 - j1.22	1.55 - j0.95
1.4	1.23 - j0.67	1.51 - j0.78

RF Test Circuit Available Upon Request

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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



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Revision History

Revision Level / Date	Para. Affected	Description
01 / April 2014	-	Initial Preliminary Release
02 / September 2015	various	Formatting Changes

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