

## GENERAL DESCRIPTION

The 0912GN-500LV is an internally matched, COMMON SOURCE, class AB GaN on SiC HEMT transistor capable of providing over 16dB gain, 500 Watts of pulsed RF output power at 450 $\mu$ s pulse width, 35% duty factor across the 960 to 1215 MHz band. The transistor has internal pre-match for optimal performance. This hermetically sealed transistor can be used for Broadband Data Link applications. It utilizes gold metallization and eutectic attach to provide highest reliability and superior ruggedness.

## ABSOLUTE MAXIMUM RATINGS

### Maximum Power Dissipation

Device Dissipation @ 25°C

### Maximum Voltage and Current

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

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

### Maximum Temperatures

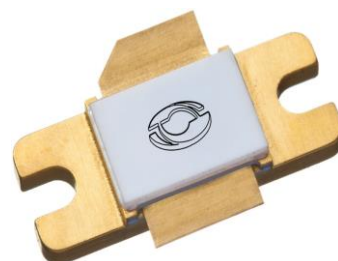
Storage Temperature ( $T_{STG}$ ) -55 to +125 °C

Operating Junction Temperature +250 °C

## 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	500	550		W
$G_P$	Power Gain	Pin=12.5W, Freq=960,1090,1215MHz	16	16.5		dB
$\eta_D$	Drain Efficiency	Pin=12.5W, Freq=960,1090,1215MHz	60	63		%
$Dr$	Droop	Pin=12.5W, Freq=960,1090,1215MHz			0.5	dB
VSWR-T	Load Mismatch Tolerance	Pin=12.5W, Freq=1215MHz			3:1	
$\Theta_{JC}$	Thermal Resistance	Pulse Width=450uS, Duty=35%			0.37	°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	$V_{GS} = -8V$ , $V_D = 150V$			64	mA
$I_{G(Off)}$	Gate leakage current	$V_{GS} = -8V$ , $V_D = 0V$			22	mA

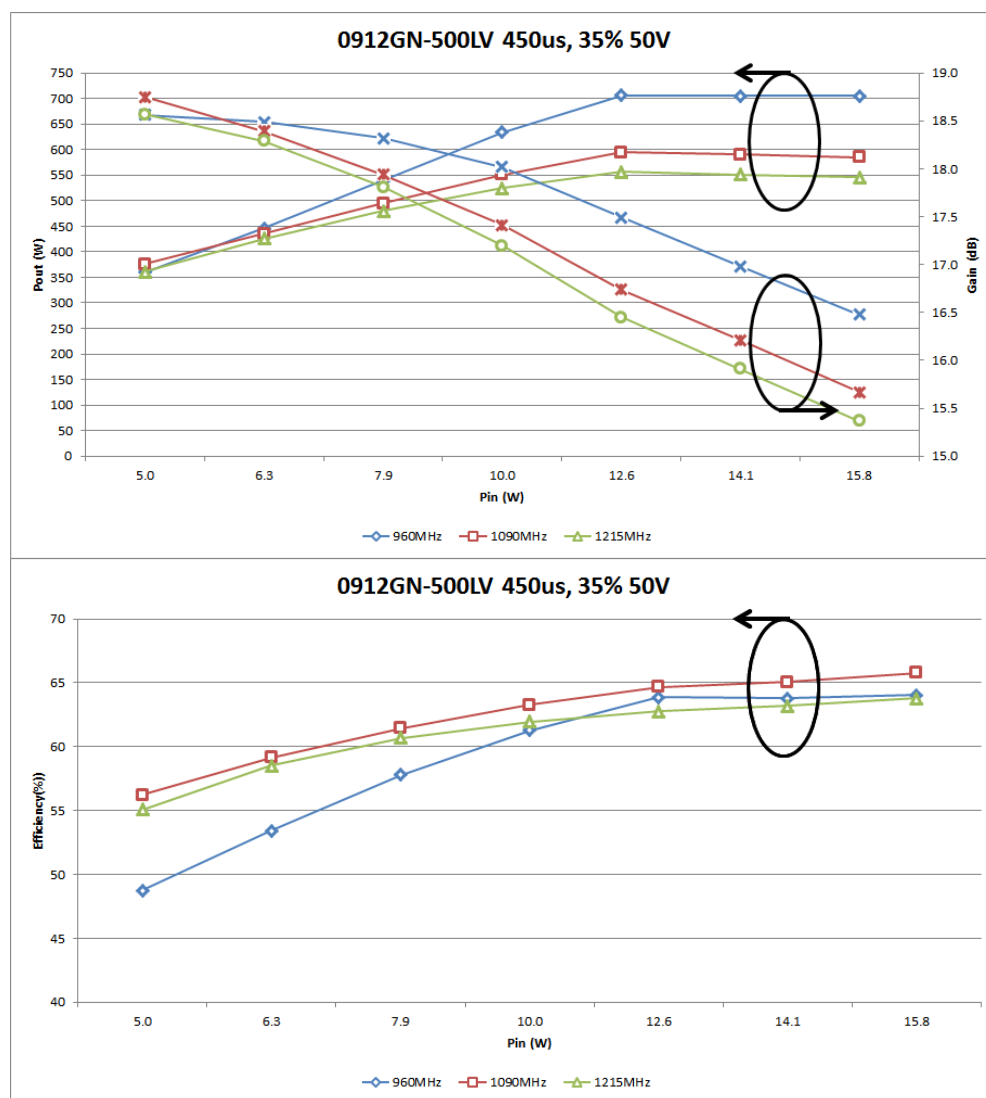
**Export Classification: EAR-99**

# 0912GN-500LV

500 Watts • 50 Volts • 450  $\mu$ s, 35%  
960 - 1215 MHz Broad Band Data Link

## TYPICAL BROAD BAND PERFORMANCE DATA

Frequency	P <sub>IN</sub> (W)	P <sub>OUT</sub> (W)	I <sub>D</sub> (A)	RL (dB)	$\eta_D$ (%)	G <sub>P</sub> (dB)	Droop (dB)
960 MHz	12.5	706	7.73	-7	64	17.5	0.41
1090 MHz	12.5	594	6.43	-6.5	65	16.7	0.29
1215 MHz	12.5	556	6.2	-10	63	16.5	0.24



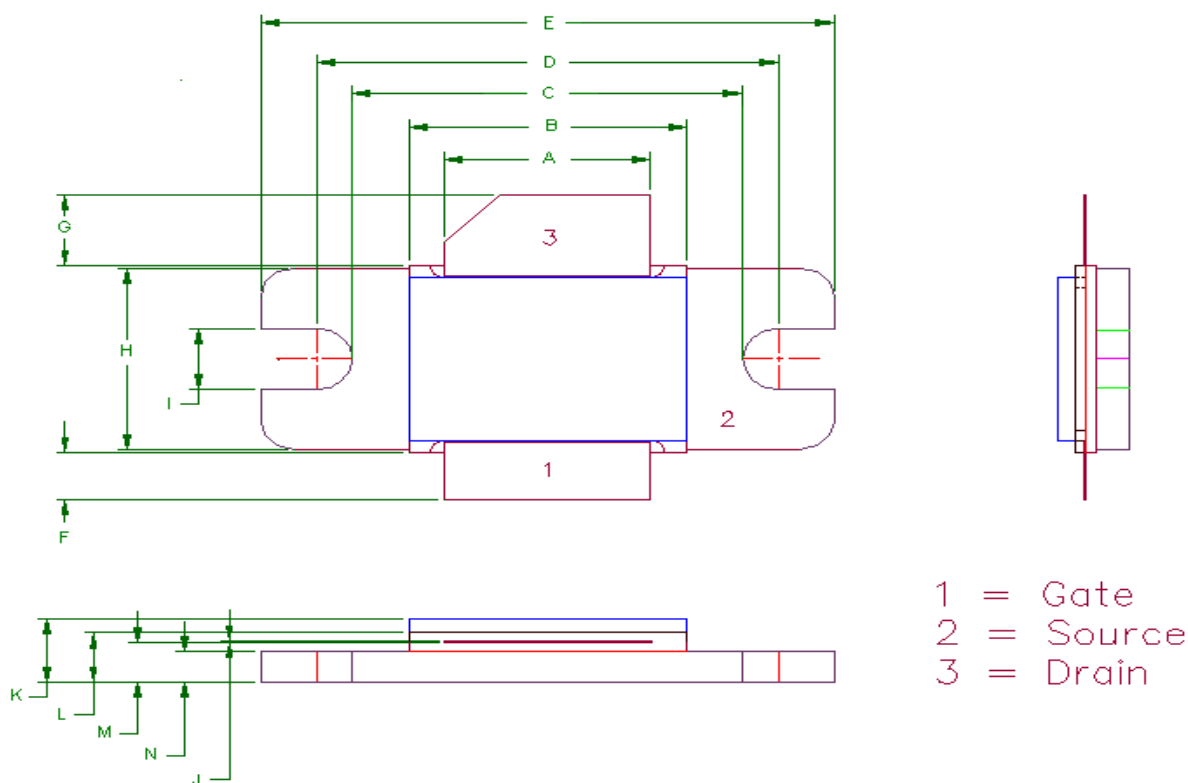
## TYPICAL DATA LINK BROAD BAND PERFORMANCE

Freq	P <sub>IN</sub> (W)	P1*					P256*		Droop
		P <sub>OUT</sub> (W)	G <sub>P</sub> (dB)	IRL (dB)	I <sub>D</sub> (mA)	Eff (%)	P <sub>OUT</sub> (W)	G <sub>P</sub> (dB)	
Pulsing: 256 pulse burst - 6.4us @ 13μs, Burst Rep Rate=7.8125ms (21% Duty Cycle)									
960 MHz	10.0	604	17.8	-7.0	4650	55.5	550	17.4	0.41
1090 MHz	10.0	653	18.2	-9.2	4540	61.5	607	17.8	0.32
1215 MHz	10.0	659	18.2	-7.7	4340	65.0	618	17.9	0.28
Pulsing: 444 pulse burst - 6.4us @ 13μs, Burst Rep Rate=5777.4ms (49% Duty Cycle)									
960 MHz	10.0	579	17.6	-7.0	4580	53.5	532	17.3	0.37
1090 MHz	10.0	640	18.1	-9.2	4510	60.0	601	17.8	0.27
1215 MHz	10.0	646	18.1	-7.7	4330	63.1	614	17.9	0.22

V<sub>DD</sub> = 50V, V<sub>GS</sub> = -3.61V, I<sub>DQ</sub>=100mA

\*pulse power measured at pulse center, 3.2us from rising edge

## 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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960 - 1215 MHz Broad Band Data Link

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## Revision History

Revision Level / Date	Para. Affected	Description
01 / June 2013	-	Initial Preliminary Release

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