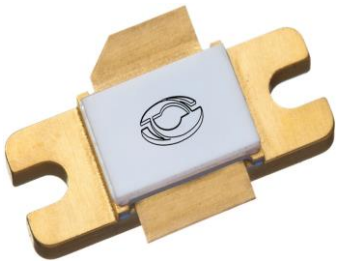
0912GN-500LV

500 Watts • 50 Volts • 450 µs, 35%
960 - 1215 MHz Broad Band Data Link

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 450µs 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.

CASE OUTLINE
55-KR
Common Source



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

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
η_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	
Θ_{JC}	Thermal Resistance	Pulse Width=450uS, Duty=35%			0.37	°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 = 150V			64	mA
$I_{G(Off)}$	Gate leakage current	V_{gS} = -8V, V_D = 0V			22	mA

Export Classification: EAR-99

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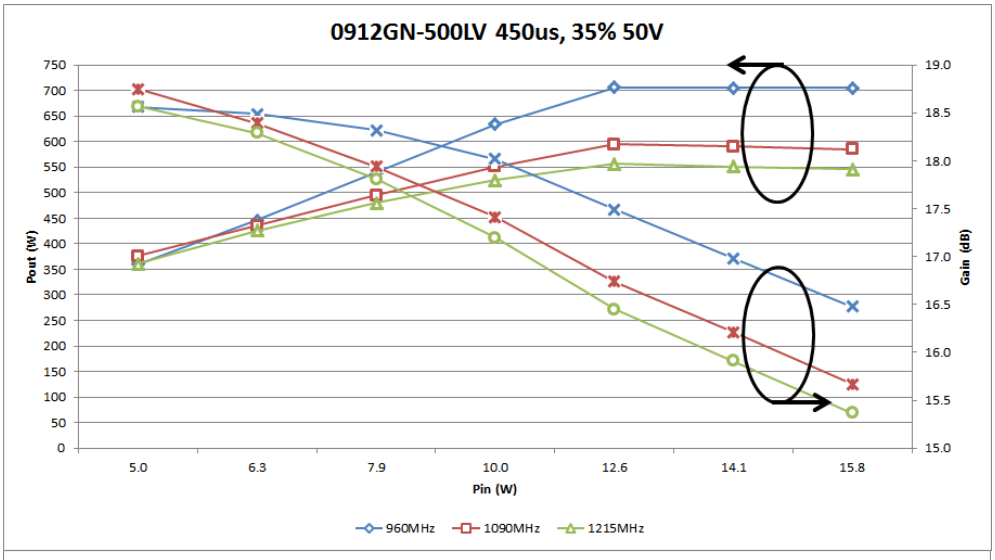
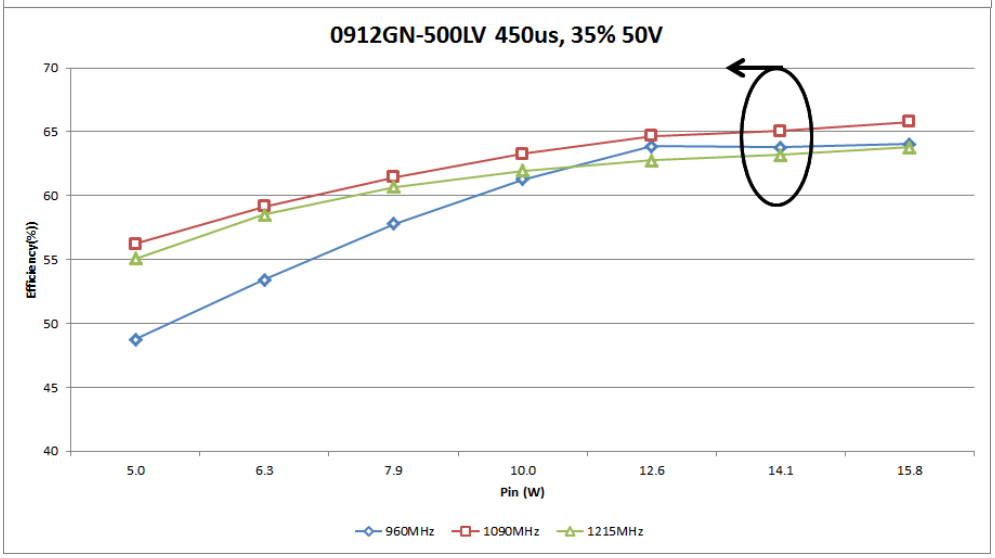
TYPICAL BROAD BAND PERFORMACE DATA

Frequency	P_{IN} (W)	P_{OUT} (W)	I_D (A)	RL (dB)	η_D (%)	G_P (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





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TYPICAL DATA LINK BROAD BAND PERFORMACE

Freq	P_{IN} (W)	P1*					P256*		Droop
		P_{OUT} (W)	G_P (dB)	IRL (dB)	I_D (mA)	Eff (%)	P_{OUT} (W)	G_P (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_{DD} = 50V, V_{GS} = -3.61V, I_{DQ}=100mA
*pulse power measured at pulse center, 3.2us from rising edge

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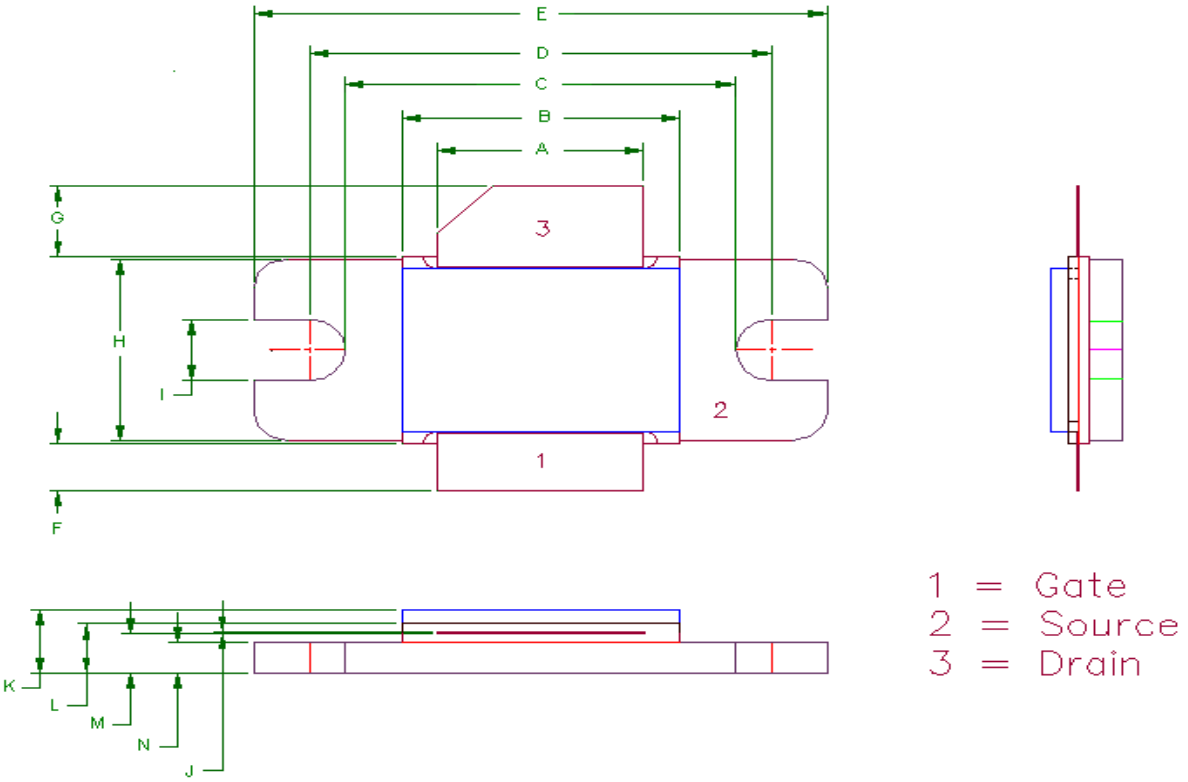
55-KR PACKAGE DIMENSION



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 / June 2013	-	Initial Preliminary Release