



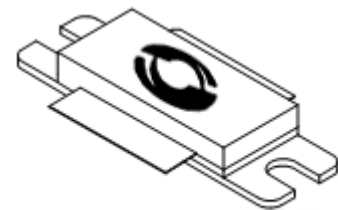
1011GN-1000V

1000 Watts • 50 Volts • ELM
L-Band Avionics 1030/1090 MHz

GENERAL DESCRIPTION

The 1011GN-1000V is an internally matched, COMMON SOURCE, class AB, GaN on SiC HEMT transistor capable of providing over 19 dB gain, 1000 Watts of pulsed RF output power at ELM pulse format across the 1030 to 1090 MHz band. The transistor has internal pre-match for optimal performance. It utilizes gold metallization and eutectic attach to provide highest reliability and superior ruggedness.

CASE OUTLINE 55-Q03 Common Source



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation

Device Dissipation @ 25°C 1830

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
Pin	Input Power	Pout=1000W, Freq=1030,1090MHz		10		W
Gp	Power Gain	Pout=1000W, Freq=1030,1090MHz	19	20.3		dB
η_d	Drain Efficiency	Pout=1000W, Freq=1030,1090MHz	60	70		%
Dr	Droop	Pout=1000W, Freq=1030,1090MHz			1.2	dB
VSWR-T	Load Mismatch Tolerance	Pout=1000W, Freq=1030MHz			3:1	
Θ_{jc}	Thermal Resistance	32us, 2% duty cycle			.17	°C/W

- Bias Condition: Vdd=+50V, Idq=120mA average current (Vgs= -2.0 ~ -4.5V typical)

FUNCTIONAL CHARACTERISTICS @ 25°C

$I_{D(Off)}$	Drain leakage current	$V_{gs} = -8V, V_D = 150V$			50	mA
$I_{G(Off)}$	Gate leakage current	$V_{gs} = -8V, V_D = 0V$			16	mA

Export Classification: EAR 99

Consult www.MICROSEMI.com or RF Integrated Solutions at (408) 986-8031 for most current data and information.
Standard product specifications are subject to change without notice.



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TYPICAL PERFORMANCE DATA UNDER MODE-S ELM (32 μ S on 18 μ S off, N=48 pulses, DF=6.4%)

Frequency	Pin (W)	Pout (W)	Id (A)	RL (dB)	η_D @ pulse 1 (%)	Gain (dB)	Droop @ Pulse 48 (dB)
1030 MHz	9.3	1000	1.85	-14	69	19.5	0.80
1090 MHz	9.3	1000	1.75	-10	73	19.5	0.80

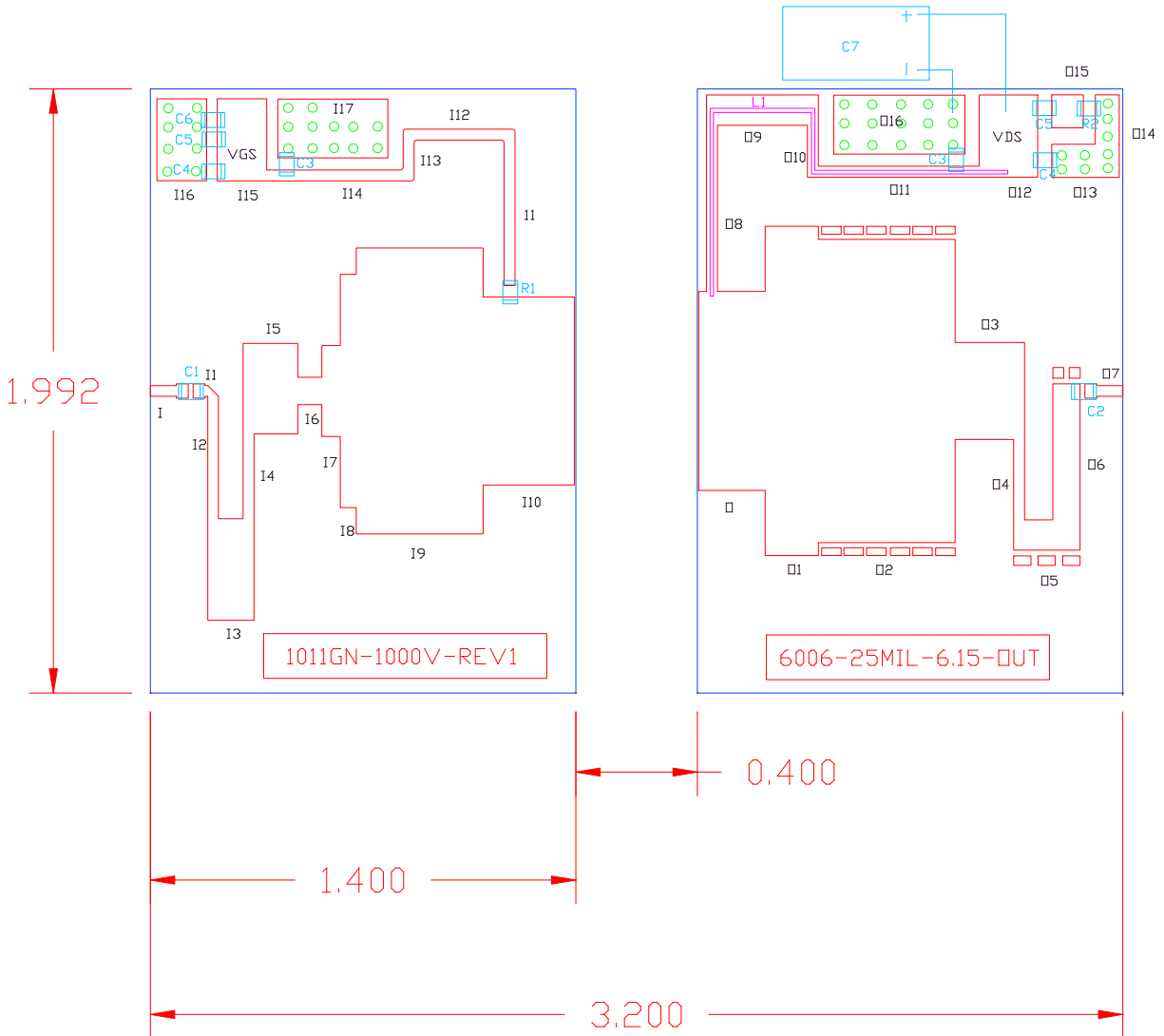
TYPICAL PERFORMANCE DATA UNDER (32 μ S, DF=2%)

Frequency	Pin (W)	Pout (W)	Id (A)	RL (dB)	η_D (%)	Gain (dB)	Droop (dB)
1030 MHz	8.9	1000	.61	-13	78	20.5	.15
1090 MHz	10	1000	.57	-10	84	20.0	.15



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TEST CIRCUIT (inches)





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COMPONENT LIST

Item	Description	Value
C1	Chip Cap A size	100 pF
C2	Chip Cap A size	100 pF
C3	Chip Cap B size	100 pF
C4	Chip Cap B size	1,000 pF
C5	Chip Cap B size	100,000 pF
C6	Electrolytic Cap (63V)	2.2 μ F
C7	Electrolytic Cap (63V)	4700 μ F
R1	Chip Resistor size 0805	20.5 Ω
R2	Chip Resistor size 0805	5.1 Ω
L1	22 AWG cu wire, L=1700 Mil	
<p>Note: Need 2x of C3,C4,C5 Board Material: Roger Duroid 6006, 0.025", $\epsilon_r = 6.15$</p>		

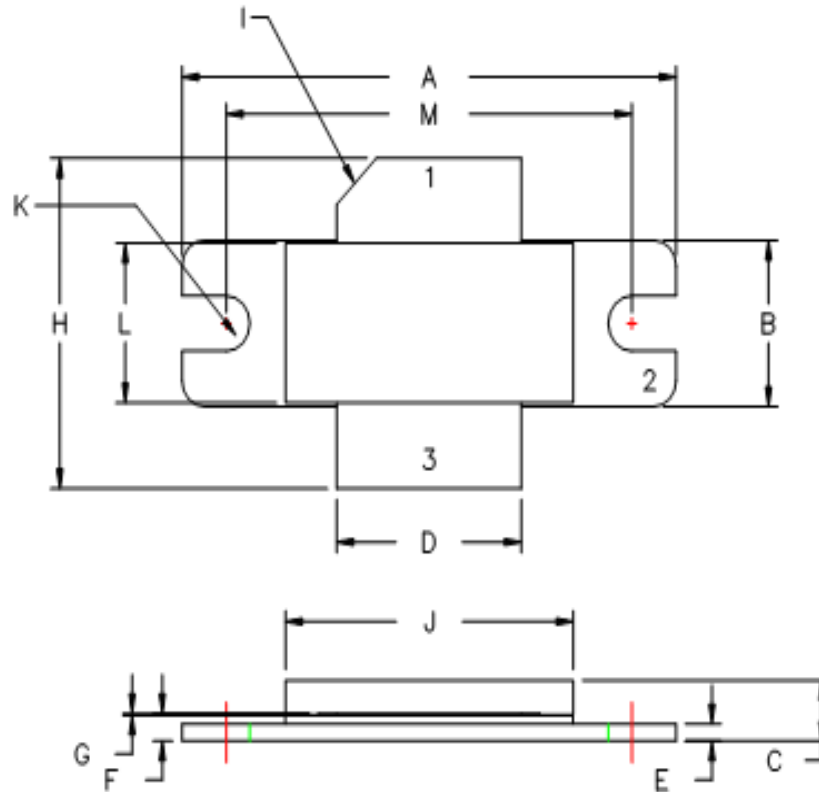
INPUT

Item	W (mil)	L (mil)
I	36	124
I1	36	48
I2	36	404
I3	335	152
I4	36	280
I5	298	180
I6	90	79
I7	300	60
I8	769	52
I9	943	418
I10	620	300
I11	36	477
I12	36	296
I13	36	98
I14	36	450
I15	270	162
I16	270	164
I17	194	360

OUTPUT

Item	W (mil)	L (mil)
O	656	219
O1	1086	175
O2	1000	450
O3	320	228
O4	36	265
O5	100	218
O6	89	448
O7	36	124
O8	36	548
O9	100	368
O10	36	170
O11	36	530
O12	270	192
O13	110	144
O14	272	80
O15	108	104
O16	194	430

55-Q03 PACKAGE DIMENSION



DIM	MILLIMETER	TOL	INCHES	TOL
A	34.03	.25	1.340	.010
B	9.78	.25	.385	.010
C	3.55	.19	.140	.007
D	12.70	.13	.500	.005
E	1.02	.13	.040	.005
F	1.65	.13	.065	.005
G	0.13	.03	.005	.001
H	19.43	.76	.765	.030
I	45°	5°	45°	5°
J	19.81	.25	.780	.030
K	3.30 DIA	.13	.130 DIA	.005
L	9.40	.13	.370	.005
M	27.94	MAX	1.100	MAX

PIN 1 = DRAIN
PIN 2 = SOURCE
PIN 3 = GATE

Revision History

Revision Level / Date	Para. Affected	Description
.01/ December 16, 2015	-	Initial Preliminary Release