



# 1011GN-800V • 800 W

52 Volts • 1030/1090 MHz  
IFF & Mode-S ELM

## GENERAL DESCRIPTION

The 1011GN-800V is an internally matched, COMMON SOURCE, class AB, GaN on SiC HEMT transistor capable of providing over 19 dB gain, 800 Watts of pulsed RF output power at ELM pulse format across the 1030MHz to 1090MHz avionic band. The transistor has internal pre-matching for optimal performance. This hermetically sealed transistor is specifically designed for IFF & Mode-S ELM avionics 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

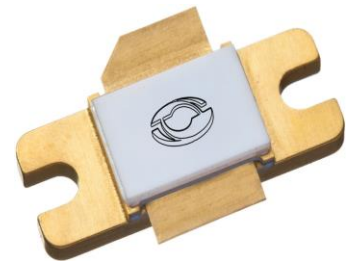
### Maximum Temperatures

Storage Temperature ( $T_{STG}$ )            -55 to +125° C  
Operating Junction Temperature        +200° C

## CASE OUTLINE

55-KP

Common Source



## ELECTRICAL CHARACTERISTICS @ 25°C

Symbol	Characteristics	Test Conditions	Min	Typ	Max	Units
Po	Output Power	Pin=10W, Freq=1030,1090 MHz	800	860		W
Gp	Power Gain	Pin=10W, Freq=1030,1090 MHz	19	19.35		dB
$\eta_d$	Drain Efficiency	Pin=10W, Freq=1030,1090 MHz	65	80		%
Dr	Droop	Pin=10W, Freq=1030,1090 MHz			1.0	dB
VSWR-T	Load Mismatch Tolerance	Pout=800W, Freq= 1030MHz			3:1	
$\theta_{jc}$	Thermal Resistance	32us, 2% duty cycle			0.07	°C/W

- Bias Condition: Vdd=+52V, Idq=100mA average current (Vgs= -2.0 ~ -4.5V typical)

## FUNCTIONAL CHARACTERISTICS @ 25°C

$I_{D(Off)}$	Drain leakage current	$V_{gs} = -8V, V_D = 150V$			64	mA
$I_{G(Off)}$	Gate leakage current	$V_{gs} = -8V, V_D = 0V$			20	mA

*Export Classification: EAR 99*

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

Frequency	Pin (W)	Pout (W)	Id (A)	RL (dB)	$\eta_D$ @ pulse 1 (%)	Gain (dB)	Droop @ Pulse 48 (dB)
1030 MHz	10	912	1.54	-18	73	19.6	19.0
1090 MHz	10	877	1.45	-14	74	19.4	18.8

## TYPICAL PERFORMANCE DATA UNDER (32 $\mu$ S, DF=2%)

Frequency	Pin (W)	Pout (W)	Id (A)	RL (dB)	$\eta_D$ (%)	Gain (dB)	Droop (dB)
1030 MHz	10	891	.497	-18	85	19.5	.05
1090 MHz	10	851	.481	-14	83	19.3	.05



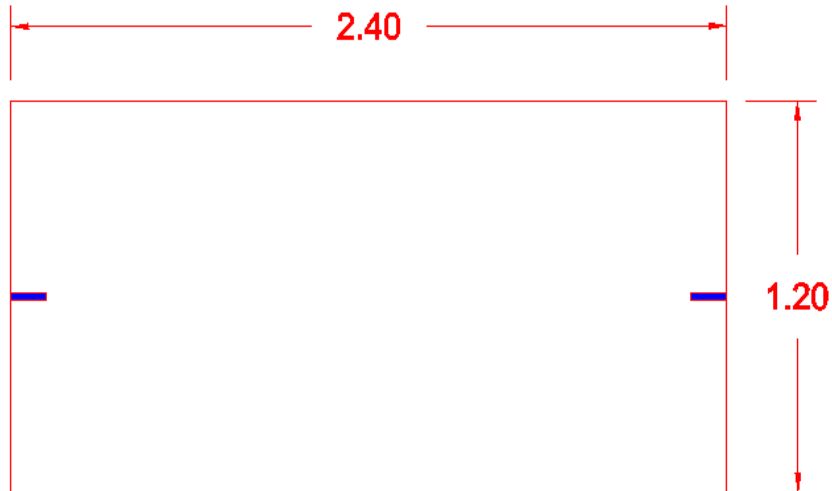
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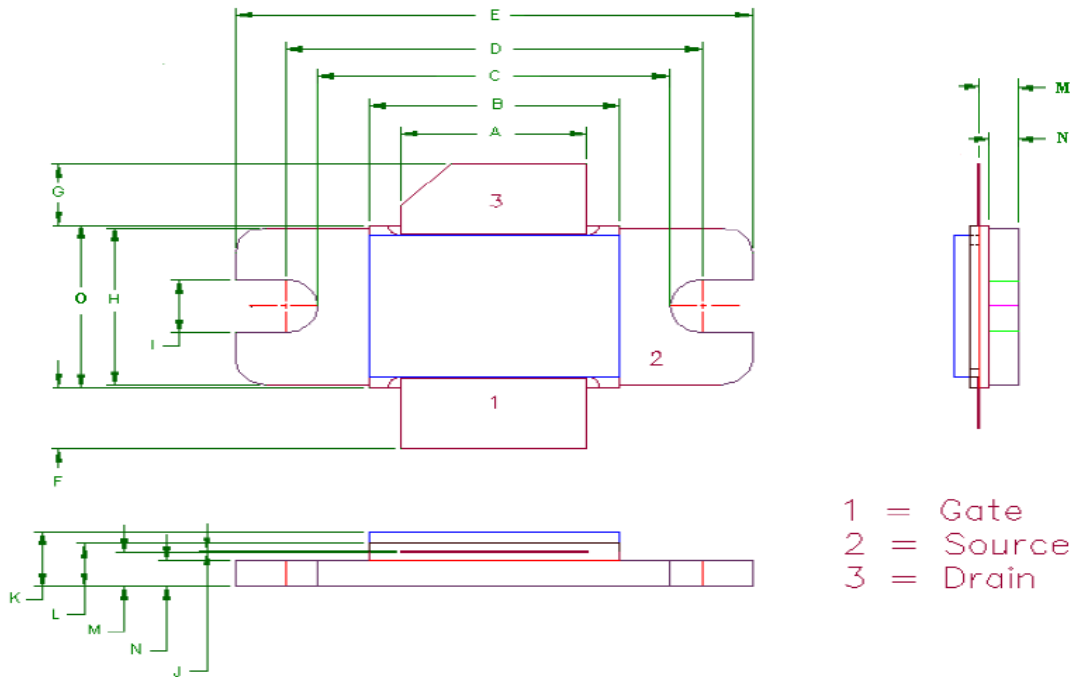
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**OVERALL CIRCUIT DIMENSION (inches)**



**Please contact Microsemi for details**

**55-KP PACKAGE DIMENSION**


imension	Min (mil)	Min (mm)	Max (mil)	Max (mm)
A	370	9.40	372	9.44
B	492	12.49	504	12.80
C	700	17.78	702	17.83
D	830	21.08	832	21.13
E	1030	26.16	1032	26.21
F	150	3.81	152	3.86
G	150	3.81	152	3.86
H	385	9.78	387	9.83
I	130	3.30	1.32	3.35
J	003	.76	005	.127
K	125	3.17	144	3.66
L	100	2.54	114	2.90
M	085	2.16	086	2.18
N	065	1.65	66	1.68
O	392	9.96	404	10.26



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#### Revision History

Revision Level / Date	Para. Affected	Description
01 / May 18, 2016	-	Initial Preliminary Release

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