



## 2729GN – 270

270 Watts - 60 Volts, 100  $\mu$ s, 10%  
Radar 2700 - 2900 MHz

### GENERAL DESCRIPTION

The 2729GN-270 is an internally matched, COMMON SOURCE, class AB GaN on SiC transistor capable of providing 14dB gain, 280 Watts of pulsed RF output power at 100 $\mu$ s pulse width, 10% duty factor across the 2700 to 2900 MHz band. The transistor has internal pre-match for optimal performance. This hermetically sealed transistor is specifically designed for S-band radar applications. It utilizes gold metallization and eutectic attach to provide highest reliability and superior ruggedness.

### CASE OUTLINE

55-QP

Common Source

### ABSOLUTE MAXIMUM RATINGS

#### Maximum Power Dissipation

Device Dissipation @ 25°C 570 W

#### Maximum Voltage and Current

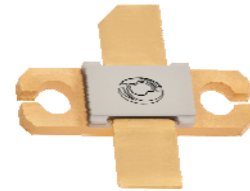
Drain-Source Voltage ( $V_{DSS}$ ) 150 V

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

#### Maximum Temperatures

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

Operating Junction Temperature +200 °C



### ELECTRICAL CHARACTERISTICS @ 25°C

Symbol	Characteristics	Test Conditions	Min	Typ	Max	Units
Pout	Output Power	Pin=12.6W, Freq=2.7, 2.8, 2.9 GHz	270	304		W
Gp	Power Gain	Pin=12.6W, Freq=2.7, 2.8, 2.9 GHz	13.3	13.8		dB
$\eta_d$	Drain Efficiency	Pin=12.6W, Freq=2.7, 2.8, 2.9 GHz	48	55		%
R/L	Input Return Loss	Pin=12.6W, Freq=2.7, 2.8, 2.9 GHz	-9			dB
VSWR-T	Load Mismatch Tolerance	Pout=270W, Freq= 2.7 GHz			5:1	
$\Theta_{jc}$	Thermal Resistance	Pulse Width=100uS, Duty=10%			0.6	°C/W

- Bias Condition: Vdd=+60V, Idq=500mA peak current ( $V_{gs}$  = -2.0 ~ -4.5V typical)

### FUNCTIONAL CHARACTERISTICS @ 25°C

$I_{D(om)}$	Drain leakage current	$V_{gs} = -8V, V_D = 60V$			5	mA
$I_{G(om)}$	Gate leakage current	$V_{gs} = -8V, V_D = 0V$			4	mA
$BV_{DSS}$	Drain-source breakdown voltage	$V_{gs} = -8V, I_D = 5mA$	250			V

Issue June 2011



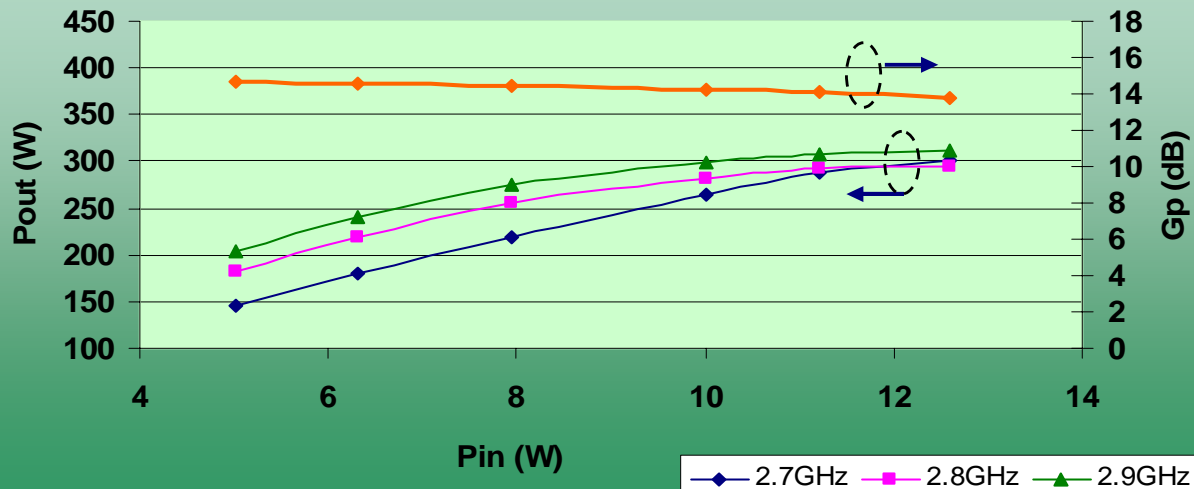
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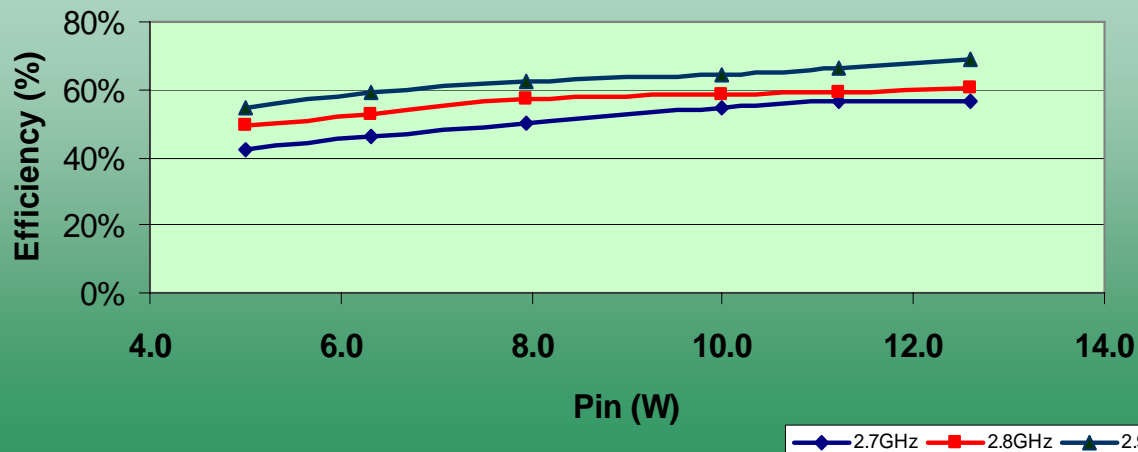
### Typical Performance Data:

Frequency	Pin (W)	Pout (W)	Id (A)	RL (dB)	Nd (%)	G (dB)
2700 MHz	12.6	300	0.93	-11	56	13.8
2800 MHz	12.6	295	0.86	-15	58	13.7
2900 MHz	12.6	310	0.80	-14	67	13.9

GaN 2.7 - 2.9 GHz , 280W, 13 dB Gain, 55% Efficiency



2729GN-270: Pin Vs. Efficiency



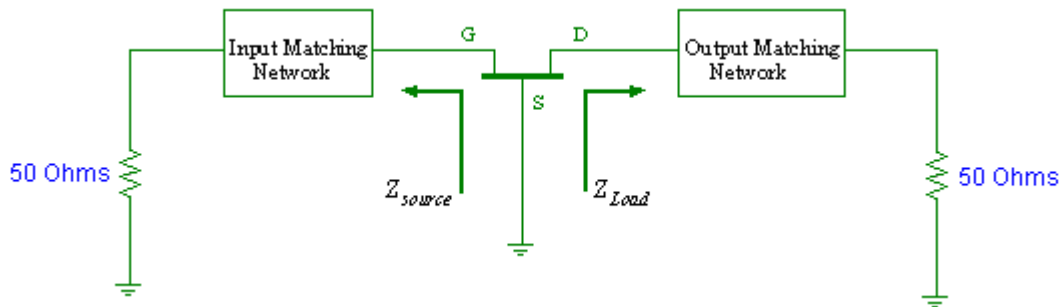


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### Transistor Impedance Information

Impedance Data		
Freq (GHz)	Zs	ZI
2.7	3.28 – j7.50	2.92 – j3.72
2.8	3.10 – j7.14	2.91 – j3.40
2.9	2.94 – j2.94	2.92 – j3.08



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

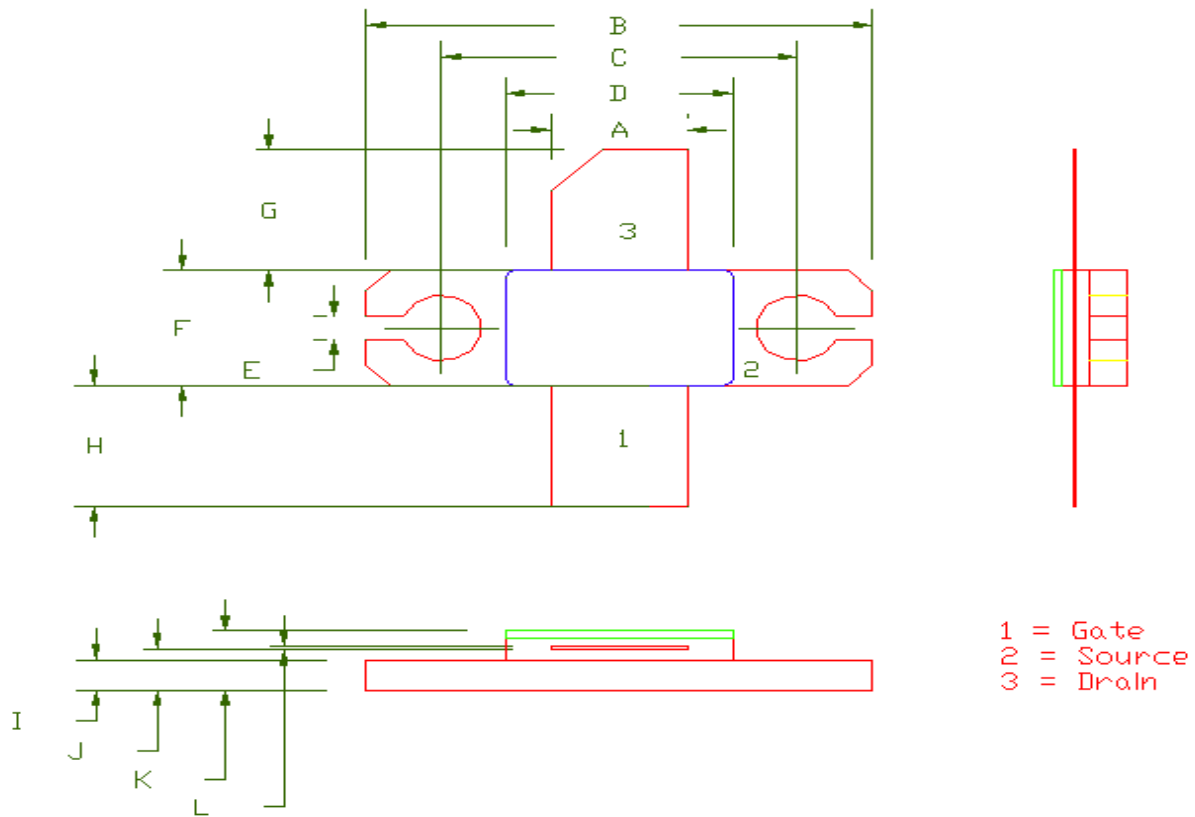
Test Circuit Layout Available Upon Request  
Please send your request to [GaN@Microsemi.com](mailto:GaN@Microsemi.com)



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### 55-QP Package Dimension



Dimension	Min (mil)	Min (mm)	Max (mil)	Max (mm)
A	213	5.41	217	5.51
B	798	20.26	802	20.37
C	560	14.22	564	14.32
D	258	6.55	362	9.19
E	43	1.09	47	1.19
F	226	5.74	230	5.84
G	235	5.96	239	6.07
H	235	5.96	239	6.07
I	60	1.52	62	1.57
J	81	2.06	82	2.08
K	116	2.94	118	2.99
L	4	.102	6	.152