



## 2729GN – 150

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

### GENERAL DESCRIPTION

The 2729GN-150 is an internally matched, COMMON SOURCE, class AB GaN on SiC transistor capable of providing 13dB gain, 150 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 330 W

#### Maximum Voltage and Current

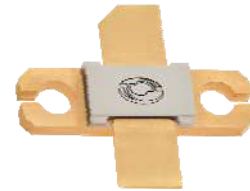
Drain-Source Voltage ( $V_{DSS}$ ) 150 V

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=8W, Freq=2.7, 2.8, 2.9 GHz	150	165		W
Gp	Power Gain	Pin=8W, Freq=2.7, 2.8, 2.9 GHz	12.7	13.2		dB
$\eta_d$	Drain Efficiency	Pin=8W, Freq=2.7, 2.8, 2.9 GHz	50	60		%
R/L	Input Return Loss	Pin=8W, Freq=2.7, 2.8, 2.9 GHz	-9			dB
VSWR-T	Load Mismatch Tolerance	Pout=150W, Freq= 2.7 GHz			5:1	
$\Theta_{jc}$	Thermal Resistance	Pulse Width=100uS, Duty=10%			1.1	°C/W

- Bias Condition: Vdd=+60V, Idq=250mA peak current ( $V_{gs} = -2.0 \sim -4.5V$  typical)

### FUNCTIONAL CHARACTERISTICS @ 25°C

$I_{D(om)}$	Drain leakage current	$V_{gs} = -8V, V_D = 60V$		2.5		mA
$I_{G(om)}$	Gate leakage current	$V_{gs} = -8V, V_D = 0V$		2		mA
$BV_{DSS}$	Drain-source breakdown voltage	$V_{gs} = -8V, I_D = 2mA$	250			V

Issue July 2011

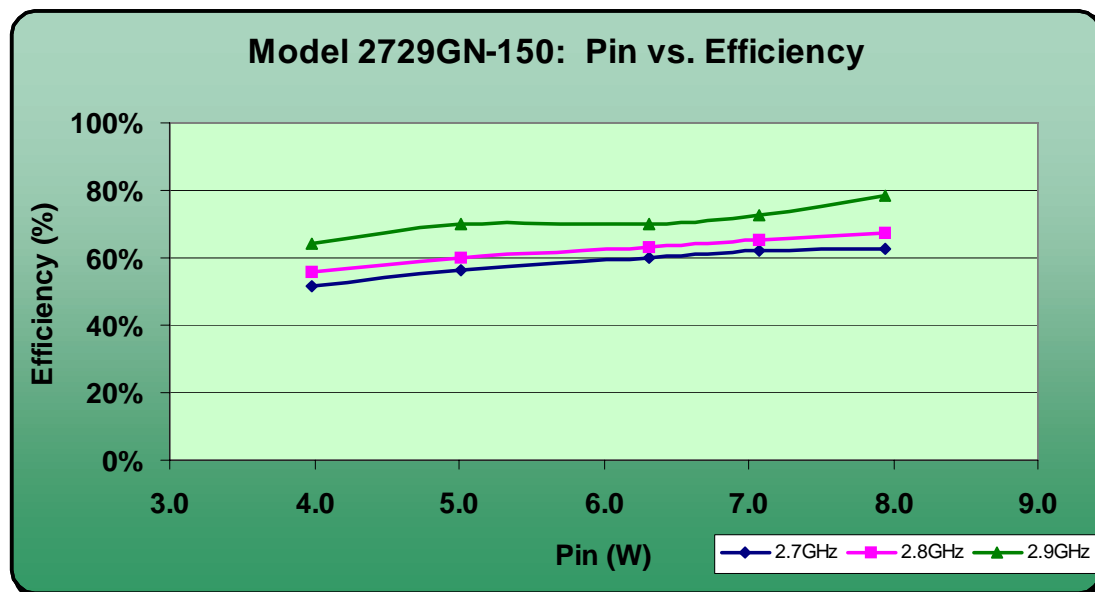
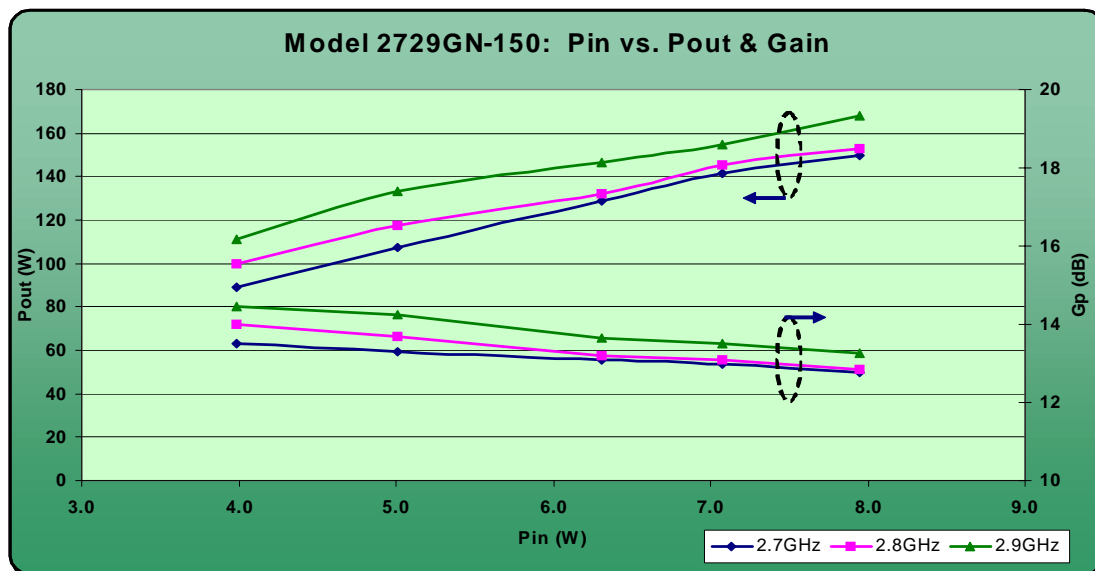


## 2729GN – 150

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

### Typical Performance Data:

Frequency	Pin (W)	Pout (W)	Id (A)	RL (dB)	Nd (%)	G (dB)
2700 MHz	8	152	0.42	-11	60	12.8
2800 MHz	8	155	0.40	-12	64	12.8
2900 MHz	8	168	0.38	-10	74	13.2



MICROSEMI RFIS TS RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE. TO VERIFY THE CURRENT VERSION PLEASE CHECK OUR WEB SITE AT [WWW.MICROSEMI.COM](http://WWW.MICROSEMI.COM) OR CONTACT OUR FACTORY DIRECTLY.




---

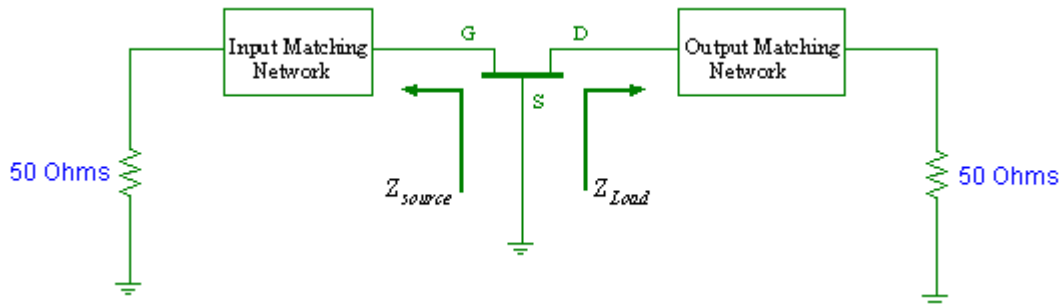
**2729GN – 150**

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

---

## Transistor Impedance Information

Impedance Data		
Freq (GHz)	Zs	ZI
2.7	5.62 – j11.20	5.28 – j3.20
2.8	5.27 – j10.74	5.37 – j2.74
2.9	4.94 – j10.34	5.49 – j2.28



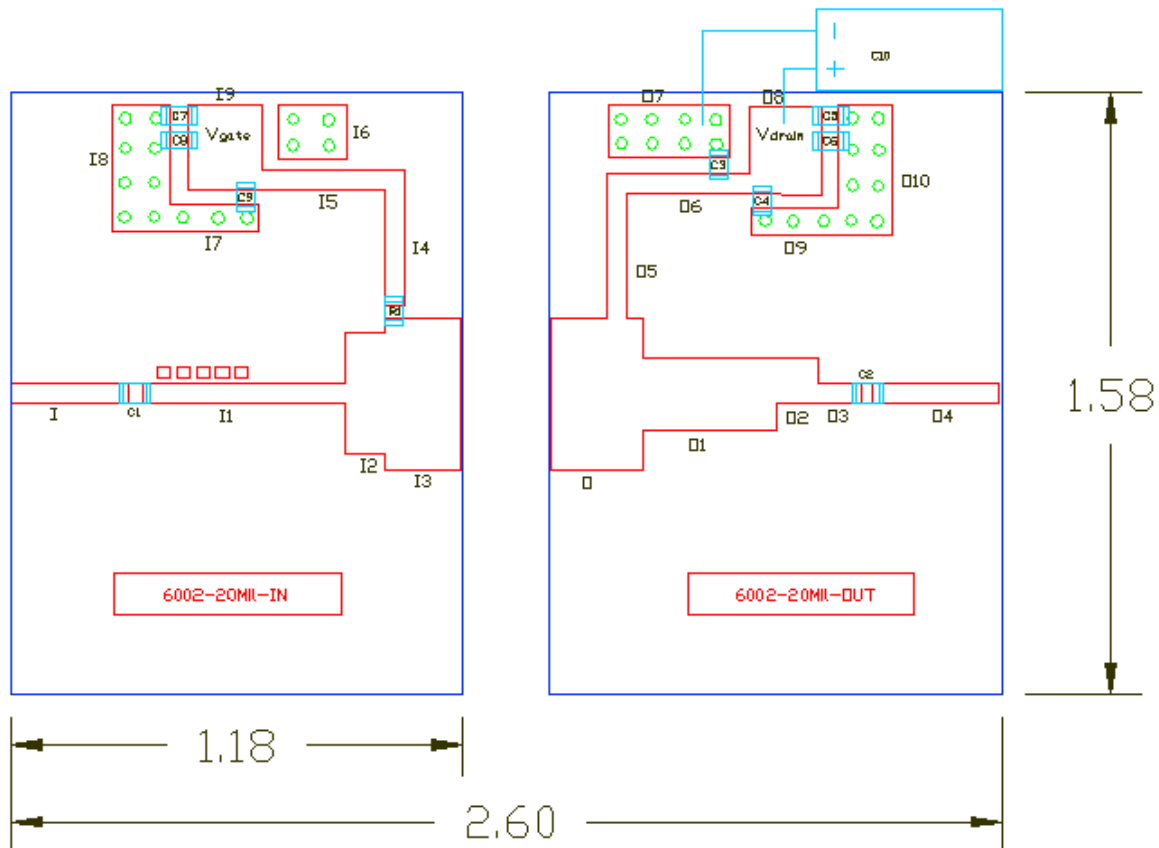
Note:  $Z_{in}$  is looking into the input circuit;  
 $Z_{Load}$  is looking into the output circuit.



## 2729GN – 150

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

### Test Circuit Diagram



Board Material: Roger Duroid 6002 @ 20 mils thickness, 1 oz Cu, Er = 2.9

Component List			Input Physical Circuit Layout			Output Physical Circuit Layout		
Item	Description	Value	Item	W (mil)	L (mil)	Item	W (mil)	L (mil)
C1	Chip Cap A size	9.1pF	I1	52	320	O1	400	242
C2	Chip Cap A size	9.1pF	I11	52	530	O10	190	350
C3	Chip Cap B size	120pF	I12	318	103	O2	121	105
C4	Chip Cap B size	1000pF	I13	400	200	O3	52	116
C5	Chip Cap B size	10,000pF	I14	52	320	O4	52	340
C6	Chip Cap B size	1,000pF	I15	52	340	O5	52	340
C7	Chip Cap B size	10,000pF	I16	140	180	O6	52	340
C8	Chip Cap B size	1,000pF	I17	70	230	O7	130	320
C9	Chip Cap B size	120pF	I18	330	150	O8	230	190
C10	Electrolytic Cap (63V)	2200uF	I19	220	190	O9	70	230
R1	Chip Resistor size 0805	11.5 ohms				O10	340	140

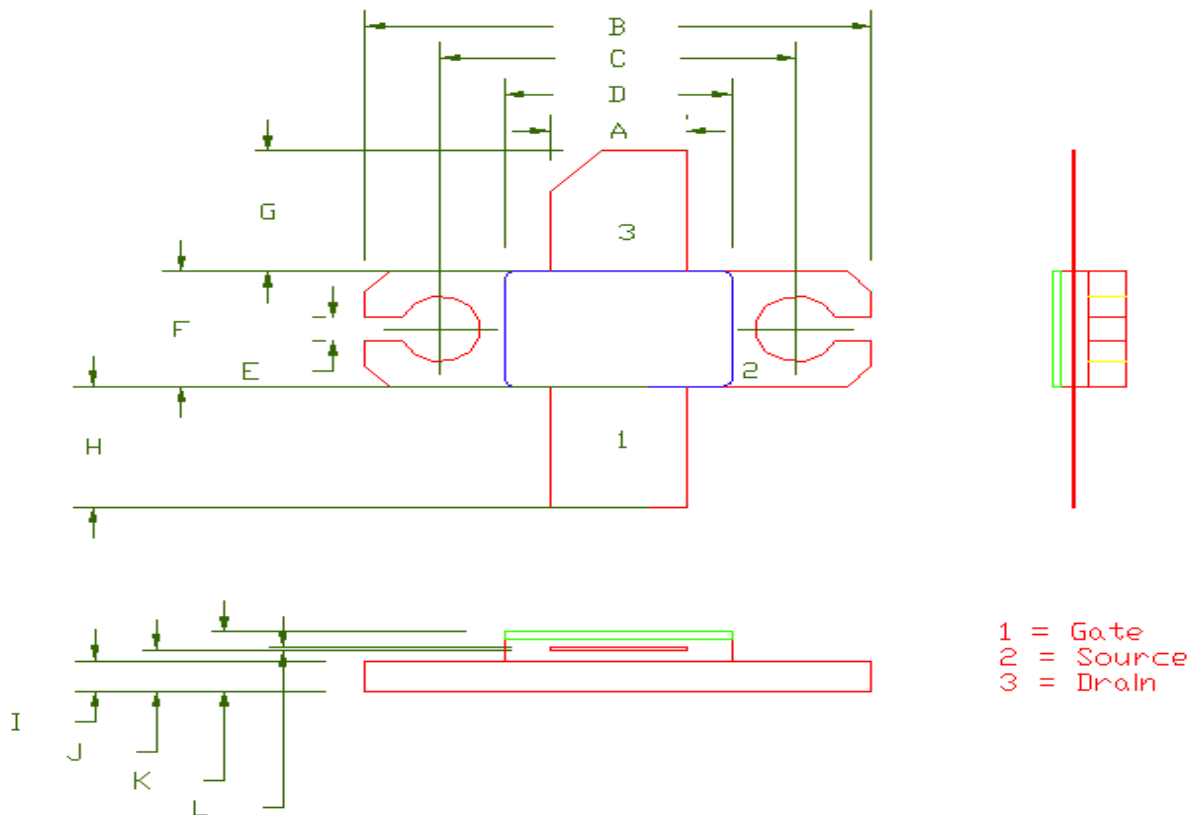
MICROSEMI RFIS TS RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE. TO VERIFY THE CURRENT VERSION PLEASE CHECK OUR WEB SITE AT [WWW.MICROSEMI.COM](http://WWW.MICROSEMI.COM) OR CONTACT OUR FACTORY DIRECTLY.



## 2729GN – 150

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

### 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

MICROSEMI RFIS TS RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE. TO VERIFY THE CURRENT VERSION PLEASE CHECK OUR WEB SITE AT [WWW.MICROSEMI.COM](http://WWW.MICROSEMI.COM) OR CONTACT OUR FACTORY DIRECTLY.