



2729GN – 150

150 Watts - 60 Volts, 100 μ 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 μ 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.

ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation

Device Dissipation @ 25°C 330 W

Maximum Voltage and Current

Drain-Source Voltage (V_{DS}) 150 V

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

Maximum Temperatures

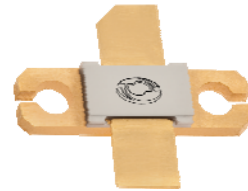
Storage Temperature (T_{STG}) -55 to +125 °C

Operating Junction Temperature +200 °C

CASE OUTLINE

55-QP

Common Source



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
η_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	
Θ_{jc}	Thermal Resistance	Pulse Width=100uS, Duty=10%			1.1	°C/W

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

FUNCTIONAL CHARACTERISTICS @ 25°C

$I_{D(on)}$	Drain leakage current	$V_{gs} = -8V$, $V_D = 60V$			2.5	mA
$I_{G(on)}$	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

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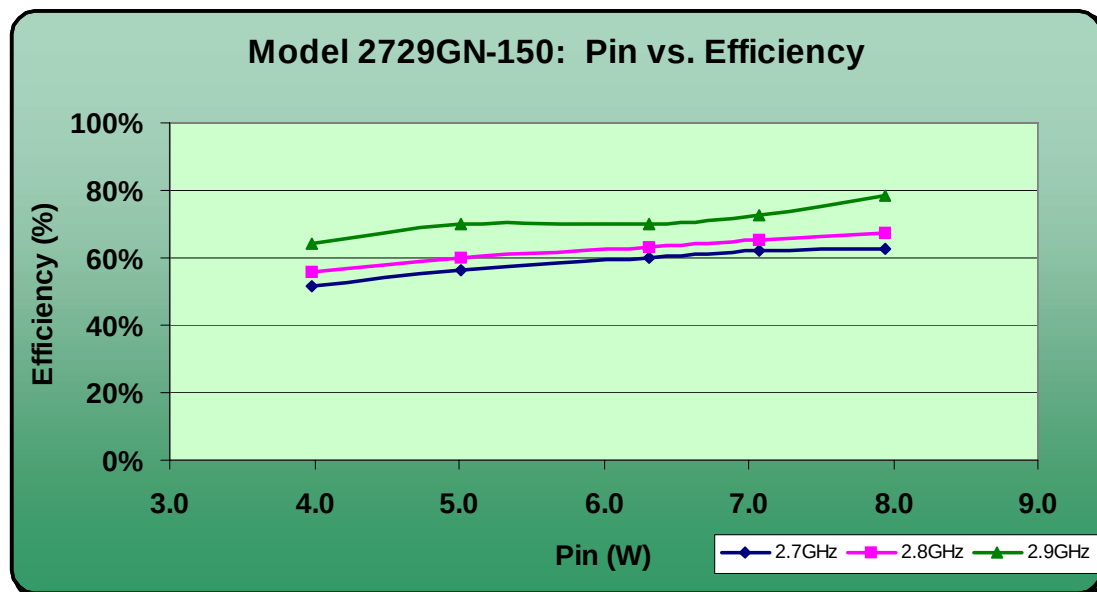
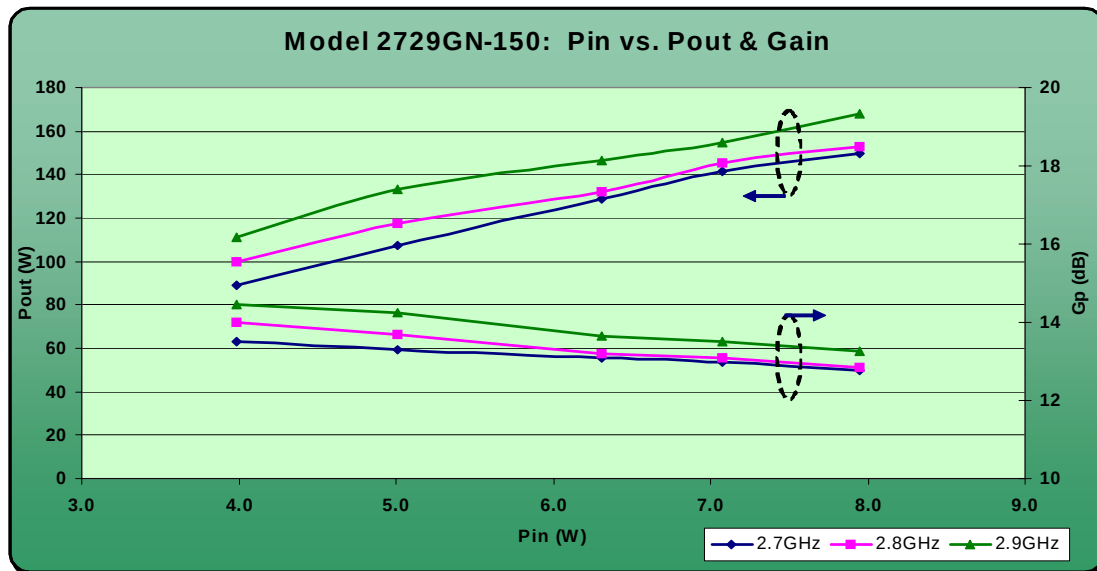


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Typical Performance Data:

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



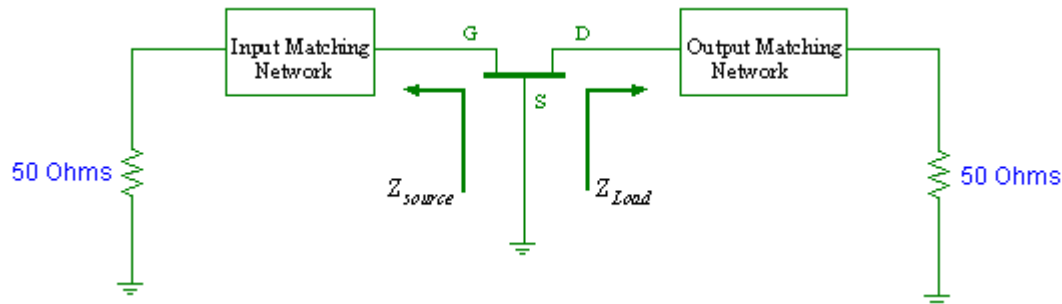


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Transistor Impedance Information

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



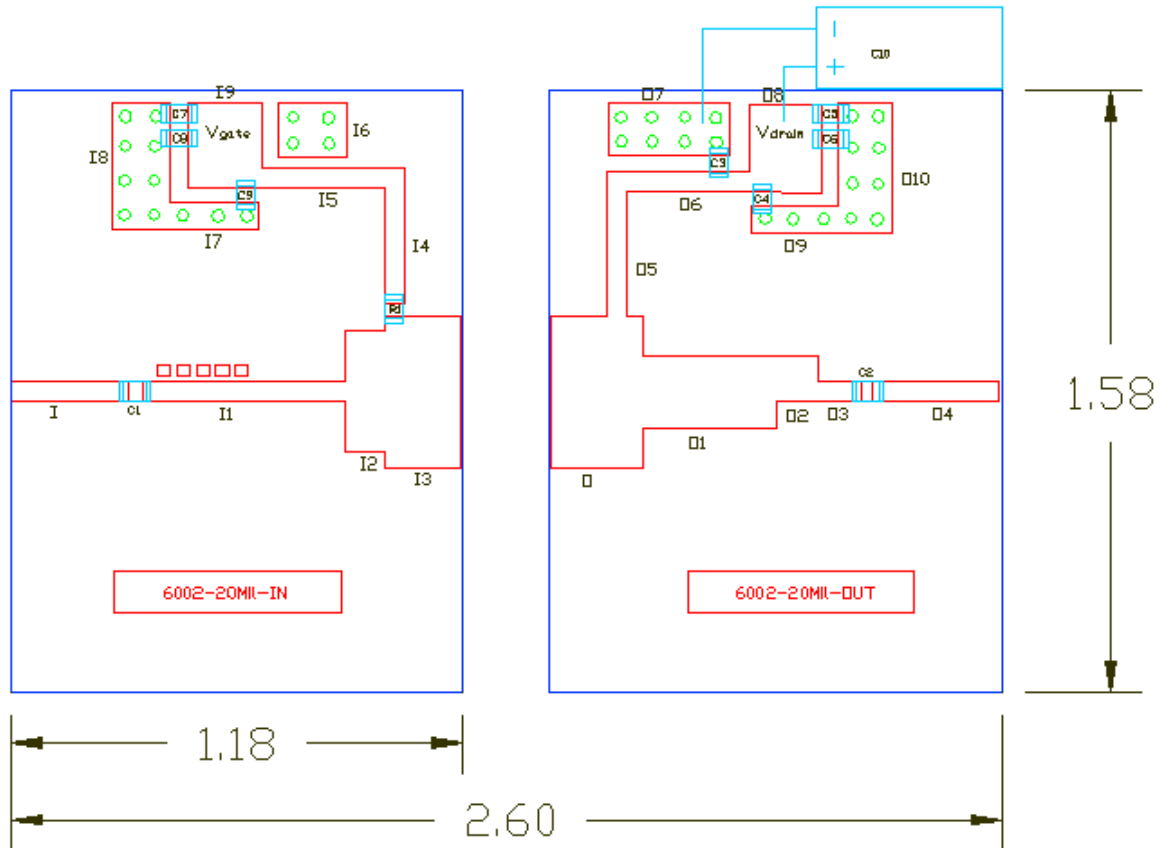
Note: Z_{in} is looking into the input circuit;
 Z_{Load} is looking into the output circuit.



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Test Circuit Diagram



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

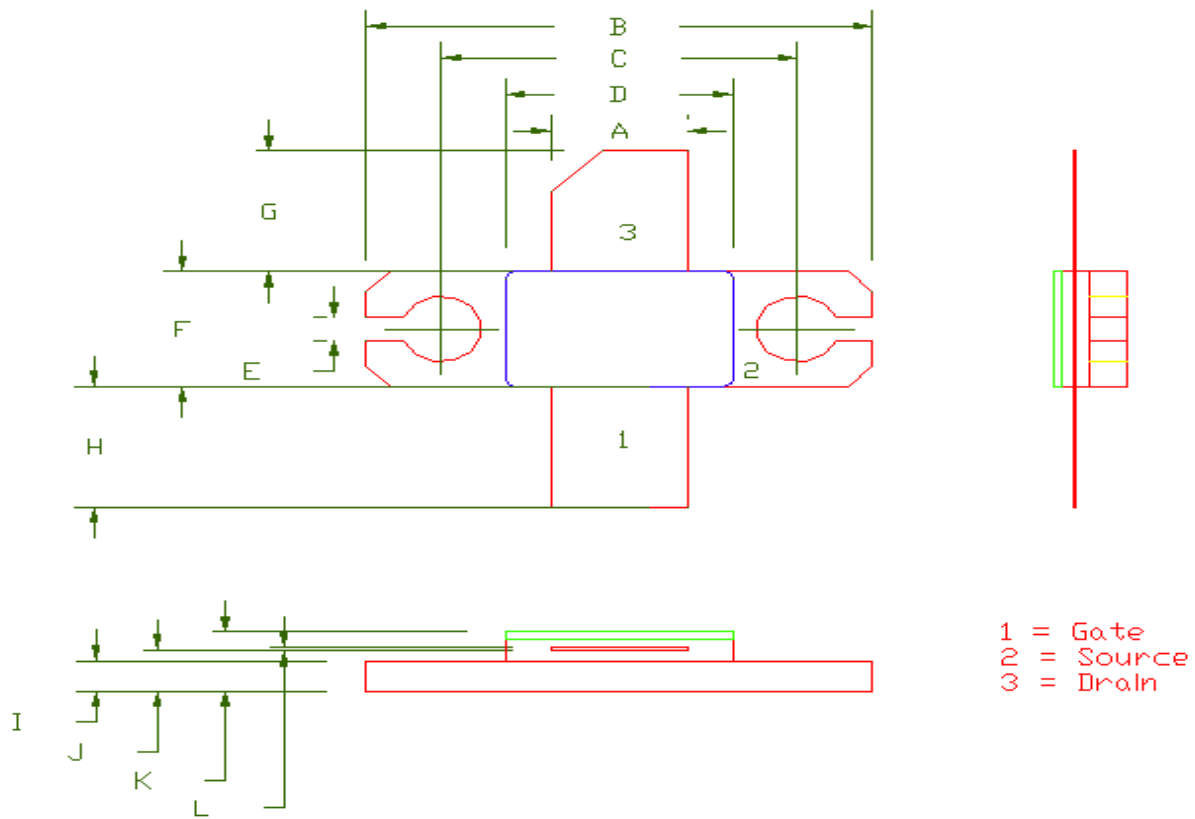
Component List			Input Physical Circuit Layout			Output Physical Circuit Layout		
Item	Description	Value	Item	W (mil)	L (mil)	Item	W (mil)	L (mil)
C1	Chip Cap A size	9.1pF	I	52	320	O	400	242
C2	Chip Cap A size	9.1pF	I1	52	530	O1	190	350
C3	Chip Cap B size	120pF	I2	318	103	O2	121	105
C4	Chip Cap B size	1000pF	I3	400	200	O3	52	116
C5	Chip Cap B size	10,000pF	I4	52	320	O4	52	340
C6	Chip Cap B size	1,000pF	I5	52	340	O5	52	340
C7	Chip Cap B size	10,000pF	I6	140	180	O6	52	340
C8	Chip Cap B size	1,000pF	I7	70	230	O7	130	320
C9	Chip Cap B size	120pF	I8	330	150	O8	230	190
C10	Electrolytic Cap (63V)	2200uF	I9	220	190	O9	70	230
R1	Chip Resistor size 0805	11.5 ohms				O10	340	140



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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