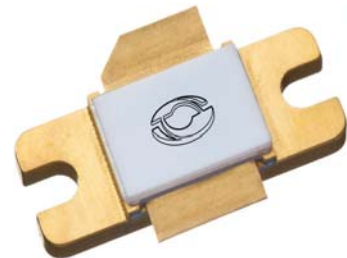


GENERAL DESCRIPTION

The 2729GN-500V is an internally matched, COMMON SOURCE, class AB, GaN on SiC HEMT transistor capable of providing over 11.2 dB gain, 500 Watts of pulsed RF output power at 100µs 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 designed for S-Band Radar applications. It utilizes gold metallization and eutectic attach to provide highest reliability and superior ruggedness.

Market Application – 2729GN-500V is designed for S-Band Pulsed Radar

CASE OUTLINE 55-KR Common Source



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation

Device Dissipation @ 25°C 1120 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 +250 °C

ELECTRICAL CHARACTERISTICS @ 25°C

Symbol	Characteristics	Test Conditions	Min	Typ	Max	Units
Pout	Output Power	Pout=500W, Freq=2700,2800,2900 MHz	500	540		W
Gp	Power Gain	Pout=500W, Freq=2700,2800,2900 MHz	11.2	11.9		dB
η_d	Drain Efficiency	Pout=500W, Freq=2700,2800,2900 MHz	45	50		%
Dr	Droop	Pout=500W, Freq=2700,2800,2900 MHz			1.0	dB
VSWR-T	Load Mismatch Tolerance	Pout=500W, Freq= 2900MHz			3:1	
Θ_{jc}	Thermal Resistance	Pulse Width=100uS, Duty=10%			0.18	°C/W

- Bias Condition: Vdd=+50V, Idq=100mA average current (V_{GS} = -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
BV_{DSS}	Drain-source breakdown voltage	$V_{GS} = -8V, I_D = 64mA$	150			V

Export Classification: EAR-99

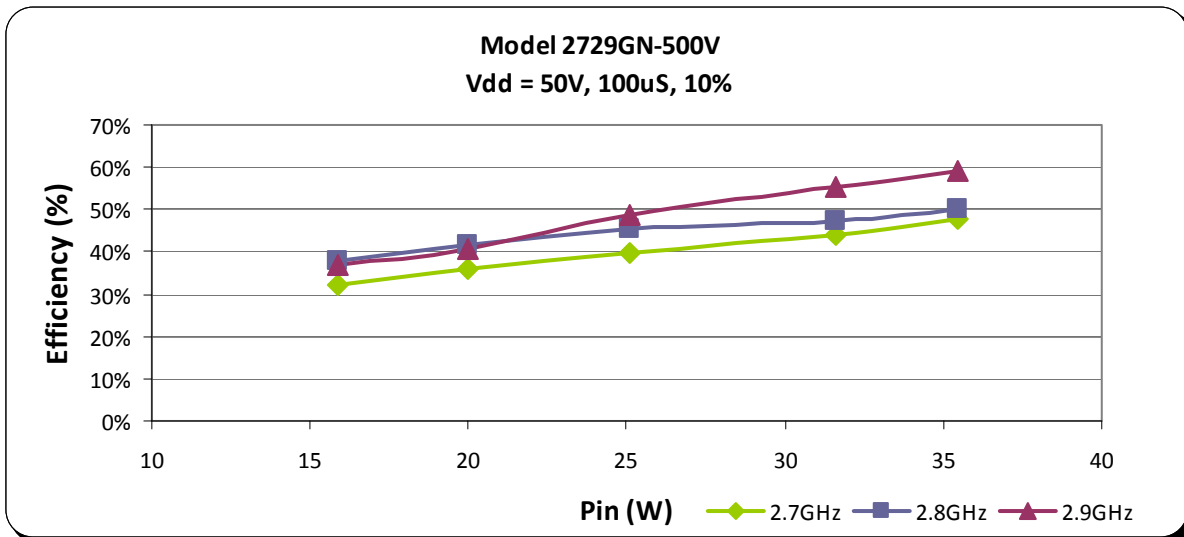
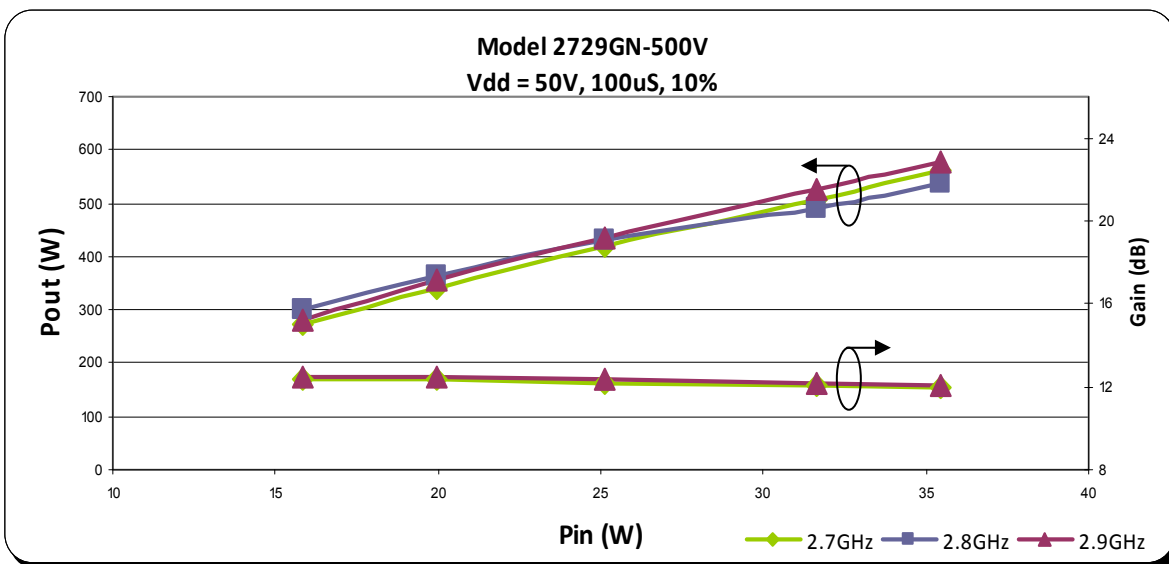
For the most current data, consult MICROSEMI's website: www.MICROSEMI.com
Specifications are subject to change, consult the RFIS factory at (408) 986-8031 for the latest information

2729GN-500V

500 Watts - 50 Volts, 100 us, 10%
S-Band Radar 2700 - 2900 MHz

TYPICAL BROAD BAND PERFORMANCE DATA

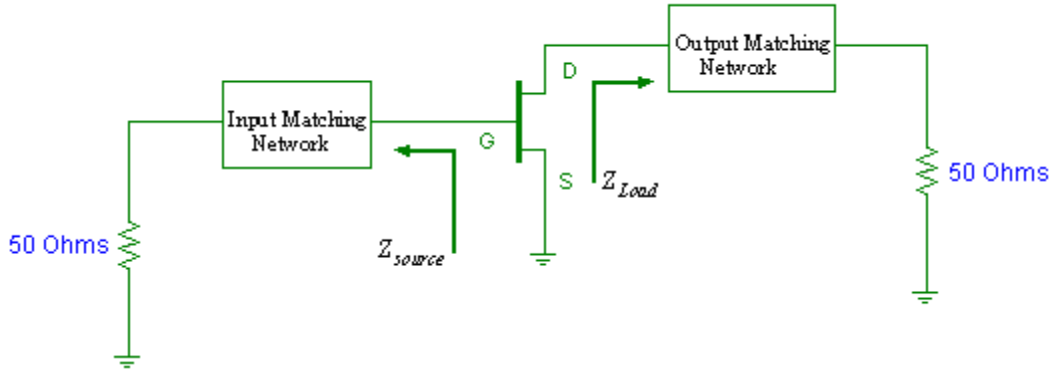
Frequency	Pin (W)	Pout (W)	Id (A)	RL (dB)	Nd (%)	G (dB)	Drop (dB)
2700 MHz	35	562	2.45	-15	52	12.0	0.5
2800 MHz	35	537	2.25	-17	55	11.8	0.4
2900 MHz	35	575	2.05	-9	61	12.1	0.4



2729GN-500V

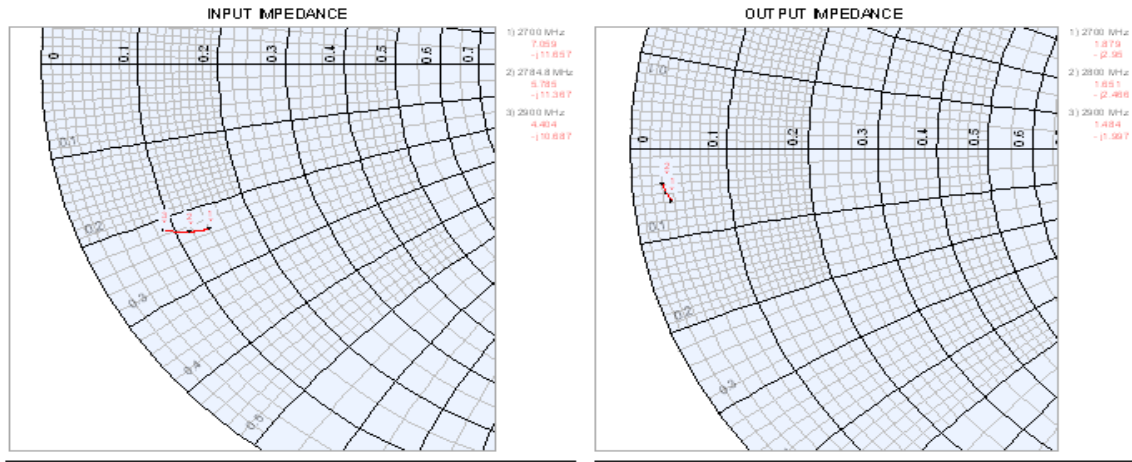
500 Watts - 50 Volts, 100 us, 10%
L-Band Radar 1200 - 1400MHz

TRANSISTOR IMPEDANCE INFORMATION



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

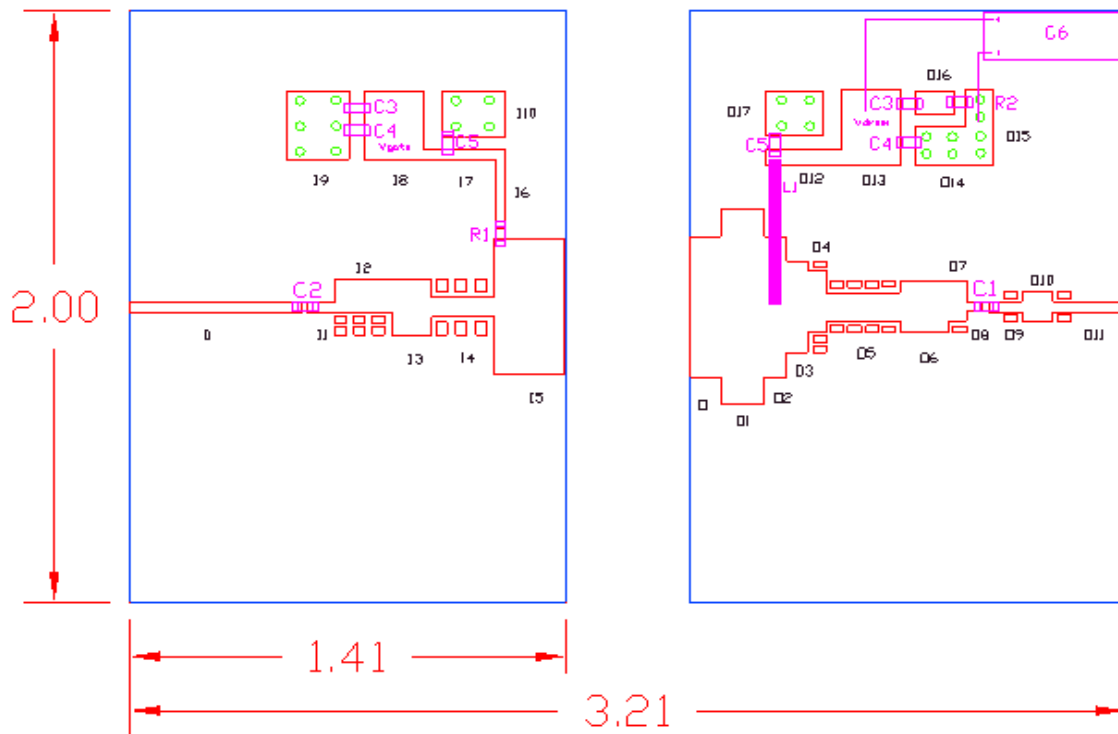
Impedance Data		
Freq (GHz)	Zs	ZI
2.7	7.06 – j11.66	1.88 – j2.95
2.8	5.78 – j11.34	1.65 – j2.46
2.9	4.40 – j10.68	1.48 – j2.00



2729GN-500V

500 Watts - 50 Volts, 100 us, 10%
S-Band Radar 2700 - 2900 MHz

TEST CIRCUIT DIAGRAM



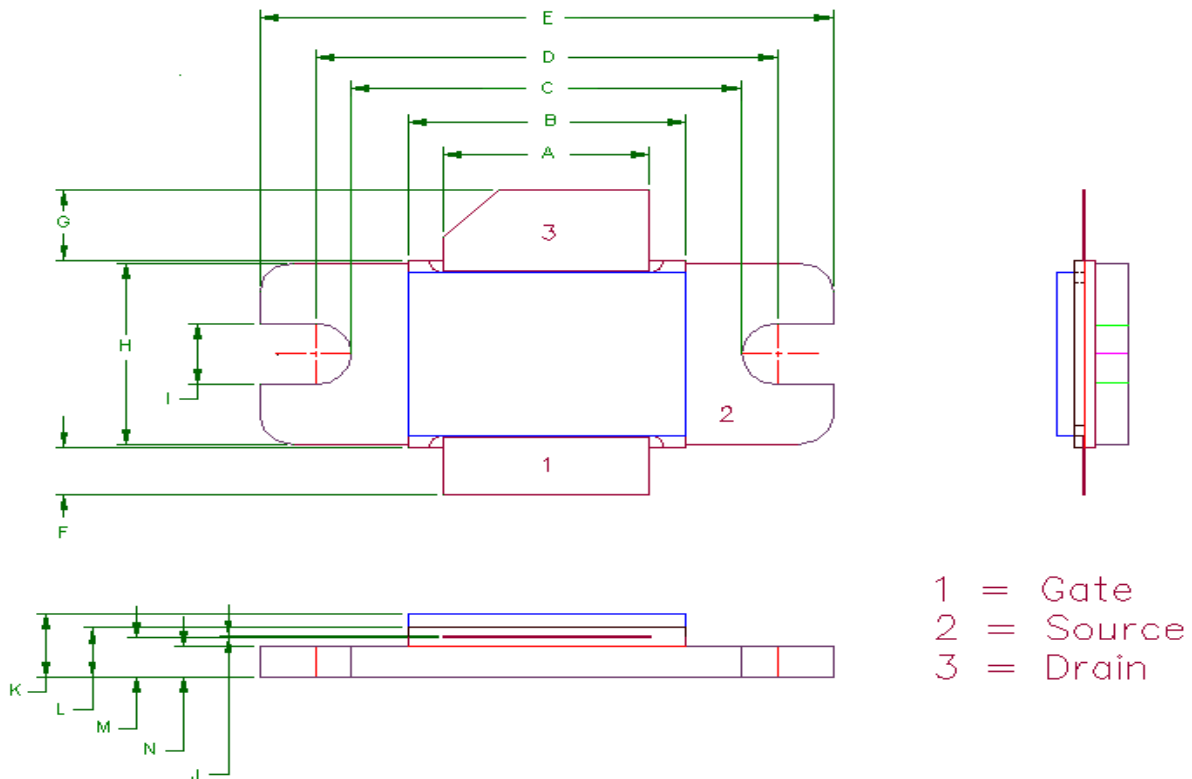
Board Material: Roger Duroid 6006 @ 25 Mil Thickness, Er=6.15

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	ATC800A6R8BW250XT	5.6pF	I	35	550	O	476	98
C2	Chip Cap A size	ATC800A8R2BW250XT	9.1pF	I1	35	90	O1	660	140
C3	Chip Cap B size	ATC200B103KW50XT	10,000pF	I2	112	182	O2	476	70
C4	Chip Cap B size	ATC100B102102KW50XT	1000pF	I3	190	128	O3	310	70
C5	Chip Cap B size	ATC100B101FW1000XT	100pF	I4	70	204	O4	208	60
C6	Electrolytic Cap (63V)	Any	2200uF	I5	460	225	O5	95	238
R1	Chip Resistor size 0805	ANY	11.5 ohms	I6	35	250	O6	176	152
R2	Chip Resistor size 0805	ANY	2 ohms	I7	35	240	O7	135	60
L	RF Choke 20 AWG Copper wire L=650 mil			I8	230	190	O8	35	50
				I9	230	200	O9	35	105
				I10	150	150	O10	100	100
							O11	35	230
							O12	55	245
							O13	250	190
							O14	130	250
							O15	120	90
							O16	80	120
							O17	150	150
Note:	Need 2x of C3,C4,C5								
	Duroid 6006, 25 mil thickness, 1 oz CU, Er = 6.15								

2729GN-500V

500 Watts - 50 Volts, 100 us, 10%
S-Band Radar 2700 - 2900 MHz

55-KR PACKAGE DIMENSION



Dimension	Min (mil)	Min (mm)	Max (mil)	Max (mm)
A	370	9.40	372	9.44
B	498	12.65	500	12.7
C	700	17.78	702	17.83
D	830	21.08	832	21.13
E	1030	26.16	1032	26.21
F	101	2.56	102	2.59
G	151	3.84	152	3.86
H	385	9.78	387	9.83
I	130	3.30	132	3.35
J	003	.076	004	0.10
K	135	3.43	137	3.48
L	105	2.67	107	2.72
M	085	2.16	86	2.18
N	065	1.65	66	1.68



2729GN-500V

500 Watts - 50 Volts, 100 us, 10%
S-Band Radar 2700 - 2900 MHz

The information contained in the document is PROPRIETARY AND CONFIDENTIAL information of Microsemi and cannot be copied, published, uploaded, posted, transmitted, distributed or disclosed or used without the express duly signed written consent of Microsemi. If the recipient of this document has entered into a disclosure agreement with Microsemi, then the terms of such Agreement will also apply. This document and the information contained herein may not be modified, by any person other than authorized personnel of Microsemi. No license under any patent, copyright, trade secret or other intellectual property right is granted to or conferred upon you by disclosure or delivery of the information, either expressly, by implication, inducement, estoppel or otherwise. Any license under such intellectual property rights must be approved by Microsemi in writing signed by an officer of Microsemi.

Microsemi reserves the right to change the configuration, functionality and performance of its products at anytime without any notice. This product has been subject to limited testing and should not be used in conjunction with life-support or other mission-critical equipment or applications. Microsemi assumes no liability whatsoever, and Microsemi disclaims any express or implied warranty, relating to sale and/or use of Microsemi products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright or other intellectual property right. The product is subject to other terms and conditions which can be located on the Web at <http://www.microsemi.com/legal/tnc.asp>.

Revision History

Revision Level / Date	Para. Affected	Description
0.1 / 18 January 2013	-	Initial Preliminary Release

For the most current data, consult MICROSEMI's website: www.MICROSEMI.com
Specifications are subject to change, consult the RFIS factory at [\(408\) 986-8031](tel:4089868031) for the latest information