Microsemi

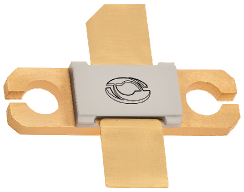
2735GN – 100M

100 Watts - 60 Volts, 300 µs, 10%
2700 - 3500 MHz

GENERAL DESCRIPTION

The 2735GN-100 is an internally matched, COMMON SOURCE, class AB GaN on SiC transistor capable of providing 11dB gain, 100 Watts of pulsed RF output power at 300µs pulse width, 10% duty factor across the 2700 to 3500 MHz band. The transistor has internal pre-match for optimal performance**.** This hermetically sealed transistor is specifically designed for general purpose driver or 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	200 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, 3.1, 3.5 GHz	100	110		W
Gp	Power Gain	Pin=8W, Freq=2.7, 3.1, 3.5 GHz	11	11.4		dB
□d	Drain Efficiency	Pin=8W, Freq=2.7, 3.1, 3.5 GHz	40	48		%
R/L	Input Return Loss	Pin=8W, Freq=2.7, 3.1, 3.5 GHz	-7			dB
VSWR-T	Load Mismatch Tolerance	Pout=100W, Freq=2.7 GHz			5:1	
Ɵjc	Thermal Resistance	Pulse Width=300uS, Duty=10%			1.1	℃/W

- **Bias Condition: Vdd=+60V, Idq=250mA peak current (Vgs= -2.0 ~ -4.5V typical)**

FUNCTIONAL CHARACTERISTICS @ 25°C

$I_{D(Off)}$	Drain leakage current	V_{gS} = -8V, V_D = 60V			2.5	mA
$I_{G(Off)}$	Gate leakage current	V_{gS} = -8V, V_D = 0V			2	mA
BV_{DSS}	Drain-source breakdown voltage	V_{gs} =-8V, I_D = 3mA	250			V

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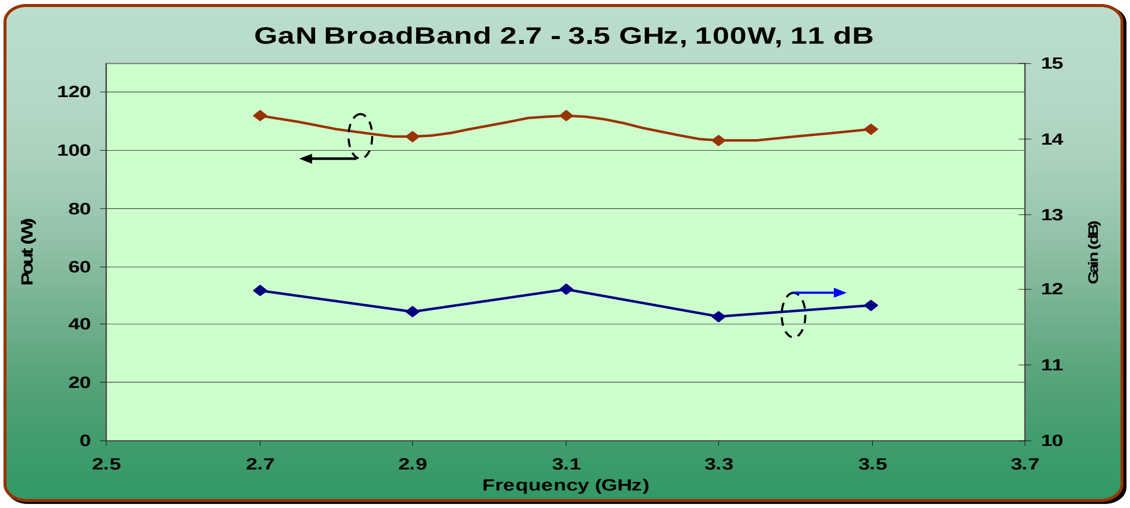
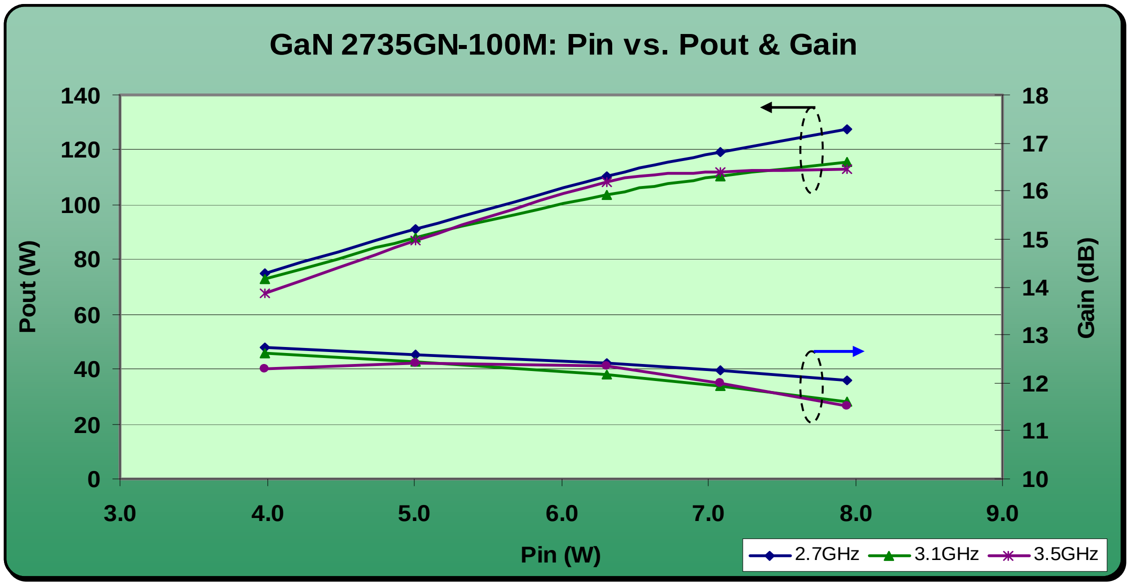
For the most current data, consult MICROSEMI's website: ***www.MICROSEMI.com***
Specifications are subject to change, consult the RFIS factory at (408) 986-8031 for the latest information.

TYPICAL PERFORMANCE DATA

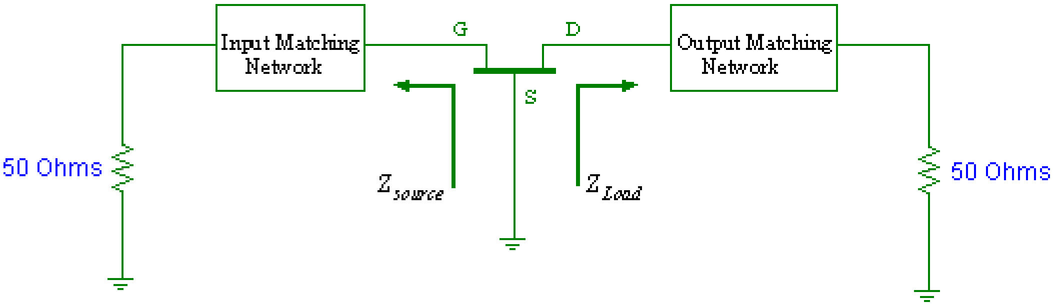
Frequency	Pin (W)	Pout (W)	Id (A)	RL (dB)	Nd (%)	G (dB)
2700 MHz	8	124	0.43	-7	48	12.0
2900 MHz	8	115	0.43	-7	45	11.6
3100 MHz	8	115	0.40	-8	48	11.6
3300 MHz	8	121	0.40	-12	51	11.8
3500 MHz	8	123	0.40	-13	47	11.5





TRANSISTOR IMPEDANCE INFORMATION

Impedance Data		
Freq (GHz)	**Zs**	**Zl**
2.7	6.75 – j7.95	8.49 – j4.21
2.9	6.46 – j7.34	8.40 – j5.68
3.1	6.20 – j6.78	7.20 – j6.89
3.3	6.00 – j6.24	5.49 – j7.20
3.5	5.83 – j5.72	3.98 – j3.98



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

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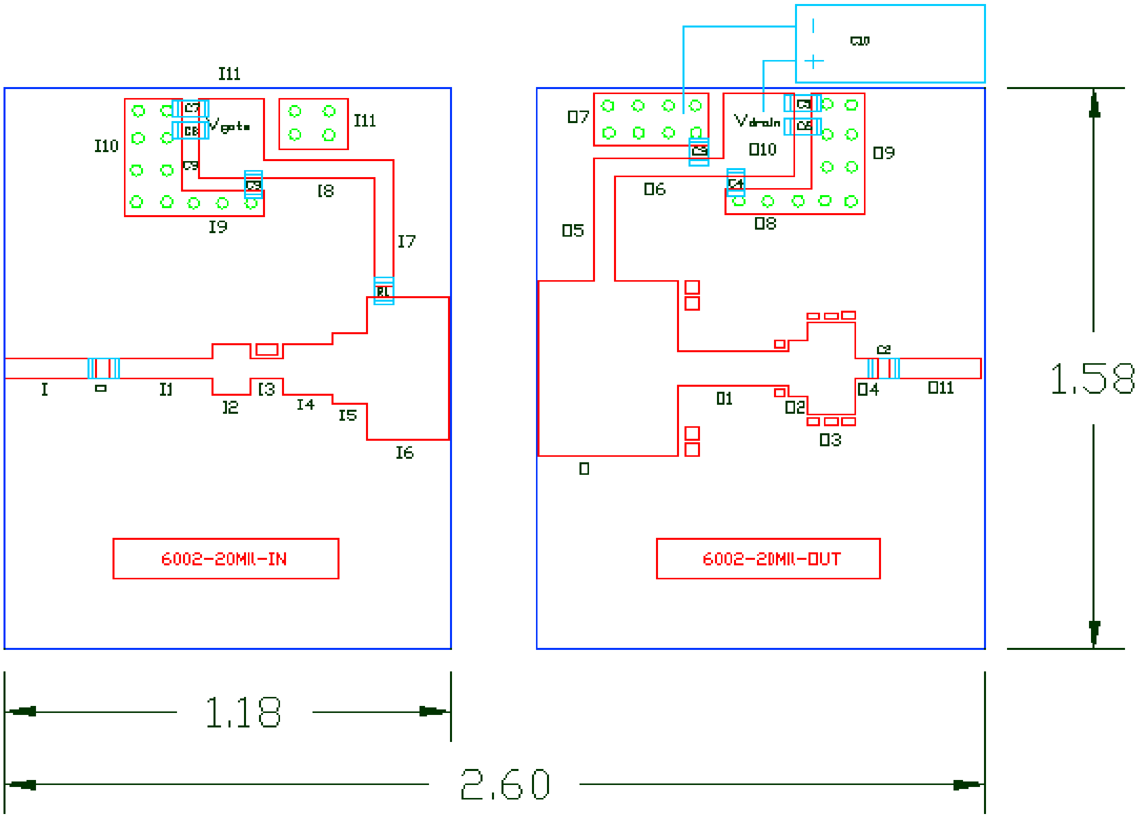
TEST CIRCUIT LAYOUT



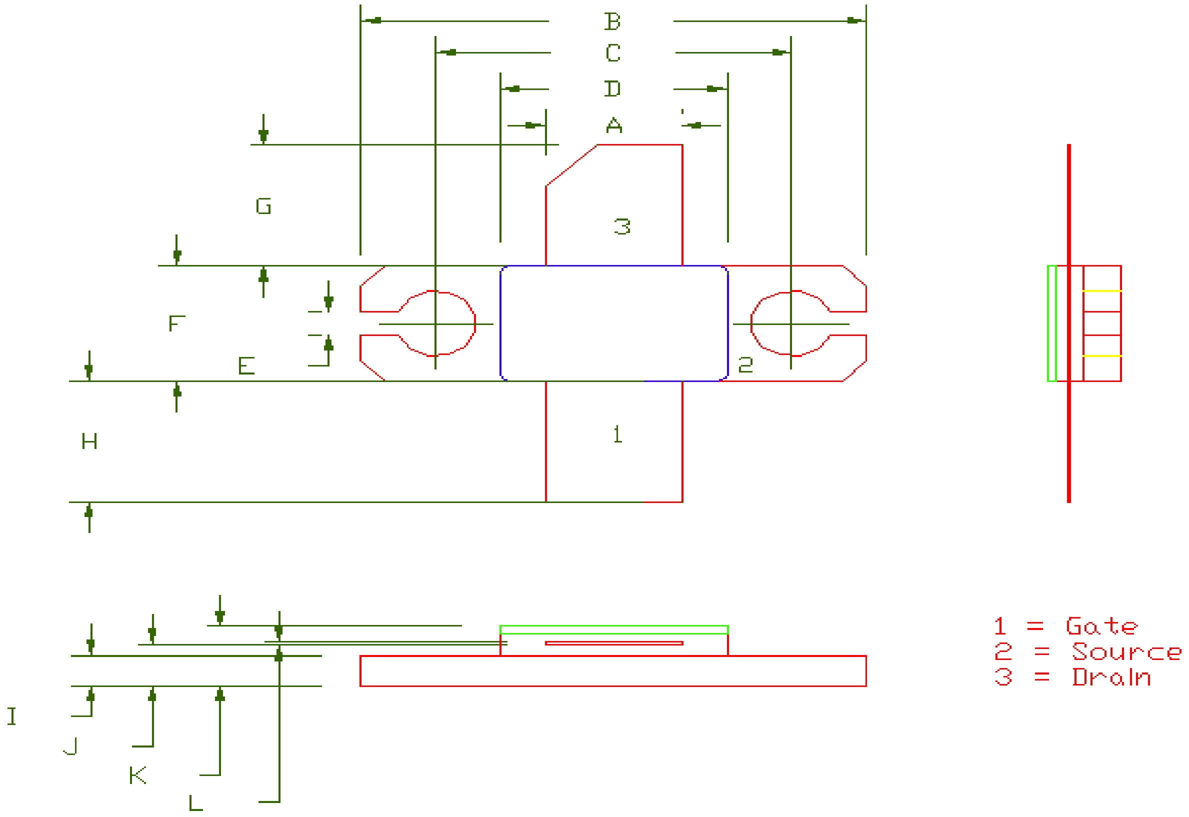
Board Material: Roger Duroid 6002 @ 20 mils thickness, 1 oz Cu, Er = 2.9

Component List		
Item	**Description**	**Value**
C1	Chip Cap A size	9.1pF
C2	Chip Cap A size	9.1pF
C3	Chip Cap B size	120pF
C4	Chip Cap B size	1000pF
C5	Chip Cap B size	10,000pF
C6	Chip Cap B size	1000pF
C7	Chip Cap B size	10,000pF
C8	Chip Cap B size	1,000pF
C9	Chip Cap B size	120pF
C10	Electrolytic Cap (63V)	2200uF
R1	Chip Resistor size 0805	11.5 ohms

Input Physical Circuit Layout		
Item	**W (mil)**	**L (mil)**
I	52	240
I1	52	270
I2	140	100
I3	52	84
I4	140	132
I5	200	90
I6	400	220
I7	52	320
I8	52	300
I9	70	215
I10	330	150
I11	140	180

Output Physical Circuit Layout		
Item	**W (mil)**	**L (mil)**
O	490	370
O1	100	290
O2	160	50
O3	260	130
O4	52	60
O5	52	245
O6	52	320
O7	146	300
O8	70	215
O9	340	140
O10	230	180
O11	52	246

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

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Revision History

Revision Level / Date	Para. Affected	Description
0.1 / 6 August 2012	-	Initial Preliminary Release