



## 2729-170

**170 Watts, 38 Volts, 100µs, 10%  
Radar 2700-2900 MHz**

### GENERAL DESCRIPTION

The 2729-170 is an internally matched, COMMON BASE bipolar transistor capable of providing 170 Watts of pulsed RF output power at 100µs pulse width, 10% duty factor across the 2700 to 2900 MHz band. **The transistor prematch and test fixture has been optimized through the use of Pulsed Automated Load Pull.** This hermetically solder-sealed transistor is specifically designed for S-band radar applications. It utilizes gold metallization and emitter ballasting to provide high reliability and supreme ruggedness.

### CASE OUTLINE

**55KS-1  
Common Base**

### ABSOLUTE MAXIMUM RATINGS

#### Maximum Power Dissipation

Device Dissipation @ 25°C<sup>1</sup>            570 W

#### Maximum Voltage and Current

Collector to Base Voltage (BV<sub>ces</sub>)            65 V

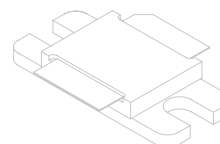
Emitter to Base Voltage (BV<sub>ebo</sub>)            3.0 V

Collector Current (I<sub>c</sub>)                            17 A

#### Maximum Temperatures

Storage Temperature                            -65 to +200 °C

Operating Junction Temperature            +200 °C



### ELECTRICAL CHARACTERISTICS @ 25°C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
P <sub>out</sub>	Power Output	F=2700-2900 MHz	170			W
P <sub>in</sub>	Power Input	V <sub>cc</sub> = 38 Volts			25.7	W
P <sub>g</sub>	Power Gain	Pulse Width = 100 µs	8.2	8.6		dB
η <sub>c</sub>	Collector Efficiency	Duty Factor = 10%	52	60		%
VSWR	Load Mismatch Tolerance <sup>1</sup>	F = 2900 MHz, P <sub>o</sub> = 170 W			2:1	

### FUNCTIONAL CHARACTERISTICS @ 25°C

BV <sub>ebo</sub>	Emitter to Base Breakdown	I <sub>e</sub> = 30 mA	3.0			V
I <sub>ebo</sub>	Emitter to Base Leakage	V <sub>eb</sub> = 1.5 V			2	mA
BV <sub>ces</sub>	Collector to Emitter Breakdown	I <sub>c</sub> = 120 mA	56	65		V
I <sub>ces</sub>	Collector to Emitter Leakage	V <sub>ce</sub> = 36 V			7	mA
h <sub>FE</sub>	DC – Current Gain	V <sub>ce</sub> = 5V, I <sub>c</sub> = 600 mA	18	50		
θ <sub>jc</sub> <sup>1</sup>	Thermal Resistance				0.30	°C/W

NOTE: 1. At rated output power and pulse conditions

Issue April 2005

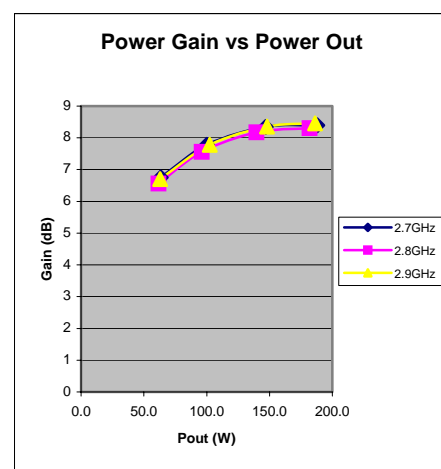
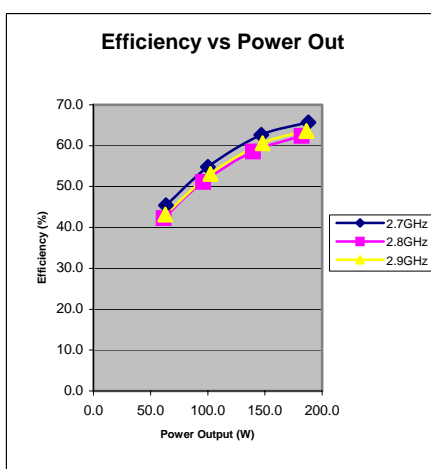
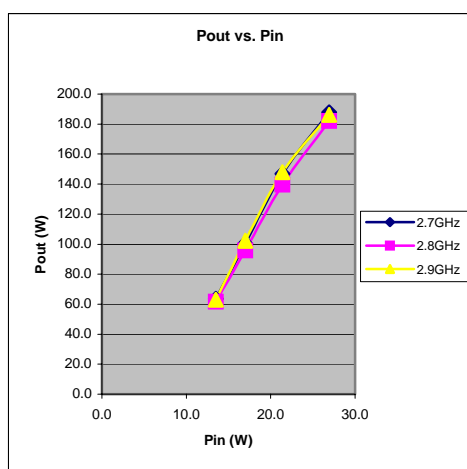


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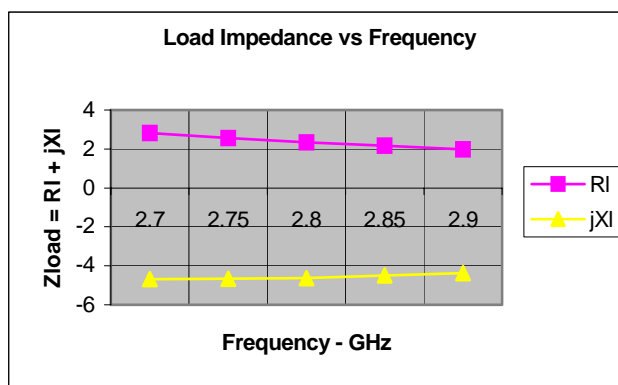
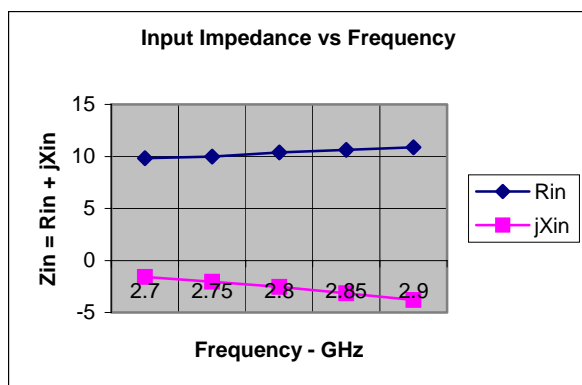
**Vcc = 38 Volts, Pulse Width = 100μs, Duty = 10 %**

G2754-2,

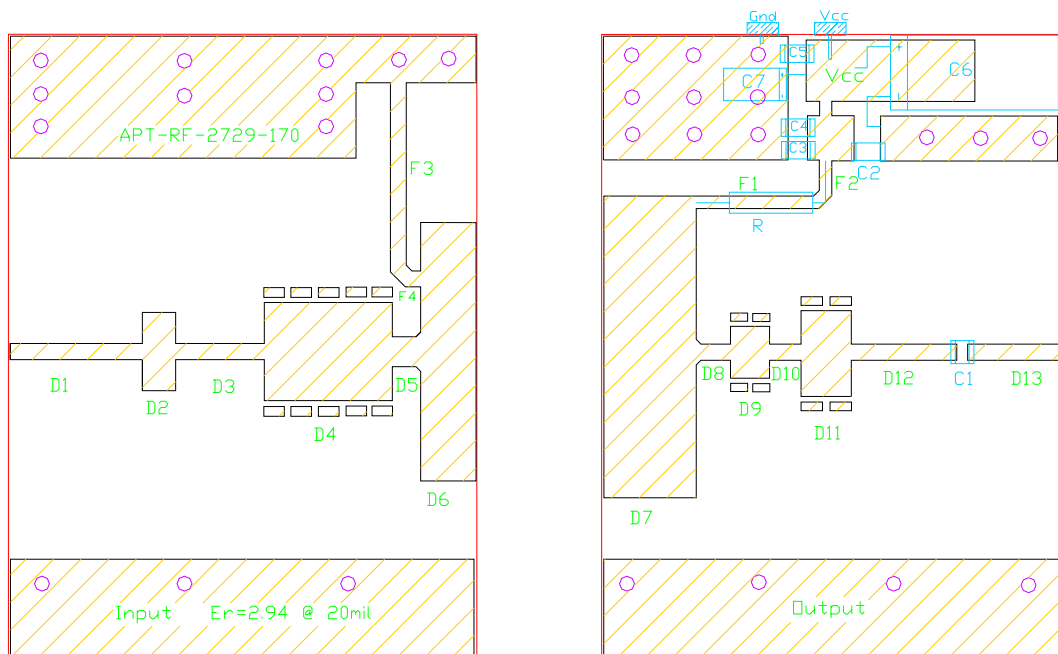
*Product is in characterization, additional curves will be inserted at the conclusion.*



### Input and Load Impedance



Note:  $Z_{in}$  is looking into the transistor input,  $Z_{Load}$  is looking into the Output Circuit.

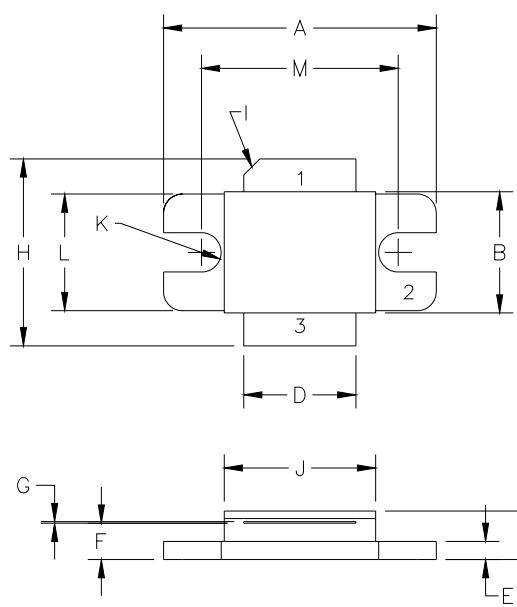
**2729-170****Broadband Test Circuit –**

Destination	W (Mil)	L (Mil)
F1	51	115
F2	51	395
F3	51	630
F4	51	50
D1	51	424
D2	250	107
D3	51	284
D4	314	410
D5	96	91
D6	827	177
D7	965	295
D8	51	110
D9	166	125
D10	51	100

Destination	W (Mil)	L (Mil)
D11	274	160
D12	51	336
D13	51	324
Duroid 6002, 20Mil, 1Oz Cu		
<b>List of component</b>		
Destination	Value	Size
C1	10pF	A
C2	1000pF	B
C3	10000pF	B
C4	10000pF	B
C5	10000pF	B
C6	2200uF	Electrolytic
C7	47uF	Electrolytic
R	2.5 ohms (may needed)	Fix

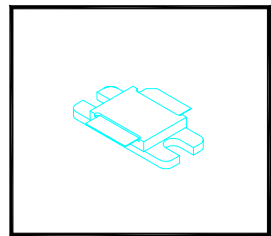
**2729-170**

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



DIM	MILLIMETER	TOL	INCHES	TOL
A	22.86	.25	.900	.010
B	10.16	.25	.400	.010
C	4.19	.19	.165	.007
D	9.39	.13	.370	.005
E	1.52	.13	.060	.005
F	3.05	.13	.120	.005
G	0.13	.03	.005	.001
H	16.51	.76	.650	.030
I	45°	5°	45°	5°
J	12.70	.25	.500	.030
K	3.30 DIA	.13	.130 DIA	.005
L	9.78	.13	.385	.005
M	16.51	MAX	.650	MAX

STYLE:  
 1 = COLLECTOR  
 2 = BASE  
 3 = EMITTER



	CAGE	DWG NO.	REV
	OPJR2	55KS	A
SCALE		SHEET	
		2/1	