

Radar Pulsed Power Transistor 2.7-2.9GHz, 36V, 100μsec, 170W

MAPR-002729-170M00
Preliminary 1/2007

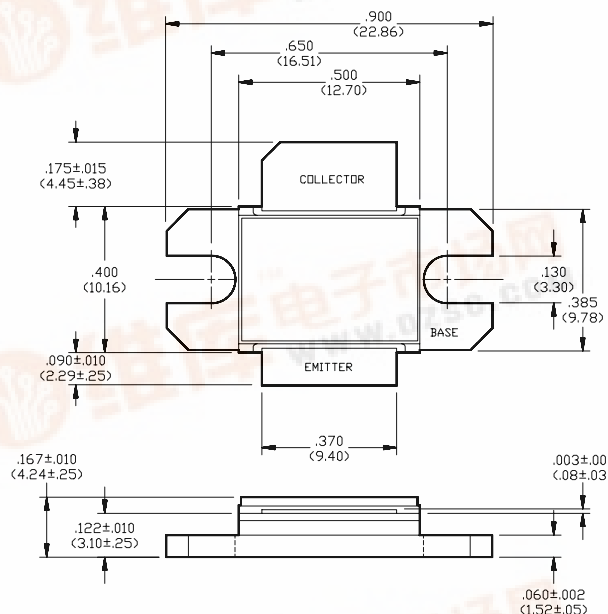
Features

190W, 53% efficiency, typical RF performance
36V, 24W nominal RF input drive
Designed for ATC radar applications
NPN silicon microwave power transistor
Common base, Class-C configuration
High efficiency inter-digitated geometry
Gold metallization system
Internal input and output pre-matching
Hermetic metal/ceramic package

MAXIMUM RATINGS

Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	V_{CES}	65	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	27	A
Storage Temperature	T_{STG}	-65 to +200	°C
Junction Temperature	T_J	200	°C

OUTLINE DRAWING

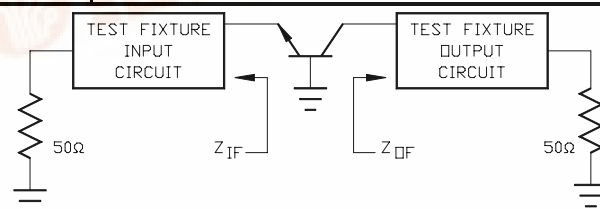


ELECTRICAL CHARACTERISTICS AT 25°C

Parameter	Symbol	Min	Max	Units	Test Conditions
Collector-Emitter Breakdown Voltage	BV_{CES}	65	-	V	$I_C=50\text{mA}$
Collector-Emitter Leakage Current	I_{CES}	-	15	mA	$V_{CE}=36\text{V}$
Thermal Resistance	R_{TH}	-	0.35	°C/W	$V_{CC}=36\text{V}$, $P_{in}=24\text{W}$, $F=2.7, 2.8$ and 2.9GHz
Power Output	P_{out}	170	-	Wpk	$V_{CC}=36\text{V}$, $P_{in}=24\text{W}$, $F=2.7, 2.8$ and 2.9GHz
Power Gain	G_P	8.5	-	dB	$V_{CC}=36\text{V}$, $P_{in}=24\text{W}$, $F=2.7, 2.8$ and 2.9GHz
Collector Efficiency	η_C	40	-	%	$V_{CC}=36\text{V}$, $P_{in}=24\text{W}$, $F=2.7, 2.8$ and 2.9GHz
Input Return Loss	RL	10	-	dB	$V_{CC}=36\text{V}$, $P_{in}=24\text{W}$, $F=2.7, 2.8$ and 2.9GHz
Load Mismatch Stability	$VSWR-S$	-	1.5:1	-	$V_{CC}=36\text{V}$, $P_{in}=24\text{W}$, $F=2.7, 2.8$ and 2.9GHz
Load Mismatch Tolerance	$VSWR-T$	-	2:1	-	$V_{CC}=36\text{V}$, $P_{in}=24\text{W}$, $F=2.7, 2.8$ and 2.9GHz

BROADBAND TEST FIXTURE IMPEDANCE

F (MHz)	$Z_{IF} (\Omega)$	$Z_{OF} (\Omega)$
2700	5.1 – 5.1j	1.8 – 2.1j
2800	5.2 – 4.7j	1.8 – 1.8j
2900	5.3 – 4.3j	1.8 – 1.4j



* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

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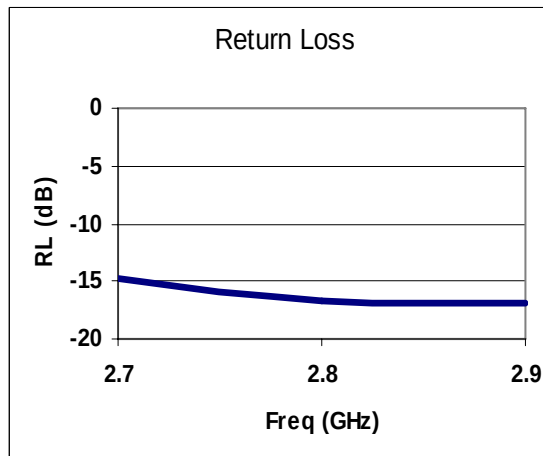
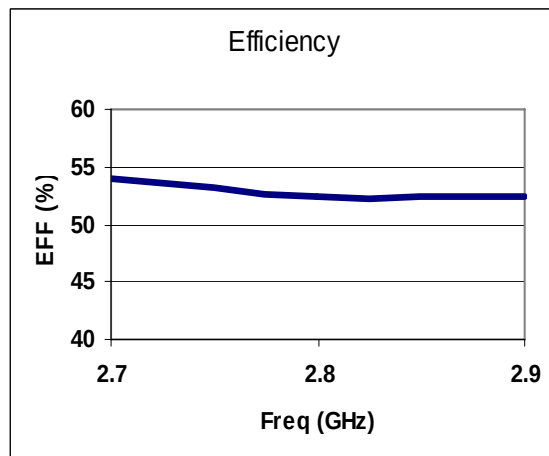
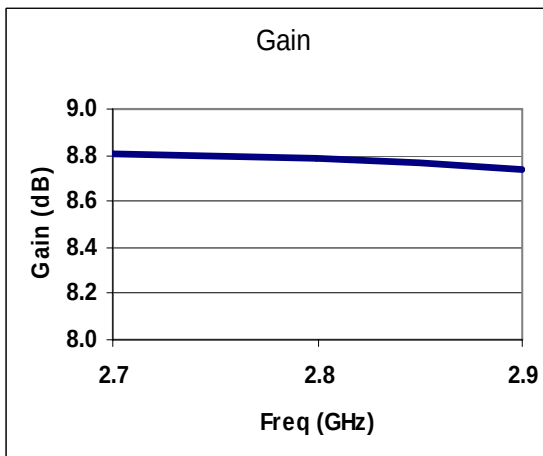
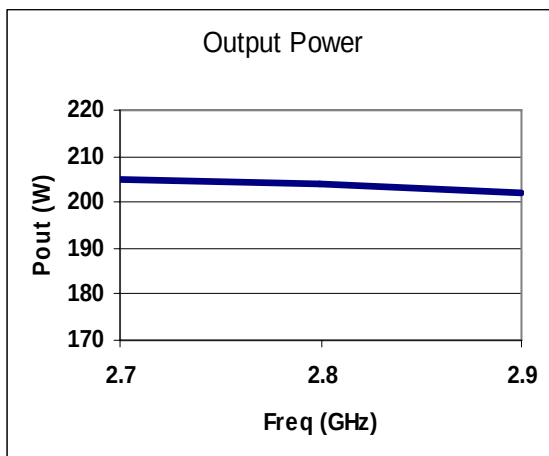
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Measured RF Performance



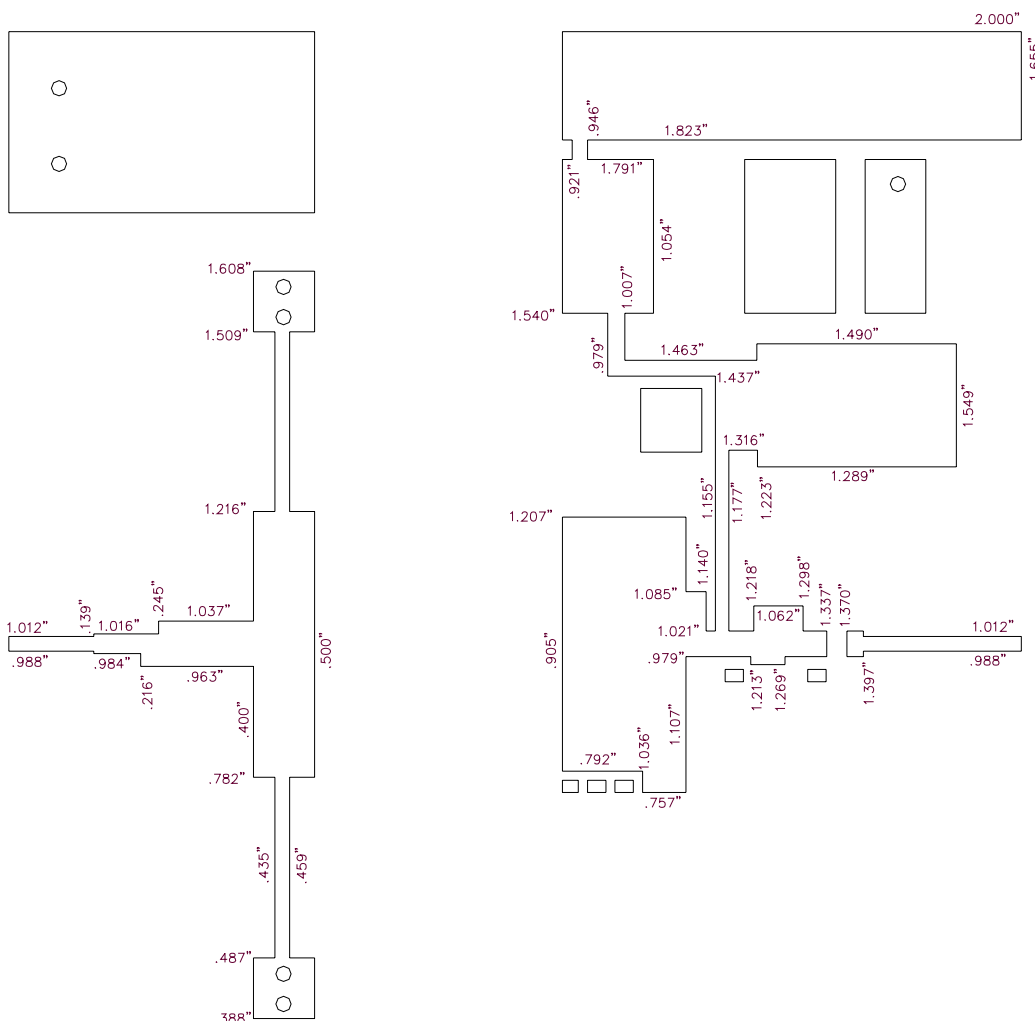
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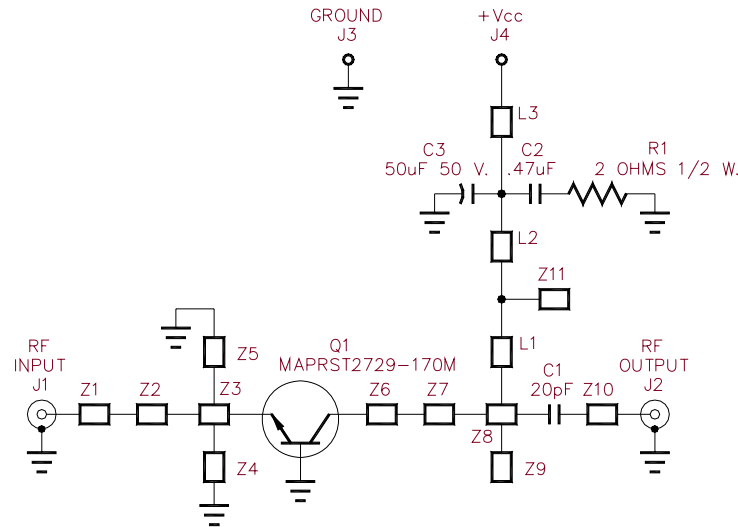


TFMAPRST
2729-170M

Droid 6010.5
Dielectric Constant $\epsilon_r = 10.5$
Dielectric Thickness $h = 25\text{mils}$

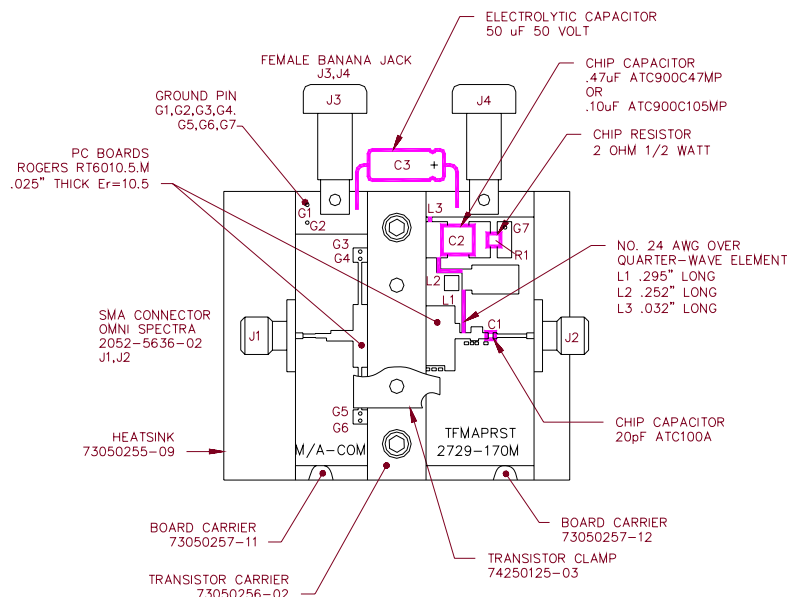
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L1 NO. 24 AWG X .292" LONG OVER QUARTER-WAVE ELEMENT
L2 NO. 24 AWG X .252" LONG OVER QUARTER-WAVE ELEMENT
L3 NO. 24 AWG X .032" LONG OVER QUARTER-WAVE ELEMENT
Z1-Z11 DISTRIBUTED MICROSTRIP ELEMENT
BOARD TYPE ROGERS RT6010.5LM .025" THICK Er=10.5

SCHEMATIC



ASSEMBLY VIEW

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