MAPR-002731-115M00

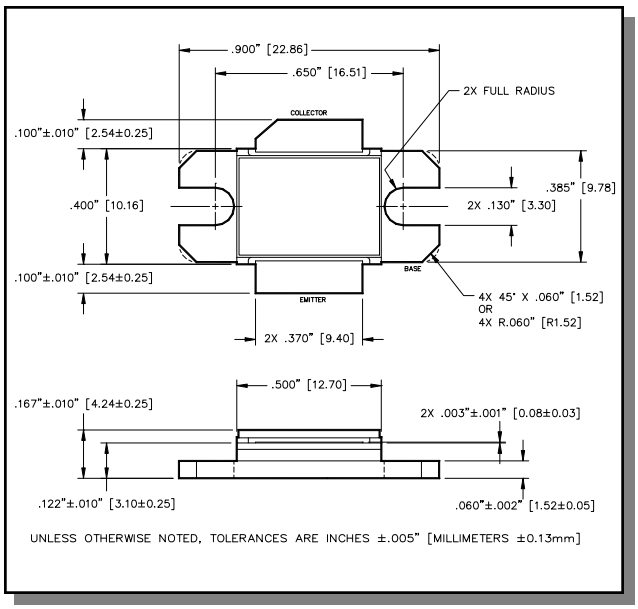
Radar Pulsed Power Transistor
115W, 2.7-2.9 GHz, 200µs Pulse, 10% Duty

M/A-COM Products
PRELIMINARY, 10 Aug 07

Features

- NPN silicon microwave power transistors
- Common base configuration
- Broadband Class C operation
- High efficiency inter-digitized geometry
- Diffused emitter ballasting resistors
- Gold metallization system
- Internal input and output impedance matching
- Hermetic metal/ceramic package
- RoHS compliant
- Device marked as PR2731-115M

Outline Drawing



Absolute Maximum Ratings at 25°C

Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	V_{CES}	65	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	TBD	A
Power Dissipation @ +25°C	P_{TOT}	TBD	W
Storage Temperature	T_{STG}	-65 to +200	°C
Junction Temperature	T_J	200	°C

Electrical Specifications: T_C = 25 ± 5°C (Room Ambient)

Parameter	Test Conditions	Frequency	Symbol	Min	Max	Units
Collector-Emitter Breakdown Voltage	I_C = 40mA		BV_{CES}	65	-	V
Collector-Emitter Leakage Current	V_{CE} = 36V		I_{CES}	-	7.5	mA
Thermal Resistance	Vcc = 36V, Pin = 20W	F = 2.7, 2.9, 3.1 GHz	$R_{TH(JC)}$	-	TBD	°C/W
Output Power	Vcc = 36V, Pin = 20W	F = 2.7, 2.9, 3.1 GHz	P_{OUT}	115	-	W
Power Gain	Vcc = 36V, Pin = 20W	F = 2.7, 2.9, 3.1 GHz	G_P	7.6	-	dB
Gain Flatness	Vcc = 36V, Pin = 20W	F = 2.7, 2.9, 3.1 GHz	ΔG	-	1.0	dB
Collector Efficiency	Vcc = 36V, Pin = 20W	F = 2.7, 2.9, 3.1 GHz	η_C	38	-	%
Pulse Droop	Vcc = 36V, Pin = 20W	F = 2.7, 2.9, 3.1 GHz	Droop	-	0.5	dB
Input Return Loss	Vcc = 36V, Pin = 20W	F = 2.7, 2.9, 3.1 GHz	RL	-	-10	dB
Load Mismatch Tolerance	Vcc = 36V, Pin = 20W	F = 2.7, 2.9, 3.1 GHz	VSWR-T	-	2:1	-
Load Mismatch Stability	Vcc = 36V, Pin = 20W	F = 2.7, 2.9, 3.1 GHz	VSWR-S	-	1.5:1	-

- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

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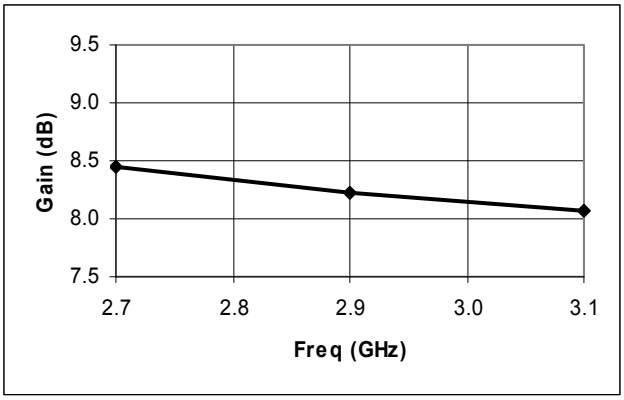
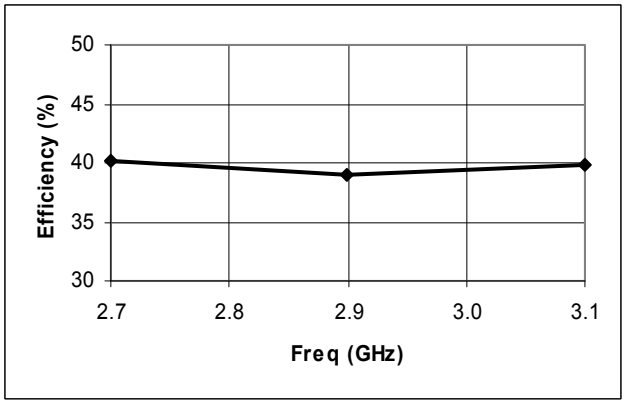
Typical RF Performance

Freq. (GHz)	Pin (W)	Pout (W)	Gain (dB)	ΔGain (dB)	Ic (A)	Eff (%)	RL (dB)	Droop (dB)	VSWR-S (1.5:1)	VSWR-T (2:1)
2.7	20	140	8.45	-	9.16	40.1	-11.8	0.00	S	P
2.9	20	133	8.23	-	8.97	38.9	-16.6	0.12	S	P
3.1	20	128	8.06	0.39	8.49	39.8	-15.3	0.26	S	P

Gain vs. Frequency



Collector Efficiency vs. Frequency



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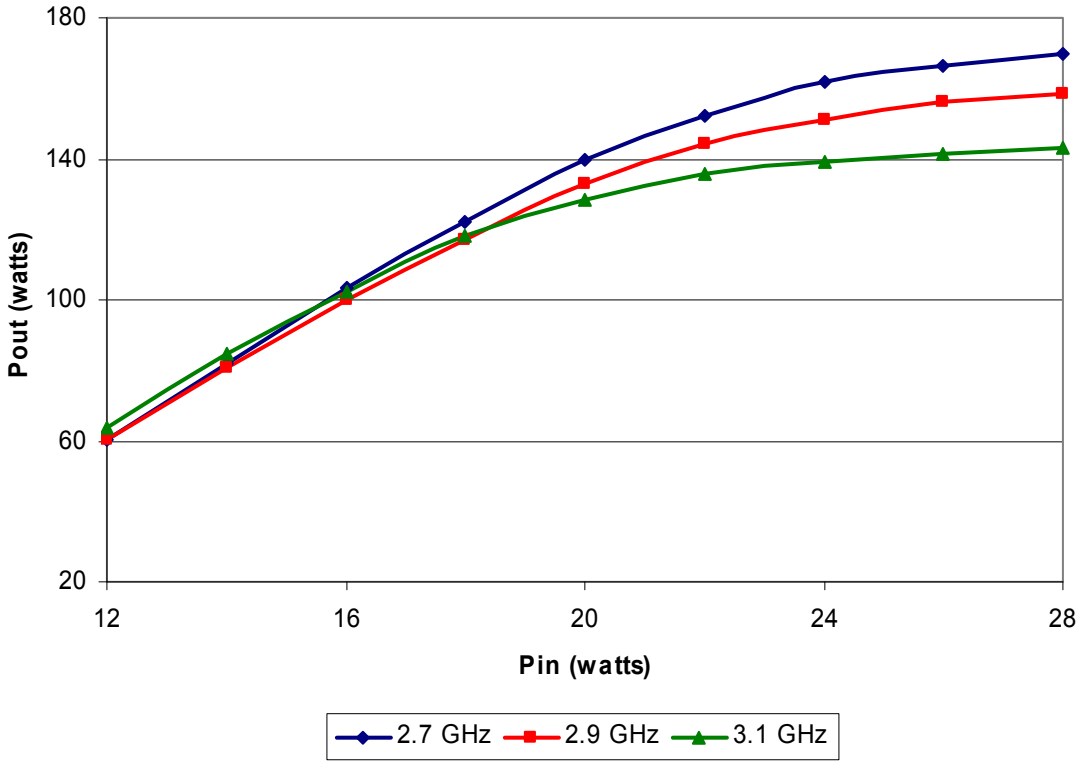
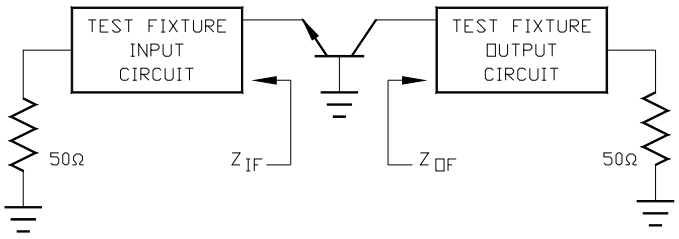
RF Power Transfer Curve
(Output Power Vs. Input Power)

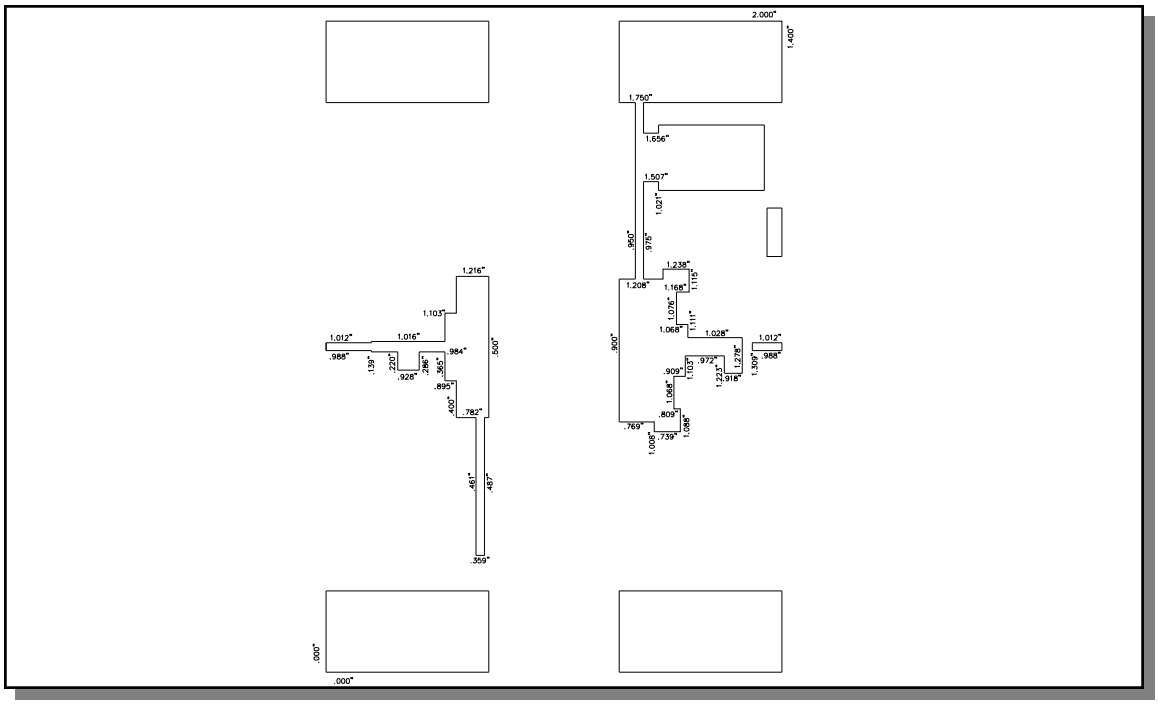


RF Test Fixture Impedance

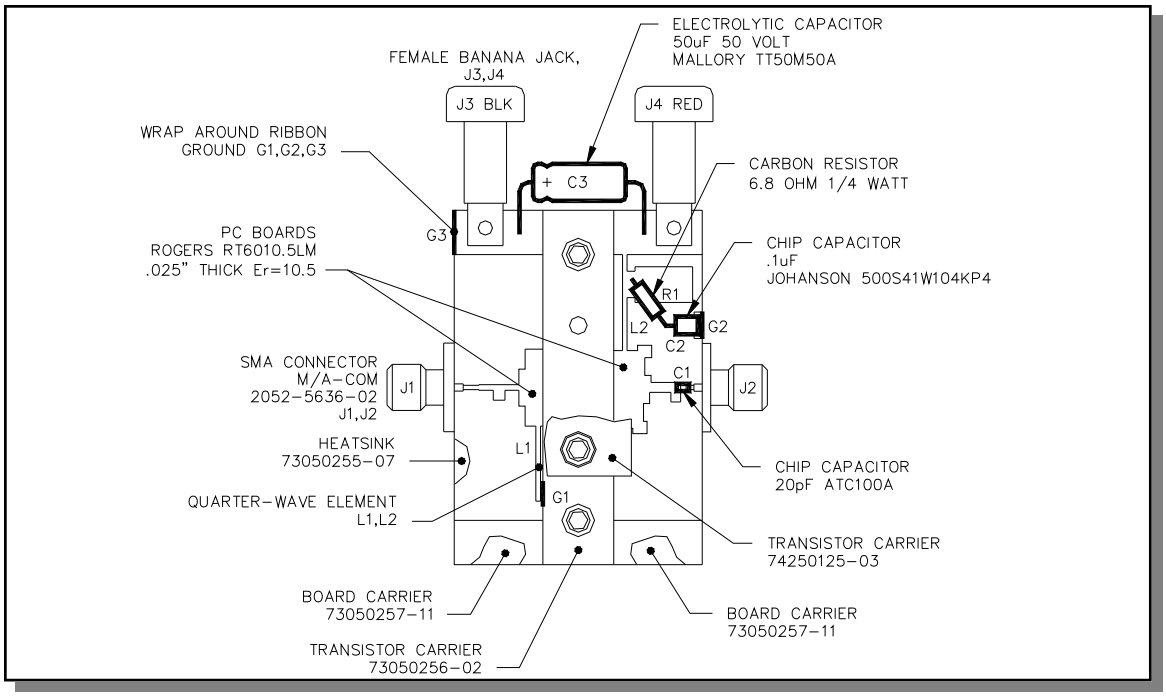
F (GHz)	Z_{IF} (Ω)	Z_{OF} (Ω)
2.7	4.7 - j6.1	2.4 - j2.4
2.8	4.5 - j5.8	2.4 - j2.2
2.9	4.4 - j5.7	2.4 - j2.0
3.0	4.3 - j5.5	2.4 - j1.8
3.1	4.1 - j5.3	2.4 - j1.6



Test Fixture Circuit Dimensions



Test Fixture Assembly



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