MAPR-001011-850S00

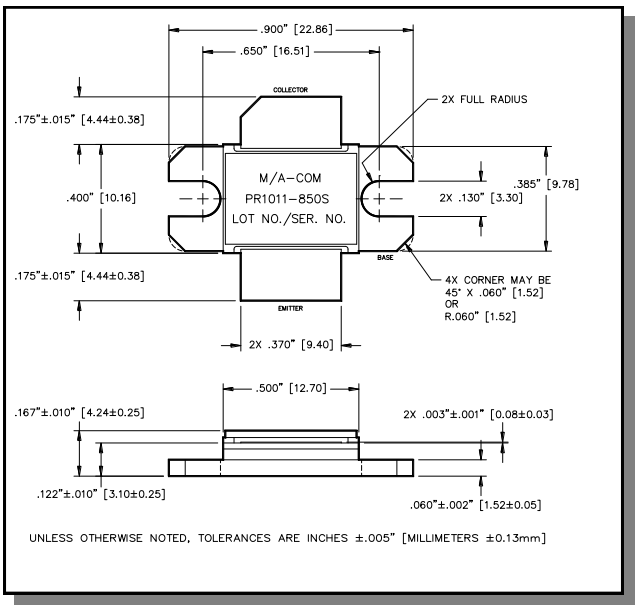
Avionics Pulsed Power Transistor
850W, 1025-1150 MHz, 10µs Pulse, 1% Duty

Rev. V1

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

Outline Drawing



Absolute Maximum Ratings at 25°C

Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	V_{CES}	80	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	250	A
Power Dissipation @ +25°C	P_{TOT}	11.6	kW
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 = 250mA		BV_{CES}	80	-	V
Collector-Emitter Leakage Current	V_{CE} = 50V		I_{CES}	-	30	mA
Thermal Resistance	Vcc=50V, Pout=850W	F = 1025, 1090, 1150 MHz	$R_{TH(JC)}$	-	0.015	°C/W
Input Power	Vcc=50V, Pout=850W	F = 1025, 1090, 1150 MHz	P_{IN}	-	141	W
Power Gain	Vcc=50V, Pout=850W	F = 1025, 1090, 1150 MHz	G_P	7.8	-	dB
Collector Efficiency	Vcc=50V, Pout=850W	F = 1025, 1090, 1150 MHz	η_C	42	-	%
Input Return Loss	Vcc=50V, Pout=850W	F = 1025, 1090, 1150 MHz	RL	-	-9	dB
Load Mismatch Tolerance	Vcc=50V, Pout=850W	F = 1025 MHz	VSWR-T	-	5:1	-
Load Mismatch Stability *	Vcc=50V, Pout=850W	F = 1025, 1090, 1150 MHz	VSWR-S	-	1.5:1	-

* All spurious signals shall be < -60dBc below carrier, except F = Fo ± ½ Fo shall be < -40dBc

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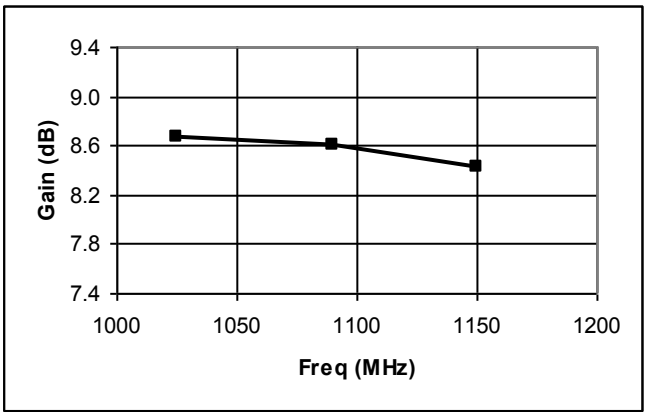
Typical RF Performance

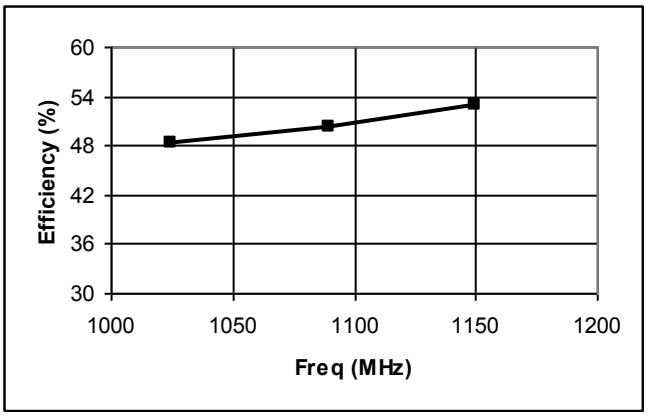
Freq. (MHz)	Pin (W)	Pout (W)	Gain (dB)	ΔGain (dB)	Ic (A)	Eff (%)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (5:1)	P1dB Overdrive	
										Pout	Δ Po
1025	116	850	8.67	-	35.3	48.2	-18.3	S	P	974	0.59
1090	117	850	8.61	-	33.9	50.3	-16.3	S	-	1014	0.76
1150	112	850	8.42	0.25	32.1	53.0	-21.1	S	-	997	0.69

Note: **ΔPo(dB)** is the difference between Pout at 1dB overdrive and Pout at Pout=850W.

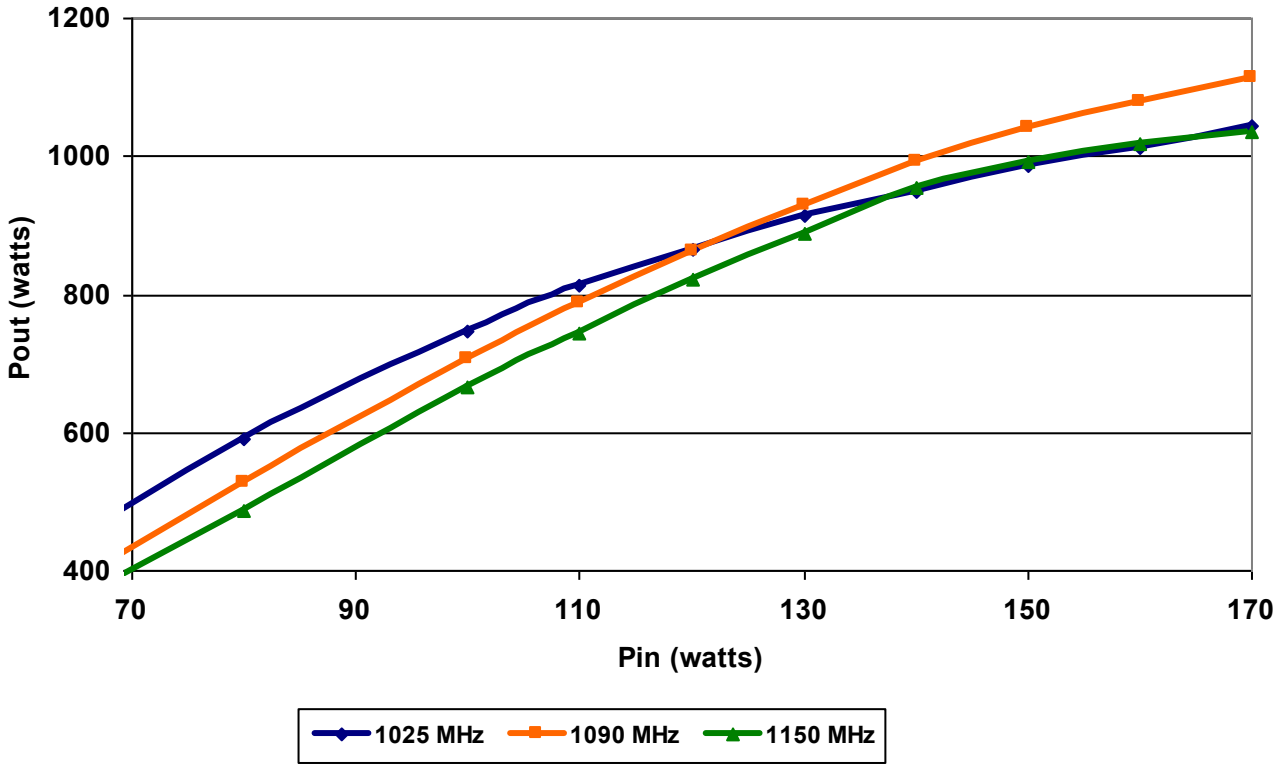
Gain vs. Frequency



Collector Efficiency vs. Frequency

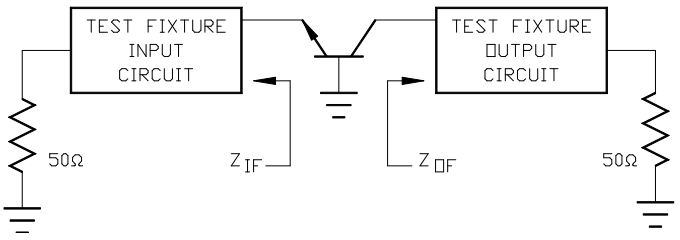


RF Power Transfer Curve
(Output Power Vs. Input Power)

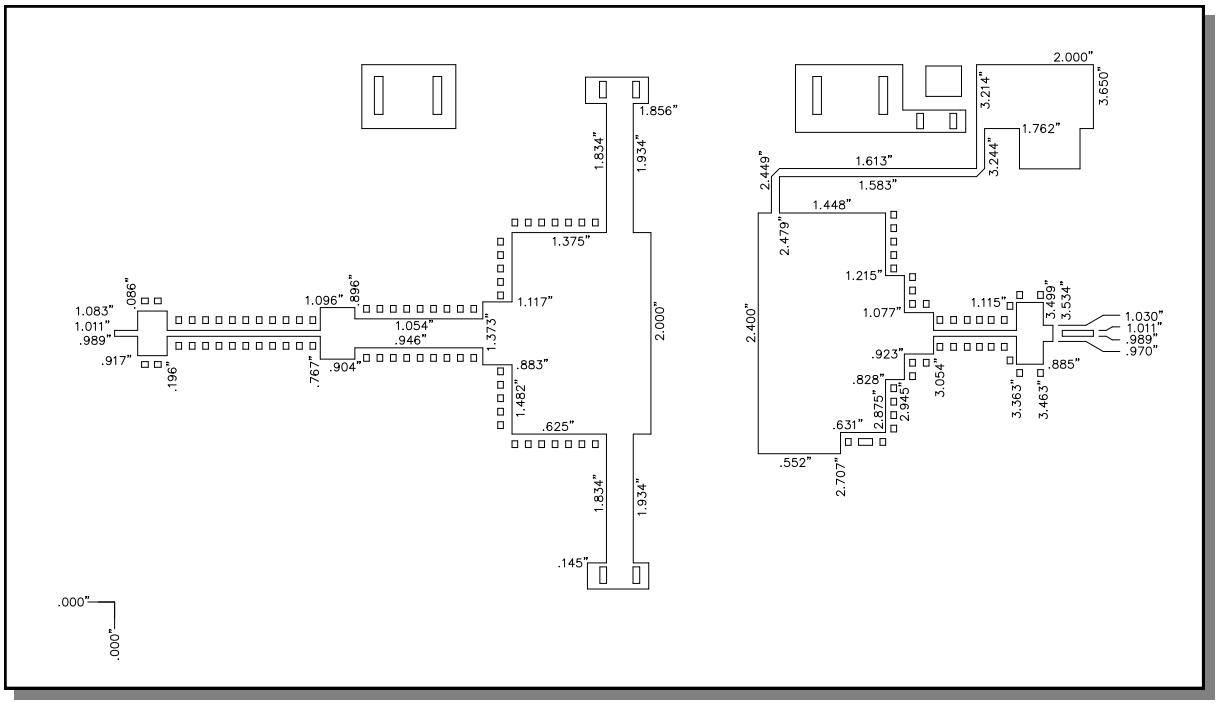


Broadband Test Fixture Impedance

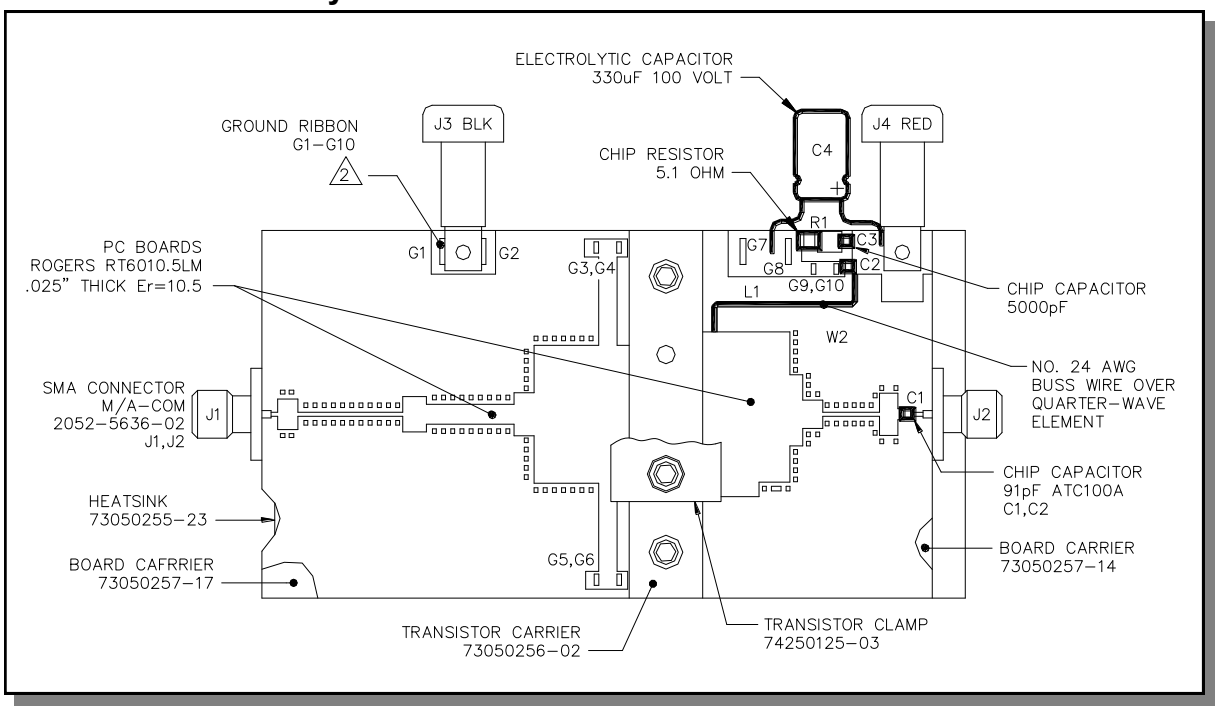
F (MHz)	Z_{IF} (Ω)	Z_{OF} (Ω)
1025	1.7 - j1.8	0.8 - j1.3
1090	1.4 - j1.2	0.8 - j1.0
1150	1.3 - j0.7	0.8 - j0.8



Test Fixture Circuit Dimensions



Test Fixture Assembly



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