

Radar Pulsed Power Transistor 150W, 1.2-1.4 GHz, 6ms Pulse, 25% Duty M/A-COM Products Released, 30 May 07

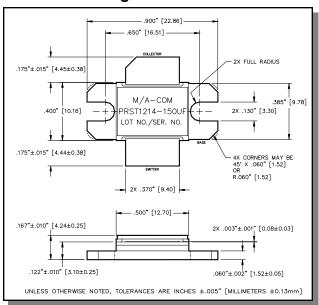
#### **Features**

- 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

### Absolute Maximum Ratings at 25°C

Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	$V_{CES}$	70	V
Emitter-Base Voltage	$V_{EBO}$	4.0	V
Collector Current (Peak)	Ic	19.5	Α
Power Dissipation @ +25°C	P <sub>TOT</sub>	580	W
Storage Temperature	T <sub>STG</sub>	-65 to +200	°C
Junction Temperature	$T_J$	200	°C

#### **Outline Drawing**



#### Electrical Specifications: T<sub>C</sub> = 25 ± 5°C (Room Ambient)

Parameter	Test Conditions	Frequency	Symbol	Min	Max	Units
Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 10mA		$BV_CES$	70	-	V
Collector-Emitter Leakage Current	V <sub>CE</sub> = 40V		I <sub>CES</sub>	-	4.0	mA
Thermal Resistance	Vcc = 36V, Pin = 27W	F = 1.2, 1.3, 1.4 GHz	R <sub>TH(JC)</sub>	-	0.3	°C/W
Output Power	Vcc = 36V, Pin = 27W	F = 1.2, 1.3, 1.4 GHz	P <sub>OUT</sub>	150	-	W
Power Gain	Vcc = 36V, Pin = 27W	F = 1.2, 1.3, 1.4 GHz	G <sub>P</sub>	7.4	-	dB
Gain Flatness	Vcc = 36V, Pin = 27W	F = 1.2, 1.3, 1.4 GHz	ΔG	-	1.25	dB
Collector Efficiency	Vcc = 36V, Pin = 27W	F = 1.2, 1.3, 1.4 GHz	ης	45	-	%
Input Return Loss	Vcc = 36V, Pin = 27W	F = 1.2, 1.3, 1.4 GHz	RL	-	-9	dB
Pulse Droop	Vcc = 36V, Pin = 27W	F = 1.2, 1.3, 1.4 GHz	Droop	-	0.5	dB
Load Mismatch Tolerance	Vcc = 36V, Pin = 27W	F = 1.2, 1.3, 1.4 GHz	VSWR-T	-	3:1	-
Load Mismatch Stability	Vcc = 36V, Pin = 27W	F = 1.2, 1.3, 1.4 GHz	VSWR-S	-	1.5:1	-

ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

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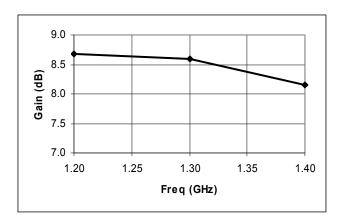


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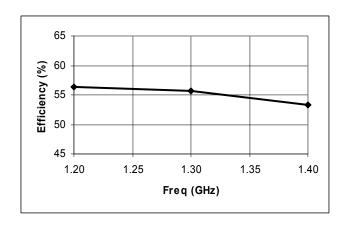
#### **Typical RF Performance**

Freq. (GHz)	Pin (W)	Pout (W)	Gain (dB)	Ic (A)	Eff (%)	Droop (dB)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (3:1)
1.2	27	199	8.67	9.81	56.4	0.08	-11.3	S	Р
1.3	27	196	8.60	9.76	55.8	0.13	-18.8	S	Р
1.4	27	176	8.15	9.19	53.3	0.12	-16.0	S	Р

### Gain vs. Frequency



## Collector Efficiency vs. Frequency



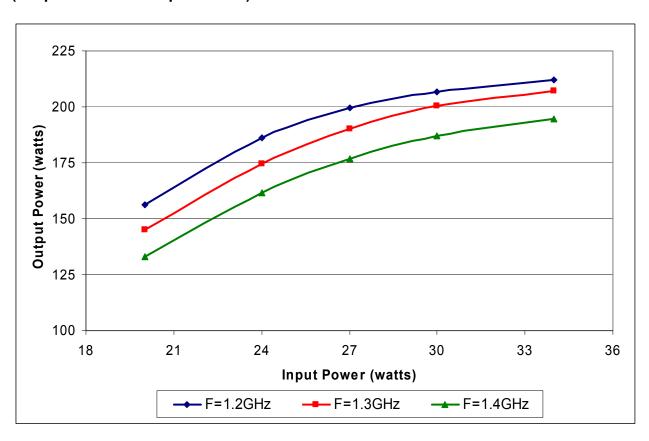
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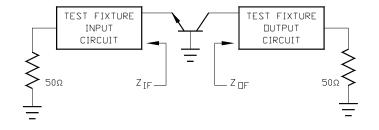
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# RF Power Transfer Curve (Output Power Vs. Input Power)



#### **RF Test Fixture Impedance**

F (GHz)	Z <sub>IF</sub> (Ω)	Z <sub>OF</sub> (Ω)
1.2	1.7 - j1.8	2.0 - j2.3
1.3	1.6 - j1.3	1.95 - j2.0
1.4	1.4 - j1.0	1.8 - j1.85

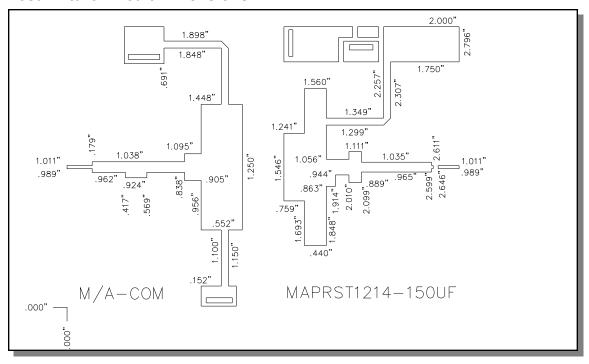


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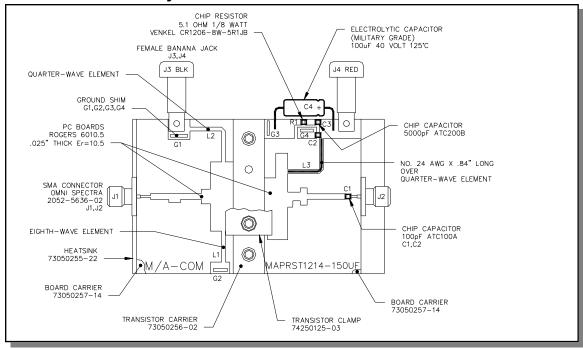


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#### **Test Fixture Circuit Dimensions**



## **Test Fixture Assembly**



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