# MAPRST0002

# Radar Pulsed Power Transistor 50W, 1.2-1.4 GHz, 150µs Pulse, 10% Duty

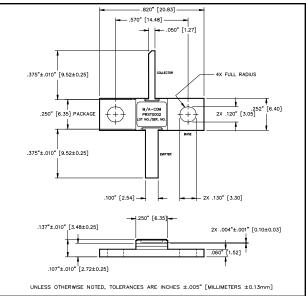
#### Features

- 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



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#### **Outline Drawing**



#### Absolute Maximum Ratings at 25°C

Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	V <sub>CES</sub>	70	V
Emitter-Base Voltage	V <sub>EBO</sub>	3.0	V
Collector Current (Peak)	Ι <sub>C</sub>	3.5	А
Power Dissipation @ +25°C	P <sub>TOT</sub>	100	W
Storage Temperature	T <sub>STG</sub>	-65 to +200	°C
Junction Temperature	TJ	200	°C

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

Parameter	Test Conditions	Frequency	Symbol	Min	Мах	Units
Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 15mA		BV <sub>CES</sub>	70	-	V
Collector-Emitter Leakage Current	V <sub>CE</sub> = 40V		I <sub>CES</sub>	-	3.5	mA
Thermal Resistance	Vcc = 40V, Pin = 5.6W	F = 1.2, 1.3, 1.4 GHz	R <sub>TH(JC)</sub>	-	1.8	°C/W
Output Power	Vcc = 40V, Pin = 5.6W	F = 1.2, 1.3, 1.4 GHz	P <sub>OUT</sub>	50	-	W
Power Gain	Vcc = 40V, Pin = 5.6W	F = 1.2, 1.3, 1.4 GHz	G <sub>P</sub>	9.5	-	dB
Collector Efficiency	Vcc = 40V, Pin = 5.6W	F = 1.2, 1.3, 1.4 GHz	η <sub>c</sub>	50	-	%
Input Return Loss	Vcc = 40V, Pin = 5.6W	F = 1.2, 1.3, 1.4 GHz	RL	-	-9	dB
Load Mismatch Tolerance	Vcc = 40V, Pin = 5.6W	F = 1.2, 1.3, 1.4 GHz	VSWR-T	-	3:1	-
Load Mismatch Stability	Vcc = 40V, Pin = 5.6W	F = 1.2, 1.3, 1.4 GHz	VSWR-S	-	1.5:1	-

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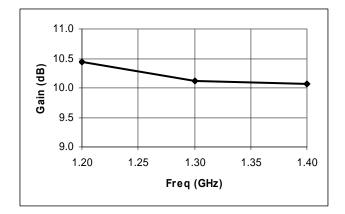
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#### **Typical RF Performance**

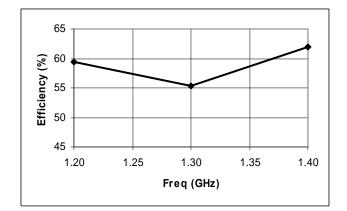
Freq.	Pin	Pout	Gain	∆Gain	lc	Eff	RL	VSWR-S	VSWR-T	P1dB Overdrive	
(GHz)	(W)	(W)	(dB)	(dB)	(A)	(%)	(dB)	(1.5:1)	(3:1)	Pout	ΔPo
1.2	5.6	62.0	10.44	-	2.61	59.4	-14.7	S	Р	68.6	0.44
1.3	5.6	57.6	10.11	-	2.60	55.3	-20.6	S	Р	70.5	0.88
1.4	5.6	57.1	10.07	0.36	2.31	61.9	-13.9	S	Р	62.2	0.37

Note:  $\Delta Po(dB)$  is the difference between Pout at 1dB overdrive and Pout at Pin = 5.6W.

#### Gain vs. Frequency

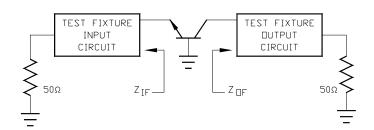


## **Collector Efficiency vs. Frequency**



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

F (GHz)	Z <sub>IF</sub> (Ω)	Z <sub>OF</sub> (Ω)		
1.2	3.7 - j4.6	4.4 + j0.8		
1.3	3.5 - j4.5	3.7 - j1.0		
1.4	3.1 - j4.5	2.2 - j1.1		



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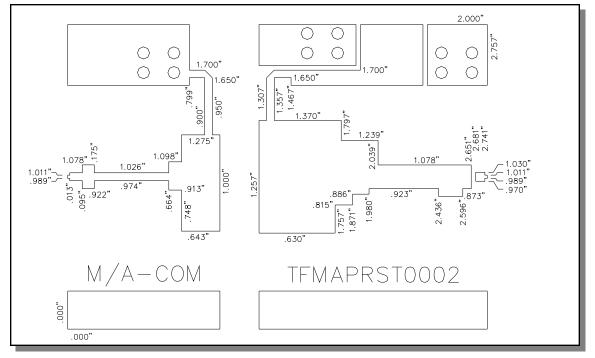
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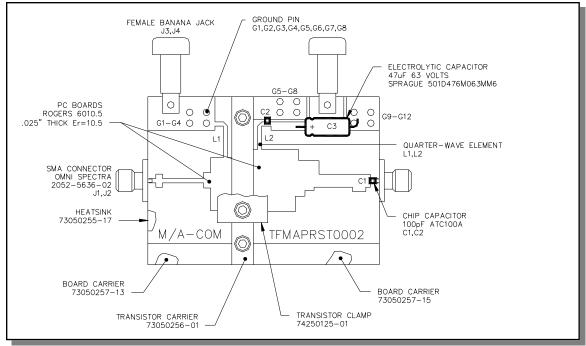
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## **Test Fixture Circuit Dimensions**



## **Test Fixture Assembly**



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