

Radar Pulsed Power Transistor

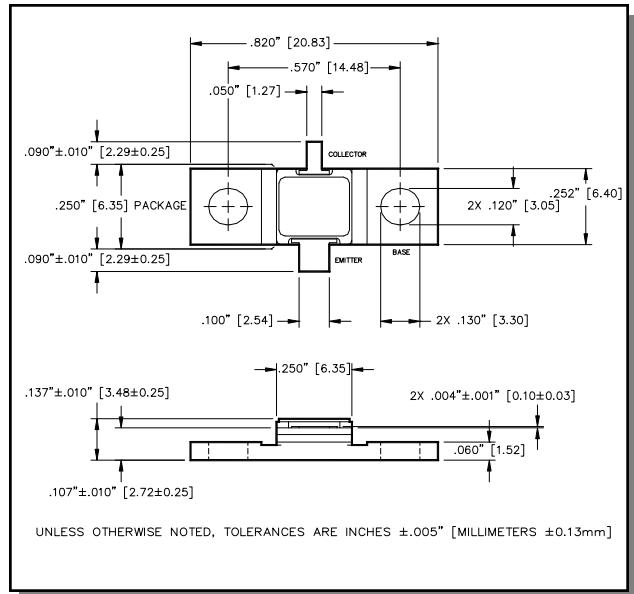
10W, 3.1-3.4 GHz, 100µs Pulse, 10% Duty

M/A-COM Products
Released, 10 Jul 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

Outline Drawing



Absolute Maximum Ratings at 25°C

Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	V_{CES}	60	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	1.2	A
Power Dissipation @ +25°C	P_{TOT}	70	W
Storage Temperature	T_{STG}	-65 to +200	°C
Junction Temperature	T_J	200	°C

Electrical Specifications: $T_c = 25 \pm 5^\circ\text{C}$ (Room Ambient)

Parameter	Test Conditions	Frequency	Symbol	Min	Max	Units
Collector-Emitter Breakdown Voltage	$I_C = 12.5\text{mA}$		BV_{CES}	60	-	V
Collector-Emitter Leakage Current	$V_{CE} = 36\text{V}$		I_{CES}	-	1.25	mA
Thermal Resistance	$V_{CC} = 36\text{V}$, $P_{out} = 10\text{W}$	$F = 3.1, 3.25, 3.4 \text{ GHz}$	$R_{TH(JC)}$	-	2.5	°C/W
Input Power	$V_{CC} = 36\text{V}$, $P_{out} = 10\text{W}$	$F = 3.1, 3.25, 3.4 \text{ GHz}$	P_{IN}	-	1.6	W
Power Gain	$V_{CC} = 36\text{V}$, $P_{out} = 10\text{W}$	$F = 3.1, 3.25, 3.4 \text{ GHz}$	G_P	8.0	-	dB
Collector Efficiency	$V_{CC} = 36\text{V}$, $P_{out} = 10\text{W}$	$F = 3.1, 3.25, 3.4 \text{ GHz}$	η_C	35	-	%
Input Return Loss	$V_{CC} = 36\text{V}$, $P_{out} = 10\text{W}$	$F = 3.1, 3.25, 3.4 \text{ GHz}$	RL	-	-6	dB
Load Mismatch Tolerance	$V_{CC} = 36\text{V}$, $P_{out} = 10\text{W}$	$F = 3.1, 3.25, 3.4 \text{ GHz}$	$VSWR-T$	-	2:1	-

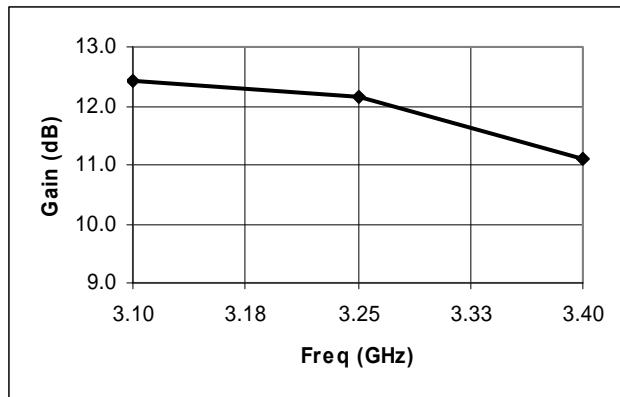
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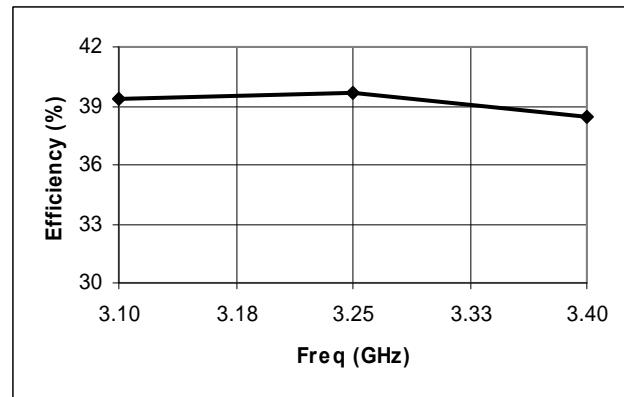
Typical RF Performance

Freq. (GHz)	Pin (W)	Pout (W)	Gain (dB)	Ic (A)	Eff (%)	RL (dB)	VSWR-T (2:1)
3.10	0.58	10.0	12.42	0.705	39.4	-13.5	-
3.25	0.61	10.0	12.14	0.701	39.6	-16.7	P
3.40	0.78	10.0	11.11	0.723	38.4	-16.3	-

Gain vs. Frequency

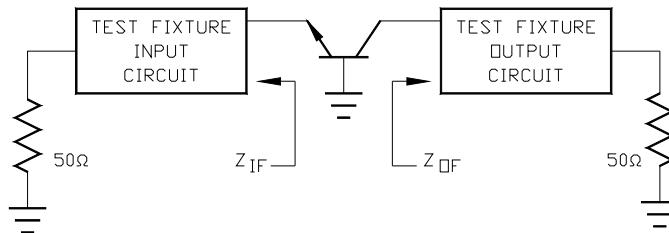


Collector Efficiency vs. Frequency



RF Test Fixture Impedance

F (GHz)	Z _{IF} (Ω)	Z _{OF} (Ω)
3.10	17.5 - j8.5	90 + j37
3.25	15.0 - j8.2	58 + j7.0
3.40	13.0 - j8.0	30 + j14.5



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.

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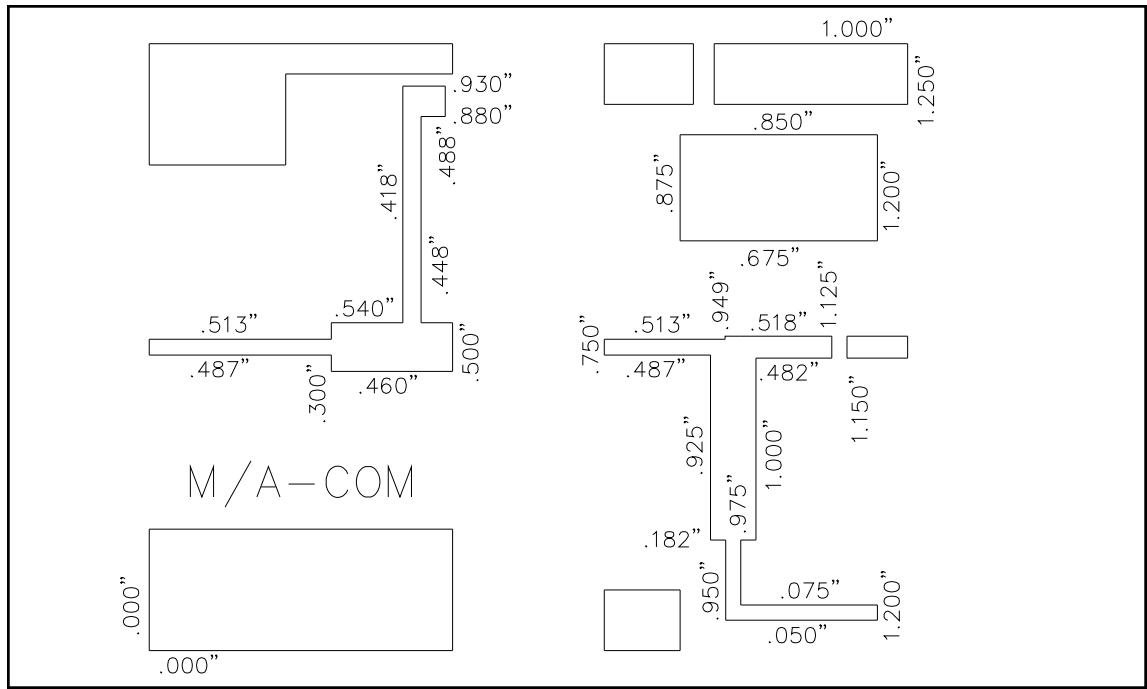
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Test Fixture Circuit Dimensions



Test Fixture Assembly

