Technology Solutions

M/A-COM Products

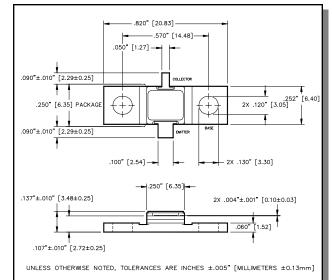
Released, 10 Jul 07

Radar Pulsed Power Transistor 10W, 3.1-3.4 GHz, 100µs 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

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)	Ι _C	1.2	А
Power Dissipation @ +25°C	P _{TOT}	70	W
Storage Temperature	T _{STG}	-65 to +200	°C
Junction Temperature	TJ	200	°C

Solutions has under development. Performance is based on engineering tests. Specifications are

typical. Mechanical outline has been fixed. Engineering samples

Commitment to produce in volume is not gua

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

Parameter	Test Conditions	Frequency	Symbol	Min	Мах	Units
Collector-Emitter Breakdown Voltage	I _C = 12.5mA		BV _{CES}	60	-	V
Collector-Emitter Leakage Current	V _{CE} = 36V		I _{CES}	-	1.25	mA
Thermal Resistance	Vcc = 36V, Pout = 10W	F = 3.1, 3.25, 3.4 GHz	R _{TH(JC)}	-	2.5	°C/W
Input Power	Vcc = 36V, Pout = 10W	F = 3.1, 3.25, 3.4 GHz	P _{IN}	-	1.6	W
Power Gain	Vcc = 36V, Pout = 10W	F = 3.1, 3.25, 3.4 GHz	G _P	8.0	-	dB
Collector Efficiency	Vcc = 36V, Pout = 10W	F = 3.1, 3.25, 3.4 GHz	η _c	35	-	%
Input Return Loss	Vcc = 36V, Pout = 10W	F = 3.1, 3.25, 3.4 GHz	RL	-	-6	dB
Load Mismatch Tolerance	Vcc = 36V, Pout = 10W	F = 3.1, 3.25, 3.4 GHz	VSWR-T	-	2:1	-

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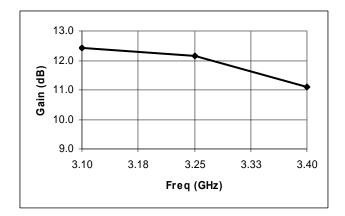
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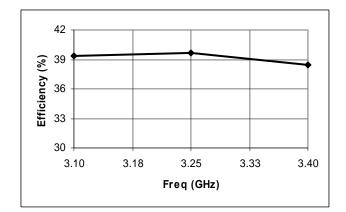
Typical RF Performance

Freq. (GHz)	Pin (W)	Pout (W)	Gain (dB)	lc (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	Р
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

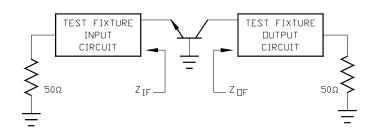
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F (GHz)	Z _{IF} (Ω)	Z _{OF} (Ω)
3.10	17.5 - j8.5	90 + j37
3.25	15.0 - j8.2	58 + j7.0
3.40	13.0 - j8.0	30 + j14.5

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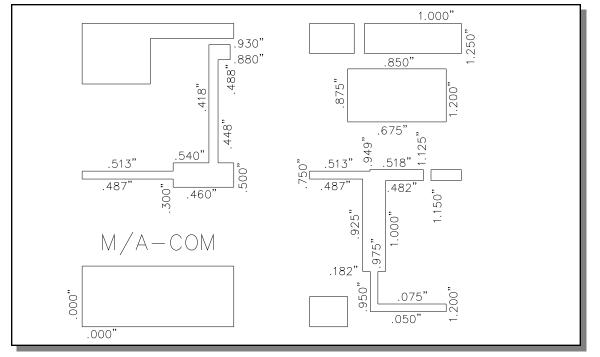
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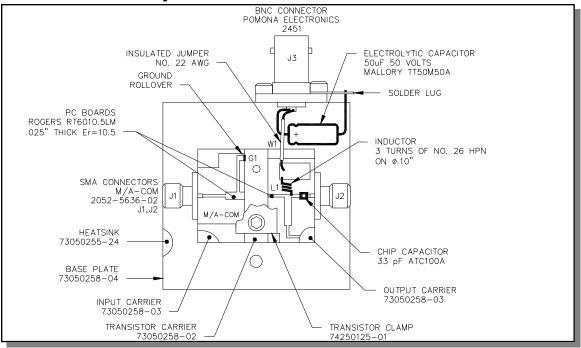
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Test Fixture Circuit Dimensions



Test Fixture Assembly



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