

Radar Pulsed Power Transistor
110W, 2.7-2.9 GHz, 100μs Pulse, 10% Duty

M/A-COM Products
Released, 29 Jun 07

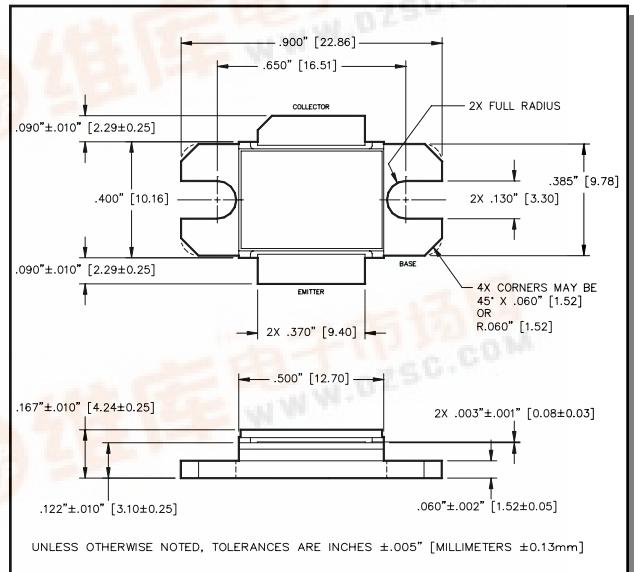
Features

- 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}	63	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	8.0	A
Power Dissipation @ +25°C	P_{TOT}	330	W
Storage Temperature	T_{STG}	-65 to +200	°C
Junction Temperature	T_J	200	°C

Outline Drawing



Electrical Specifications: $T_C = 25 \pm 5$ °C (Room Ambient)

Parameter	Test Conditions	Frequency	Symbol	Min	Max	Units
Collector-Emitter Breakdown Voltage	$I_C = 50$ mA		BV_{CES}	63	-	V
Collector-Emitter Leakage Current	$V_{CE} = 36$ V		I_{CES}	-	7.5	mA
Thermal Resistance	$V_{CC} = 36$ V, $P_{IN} = 23$ W	$F = 2.7, 2.8, 2.9$ GHz	$R_{TH(JC)}$	-	0.3	°C/W
Output Power	$V_{CC} = 36$ V, $P_{IN} = 23$ W	$F = 2.7, 2.8, 2.9$ GHz	P_{OUT}	110	-	W
Power Gain	$V_{CC} = 36$ V, $P_{IN} = 23$ W	$F = 2.7, 2.8, 2.9$ GHz	G_P	6.8	-	dB
Collector Efficiency	$V_{CC} = 36$ V, $P_{IN} = 23$ W	$F = 2.7, 2.8, 2.9$ GHz	η_C	35	-	%
Input Return Loss	$V_{CC} = 36$ V, $P_{IN} = 23$ W	$F = 2.7, 2.8, 2.9$ GHz	RL	-	-6	dB
Load Mismatch Tolerance	$V_{CC} = 36$ V, $P_{IN} = 23$ W	$F = 2.7, 2.8, 2.9$ GHz	$VSWR-T$	-	2:1	-
Load Mismatch Stability	$V_{CC} = 36$ V, $P_{IN} = 23$ W	$F = 2.7, 2.8, 2.9$ GHz	$VSWR-S$	-	1.5:1	-



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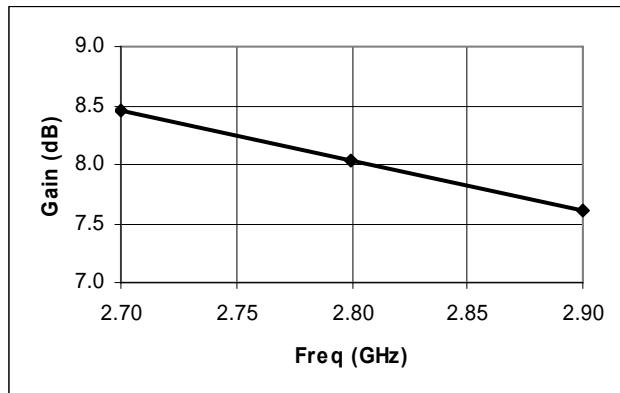
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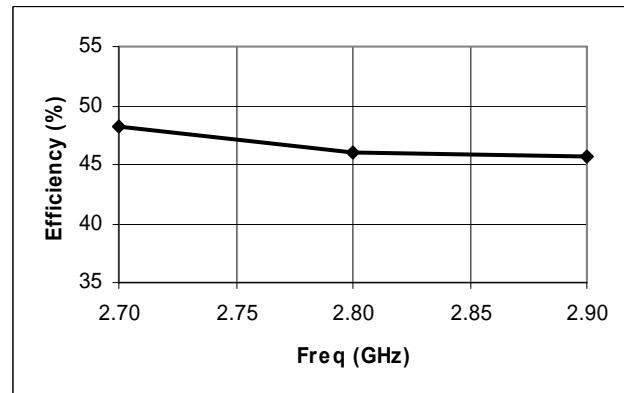
Typical RF Performance

Freq. (GHz)	Pin (W)	Pout (W)	Gain (dB)	I _c (A)	Eff (%)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (2:1)
2.7	23	162	8.46	9.31	48.2	-23.9	S	P
2.8	23	146	8.03	8.82	46.0	-16.6	S	P
2.9	23	133	7.60	8.07	45.6	-13.8	S	P

Gain vs. Frequency

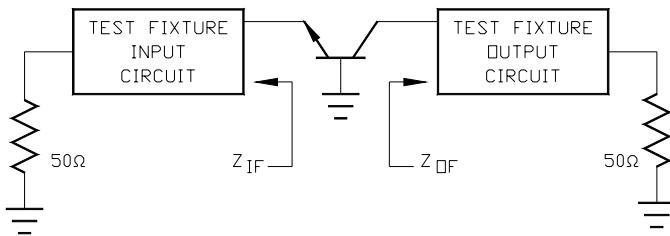


Collector Efficiency vs. Frequency



RF Test Fixture Impedance

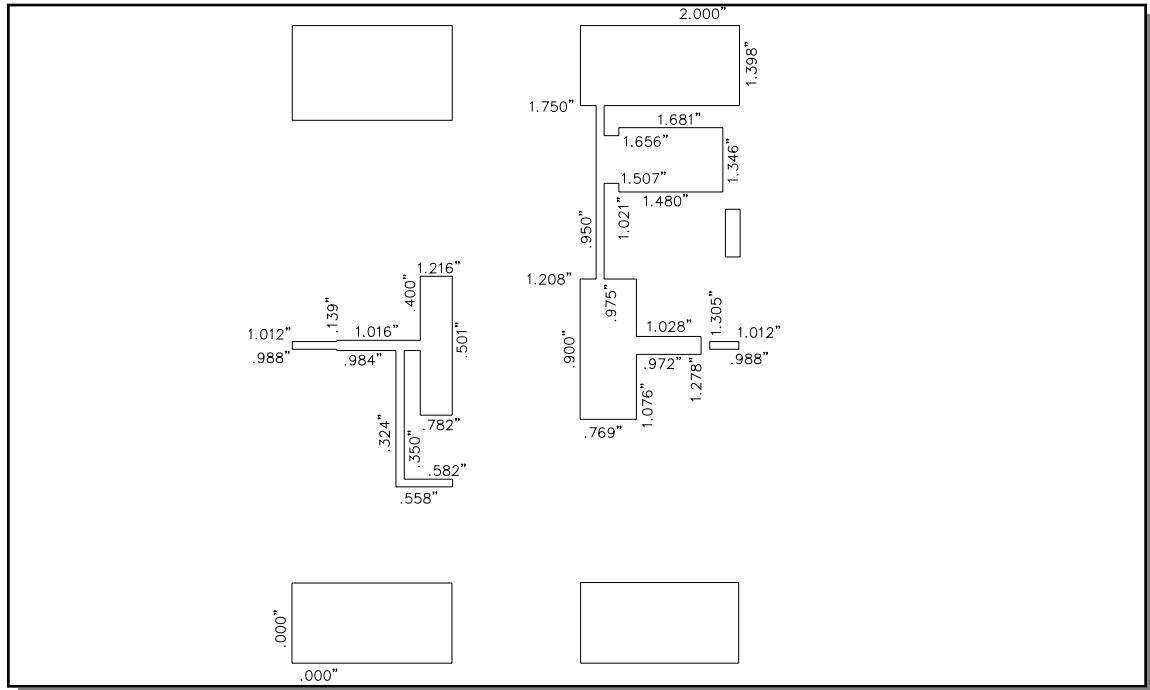
F (GHz)	Z _{IF} (Ω)	Z _{OF} (Ω)
2.7	4.3 - j7.0	2.6 - j3.9
2.8	4.4 - j6.4	2.8 - j3.5
2.9	4.6 - j5.8	2.9 - j3.1



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Test Fixture Circuit Dimensions



Test Fixture Assembly

