PH1214-100EL

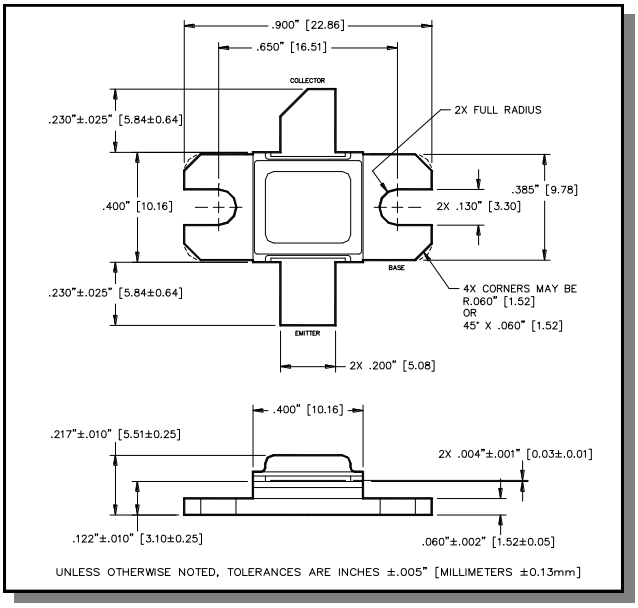
Radar Pulsed Power Transistor
100W, 1.2-1.4 GHz, 2ms Pulse, 20% Duty

Rev. V1

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}	75	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	14.1	A
Power Dissipation @ +25°C	P_{TOT}	250	W
Storage Temperature	T_{STG}	-65 to +200	°C
Junction Temperature	T_J	200	°C

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

Parameter	Test Conditions	Frequency	Symbol	Min	Max	Units
Collector-Emitter Breakdown Voltage	I_C = 50mA		BV_{CES}	70	-	V
Collector-Emitter Leakage Current	V_{CE} = 28V		I_{CES}	-	10	mA
Thermal Resistance	Vcc = 28V, Pin = 25W	F = 1.2, 1.3, 1.4 GHz	$R_{TH(JC)}$	-	0.7	°C/W
Output Power	Vcc = 28V, Pin = 25W	F = 1.2, 1.3, 1.4 GHz	P_{OUT}	100	-	W
Power Gain	Vcc = 28V, Pin = 25W	F = 1.2, 1.3, 1.4 GHz	G_P	6.0	-	dB
Collector Efficiency	Vcc = 28V, Pin = 25W	F = 1.2, 1.3, 1.4 GHz	η_C	52	-	%
Input Return Loss	Vcc = 28V, Pin = 25W	F = 1.2, 1.3, 1.4 GHz	RL	-	-8	dB
Load Mismatch Tolerance	Vcc = 28V, Pin = 25W	F = 1.2, 1.3, 1.4 GHz	VSWR-T	-	3:1	-
Load Mismatch Stability	Vcc = 28V, Pin = 25W	F = 1.2, 1.3, 1.4 GHz	VSWR-S	-	1.5:1	-

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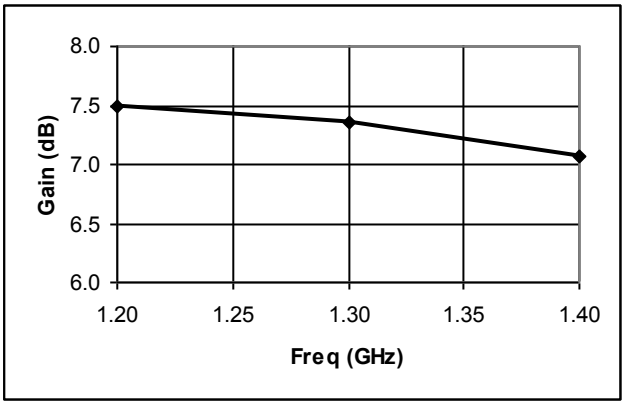
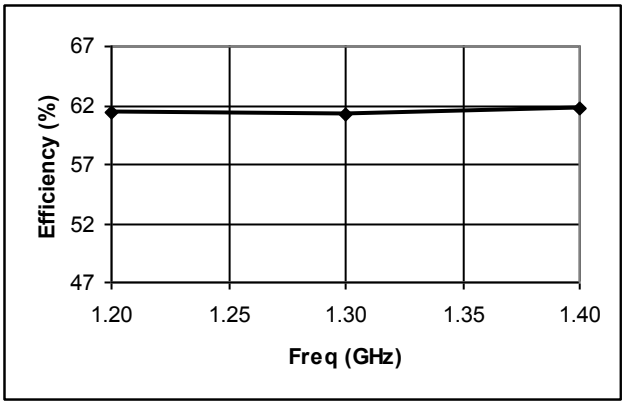
Typical RF Performance

Freq. (GHz)	Pin (W)	Pout (W)	Gain (dB)	Ic (A)	Eff (%)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (3:1)
1.2	25	140	7.48	16.3	61.4	-14.9	S	P
1.3	25	136	7.35	15.8	61.3	-13.5	S	P
1.4	25	127	7.07	14.7	61.8	-13.9	S	P

Gain vs. Frequency

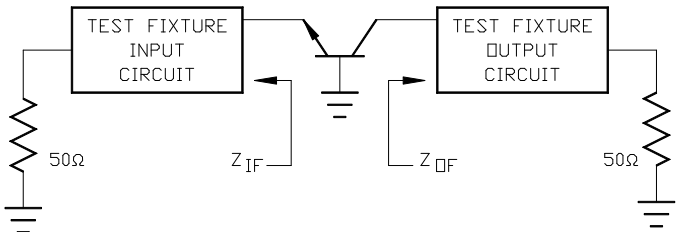


Collector Efficiency vs. Frequency



RF Test Fixture Impedance

F (GHz)	Z_{IF} (Ω)	Z_{OF} (Ω)
1.2	2.6 - j3.8	3.0 - j2.7
1.3	3.0 - j3.4	2.4 - j2.6
1.4	3.4 - j3.1	1.9 - j2.5



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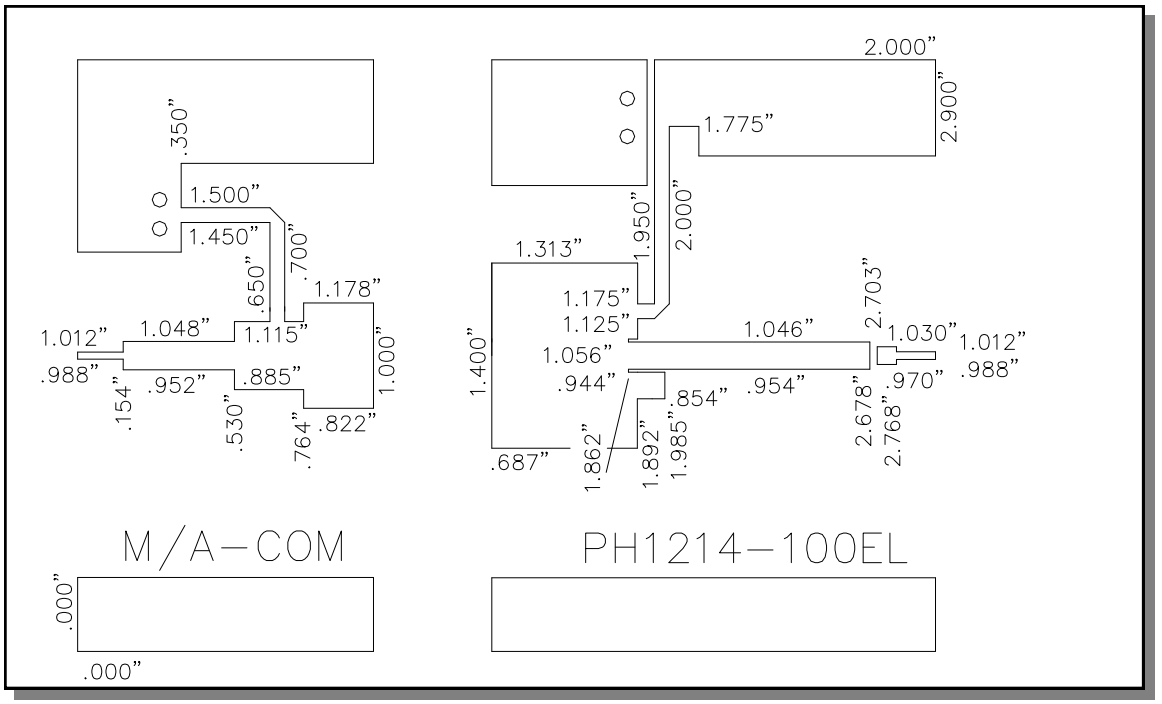
Test Fixture Circuit Dimensions



Test Fixture Assembly