MAPRST1030-1KS

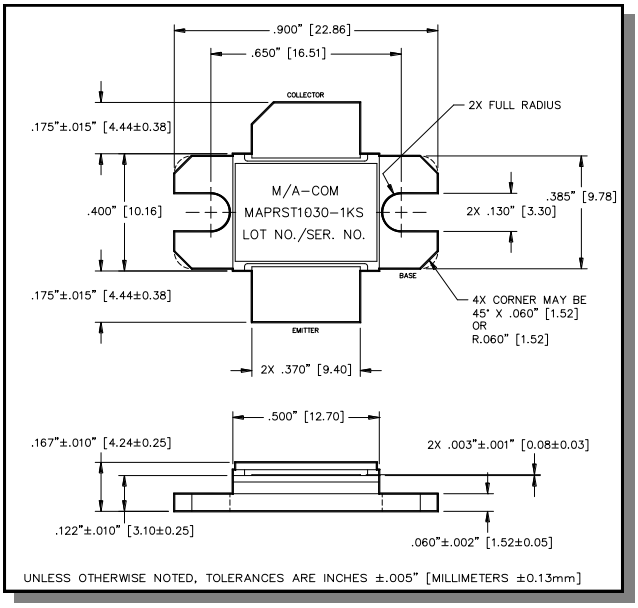
Avionics Pulsed Power Transistor
1000W, 1030 MHz, 10µs Pulse, 1% Duty

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}	65	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	250	A
Power Dissipation @ +25°C	P_{TOT}	11.6	kW
Storage Temperature	T_{STG}	-65 to +200	°C
Junction Temperature	T_J	200	°C

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

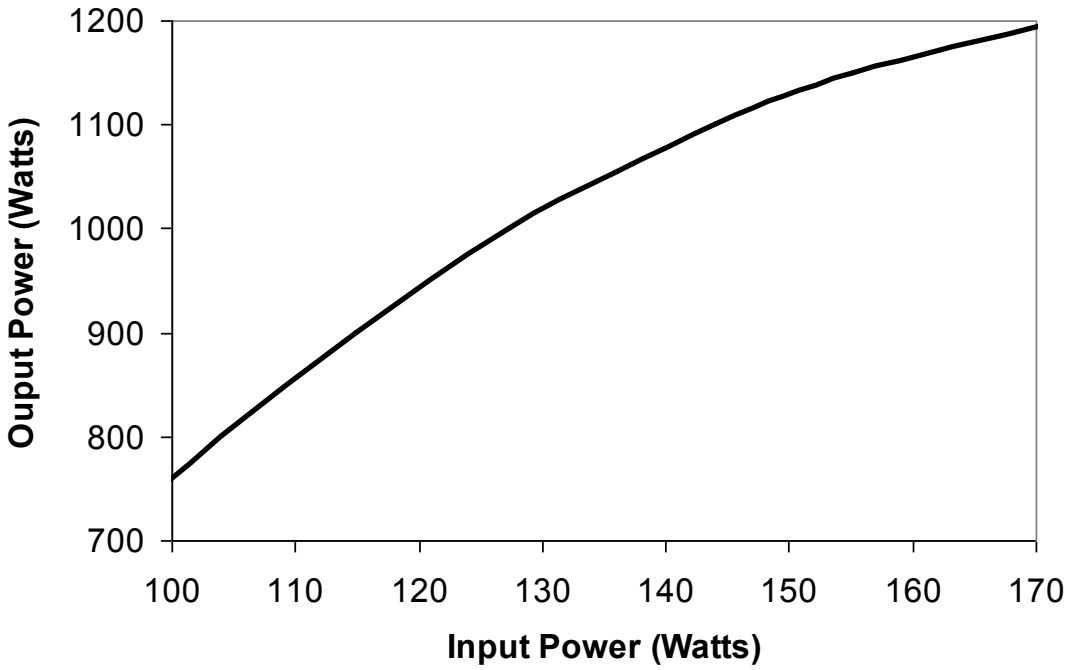
Parameter	Test Conditions	Frequency	Symbol	Min	Max	Units
Collector-Emitter Breakdown Voltage	I_C = 250mA		BV_{CES}	65	-	V
Collector-Emitter Leakage Current	V_{CE} = 50V		I_{CES}	-	30	mA
Thermal Resistance	Vcc = 50V, Pout = 1000W	F = 1030 MHz	$R_{TH(JC)}$	-	0.015	°C/W
Input Power	Vcc = 50V, Pout = 1000W	F = 1030 MHz	P_{IN}	-	158	W
Power Gain	Vcc = 50V, Pout = 1000W	F = 1030 MHz	G_P	8.0	-	dB
Collector Efficiency	Vcc = 50V, Pout = 1000W	F = 1030 MHz	η_C	45	-	%
Input Return Loss	Vcc = 50V, Pout = 1000W	F = 1030 MHz	RL	-	-10	dB
Load Mismatch Tolerance	Vcc = 50V, Pout = 1000W	F = 1030 MHz	VSWR-T	-	10:1	-
Load Mismatch Stability	Vcc = 50V, Pout = 1000W	F = 1030 MHz	VSWR-S	-	1.5:1	-

Typical RF Performance

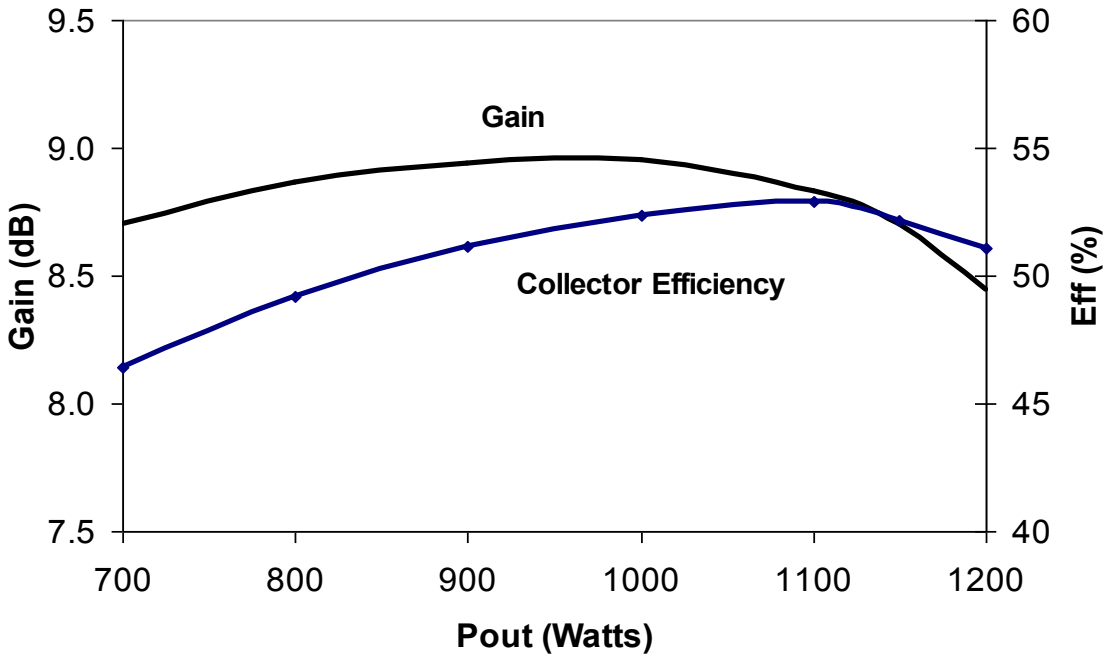
Freq. (MHz)	Pin (W)	Pout (W)	Gain (dB)	Ic (A)	Eff (%)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (10:1)	P1dB Overdrive	
									Pout	Δ Po
1030	134	1000	8.74	39.5	50.8	-21.3	S	P	1180	0.74

Note: **ΔPo(dB)** is the difference between Pout at 1dB overdrive and Pout at Pout = 1000W.

RF Power Transfer Curve
(Output Power Vs. Input Power)

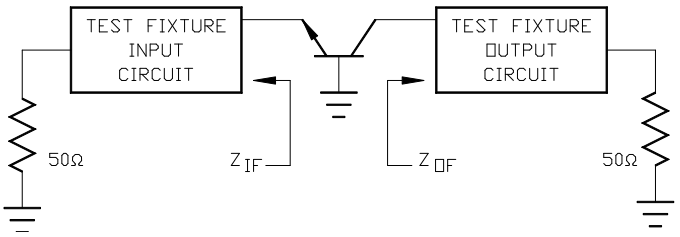


RF Power Transfer Curve
(Gain & Collector Efficiency vs. Output Power)

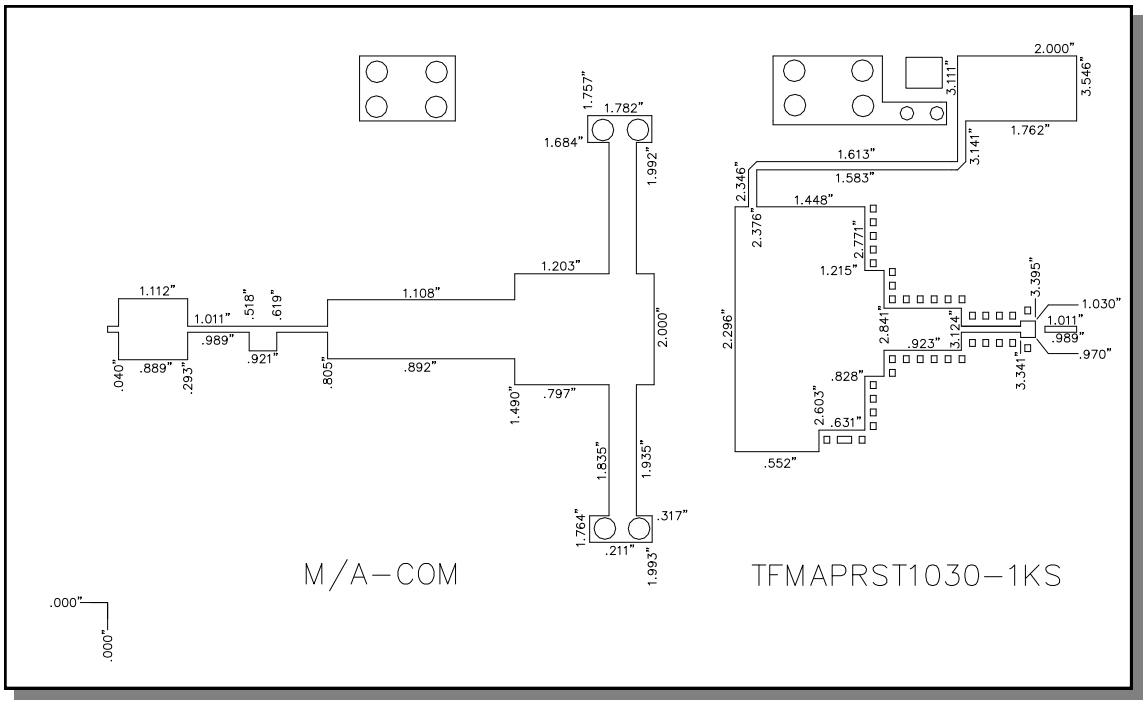


RF Test Fixture Impedance

F (MHz)	Z_{IF} (Ω)	Z_{OF} (Ω)
1030	1.8 - j2.2	0.5 - j1.0



Test Fixture Circuit Dimensions



Test Fixture Assembly