

The RF Line
Microwave Power Transistors

... designed primarily for large-signal output and driver amplifier stages in the 1.5 to 3 GHz frequency range.

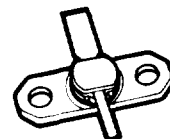
- Designed for Class B or C, Common Base Power Amplifiers
- Specified 20 Volt, 2.3 GHz Characteristics:
 - Output Power — 7 Watts
 - Power Gain — 8 dB, Min
 - Collector Efficiency — 40% Min
- Hermetic Package Suitable for Military/Space Applications
- Gold Metallization for Improved Reliability
- Diffused Ballast Resistors
- Formerly Named TRW2307,F

MRW2307
MRW2307F

8 dB
1.5-3 GHz
7 WATTS
MICROWAVE
POWER
TRANSISTORS



CASE 328E-01, STYLE 1
 (GP-13F)
 MRW2307F



CASE 328F-01, STYLE 2
 (GP-13)
 MRW2307

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Base Voltage	V _{CES}	42	Vdc
Emitter-Base Voltage	V _{EBO}	3.5	Vdc
Collector Current — Continuous	I _C	2.5	Adc
Operating Junction Temperature	T _J	200	°C
Storage Temperature Range	T _{stg}	65 to +200	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, RF, Junction to Case	R _{θJC}	8.5	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage (I _C = 50 mA, V _{BE} = 0)	V _{(BR)CES}	42	—	—	Vdc
Emitter-Base Breakdown Voltage (I _E = 1 mA, I _C = 0)	V _{(BR)EBO}	3.5	—	—	Vdc
Collector Cutoff Current (V _{CB} = 22 V, I _E = 0)	I _{CBO}	—	—	1.25	mAdc

ON CHARACTERISTICS

DC Current Gain (I _C = 500 mA, V _{CE} = 5 V)	h _{FE}	10	—	120	—
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DYNAMIC CHARACTERISTICS

Output Capacitance (V _{CB} = 22 V, I _E = 0, f = 1 MHz)	C _{ob}	—	—	10	pF
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FUNCTIONAL TESTS

Common-Base Amplifier Power Gain (V _{CE} = 20 V, P _{out} = 7 W, f = 2.3 GHz)	G _{PB}	8	—	—	dB
Collector Efficiency (V _{CE} = 20 V, P _{out} = 7 W, f = 2.3 GHz)	η _{IC}	40	—	—	%
Load Mismatch (V _{CE} = 20 V, P _{out} = 7 W, f = 2.3 GHz, Load VSWR ≤ 1, All Phase Angles)	ψ	No Degradation in Output Power			

MRW2307, MRW2307F

TYPICAL CHARACTERISTICS

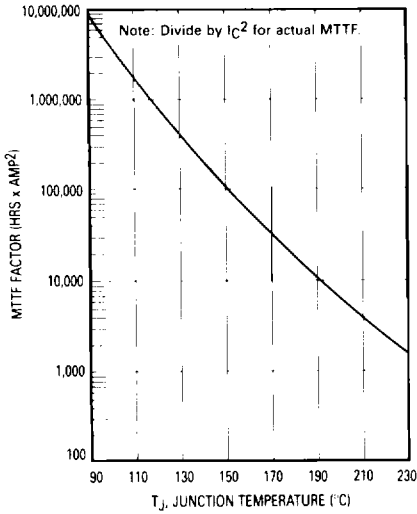


Figure 1. MTTF Factor versus Junction Temperature

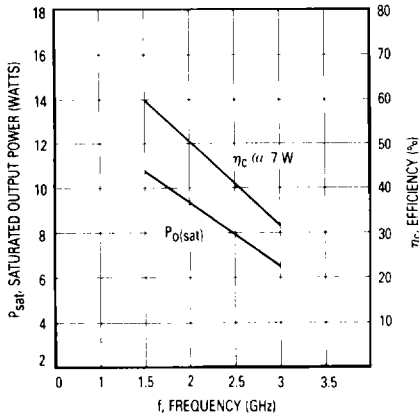


Figure 3. P_{sat} and Efficiency versus Frequency

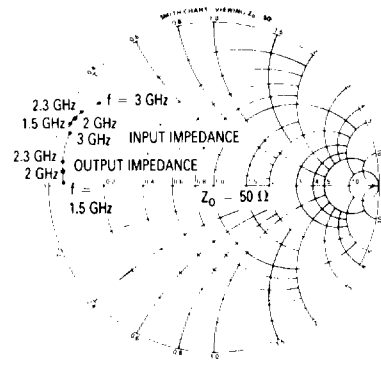


Figure 2. Series Equivalent Input/Output Impedance

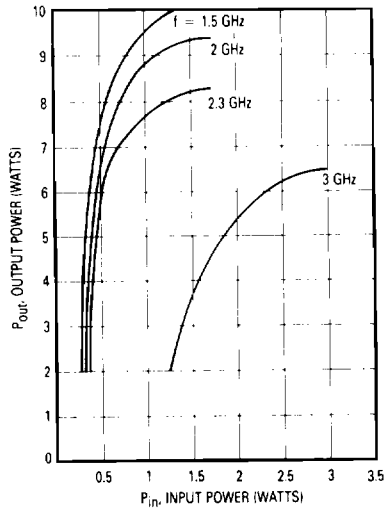
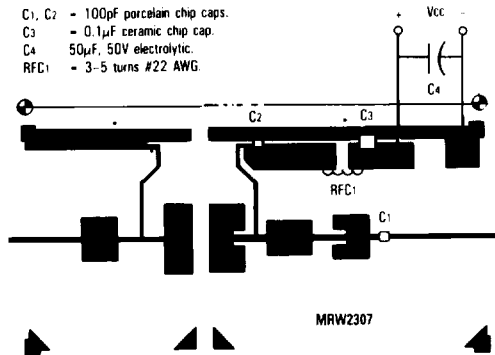


Figure 4. Output Power versus Input Power



*Ground to backside of board
 Board material: 0.018" dielectric thickness teflon fiberglass.

Figure 5. PC Board Layout (Not to Scale), $f = 2.3$ GHz