

The RF Line

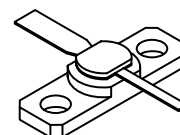
Microwave Power Oscillator Transistor

... designed for use as power oscillators at frequencies to 3.0 GHz with typical output power of over 1.0 watt.

- Operation to 3.0 GHz
- High Output Power (1.2 W Typ @ 2.5 GHz)
- Rugged — Capable of Withstanding High Load VSWR
- High Reliability
- Hermetic Package
- Gold Metallization
- Diffused Emitter Ballast Resistors
- Common Collector Configuration
- Formerly named TRW62601
- Circuit board photomaster available upon request by contacting RF Tactical Marketing in Phoenix, AZ.

TP62601

**MICROWAVE
POWER
OSCILLATOR
TRANSISTOR**



**CASE 328A-03, STYLE 3
(GP-13)**

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	22	Vdc
Collector-Base Voltage	V_{CBO}	45	Vdc
Emitter-Base Voltage	V_{EBO}	3.5	Vdc
Collector Current — Continuous	I_C	0.5	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, Junction to Case	$R_{\theta JC}$	15	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C = 20$ mA, $I_B = 0$)	$V_{(BR)CEO}$	22	—	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 1.0$ mA, $I_E = 0$)	$V_{(BR)CBO}$	45	—	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 0.25$ mA, $I_C = 0$)	$V_{(BR)EBO}$	3.5	—	—	Vdc
Collector-Emitter Breakdown Voltage ($I_C = 20$ mA, $R_{BE} = 10$ Ω)	$V_{(BR)CER}$	50	—	—	Vdc
Collector Cutoff Current ($V_{CB} = 28$ V, $I_E = 0$)	I_{CBO}	—	—	0.125	mAdc

ON CHARACTERISTICS

DC Current Gain ($I_C = 100$ mA, $V_{CE} = 5.0$ V)	h_{FE}	20	—	120	—
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(continued)

ELECTRICAL CHARACTERISTICS — continued

Characteristic	Symbol	Min	Typ	Max	Unit
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DYNAMIC CHARACTERISTICS

Output Capacitance ($V_{CB} = 28\text{ V}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{ob}	—	—	5.0	pF
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FUNCTIONAL TESTS

Oscillator Output Power ($V_{CE} = 20\text{ V}$, $f = 2.0\text{ GHz}$, $I_E = 220\text{ mA}$)	P_{out}	1.25	—	—	W
Load Mismatch ($V_{CE} = 20\text{ V}$, $I_E = 220\text{ mA}$, $P_{out} = 1.25\text{ W}$, $f = 2.0\text{ GHz}$, Load VSWR = $\infty:1$, All Phase Angles)	ψ	No Degradation in Output Power			
Cutoff Frequency ($V_{CE} = 20\text{ V}$, $I_E = 220\text{ mA}$)	f_t	—	2.7	—	GHz

TYPICAL CHARACTERISTICS

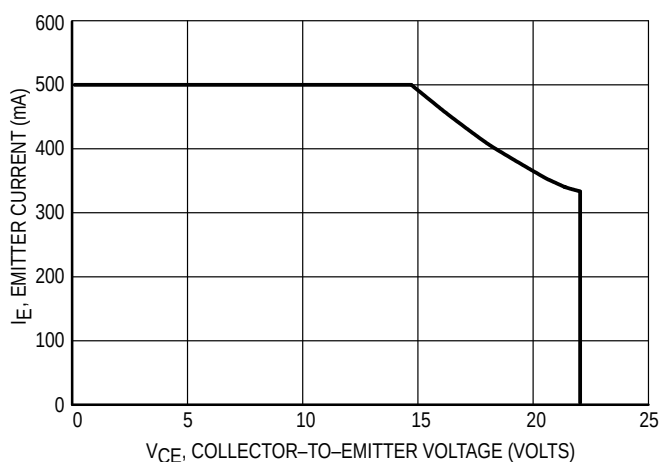


Figure 1. DC Safe Operating Area

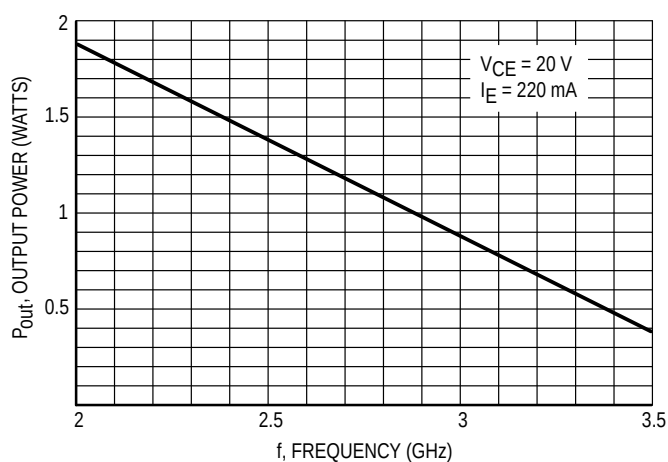


Figure 2. Output Power versus Frequency

- C1 — 220 pF (chip)
 C2 — 220 pF (chip) + 10 nF
 C3 — 220 pF (chip) + 10 nF + 10 μ F
 C4 — 0.6–4.5 pF (Frequency tuning)
 L — adjust to obtain the maximum output power
 θ — 0.115 λg for $f_0 = 2.3\text{ GHz}$
 θ — 0.06 λg for $f_0 = 3.0\text{ GHz}$
 Note: λg is the wavelength
 in the microstrip circuit

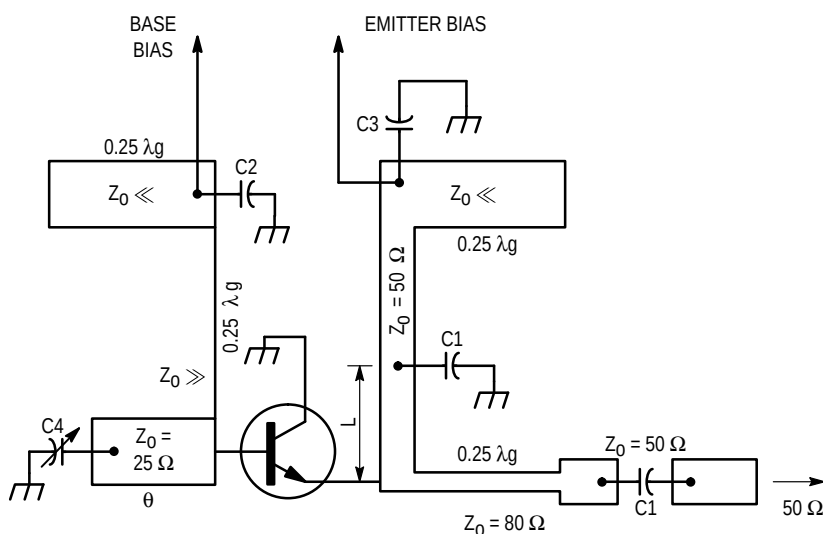


Figure 3. Test Circuit

TYPICAL CHARACTERISTICS

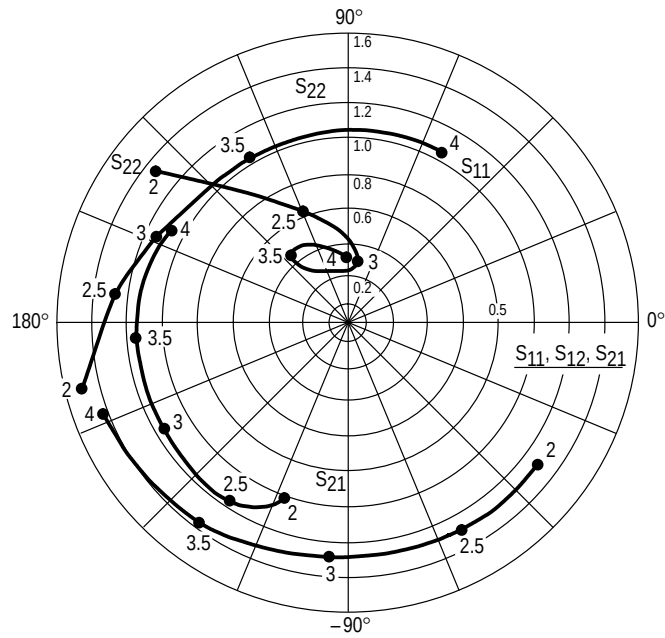
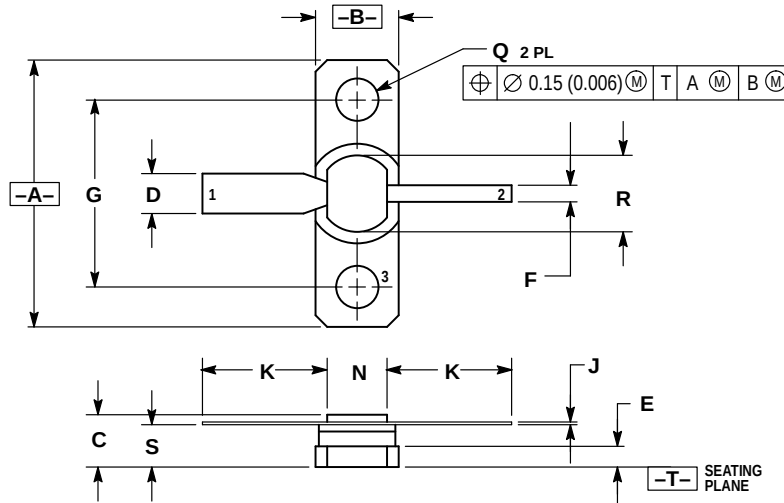


Figure 4. Small Signal S-Parameters
($V_{CE} = 20\text{ V}$, $I_E = 220\text{ mA}$)

PACKAGE DIMENSIONS



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.795	0.805	20.20	20.45
B	0.245	0.255	6.23	6.47
C	0.145	0.170	3.69	4.31
D	0.115	0.125	2.93	3.17
E	0.055	0.065	1.40	1.65
F	0.045	0.055	1.15	1.39
G	0.562 BSC		14.27 BSC	
J	0.003	0.006	0.08	0.15
K	0.260	0.375	6.60	9.52
N	0.175	0.185	4.45	4.69
Q	0.120	0.135	3.05	3.42
R	0.225	0.235	5.72	5.97
S	0.120	0.130	3.05	3.30

STYLE 3:

- PIN 1: BASE
- EMITTER
- COLLECTOR

CASE 328A-03 ISSUE D

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