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The RF Line

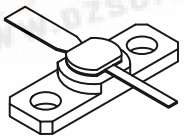
Microwave Power Oscillator Transistor

. . . 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
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	—

(continued)

ELECTRICAL CHARACTERISTICS — continued

Characteristic	Symbol	Min	Typ	Max	Unit
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 28 V, I_E = 0, f = 1.0 MHz)	C_{ob}	—	—	5.0	pF
FUNCTIONAL TESTS					
Oscillator Output Power (V_{CE} = 20 V, f = 2.0 GHz, I_E = 220 mA)	P_{out}	1.25	—	—	W
Load Mismatch (V_{CE} = 20 V, I_E = 220 mA, P_{out} = 1.25 W, f = 2.0 GHz, Load VSWR = ∞:1, All Phase Angles)	ψ	No Degradation in Output Power			
Cutoff Frequency (V_{CE} = 20 V, I_E = 220 mA)	f_τ	—	2.7	—	GHz

TYPICAL CHARACTERISTICS

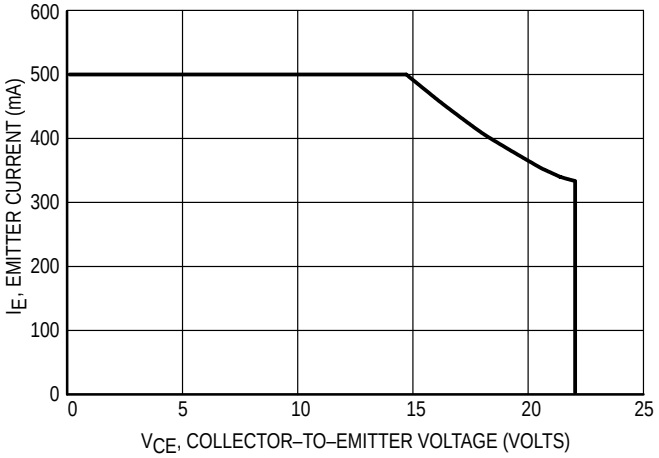


Figure 1. DC Safe Operating Area

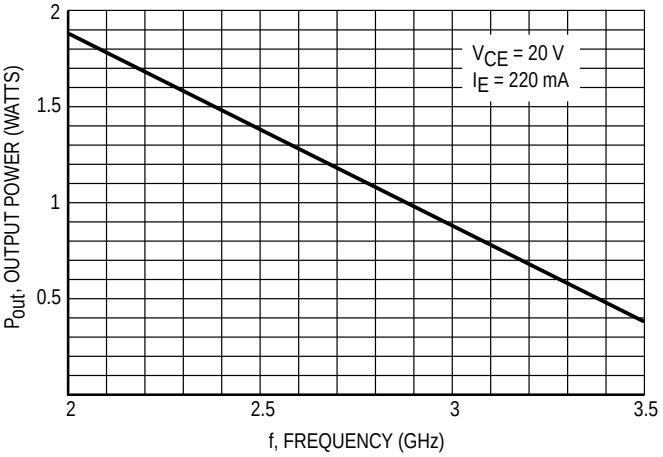


Figure 2. Output Power versus Frequency

C1 — 220 pF (chip)
C2 — 220 pF (chip) + 10 nF
C3 — 220 pF (chip) + 10 nF + 10 μF
C4 — 0.6–4.5 pF (Frequency tuning)
L — adjust to obtain the maximum output power
θ — 0.115 λg for f_O = 2.3 GHz
θ — 0.06 λg for f_O = 3.0 GHz
Note: λg is the wavelength in the microstrip circuit

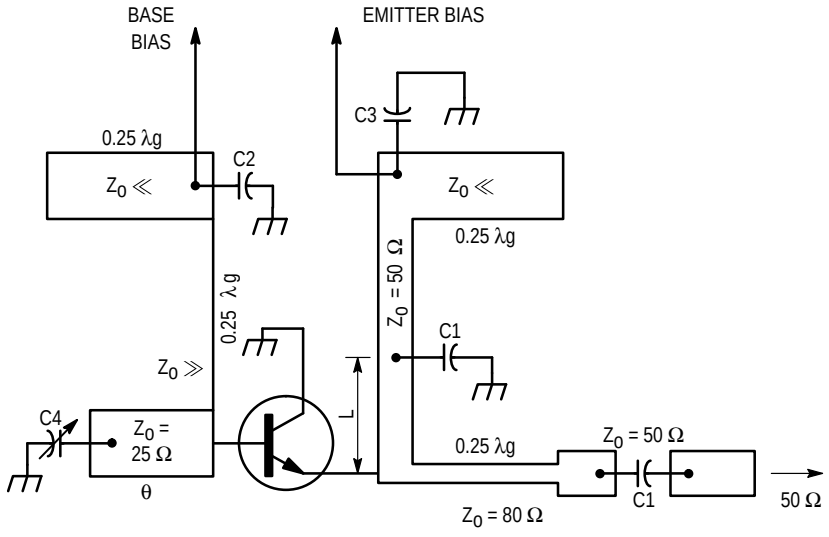


Figure 3. Test Circuit

TYPICAL CHARACTERISTICS

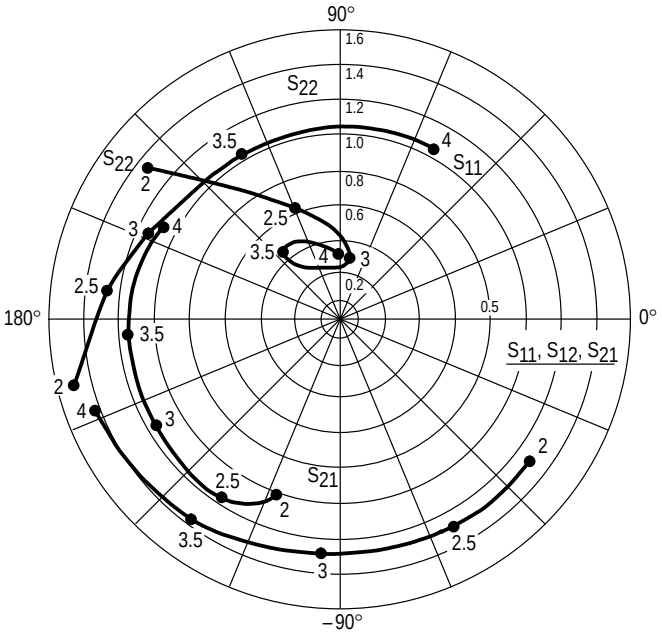
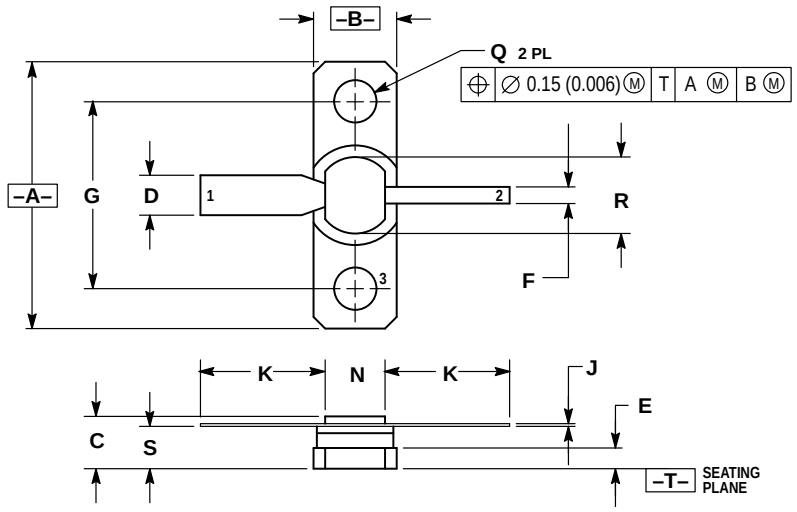


Figure 4. Small Signal S–Parameters
(V_{CE} = 20 V, I_E = 220 mA)

PACKAGE DIMENSIONS



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

	INCHES		MILLIMETERS	
DIM	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
2. EMITTER
3. COLLECTOR

CASE 328A–03
ISSUE D

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