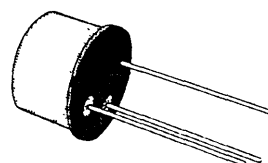


VHF OSCILLATOR POWER AMPLIFIER

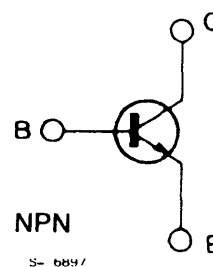
DESCRIPTION

The 2N4427 and BFR98 are silicon planar epitaxial NPN transistor in Jedec TO-39 metal case. They are designed for VHF class A, B, or C amplifier and oscillator applications.



TO-39

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage ($I_E = 0$)	40	V
V_{CEO}	Collector-emitter Voltage ($I_B = 0$)	20	V
V_{EBO}	Emitter-base Voltage ($I_C = 0$)	3.5	V
I_C	Collector Current	0.5	A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25\text{ }^{\circ}\text{C}$	3.5	W
T_{stg}, T_J	Storage and Junction Temperature	- 65 to 200	$^{\circ}\text{C}$

THERMAL DATA

$R_{th J-case}$	Thermal Resistance Junction-case	Max	50	$^{\circ}C/W$
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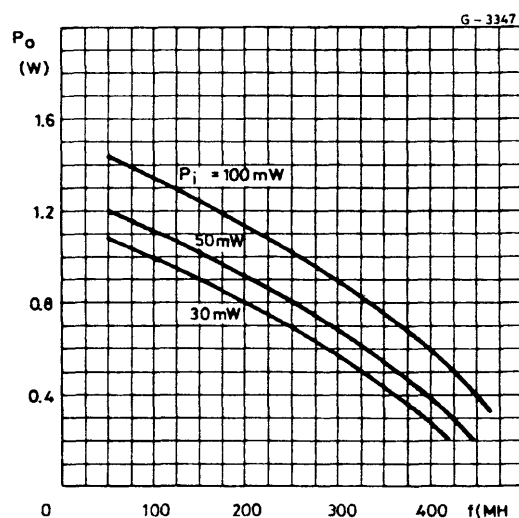
ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEO}	Collector Cutoff Current ($I_B = 0$)	$V_{CE} = 12 V$			20	μA
$V_{(BR)CBO}$	Collector-base Breakdown Voltage ($I_E = 0$)	$I_C = 100 \mu A$	40			V
$V_{CEO(sus)}^*$	Collector-emitter Sustaining Voltage ($I_B = 0$)	$I_C = 5 mA$	20			V
$V_{CE(sus)}^*$	Collector-Emitter Sustaining Voltage ($R_{BE} = 10 \Omega$)	$I_C = 5 mA$	40			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_C = 0$)	$I_E = 100 \mu A$	3.5			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 100 mA$ $I_B = 20 mA$			0.5	V
h_{FE}^*	DC Current Gain	$I_C = 100 mA$ $V_{CE} = 5 V$ $I_C = 360 mA$ $V_{CE} = 5 V$	10 5		200	
f_T	Transition Frequency	$I_C = 50 mA$ $V_{CE} = 15 V$ $f = 200 MHz$	500			MHz
C_{CBO}	Collector-base Capacitance	$I_E = 0$ $V_{CB} = 12 V$ $f = 1 MHz$			4	pF
P_o^{**}	Output Power	$V_{CC} = 12 V$ $P_i = 100 mW$ $f = 175 MHz$	1			W
η^{**}	Collector Efficiency	$V_{CC} = 12 V$ $P_o = 1 W$ $f = 175 MHz$	50			%

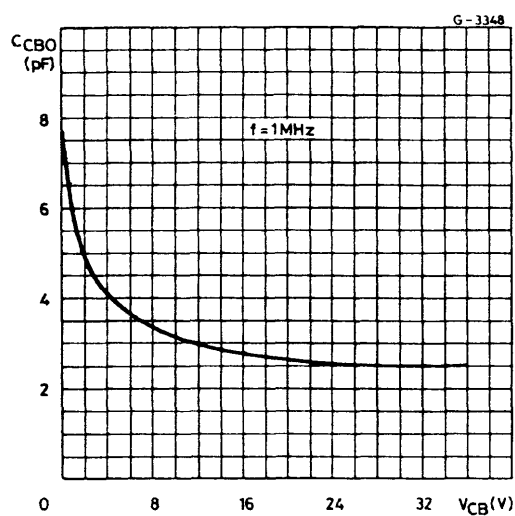
* Pulsed : pulse duration = 300 μs , duty cycle = 1 %.

** See test circuit.

RF Output Power.

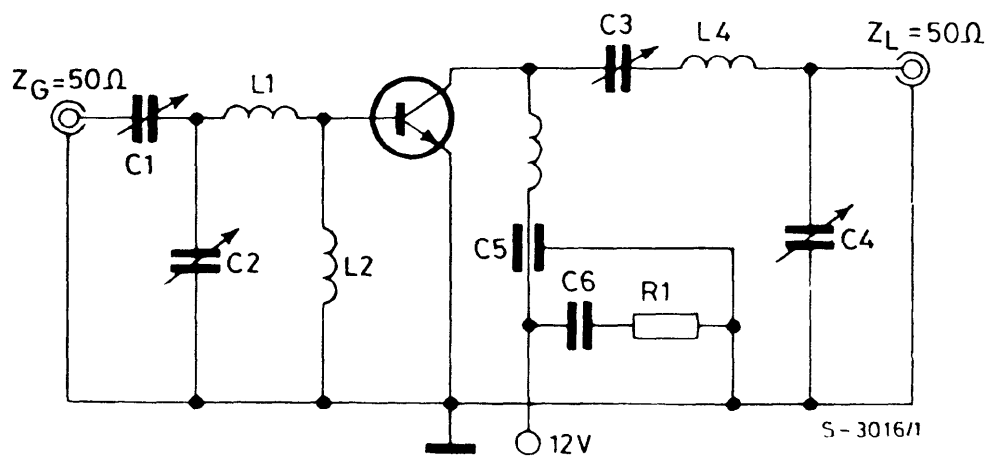


Collector-base Capacitance.



TEST CIRCUIT

Test Circuit for Power Output Measurement ($f = 175 \text{ MHz}$).



$C1, C2, C3, C4 = 3 \div 30 \text{ pF}$
 $C5 = 1000 \text{ pF}$
 $C6 = 20 \text{ k}\mu\text{F}$
 $R1 = 10 \text{ W}$

$L1 = 2 \text{ turns } 16 \text{ wire, } 3/16" \text{ ID, } 1/4" \text{ long}$
 $L2 = \text{ferrite choke, } Z = 450 \text{ W}$
 $L3 = 2 \text{ turns } 16 \text{ wire, } 1/4" \text{ ID, } 1/4" \text{ long}$
 $L4 = 4 \text{ turns } 16 \text{ wire, } 3/8" \text{ ID, } 3/8" \text{ long}$