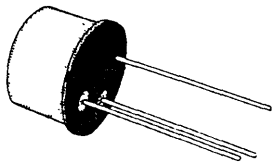
SGS-THOMSON MICROELECTRONICS

2N4427 BFR98

VHF OSCILLATOR POWER AMPLIFIER

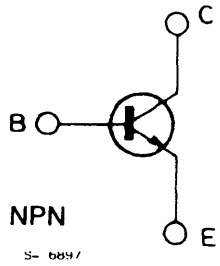
DESCRIPTION

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



S- 6897

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 $T_{case} \leq 25$ °C	3.5	W
T_{stg}, T_j	Storage and Junction Temperature	– 65 to 200	°C

THERMAL DATA

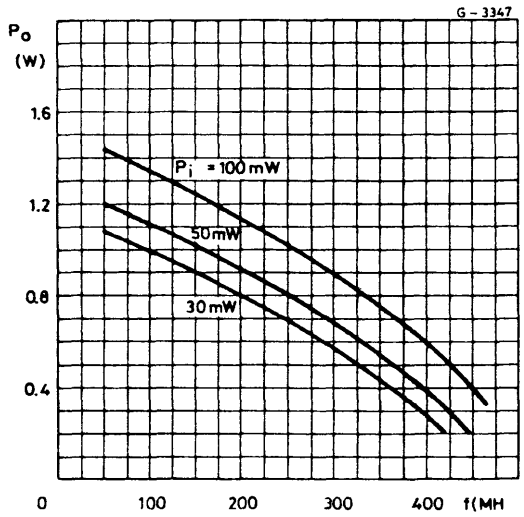
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	50	°C/W

ELECTRICAL CHARACTERISITCS (T_{amb} = 25 °C unless otherwise specified)

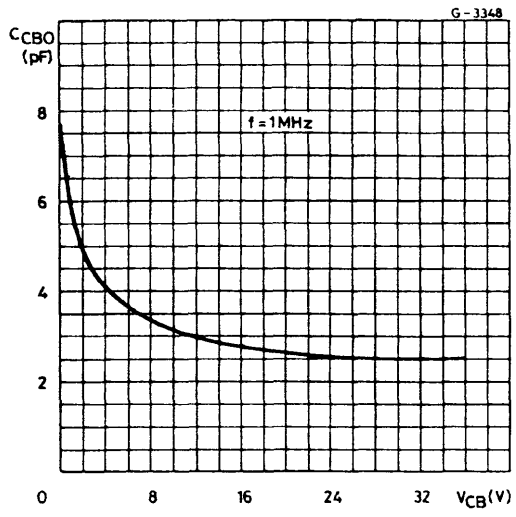
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEO}	Collector Cutoff Current (I_B = 0)	V_{CE} = 12 V			20	µA
$V_{(BR)CBO}$	Collector-base Breakdown Voltage (I_E = 0)	I_C = 100 µA	40			V
$V_{CEO(sus)}$*	Collector-emitter Sustaining Voltage (I_B = 0)	I_C = 5 mA	20			V
$V_{CER(sus)}$*	Collector-Emitter Sustaining Voltage (R_{BE} = 10 Ω)	I_C = 5 mA	40			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage (I_C = 0)	I_E =100 µA	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.

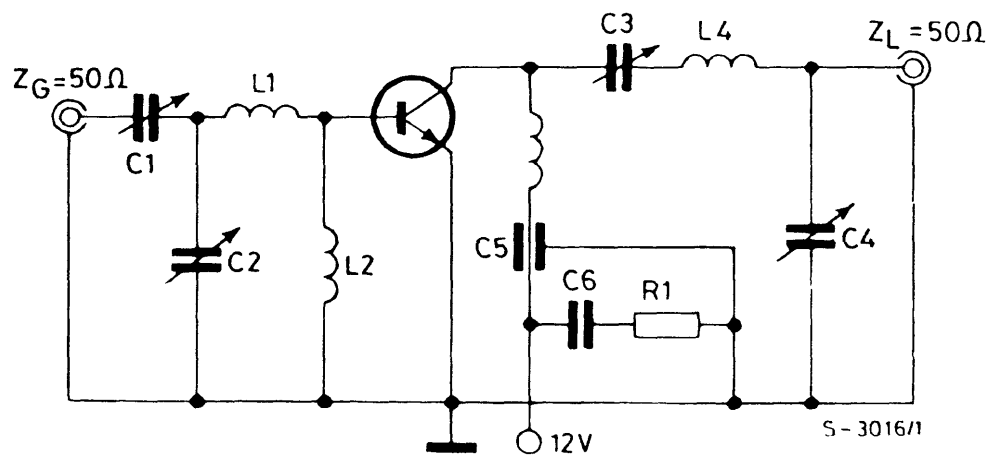


Collector-base Capacitance.



TEST CIRCUIT

Test Circuit for Power Output Measurement (f = 175 MHz).



C1, C2, C3, C4 = 3 ÷ 30 pF
C5 = 1000 pF
C6 = 20 kpF
R1 = 10 W

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