

DESCRIPTION

2SC3018 is a silicon NPN epitaxial planar type transistor designed for 7.2Volts VHF power amplifiers applications.

FEATURES

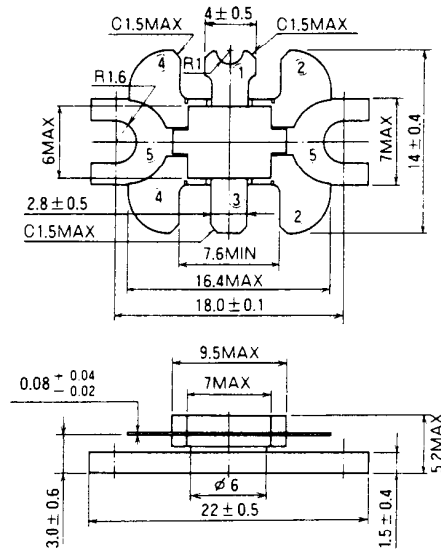
- High gain: $G_{pe} \geq 13\text{dB}$ @ $f = 175\text{MHz}$, $V_{CC} = 7.2\text{V}$
 $P_{in} = 0.15\text{W}$.
- Convenient ceramic type package with flange for high gain and excellent heat dissipation.
- Emitter ballasted construction.
- High ruggedness: Ability to withstand more than 20:1 load VSWR when operated at $V_{CC} = 9\text{V}$, $P_O = 3\text{W}$.

APPLICATION

Output stage of 2W portable type transmitter in VHF band.

OUTLINE DRAWING

Dimensions in mm



PIN :

- ① COLLECTOR
- ② EMITTER (FLANGE)
- ③ BASE
- ④ EMITTER (FLANGE)
- ⑤ FIN (EMITTER)

T-31E

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CBO}	Collector to base voltage		20	V
V_{EBO}	Emitter to base voltage		3.5	V
V_{CEO}	Collector to emitter voltage	$R_{BE} = \infty$	9	V
I_C	Collector current		1.5	A
P_C	Collector dissipation	$T_C = 25^\circ\text{C}$	10	W
T_j	Junction temperature		175	$^\circ\text{C}$
T_{stg}	Storage temperature		-55 to 175	$^\circ\text{C}$

Note. Above parameters are guaranteed independently.

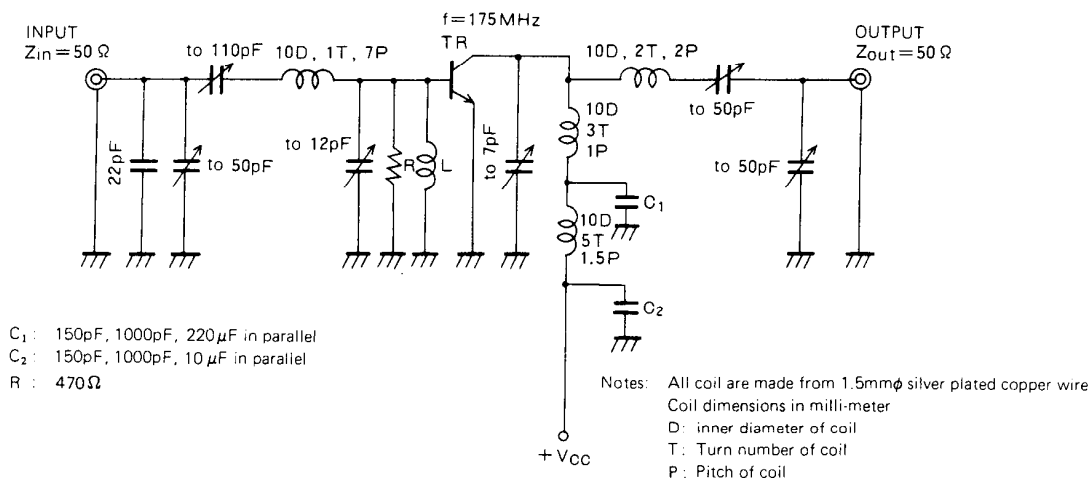
ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)EBO}$	Emitter to base breakdown voltage	$I_E = 1\text{mA}$, $I_C = 0$	3.5			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	$I_C = 10\text{mA}$, $I_E = 0$	20			V
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	$I_C = 10\text{mA}$, $R_{BE} = \infty$	9			V
I_{CBO}	Collector cut off current	$V_{CB} = 10\text{V}$, $I_E = 0$			300	μA
I_{EBO}	Emitter cut off current	$V_{EB} = 2\text{V}$, $I_C = 0$			300	μA
h_{FE}	DC forward current gain *	$V_{CE} = 5\text{V}$, $I_C = 0.1\text{A}$	20	50	180	—
P_O	Power Output	$V_{CC} = 7.2\text{V}$, $P_{in} = 0.15\text{W}$, $f = 175\text{MHz}$	3.0	3.5		W
η_C	Collector efficiency		55	60		%

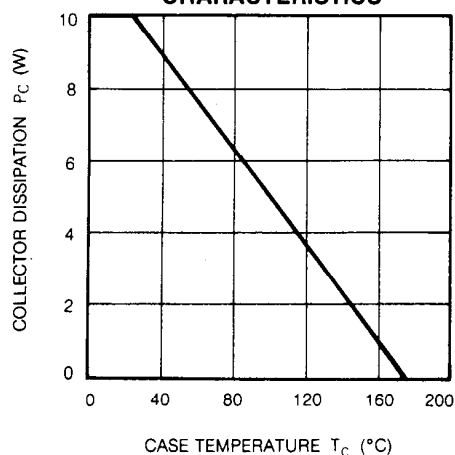
Note. * Pulse test, $P_W = 150\mu\text{s}$, duty = 5%.

Above parameters, ratings, limits and conditions are subject to change.

TEST CIRCUIT



COLLECTOR DISSIPATION VS. CASE TEMPERATURE CHARACTERISTICS



Graph showing DC current gain h_{FE} versus collector current I_C (A) for a 2N4350 PNP silicon NPN transistor. The graph is plotted for $T_C = 25^\circ\text{C}$ and $V_{CE} = 5\text{V}$. The x-axis is logarithmic, ranging from 0.1 to 10 A. The y-axis is linear, ranging from 0 to 100. The curve shows that h_{FE} increases with I_C , starting around 50 at 0.1 A and reaching approximately 75 at 3 A.

Collector Current I_C (A)	DC Current Gain h_{FE}
0.1	50
0.2	55
0.5	60
1.0	65
2.0	72
3.0	75

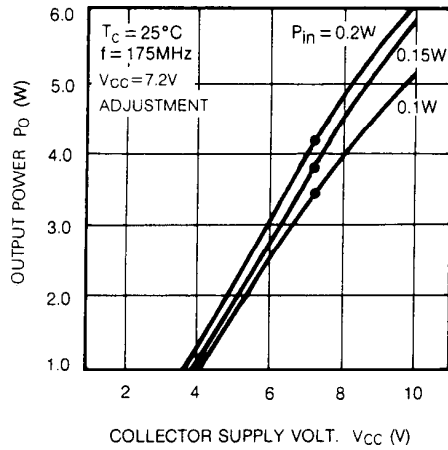
Graph showing Collector Output Capacitance C_{ob} (pF) versus Collector to Base Voltage V_{CB} (V) for the 2N4350 JFET. The graph is plotted on a log-log scale. The y-axis ranges from 1 to 100 pF, and the x-axis ranges from 1 to 70 V. The curve shows that C_{ob} decreases as V_{CB} increases. The conditions are $T_C = 25^\circ\text{C}$ and $f = 1\text{MHz}$.

Collector to Base Voltage V_{CB} (V)	Collector Output Capacitance C_{ob} (pF)
1	25
2	20
5	15
10	12
20	10

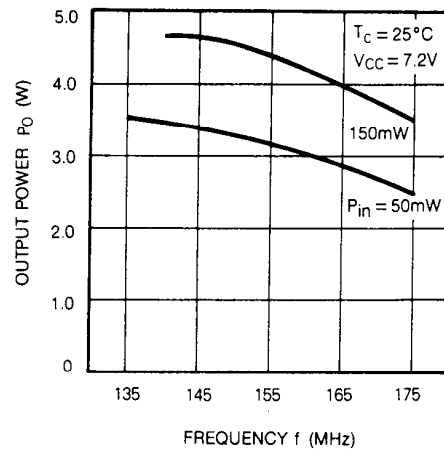
Operating conditions: $T_C = 25^\circ\text{C}$, $V_{CC} = 7.2\text{V}$, $f = 175\text{MHz}$

Input Power P_{in} (W)	Output Power P_O (W)	Collector Efficiency η_C (%)
0.05	2.2	45
0.10	3.2	55
0.20	3.8	58
0.30	4.2	55
0.40	4.5	52

**OUTPUT POWER VS. COLLECTOR
SUPPLY VOLTAGE
CHARACTERISTICS**



**OUTPUT POWER VS. FREQUENCY
CHARACTERISTICS**



**INPUT, OUTPUT IMPEDANCE
VS. FREQUENCY
CHARACTERISTICS**

