

# MITSUBISHI RF POWER TRANSISTOR 2SC3018

## NPN EPITAXIAL PLANAR TYPE

### DESCRIPTION

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

### FEATURES

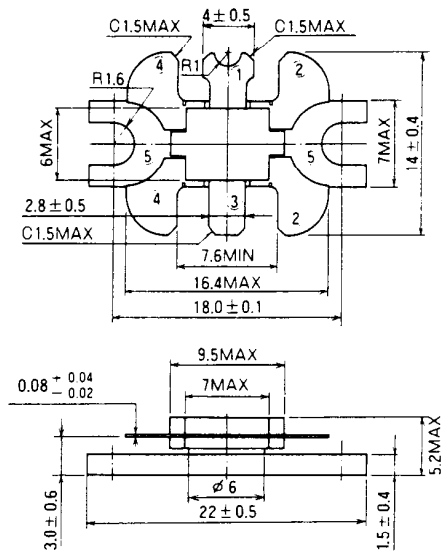
- High gain:  $G_{pe} \geq 13\text{dB}$  @  $f = 175\text{MHz}$ ,  $V_{CC} = 7.2\text{V}$   
 $P_{in} = 0.15\text{W}$ .
- Convenient ceramic type package with flange for high gain and excellent heat dissipation.
- Emitter ballasted construction.
- High ruggedness: Ability to withstand more than 20:1 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	$\mu\text{A}$
$I_{EBO}$	Emitter cut off current	$V_{EB} = 2\text{V}$ , $I_C = 0$			300	$\mu\text{A}$
$h_{FE}$	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
$\eta_C$	Collector efficiency		55	60		%

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

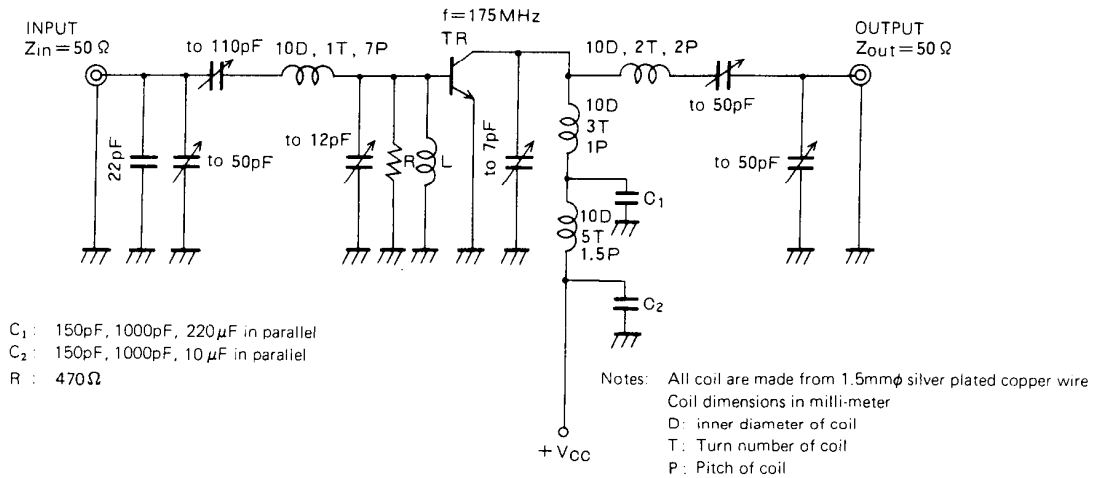
Above parameters, ratings, limits and conditions are subject to change.

NOV. '97

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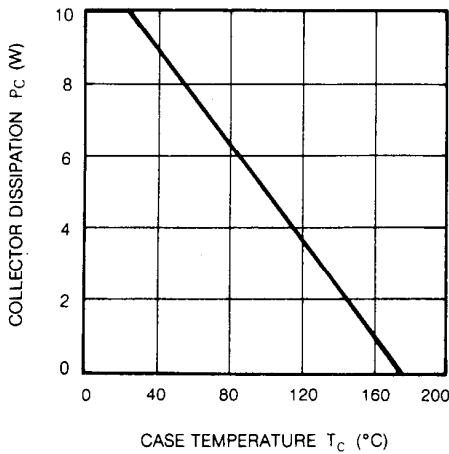
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### TEST CIRCUIT

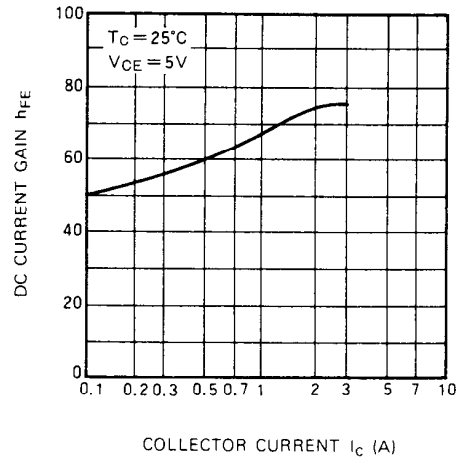


### TYPICAL PERFORMANCE DATA

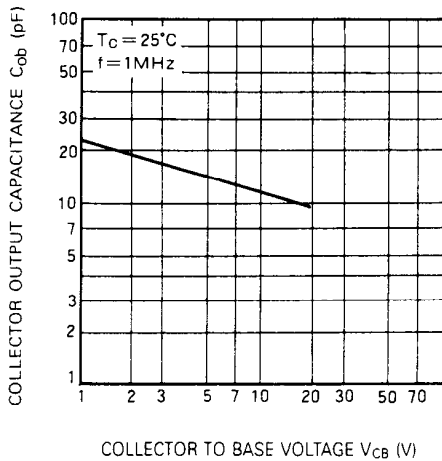
COLLECTOR DISSIPATION VS. CASE TEMPERATURE CHARACTERISTICS



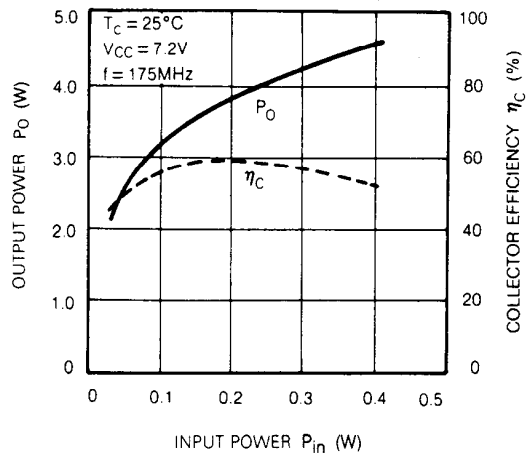
DC CURRENT GAIN VS. COLLECTOR CURRENT



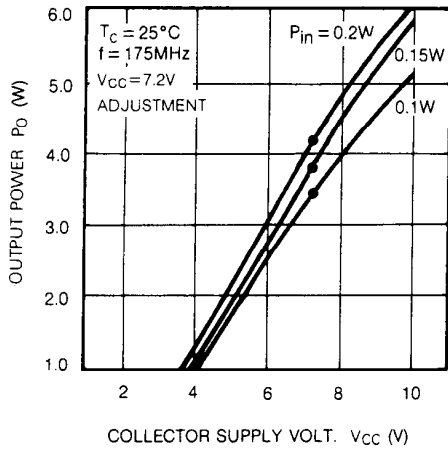
COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



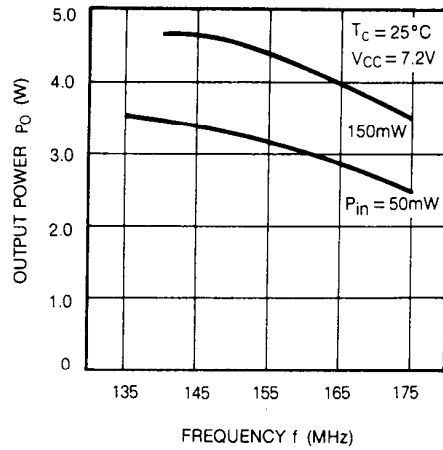
OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER CHARACTERISTICS



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



**OUTPUT POWER VS. FREQUENCY CHARACTERISTICS**



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

