

## DESCRIPTION

2SC3017 is a silicon NPN epitaxial planar type transistor specifically designed for VHF power amplifiers applications.

## FEATURES

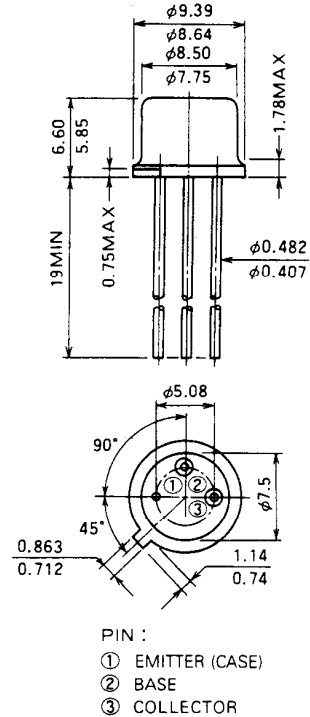
- High power gain:  $G_{pe} \geq 11\text{dB}$   
@  $V_{CC} = 7.2\text{V}$ ,  $f = 175\text{MHz}$ ,  $P_{in} = 0.1\text{W}$
- Emitter ballasted construction.
- Emitter case type TO-39 package.  
(connected internally to emitter)
- $Z_{in} = 8 - j12\Omega$ ,  $Z_{out} = 11 - j1\Omega$   
@  $V_{CC} = 7.2\text{V}$ ,  $f = 175\text{MHz}$ ,  $P_O = 1.5\text{W}$ .

## APPLICATION

For drive stage and output stage of power amplifiers in VHF band portable radio sets.

## OUTLINE DRAWING

Dimensions in mm



T-8E

## 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          | A                |
| $P_C$     | Collector dissipation        | $T_C = 25^\circ\text{C}$ | 4          | 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 ( $T_C = 25^\circ\text{C}$ )

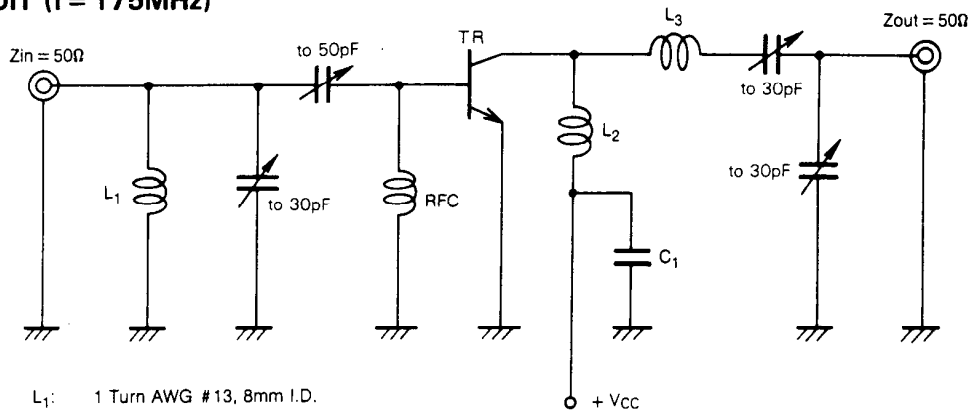
| Symbol        | Parameter                              | Test conditions                                                       | Limits |     |     | Unit          |
|---------------|----------------------------------------|-----------------------------------------------------------------------|--------|-----|-----|---------------|
|               |                                        |                                                                       | 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              | $V_{CB} = 10\text{V}$ , $I_E = 0$                                     |        |     | 200 | $\mu\text{A}$ |
| $I_{EBO}$     | Emitter cut off current                | $V_{EB} = 2\text{V}$ , $I_C = 0$                                      |        |     | 200 | $\mu\text{A}$ |
| $h_{FE}$      | DC forward current gain *              | $V_{CE} = 5\text{V}$ , $I_C = 0.1\text{A}$                            | 20     | 50  | 180 | —             |
| $P_O$         | Power Output                           | $V_{CC} = 7.2\text{V}$ , $P_{in} = 0.1\text{W}$ , $f = 175\text{MHz}$ | 1.5    | 2.0 |     | 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.

**NPN EPITAXIAL PLANAR TYPE**

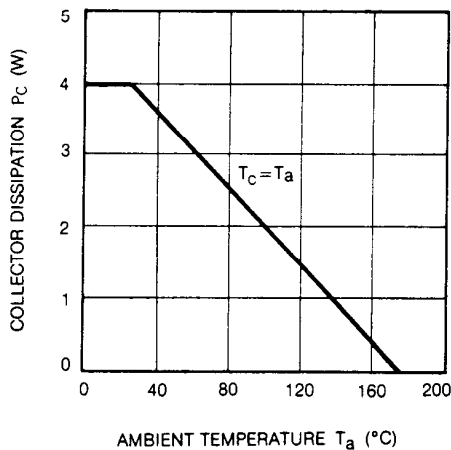
**TEST CIRCUIT ( $f = 175\text{MHz}$ )**



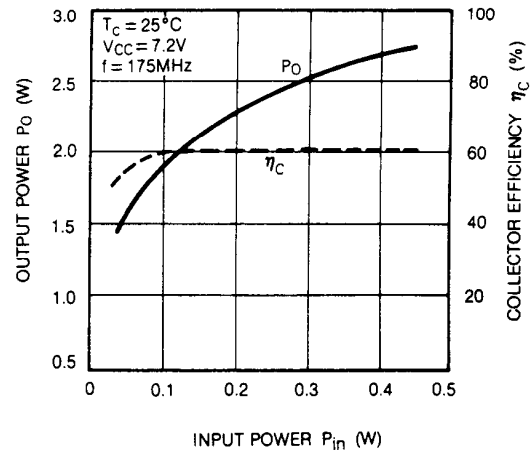
- $L_1$ : 1 Turn AWG #13, 8mm I.D.  
 $L_2$ : 4 Turns AWG #13, 8mm I.D.  
 $L_3$ : 2 Turns AWG #13, 8mm I.D.  
 $RFC$ : 20 Turns AWG #26 Enameled wire Close Wound on 4mm O.D., 14mm Length Bakelite.  
 $C_1$ : 0.022 $\mu\text{F}$ , 0.047 $\mu\text{F}$ , 0.1 $\mu\text{F}$  in parallel.

**TYPICAL PERFORMANCE DATA**

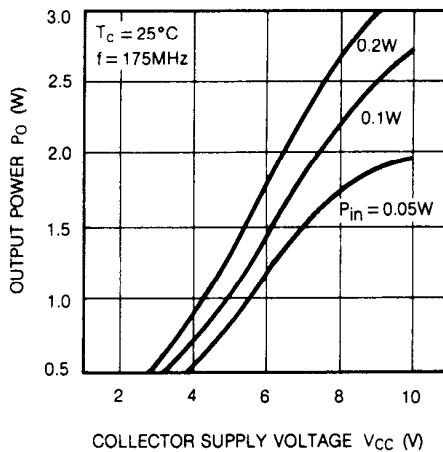
**COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE CHARACTERISTICS.**



**OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER CHARACTERISTICS.**



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



**COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE CHARACTERISTICS.**

