

**DESCRIPTION**

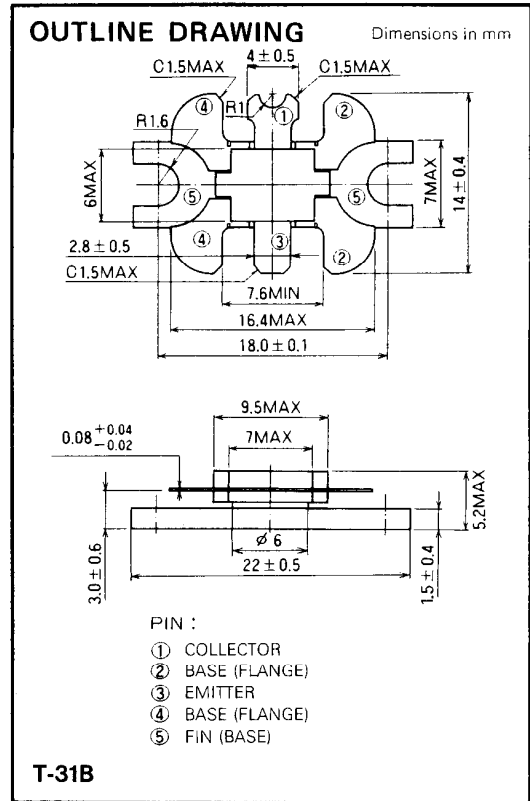
2SC2933 is silicon NPN epitaxial planar type transistor specifically designed for power amplifiers in 800 ~ 940MHz band.

**FEATURES**

- High gain, High efficiency:  
 $G_{pb} = 6.7\text{dB}$ ,  $\eta_c \geq 50\%$ ,  $P_o \geq 14\text{W}$   
 $@f = 900\text{MHz}$ ,  $V_{CC} = 12.5\text{V}$ ,  $P_{in} = 3\text{W}$
- Gold metalization of transistor die.
- Flange type ceramic package.
- Equivalent input/output series impedance:  
 $Z_{in} = 2.5 + j0.75(\Omega)$ ,  $Z_{out} = 2.2 - j2.1(\Omega)$   
 $@f = 900\text{MHz}$ ,  $V_{CC} = 12.5\text{V}$ ,  $P_o = 16\text{W}$
- Common base type.
- The ability withstand infruite VSWR when operated at  
 $f = 900\text{MHz}$ ,  $V_{CC} = 15.2\text{V}$ ,  $P_o = 14\text{W}$ .

**APPLICATION**

Output stage of power amplifiers in 800MHz band mobile radio equipment



**ABSOLUTE MAXIMUM RATINGS** ( $T_0 = 25^\circ\text{C}$  unless otherwise specified)

| Symbol     | Parameter                    | Conditions               | Ratings    | Unit               |
|------------|------------------------------|--------------------------|------------|--------------------|
| $V_{CBO}$  | Collector to base voltage    |                          | 35         | V                  |
| $V_{EBO}$  | Emitter to base voltage      |                          | 3          | V                  |
| $V_{CEO}$  | Collector to emitter voltage | $R_{BE} = \infty$        | 17         | V                  |
| $I_C$      | Collector current            |                          | 4          | A                  |
| $P_C$      | Collector dissipation        | $T_a = 25^\circ\text{C}$ | 3          | W                  |
|            |                              | $T_0 = 25^\circ\text{C}$ | 40         | W                  |
| $T_J$      | Junction temperature         |                          | 175        | $^\circ\text{C}$   |
| $T_{stg}$  | Storage temperature          |                          | -55 to 175 | $^\circ\text{C}$   |
| $R_{th-a}$ | Thermal resistance           |                          | 50         | $^\circ\text{C/W}$ |
| $R_{th-c}$ |                              |                          | 3.75       | $^\circ\text{C/W}$ |

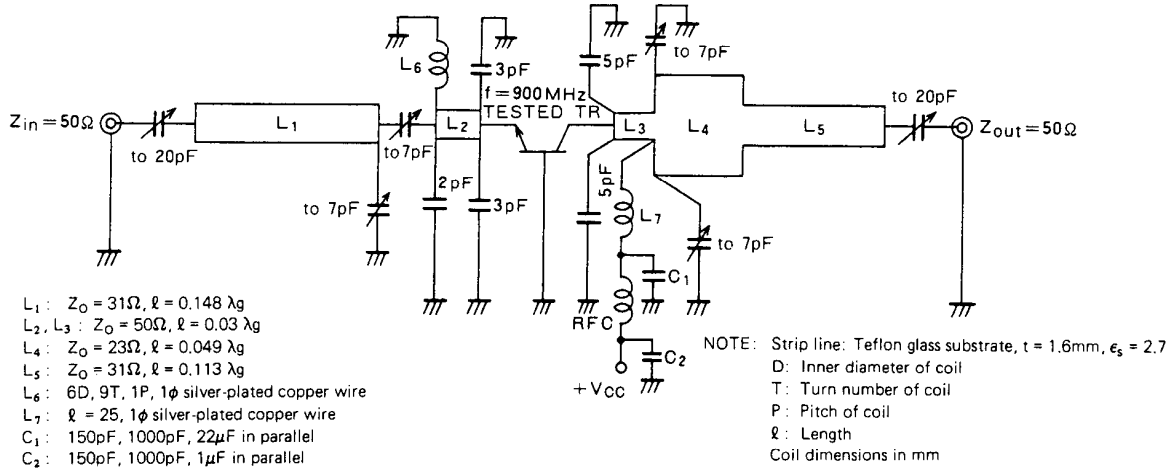
Note. Above parameters are guaranteed independently.

**ELECTRICAL CHARACTERISTICS** ( $T_0 = 25^\circ\text{C}$  unless otherwise specified)

| Symbol        | Parameter                              | Test conditions  | Limits |     |     | Unit |
|---------------|--|--|--------|-----|-----|------|
|               |  |  | Min    | Typ | Max |      |
| $V_{(BR)EBO}$ | Emitter to base breakdown voltage      | $I_E = 10\text{mA}$ , $I_C = 0$                                      | 3      |     |     | V    |
| $V_{(BR)CBO}$ | Collector to base breakdown voltage    | $I_C = 10\text{mA}$ , $I_E = 0$                                      | 35     |     |     | V    |
| $V_{(BR)CEO}$ | Collector to emitter breakdown voltage | $I_C = 0.1\text{A}$ , $R_{BE} = \infty$                              | 17     |     |     | V    |
| $I_{CBO}$     | Collector cutoff current               | $V_{CB} = 15\text{V}$ , $I_E = 0$                                    |        |     | 2   | mA   |
| $I_{EBO}$     | Emitter cutoff current                 | $V_{EB} = 2\text{V}$ , $I_C = 0$                                     |        |     | 3   | mA   |
| $h_{FE}$      | DC current gain *                      | $V_{CE} = 10\text{V}$ , $I_C = 0.2\text{A}$                          | 10     | 50  | 180 | —    |
| $P_O$         | Output power                           | $f = 900\text{MHz}$ , $V_{CC} = 12.5\text{V}$ , $P_{in} = 3\text{W}$ | 14     | 16  |     | W    |
| $\eta_C$      | Collector efficiency                   |  | 50     | 60  |     | %    |

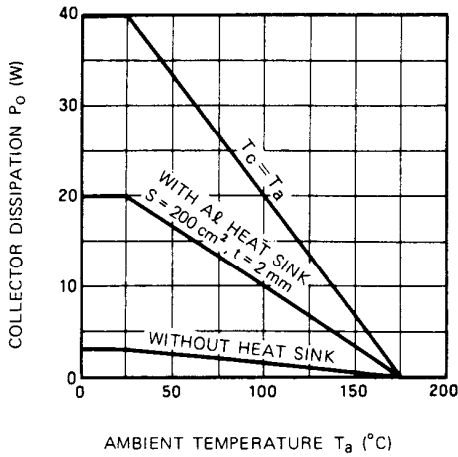
Note. \* Pulse test,  $P_W = 150\mu\text{s}$ , duty = 5%.  
 Above parameters, ratings, limits and conditions are subject to change.

**TEST CIRCUIT**

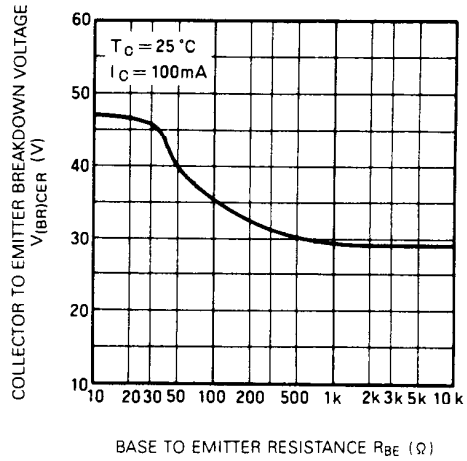


**TYPICAL PERFORMANCE DATA**

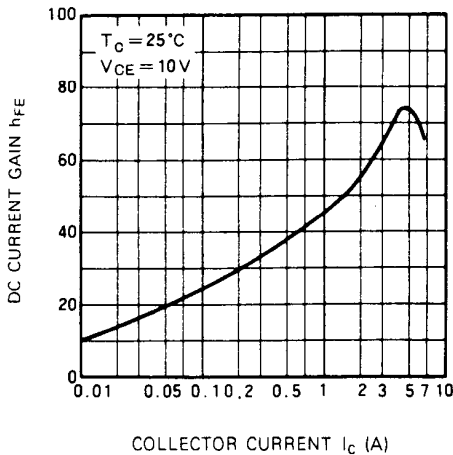
**COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE**



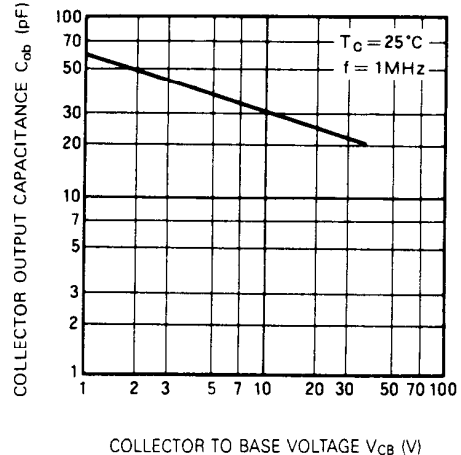
**COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE**



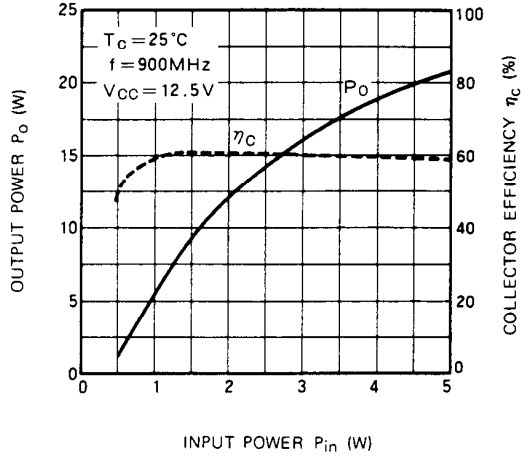
**DC CURRENT GAIN VS. COLLECTOR CURRENT**



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



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



**OUTPUT POWER, COLLECTOR SUPPLY VOLTAGE VARIATION**

