

**DESCRIPTION**

2SC3020 is a silicon NPN epitaxial planar type transistor designed for UHF power amplifier applications.

**FEATURES**

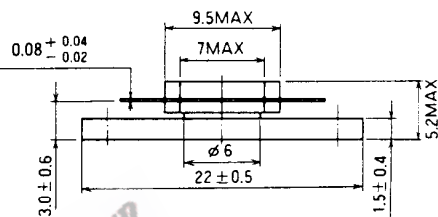
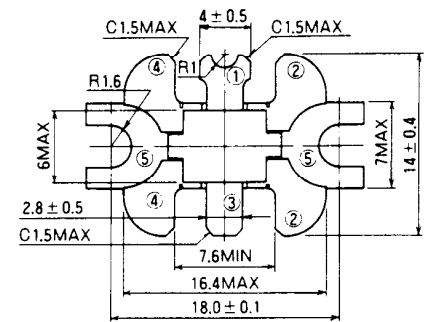
- High gain:  $G_{pe} \geq 10\text{dB}$ , @  $f = 520\text{MHz}$ ,  $V_{CC} = 12.5\text{V}$ ,  $P_{in} = 0.3\text{W}$ .
- High ruggedness: Ability to withstand more than 20:1 load VSWR (all phase) when operated at  $V_{CC} = 15.2\text{V}$ ,  $f = 520\text{MHz}$ ,  $P_O = 3\text{W}$ .
- Emitter ballasted construction.
- Low thermal resistance:  $R_{th} = 15 \text{ }^\circ\text{C/W}$  ( $T_C = 25^\circ\text{C}$ )
- Convenient flange type ceramic package.

**APPLICATION**

For drive stage and output stage of 400MHz band mobile radio.

**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             |
|-----------|------------------------------|--------------------------|------------|------------------|
| $V_{CB0}$ | Collector to base voltage    |                          | 35         | V                |
| $V_{EB0}$ | Emitter to base voltage      |                          | 4.0        | V                |
| $V_{CEO}$ | Collector to emitter voltage | $R_{BE} = \infty$        | 17         | V                |
| $I_C$     | Collector current            |                          | 1          | 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 | $^\circ\text{C}$ |

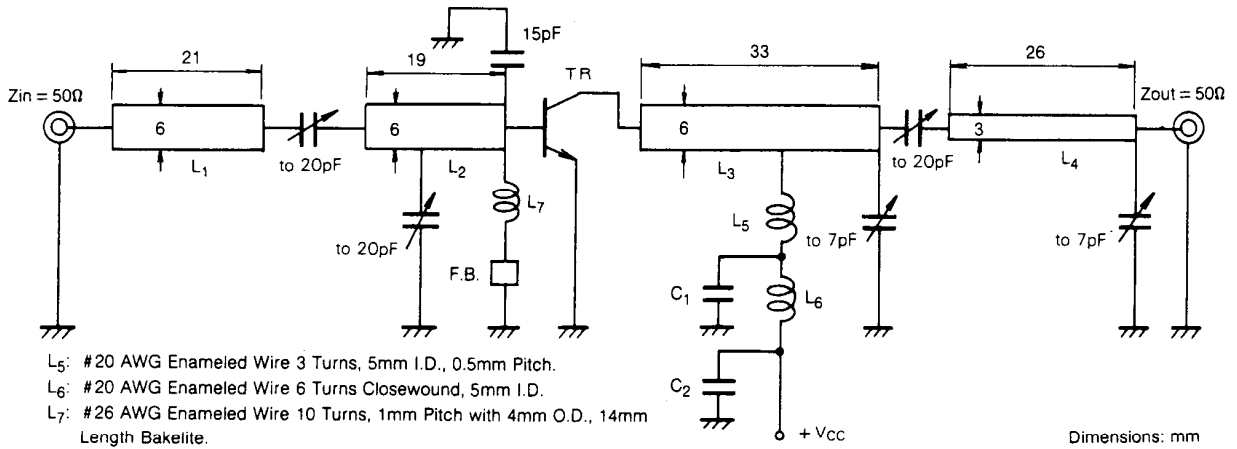
Note. Above parameters are guaranteed independently.

**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      | $I_E = 1\text{mA}$ , $I_C = 0$   | 4.0    |     |     | 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 | $I_C = 10\text{mA}$ , $R_{BE} = \infty$                                | 17     |     |     | V             |
| $I_{CBO}$     | Collector cut off current              | $V_{CB} = 15\text{V}$ , $I_E = 0$                                      |        |     | 300 | $\mu\text{A}$ |
| $I_{EBO}$     | Emitter cut off current                | $V_{EB} = 3.0\text{V}$ , $I_C = 0$                                     |        |     | 300 | $\mu\text{A}$ |
| $h_{FE}$      | DC forward current gain *              | $V_{CE} = 10\text{V}$ , $I_C = 0.1\text{A}$                            | 20     | 50  | 180 | --            |
| $P_O$         | Power Output                           | $V_{CC} = 12.5\text{V}$ , $P_{in} = 0.3\text{W}$ , $f = 520\text{MHz}$ | 3.0    | 3.3 |     | W             |
| $\eta_C$      | Collector efficiency                   |  | 50     | 55  |     | %             |

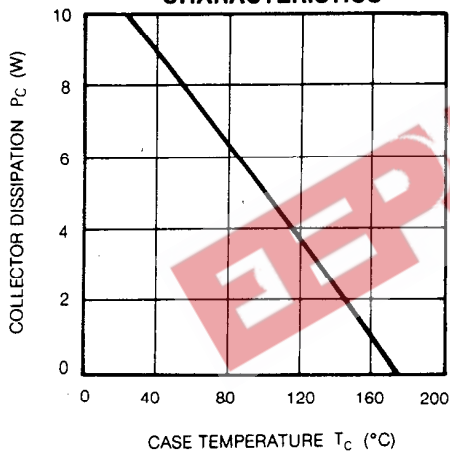
Note. \* Pulse test,  $P_w = 150\mu\text{s}$ , duty=5%.  
Above parameters, ratings, limits and conditions are subject to change.

**TEST CIRCUIT (f = 520MHz)**

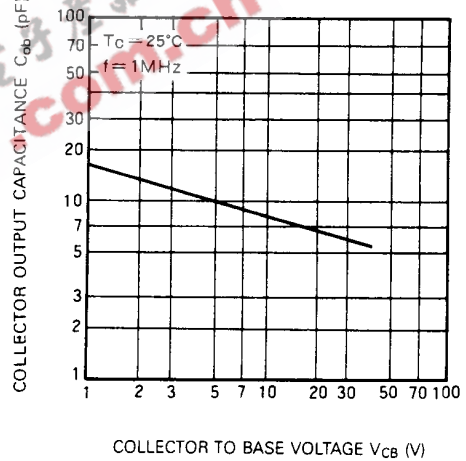


**TYPICAL PERFORMANCE DATA**

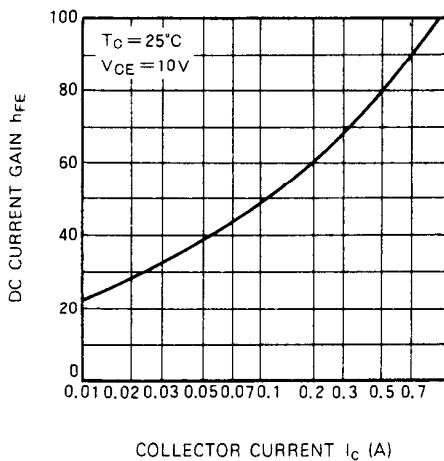
**COLLECTOR DISSIPATION VS. CASE TEMPERATURE CHARACTERISTICS**



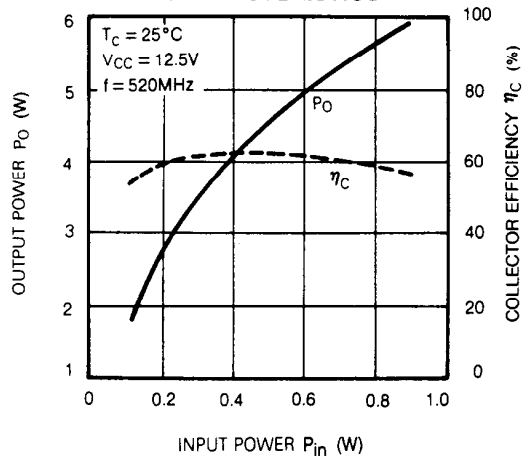
**COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE**



**DC CURRENT GAIN VS. COLLECTOR CURRENT**



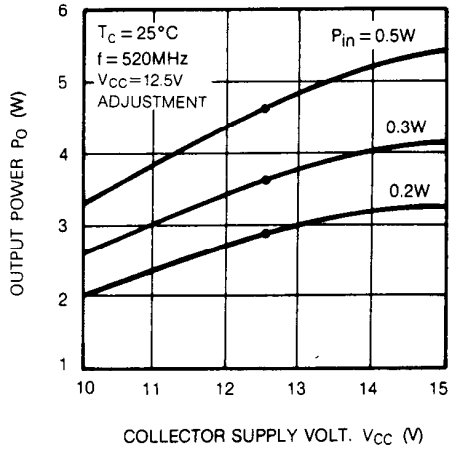
**OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER CHARACTERISTICS**



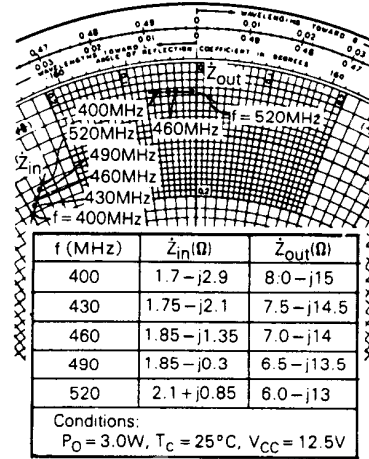
MITSUBISHI RF POWER TRANSISTOR  
**2SC3020**

**NPN EPITAXIAL PLANAR TYPE**

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



**SERIES INPUT AND OUTPUT IMPEDANCE VS. FREQUENCY CHARACTERISTICS**



EEPW 电子产品世界 .com.cn