

## DESCRIPTION

2SC3630 is a silicon NPN epitaxial planar type transistor specifically designed for UHF power amplifiers applications.

## FEATURES

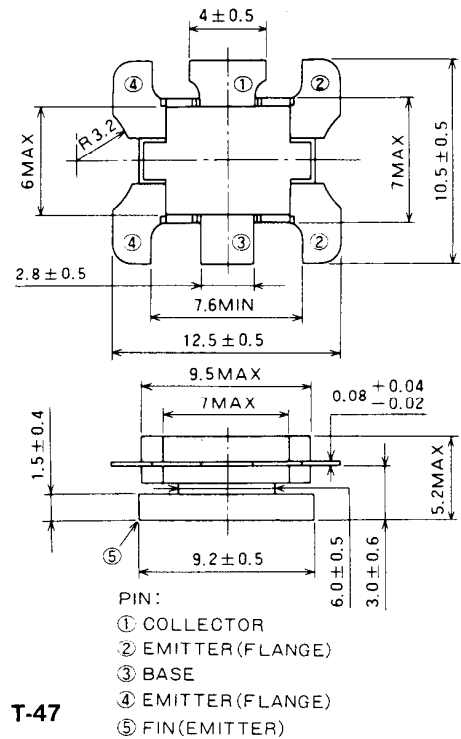
- High power gain:  $G_{pe} \geq 5.7\text{dB}$   
@  $V_{CC} = 12.5\text{V}$ ,  $f = 520\text{MHz}$ ,  $P_{in} = 0.8\text{W}$
- Emitter ballasted construction
- High ruggedness: Ability to withstand more than 20:1 load VSWR when operated at  $V_{CC} = 15.2\text{V}$ ,  $f = 520\text{MHz}$ ,  $P_O = 3\text{W}$ .

## APPLICATION

For drive stage and output stage of power amplifiers in UHF band.

## OUTLINE DRAWING

Dimensions in mm



T-47

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

| Symbol    | Parameter                    | Conditions               | Ratings    | Unit             |
|-----------|------------------------------|--------------------------|------------|------------------|
| $V_{CBO}$ | Collector to base voltage    |                          | 35         | V                |
| $V_{EBO}$ | Emitter to base voltage      |                          | 4          | 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 ( $T_C = 25^\circ\text{C}$ unless otherwise specified)

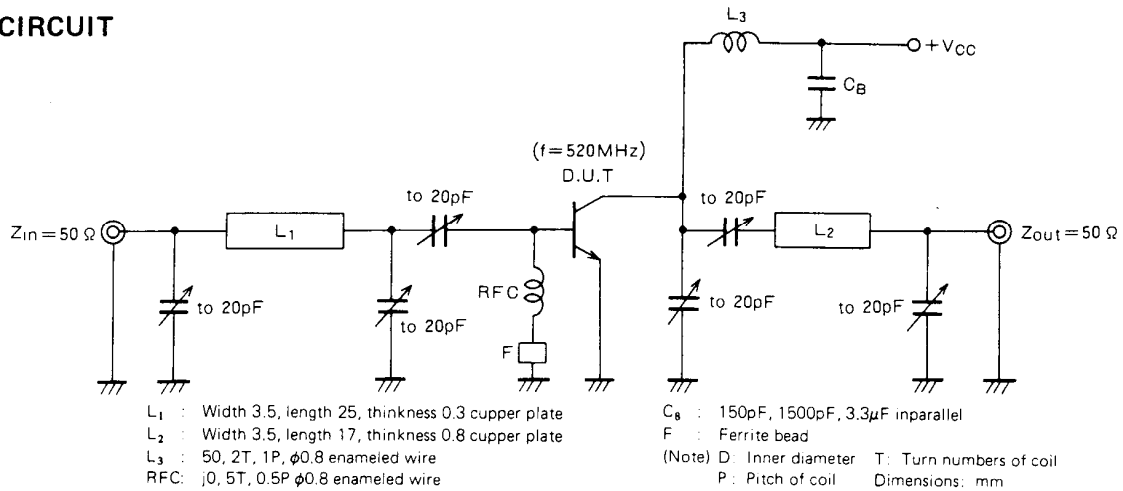
| Symbol        | Parameter                              | Test conditions                                                          | Limits |     |     | Unit          |
|---------------|----------------------------------------|--------------------------------------------------------------------------|--------|-----|-----|---------------|
|               |                                        |                                                                          | Min    | Typ | Max |               |
| $V_{(BR)EBO}$ | Emitter to base breakdown voltage      | $I_E = 1\text{mA}$ , $I_C = 0$                                           | 4      |     |     | 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 cutoff current               | $V_{CB} = 15\text{V}$ , $I_E = 0$                                        |        |     | 300 | $\mu\text{A}$ |
| $I_{EBO}$     | Emitter cutoff current                 | $V_{EB} = 2\text{V}$ , $I_C = 0$                                         |        |     | 300 | $\mu\text{A}$ |
| $h_{FE}$      | DC forward current gain *              | $V_{CB} = 10\text{V}$ , $I_C = 0.1\text{A}$                              | 10     | 50  | 180 | —             |
| $P_O$         | Output power                           | $V_{CC} = 12.5\text{V}$ , $P_{in} = 0.8\text{W}$ , $f = 520\text{MHz}$ . | 3      | 3.5 |     | 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.

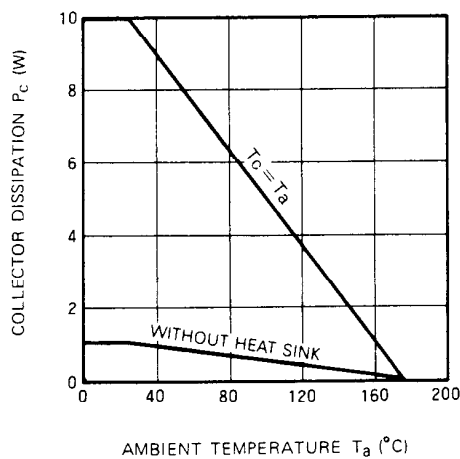
**NPN EPITAXIAL PLANAR TYPE**

**TEST CIRCUIT**

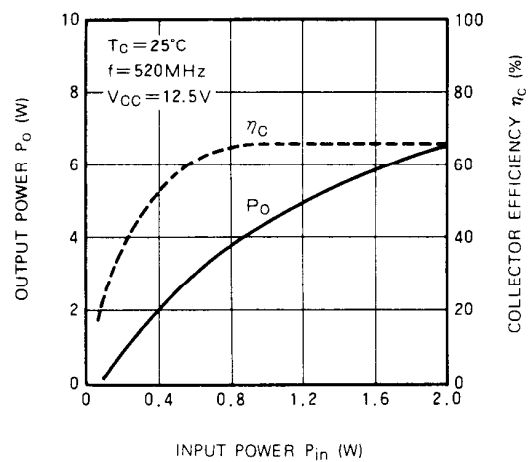


**TYPICAL PERFORMANCE DATA**

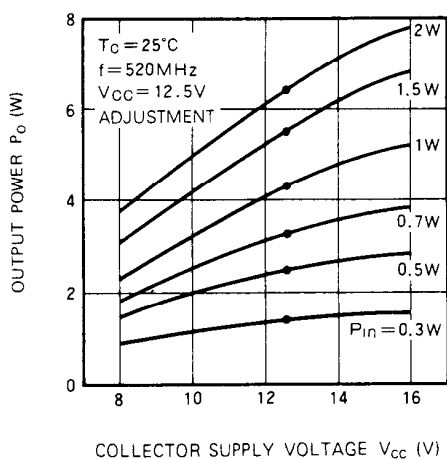
**COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE CHARACTERISTICS**



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



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



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

