

## DESCRIPTION

2SC730 is a silicon NPN epitaxial planar type transistor designed for industrial use RF power amplifiers on VHF band mobile radio applications.

## FEATURES

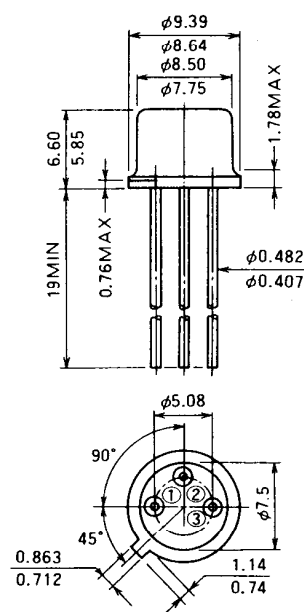
- High power gain:  $G_{pe} \geq 10\text{dB}$   
@  $V_{CC} = 13.5\text{V}$ ,  $P_O = 1\text{W}$ ,  $f = 150\text{MHz}$
- TO-39 metal sealed package for high reliability.
- All electrodes are isolated from the case.

## APPLICATION

0.5 to 0.8 watt power amplifiers, and driver stage in VHF band.

## OUTLINE DRAWING

Dimensions in mm



PIN :

- ① EMITTER
- ② BASE
- ③ COLLECTOR

T-8

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

| Symbol     | Parameter                    | Conditions               | Ratings    | Unit               |
|------------|------------------------------|--------------------------|------------|--------------------|
| $V_{CBO}$  | Collector to base voltage    |                          | 40         | V                  |
| $V_{EBO}$  | Emitter to base voltage      |                          | 4          | V                  |
| $V_{CER}$  | Collector to emitter voltage | $R_{BE} = 10\ \Omega$    | 40         | V                  |
| $I_C$      | Collector current            |                          | 0.4        | A                  |
| $P_C$      | Collector dissipation        | $T_a = 25^\circ\text{C}$ | 1.03       | W                  |
|            |                              | $T_C = 25^\circ\text{C}$ | 3          | W                  |
| $T_J$      | Junction temperature         |                          | 175        | $^\circ\text{C}$   |
| $T_{stg}$  | Storage temperature          |                          | -65 to 175 | $^\circ\text{C}$   |
| $R_{th-a}$ | Thermal resistance           | Junction to ambient      | 145        | $^\circ\text{C/W}$ |
| $R_{th-c}$ |                              | Junction to case         | 50         | $^\circ\text{C/W}$ |

Note. Above parameters are guaranteed independently.

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

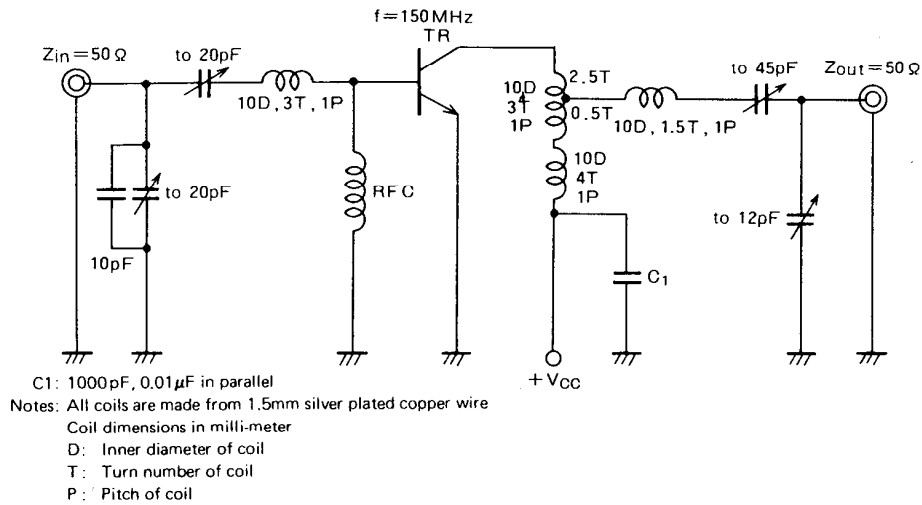
| Symbol        | Parameter                              | Test conditions                                                      | Limits |     |     | Unit          |
|---------------|----------------------------------------|----------------------------------------------------------------------|--------|-----|-----|---------------|
|               |                                        |                                                                      | 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    | $I_C = 1\text{mA}$ , $I_E = 0$                                       | 40     |     |     | V             |
| $V_{(BR)CER}$ | Collector to emitter breakdown voltage | $I_C = 10\text{mA}$ , $R_{BE} = 10\ \Omega$                          | 40     |     |     | V             |
| $I_{CBO}$     | Collector cutoff current               | $V_{CB} = 15\text{V}$ , $I_E = 0$                                    |        |     | 10  | $\mu\text{A}$ |
| $I_{EBO}$     | Emitter cutoff current                 | $V_{EB} = 2.5\text{V}$ , $I_C = 0$                                   |        |     | 100 | $\mu\text{A}$ |
| $h_{FE}$      | DC forward current gain *              | $V_{CE} = 10\text{V}$ , $I_C = 0.1\text{A}$                          | 10     | 50  | 180 | —             |
| $P_O$         | Output power                           | $V_{CC} = 13.5\text{V}$ , $P_{in} = 3\text{W}$ , $f = 150\text{MHz}$ | 1      | 1.5 |     | 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.

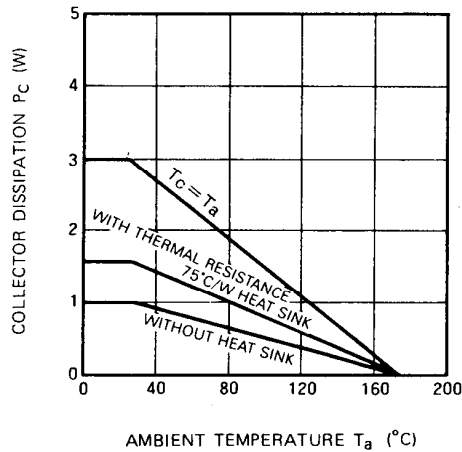
**NPN EPITAXIAL PLANAR TYPE**

**TEST CIRCUIT**

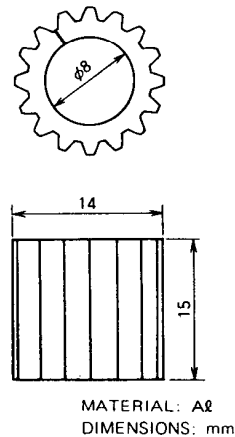


**TYPICAL PERFORMANCE DATA**

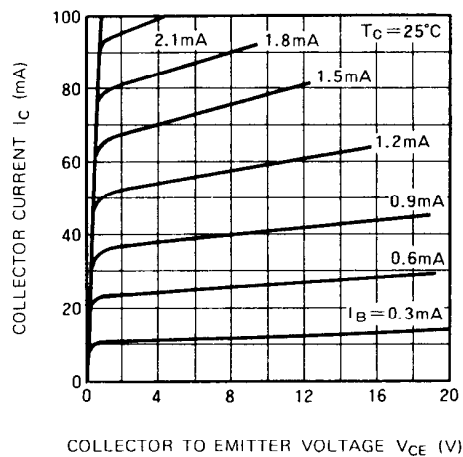
**COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE**



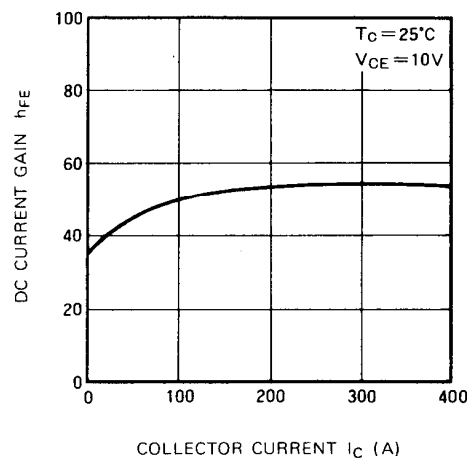
**THERMAL RESISTANCE  $75^{\circ}\text{C}$  HEAT SINK DRAWING**



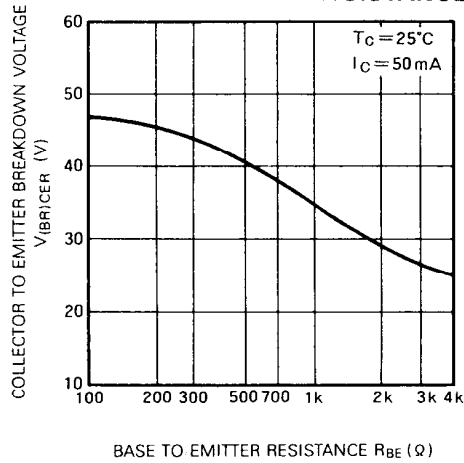
**COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE**



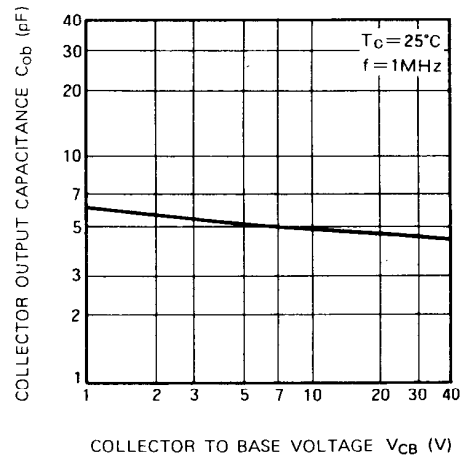
**DC CURRENT GAIN VS. COLLECTOR CURRENT**



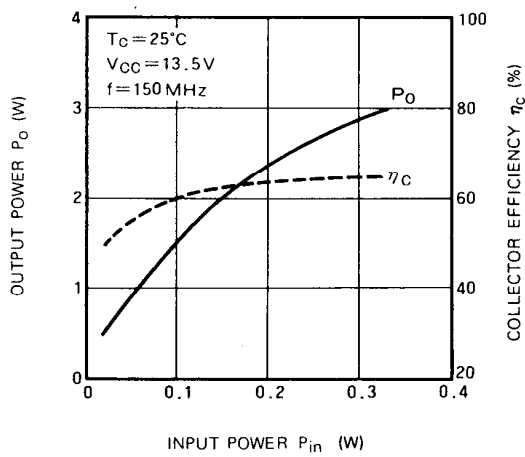
**COLLECTOR TO EMITTER BREAKDOWN  
VOLTAGE VS.  
BASE TO EMITTER RESISTANCE**



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



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



**OUTPUT POWER VS.  
COLLECTOR SUPPLY VOLTAGE**

