

**DESCRIPTION**

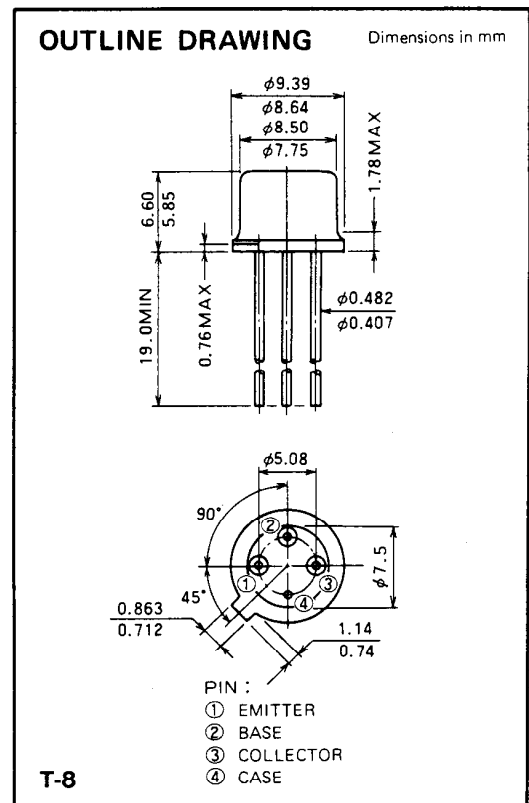
2SC1324 is a silicon NPN epitaxial planar type transistor designed for industrial use RF broadband amplifiers from VHF to UHF band.

**FEATURES**

- High power gain:  $G_{pe} \geq 9\text{dB}$   
@  $V_{CC} = 15\text{V}$ ,  $I_C = 30\text{mA}$ ,  $f = 770\text{MHz}$
- TO-12 metal sealed package with case grounded pin for high reliability and good performances.
- All electrodes excepted ground pin are isolated from the case.

**APPLICATION**

Broadband amplifiers from VHF to UHF band.



**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 | $R_{BE} = \infty$        | 25         | V                         |
| $I_C$      | Collector current            |                          | 150        | mA                        |
| $P_C$      | Collector dissipation        | $T_a = 25^\circ\text{C}$ | 0.8        | 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      | 187.5      | $^\circ\text{C}/\text{W}$ |
| $R_{th-c}$ |                              | Junction to case         | 50         | $^\circ\text{C}/\text{W}$ |

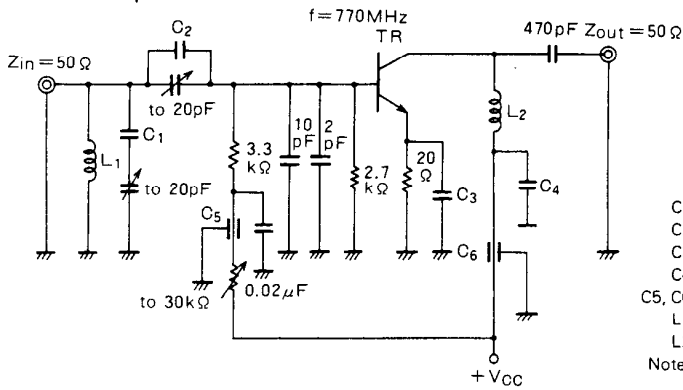
Note. Above parameters are guaranteed independently.

**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    | $I_C = 1\text{mA}$ , $I_E = 0$   | 35     |     |     | V             |
| $V_{(BR)CEO}$ | Collector to emitter breakdown voltage | $I_C = 10\text{mA}$ , $R_{BE} = \infty$  | 25     |     |     | V             |
| $I_{CBO}$     | Collector cutoff current               | $V_{CB} = 25\text{V}$ , $I_E = 0$  |        |     | 50  | $\mu\text{A}$ |
| $I_{EBO}$     | Emitter cutoff current                 | $V_{EB} = 3\text{V}$ , $I_C = 0$   |        |     | 75  | $\mu\text{A}$ |
| $h_{FE}$      | DC forward current gain *              | $V_{CE} = 15\text{V}$ , $I_C = 30\text{mA}$  | 20     | 70  | 180 | —             |
| $G_{pe}$      | Power gain                             | $V_{CC} = 15\text{V}$ , $f = 770\text{MHz}$ , $I_C = 30\text{mA}$                    | 9      | 10  |     | dB            |
| $f_T$         | Transition frequency                   | $V_{CE} = 15\text{V}$ , $I_C = 30\text{mA}$  |        | 1.7 |     | GHz           |
| NF            | Noise figure                           | $V_{CC} = 15\text{V}$ , $I_C = 30\text{mA}$ , $f = 500\text{MHz}$ , $R_G = 50\Omega$ |        | 5   |     | dB            |

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

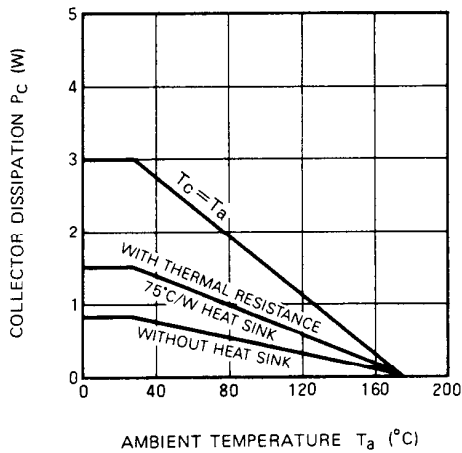
**TEST CIRCUIT**



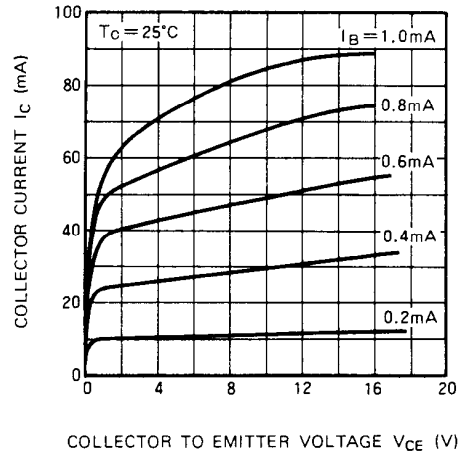
- C1: 2pF, 3pF in parallel
  - C2: 3pF, 4pF in parallel
  - C3: 500pF, 0.02μF in parallel
  - C4: 0.05μF, 0.03μF, 0.01μF in parallel
  - C5, C6: 1500pF
  - L1: 4mm core, 10T, enameled wire
  - L2: Width 2mm, length 20mm ribbon lead (silver plated copper plate)
- Notes: Coil dimensions in milli-meter  
 T: Turn number of coil

**TYPICAL PERFORMANCE DATA**

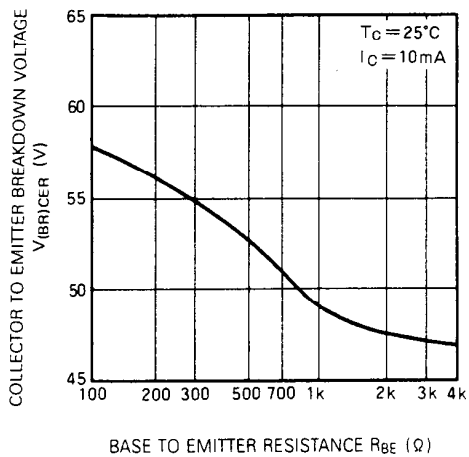
**COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE**



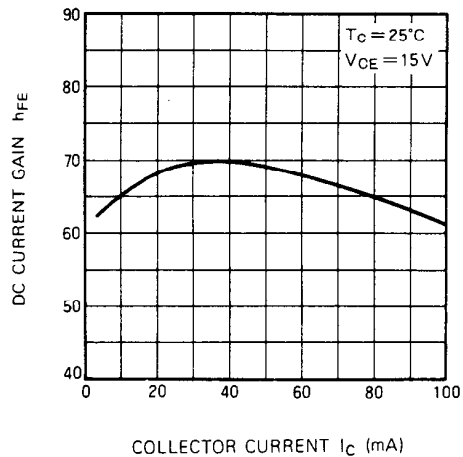
**COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE**



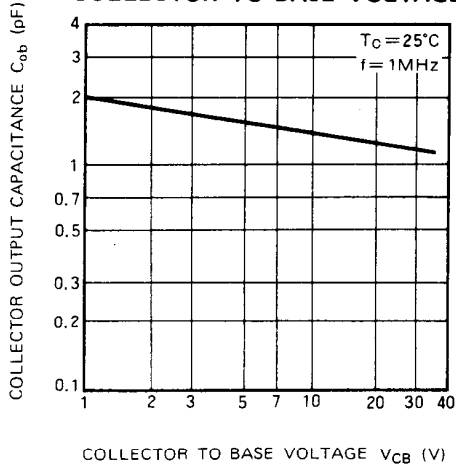
**COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE**



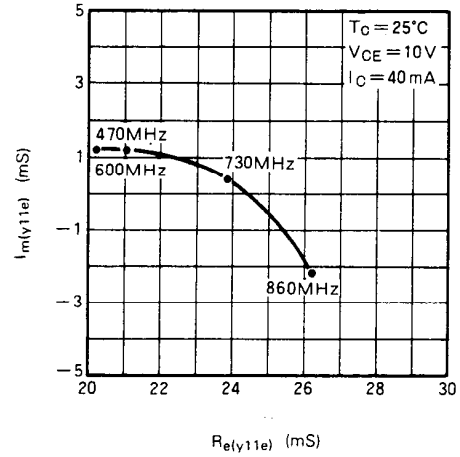
**DC CURRENT GAIN VS. COLLECTOR CURRENT**



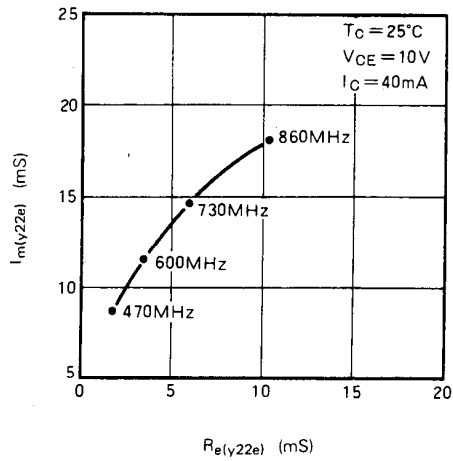
**COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE**



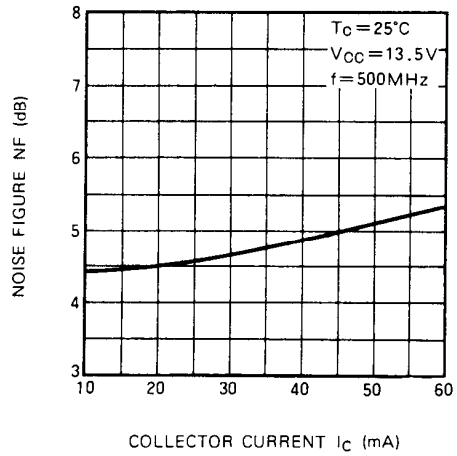
**INPUT ADMITANCE VS. FREQUENCY**



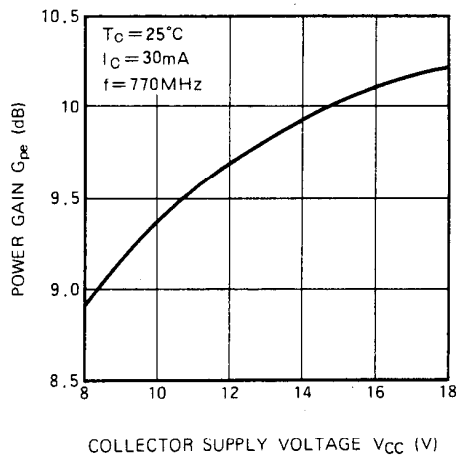
**OUTPUT ADMITANCE VS. FREQUENCY**



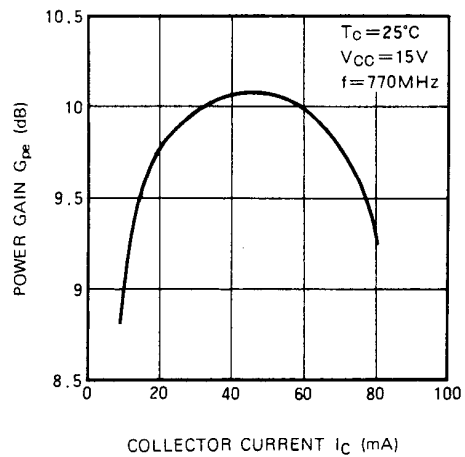
**NOISE FIGURE VS. COLLECTOR CURRENT**



**POWER GAIN VS. COLLECTOR SUPPLY VOLTAGE**



**POWER GAIN VS. COLLECTOR CURRENT**



**THIRD ORDER INTERMODULATION  
DISTORTION VS. OUTPUT LEVEL**

