

# SPECIFICATION TRANSISTORS, DIODES

NO. 17 — T —

2SC1816

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Sony-2SC1816 features an excellent rf-characteristics in the high current region, which has been designed for rf power-amplifier applications. This is the optimum transistor for rf power-amplifier applications in a 4-watts output of 27 megahertz citizens band transmitter and driver applications in a 12-watts output of 27 megahertz single-sideband transmitter.

The transistor 2SC756A is available as can-package type.

1. Construction; NPN APM (Advanced Passivated Mesa) Type  
Silicon Transistor

2. Use; RF Power Amplifier, High Speed Switching

3. Outline; TO-220 (See 9. Dimensional Outline)

4. Absolute Maximum Ratings; ( $T_a=25^\circ\text{C}$ )

|                                                           |           |                           |
|-----------------------------------------------------------|-----------|---------------------------|
| Collector-to-Base Voltage                                 | $V_{CBO}$ | 100 V                     |
| Collector-to-Emitter Voltage                              | $V_{CEO}$ | 60 V                      |
| Emitter-to-Base Voltage                                   | $V_{EB0}$ | 6 V                       |
| Collector Current                                         | $I_C$     | 4 A                       |
| Base Current                                              | $I_B$     | 0.8 A                     |
| Collector Power Dissipation<br>( $T_C=25^\circ\text{C}$ ) | $P_C$     | 12 W                      |
| Junction Temperature                                      | $T_j$     | 150 $^\circ\text{C}$      |
| Storage Temperature                                       | $T_{stg}$ | -65~+200 $^\circ\text{C}$ |

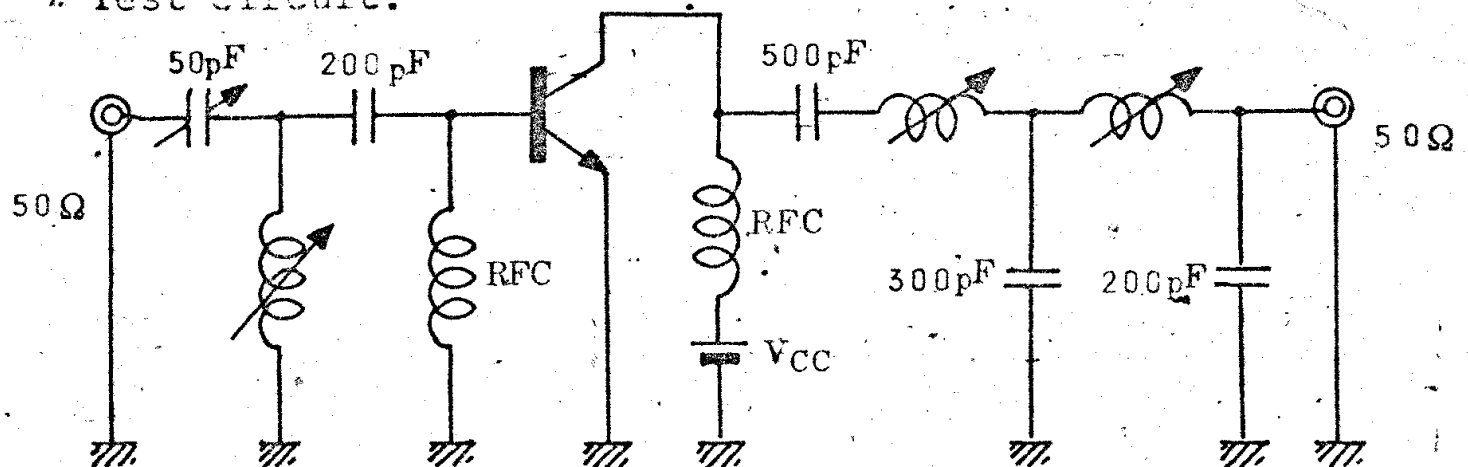
# 5. ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$ )

| Characteristic                           | Symbol              | Conditions                                                    | Min. | Typ. | Max. | Units         |
|------------------------------------------|---------------------|---------------------------------------------------------------|------|------|------|---------------|
| Collector-Cutoff Current:                | $I_{CBO}$           | $V_{CB}=50\text{V}, I_E=0$                                    |      |      | 1    | $\mu\text{A}$ |
| Emitter-Cutoff Current:                  | $I_{EBO}$           | $V_{EB}=6\text{V}, I_C=0$                                     |      |      | 2    | $\mu\text{A}$ |
| Collector-to-Base Voltage:               | $V_{CBO}$           | $I_C=100\mu\text{A}$                                          | 100  |      |      | V             |
| Collector-to-Emitter Sustaining Voltage: | $V_{CEO(sus)}$      | $I_C=10\text{mA}$                                             | 60   |      |      | V             |
| Collector-to-Emitter Saturation Voltage: | $V_{CE(sat)}$       | $I_C=2\text{A}, I_B=0.4\text{A}$                              |      | 0.3  | 0.8  | V             |
| Base-to-Emitter Saturation Voltage:      | $V_{BE(sat)}$       |                                                               |      | 1.0  | 1.4  | V             |
| DC Forward-Current Transfer Ratio:       | $h_{FE1}$           | $V_{CE}=2\text{V}, I_C=100\text{mA}$                          | 27   | 100  | 264  |               |
|                                          | $h_{FE2}$           | $V_{CE}=2\text{V}, I_C=2\text{A}$                             |      | 60   |      |               |
| Output Capacitance:                      | $C_{ob}$            | $V_{CB}=10\text{V}, I_E=0$<br>$f=1\text{MHz}$                 |      | 45   | 60   | $\text{pF}$   |
| Collector-to-Base Time Constant:         | $C_c \cdot r_{bb'}$ | $V_{CB}=10\text{V}, I_E=$<br>$f=31.9\text{MHz}$               |      |      |      | $\text{pS}$   |
| Transition Frequency:                    | $f_T$               | $V_{CB}=10\text{V}, I_E=-100\text{mA}$                        | 70   | 140  |      | $\text{MHz}$  |
| Power Output:<br>(See 7. Test Circuit)   | $P_O$               | $P_i=0.4\text{W}, V_{CC} \leq 12\text{V}$<br>$f=27\text{MHz}$ | 4    | 6    |      | W             |
| Power Gain:                              | $P \cdot G$         |                                                               | 10   |      |      | dB            |

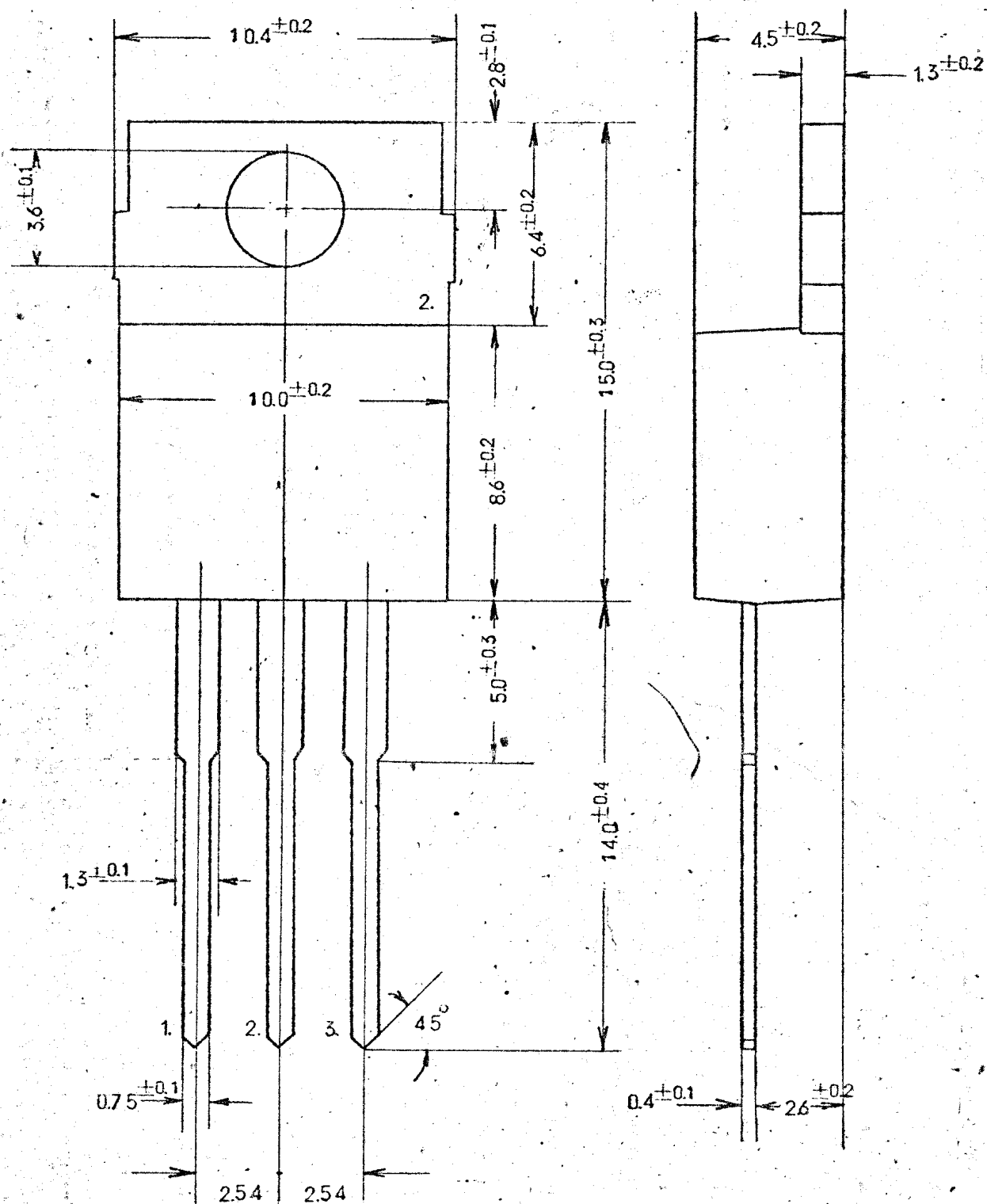
6. Item.

|   | $h_{FE}$ $I_C = 100 \mu A$<br>$V_{CE} = 2 V$ |      |
|---|----------------------------------------------|------|
|   | Min.                                         | Max. |
| 1 | 27                                           | 66   |
| 2 | 54                                           | 132  |
| 3 | 108                                          | 264  |

7. Test Circuit.



## DIMENSIONAL OUTLINE



Dimensions in millimeters

Lead #1 - Base

Lead #2 - Collector(Flange)

Lead #3 - Emitter