

# MITSUBISHI RF POWER TRANSISTOR

# 2SC2237

## NPN EPITAXIAL PLANAR TYPE

### DESCRIPTION

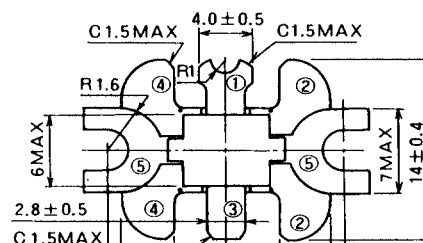
2SC2237 is a silicon NPN epitaxial planar type transistor designed for RF power amplifiers in VHF band mobile radio applications.

### FEATURES

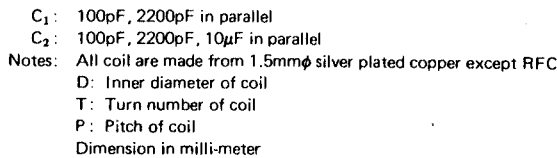
- High power gain:  $G_{pe} \geq 13.8\text{dB}$   
@  $V_{CC} = 13.5\text{V}$ ,  $P_o = 6\text{W}$ ,  $f = 175\text{MHz}$
- Emitter ballasted construction and gold metallization for high reliability and good performances.
- Low thermal resistance ceramic package with flange.
- Ability of withstanding more than 20:1 load VSWR when

### OUTLINE DRAWING

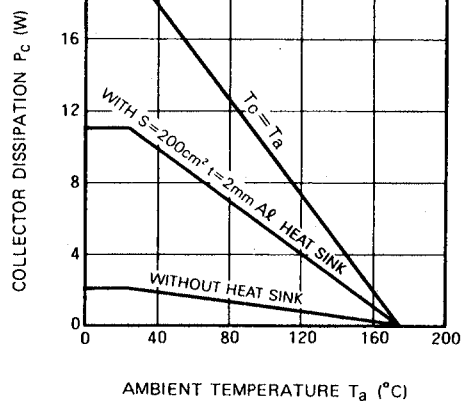
Dimensions in mm



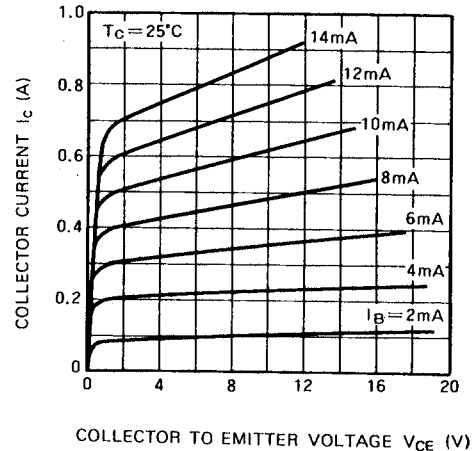
## TEST CIRCUIT



## COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE

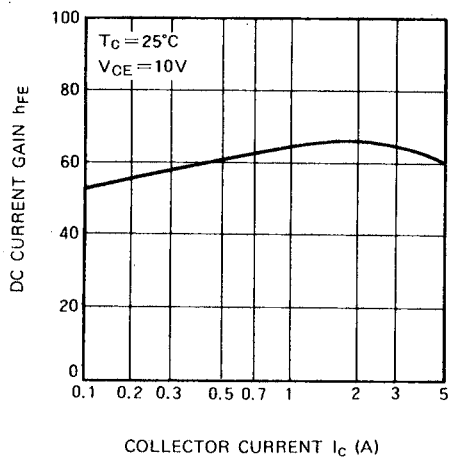


The graph shows the relationship between collector current  $I_C$  and collector-emitter voltage  $V_{CE}$  for a common-emitter BJT circuit at  $T_C = 25^\circ\text{C}$ . The x-axis represents  $V_{CE}$  in Volts (V), ranging from 0 to 20. The y-axis represents  $I_C$  in Amperes (A), ranging from 0 to 1.0. Eight curves are plotted for different base currents  $I_B$ : 2mA, 4mA, 6mA, 8mA, 10mA, 12mA, and 14mA. The curves show that  $I_C$  increases with  $V_{CE}$  and is approximately equal to  $I_B$  in the active region.



Graph showing DC Current Gain  $h_{FE}$  versus Collector Current  $I_C$  (A) for a 2N3638 PNP transistor. The conditions are  $T_C = 25^\circ\text{C}$  and  $V_{CE} = 10\text{V}$ .

| Collector Current $I_C$ (A) | DC Current Gain $h_{FE}$ |
|-----------------------------|--------------------------|
| 0.1                         | 52                       |
| 0.2                         | 55                       |
| 0.3                         | 58                       |
| 0.5                         | 62                       |
| 0.7                         | 64                       |
| 1                           | 66                       |
| 2                           | 68                       |
| 3                           | 65                       |
| 5                           | 60                       |

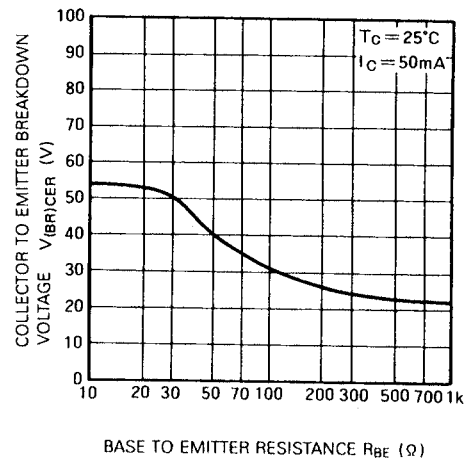


Graph showing Collector to Emitter Breakdown Voltage ( $V_{BR}(C-E)$ ) versus Base to Emitter Resistance ( $R_{BE}$ ) for a 2N4350 JFET. The graph is plotted for  $T_C = 25^\circ\text{C}$  and  $I_C = 50\text{mA}$ .

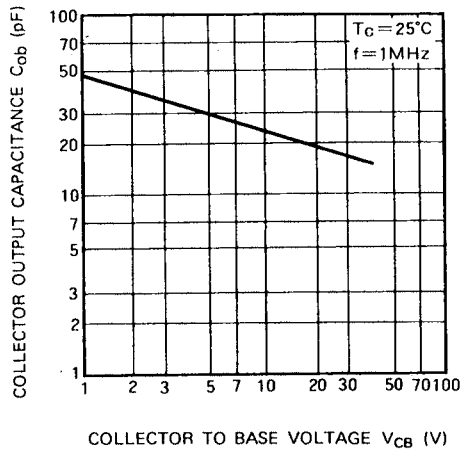
The Y-axis represents Collector to Emitter Breakdown Voltage ( $V_{BR}(C-E)$ ) in Volts (V), ranging from 0 to 100. The X-axis represents Base to Emitter Resistance ( $R_{BE}$ ) in Ohms ( $\Omega$ ), ranging from 10 to 1k on a logarithmic scale.

The curve shows that the breakdown voltage is approximately 52V for  $R_{BE}$  values between 10 $\Omega$  and 20 $\Omega$ . It then decreases sharply, reaching approximately 20V at  $R_{BE} = 1\text{k}\Omega$ .

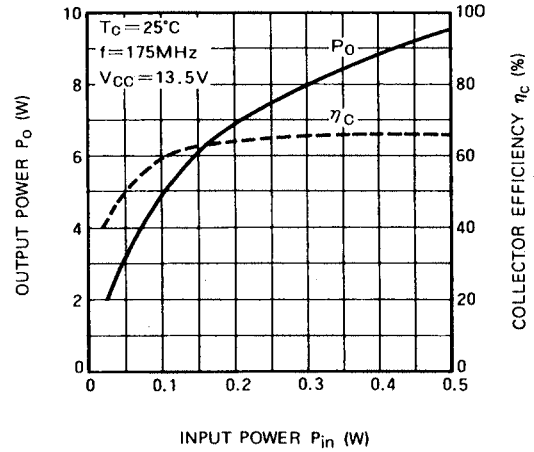
| Base to Emitter Resistance ( $R_{BE}$ ) ( $\Omega$ ) | Collector to Emitter Breakdown Voltage ( $V_{BR}(C-E)$ ) (V) |
|------------------------------------------------------|--------------------------------------------------------------|
| 10                                                   | 52                                                           |
| 20                                                   | 52                                                           |
| 30                                                   | 50                                                           |
| 50                                                   | 40                                                           |
| 70                                                   | 35                                                           |
| 100                                                  | 30                                                           |
| 200                                                  | 25                                                           |
| 300                                                  | 23                                                           |
| 500                                                  | 21                                                           |
| 700                                                  | 20                                                           |
| 1k                                                   | 20                                                           |



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



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



**OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE**

