

MITSUBISHI RF POWER TRANSISTOR 2SC2055

NPN EPITAXIAL PLANAR TYPE

DESCRIPTION

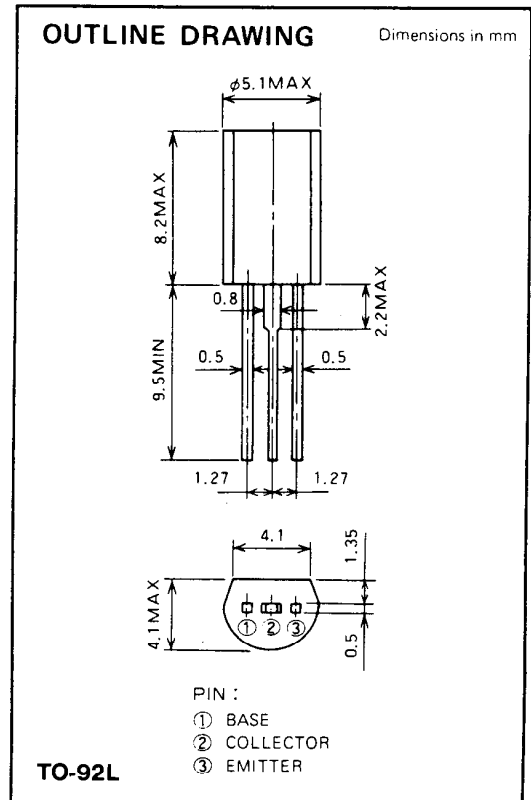
2SC2055 is a silicon NPN epitaxial planar type transistor designed for RF amplifiers on VHF band portable or hand-held radio applications.

FEATURES

- High power gain: $G_{pe} \geq 13\text{dB}$
@ $V_{CC} = 7.2\text{V}$, $P_O = 0.2\text{W}$, $f = 175\text{MHz}$
- Emitter ballasted construction, gold metallization for high reliability and good performances.
- TO-92 similar package is convenient for mounting.

APPLICATION

Driver amplifiers in general in VHF band portable or hand-held radio applications.



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

| Symbol | Parameter | Conditions | Ratings | Unit |
|------------|------------------------------|--------------------------|------------|---------------------------|
| V_{CBO} | Collector to base voltage | | 18 | V |
| V_{EBO} | Emitter to base voltage | | 4 | V |
| V_{CEO} | Collector to emitter voltage | $R_{BE} = \infty$ | 9 | V |
| I_C | Collector current | | 0.3 | A |
| P_C | Collector dissipation | $T_a = 25^\circ\text{C}$ | 0.5 | W |
| T_j | Junction temperature | | 135 | $^\circ\text{C}$ |
| T_{stg} | Storage temperature | | -55 to 135 | $^\circ\text{C}$ |
| R_{th-a} | Thermal resistance | Junction to ambient | 220 | $^\circ\text{C}/\text{W}$ |

Note. Above parameters are guaranteed independently.

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

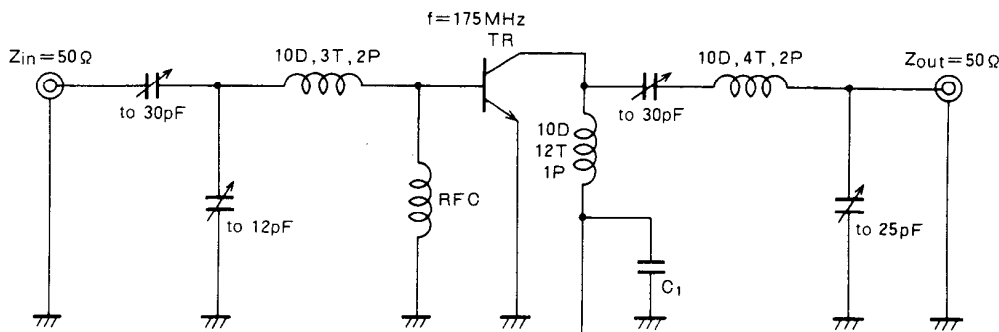
| Symbol | Parameter | Test conditions | Limits | | | Unit |
|---------------|--|---|--------|------|-----|---------------|
| | | | Min | Typ | Max | |
| $V_{(BR)EBO}$ | Emitter to base breakdown voltage | $I_E = 1\text{mA}$, $I_C = 0$ | 4 | | | V |
| $V_{(BR)CBO}$ | Collector to base breakdown voltage | $I_C = 10\text{mA}$, $I_E = 0$ | 18 | | | V |
| $V_{(BR)CEO}$ | Collector to emitter breakdown voltage | $I_C = 10\text{mA}$, $R_{BE} = \infty$ | 9 | | | V |
| I_{CBO} | Collector cutoff current | $V_{CB} = 10\text{V}$, $I_E = 0$ | | | 30 | μA |
| I_{EBO} | Emitter cutoff current | $V_{EB} = 3\text{V}$, $I_C = 0$ | | | 30 | μA |
| h_{FE} | DC forward current gain* | $V_{CE} = 7\text{V}$, $I_C = 50\text{mA}$ | 10 | 50 | 180 | — |
| P_O | Output power | $V_{CC} = 7.2\text{V}$, $P_{in} = 10\text{mW}$, $f = 175\text{MHz}$ | 0.2 | 0.25 | | W |
| η_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.

NOV. '97

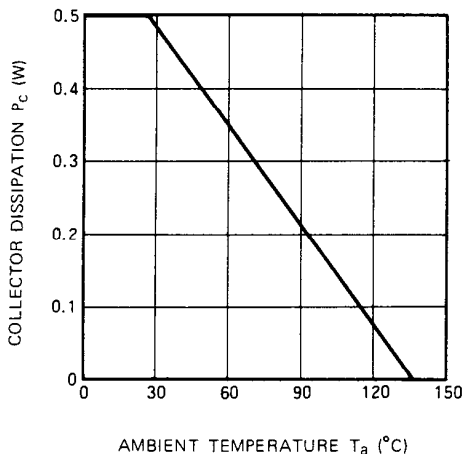
TEST CIRCUIT



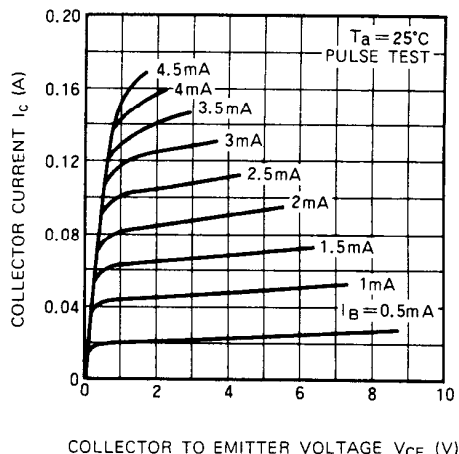
C_1 : $33\mu\text{F}$, $0.047\mu\text{F}$, $0.022\mu\text{F} \times 2$, $0.01\mu\text{F}$ in parallel
 Notes: All coils are made from 1.0mmφ silver plated copper wire
 Coil dimensions in millimeter
 D: Inner diameter of coil
 T: Turn number of coil
 P: Pitch of coil

TYPICAL PERFORMANCE DATA

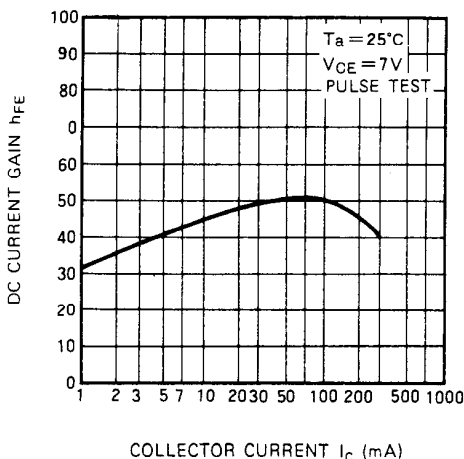
COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



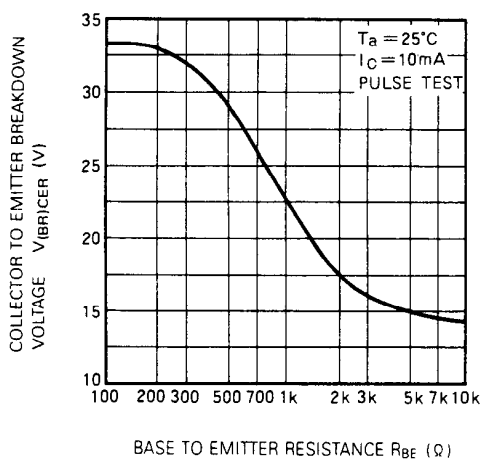
COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE



DC CURRENT GAIN VS. COLLECTOR CURRENT



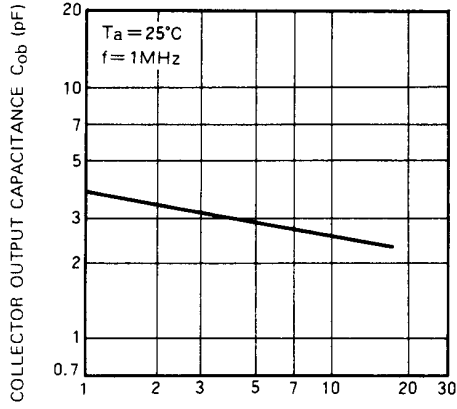
COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE



MITSUBISHI RF POWER TRANSISTOR
2SC2055

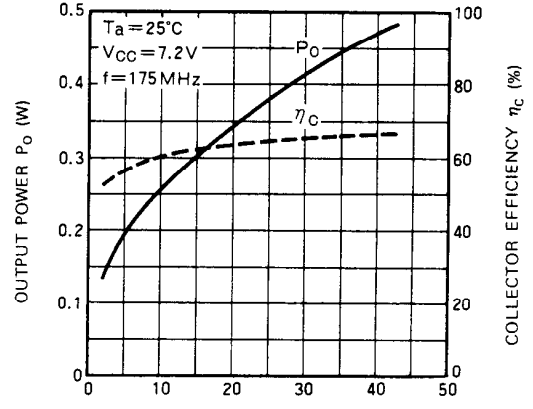
NPN EPITAXIAL PLANAR TYPE

COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



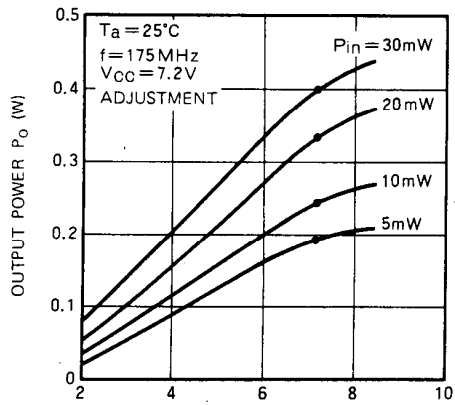
COLLECTOR TO BASE VOLTAGE V_{CB} (V)

OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER



INPUT POWER P_{in} (W)

OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE



COLLECTOR SUPPLY VOLTAGE V_{CC} (V)