

NPN EPITAXIAL PLANAR TYPE

DESCRIPTION

2SC3022 is a silicon NPN epitaxial planar type transistor specifically designed for UHF high power amplifier applications.

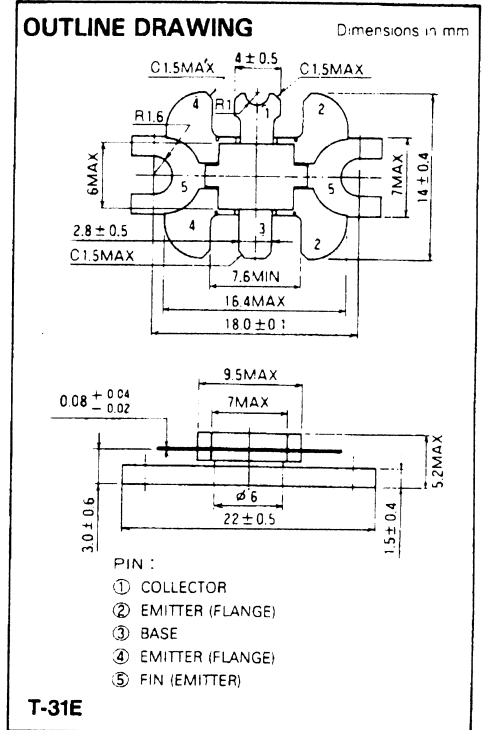
FEATURES

- High Power Gain: $G_{pe} \geq 4.7\text{dB}$
@ $V_{CC} = 12.5\text{V}$, $f = 520\text{MHz}$, $P_{in} = 6\text{W}$.
- Emitter ballasted construction.
- High ruggedness: Ability to withstand more than 20:1 load VSWR when operated at $V_{CC} = 15.2\text{V}$, $f = 520\text{MHz}$, $P_o = 18\text{W}$.
- Frange type ceramic package.
- $Z_{in} = 1.5 + j2.0\Omega$, $Z_{out} = 2.8 + j1.0\Omega$.
@ $V_{CC} = 12.5\text{V}$, $f = 520\text{MHz}$, $P_o = 18\text{W}$.

APPLICATION

For output stage of 15W power amplifiers in UHF band.

OUTLINE DRAWING



ABSOLUTE MAXIMUM RATINGS ($T_c = 25^\circ\text{C}$)

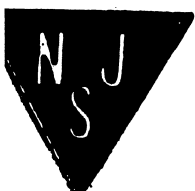
| Symbol | Parameter | Conditions | Rating | Unit |
|------------|------------------------------|--------------------------|------------|--------------------|
| V_{CBO} | Collector to base voltage | | 35 | V |
| V_{EBO} | Emitter to base voltage | | 4 | V |
| V_{CEO} | Collector to emitter voltage | $R_{BE} = \infty$ | 17 | V |
| I_C | Collector current | | 7 | A |
| P_C | Collector dissipation | $T_c = 25^\circ\text{C}$ | 50 | W |
| T_J | Junction temperature | | 175 | $^\circ\text{C}$ |
| T_{stg} | Storage temperature | | -55 to 175 | $^\circ\text{C}$ |
| R_{th-a} | Thermal resistance | Junction to ambient | 50 | $^\circ\text{C/W}$ |
| R_{th-c} | | Junction to case | 3 | $^\circ\text{C/W}$ |

Note: Above parameters are guaranteed independently.

ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$)

| Symbol | Parameter | Test conditions | Limits | | | Unit |
|----------------|--|--|--------|-----|-----|------|
| | | | Min | Typ | Max | |
| $V_{i(BR)EBO}$ | Emitter to base breakdown voltage | $I_E = 10\text{mA}$, $I_C = 0$ | 4 | | | V |
| $V_{i(BR)CBO}$ | Collector to base breakdown voltage | $I_C = 10\text{mA}$, $I_E = 0$ | 35 | | | V |
| $V_{i(BR)CEO}$ | Collector to emitter breakdown voltage | $I_C = 0.1\text{A}$, $R_{BE} = \infty$ | 17 | | | V |
| I_{CBO} | Collector cut off current | $V_{CB} = 15\text{V}$, $I_E = 0$ | | | 2.0 | mA |
| I_{EBO} | Emitter cut off current | $V_{EB} = 3\text{V}$, $I_C = 0$ | | | 3.0 | mA |
| h_{FE} | DC forward current gain * | $V_{CE} = 10\text{V}$, $I_C = 1\text{A}$ | 20 | 50 | 180 | - |
| P_O | Power Output | $V_{CC} = 12.5\text{V}$, $P_{in} = 6\text{W}$, $f = 520\text{MHz}$ | 18 | 19 | | W |
| η_C | Collector efficiency | | 55 | 60 | | % |

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



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.