

Silizium-NPN-Epitaxial-Planar-HF-Transistor
Silicon NPN Epitaxial Planar RF Transistor

Anwendungen: Allgemein und HF-Verstärkerstufen bis 100 MHz

Applications: General and RF amplifier stages up to 100 MHz

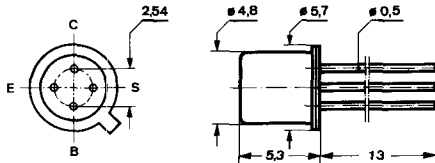
Besondere Merkmale:

- Rauschmaß 4 dB

Features:

- Noise figure 4 dB

Abmessungen in mm
Dimensions in mm



Anschluß „S“
mit Gehäuse verbunden
Terminal “S”
connected with case

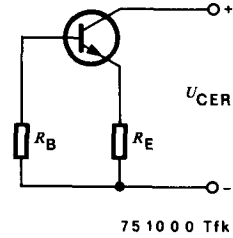
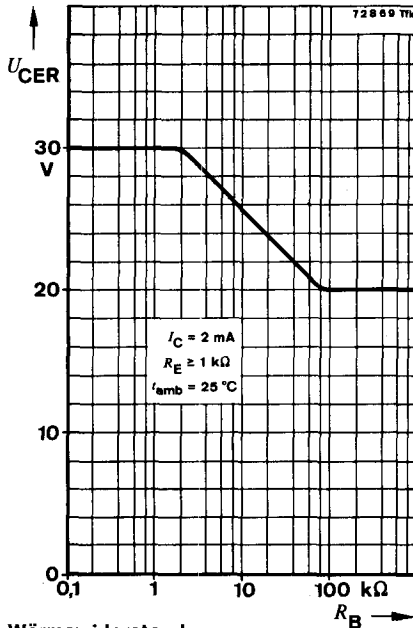
Normgehäuse
Case
18 A 4 DIN 41876
JEDEC TO 72
Gewicht · Weight
max. 0,5 g

Absolute Grenzdaten

Absolute maximum ratings

| | | | |
|--------------------------------------------------------------------------------------------|-----------|--------------|----|
| Kollektor-Basis-Sperrspannung <i>Collector-base voltage</i> | U_{CBO} | 30 | V |
| Kollektor-Emitter-Sperrspannung <i>Collector-emitter voltage</i> | U_{CEO} | 20 | V |
| Emitter-Basis-Sperrspannung <i>Emitter-base voltage</i> | U_{EBO} | 5 | V |
| Kollektorstrom <i>Collector current</i> | I_C | 30 | mA |
| Basisstrom <i>Base current</i> | I_B | 1 | mA |
| Gesamtverlustleistung <i>Total power dissipation</i> $t_{amb} \leq 45^\circ\text{C}$ | P_{tot} | 145 | mW |
| Sperrschichttemperatur <i>Junction temperature</i> | t_j | 175 | °C |
| Lagerungstemperaturbereich <i>Storage temperature range</i> | t_{stg} | -55 ... +175 | °C |

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Wärmewiderstand Thermal resistance

Sperrschicht-Umgebung
Junction ambient

| | Min. | Typ. | Max. |
|------------|------|------|----------|
| R_{thJA} | | | 900 °C/W |

Statische Kenngrößen DC characteristics

$t_{amb} = 25\text{ °C}$

Kollektor-Basis-Durchbruchspannung
Collector-base breakdown voltage

$I_C = 10\ \mu\text{A}$

| | | | | |
|---------------|----|--|--|---|
| $U_{(BR)CBO}$ | 30 | | | V |
|---------------|----|--|--|---|

Kollektor-Emitter-Durchbruchspannung
Collector-emitter breakdown voltage

$I_C = 2\ \text{mA}$

| | | | | |
|--------------------|----|--|--|---|
| $U_{(BR)CEO}^{1)}$ | 20 | | | V |
|--------------------|----|--|--|---|

Emitter-Basis-Durchbruchspannung
Emitter-base breakdown voltage

$I_E = 10\ \mu\text{A}$

| | | | | |
|---------------|---|--|--|---|
| $U_{(BR)EBO}$ | 5 | | | V |
|---------------|---|--|--|---|

Basis-Emitter-Spannung
Base-emitter voltage

$U_{CE} = 10\ \text{V}, I_C = 1\ \text{mA}$

$U_{CE} = 2\ \text{V}, I_C = 20\ \text{mA}$

| | | | | |
|---------------|-----|-----|-----|----|
| U_{BE} | 650 | 690 | 740 | mV |
| $U_{BE}^{1)}$ | | | 1 | V |

Kollektor-Basis-Gleichstromverhältnis
DC forward current transfer ratio

$U_{CE} = 10\ \text{V}, I_C = 1\ \text{mA}$

| | | | | |
|----------|----|----|-----|--|
| h_{FE} | 36 | 67 | 125 | |
|----------|----|----|-----|--|

¹⁾ $\frac{t_p}{T} = 0,01, t_p = 0,3\ \text{ms}$

Dynamische Kenngrößen AC characteristics

| | Min. | Typ. | Max. |
|--------------------------------------------------------------------------------------------------------------------|------|------|--------|
| $t_{amb} = 25^\circ\text{C}$ | | | |
| Transitfrequenz Gain bandwidth product $U_{CB} = 10\text{ V}, I_C = 1\text{ mA}, f = 100\text{ MHz}$ | | 200 | MHz |
| Rückwirkungskapazität Feedback capacitance $U_{CB} = 10\text{ V}, I_C = 1\text{ mA}, f = 10,7\text{ MHz}$ | | 0,65 | 0,9 pF |
| Rauschmaß Noise figure $U_{CB} = 10\text{ V}, I_C = 1\text{ mA}, R_G = 200\ \Omega,$ $f = 200\text{ kHz}$ | | 2 | dB |
| $U_{CB} = 10\text{ V}, I_C = 1\text{ mA}, R_G = 50\ \Omega,$ $f = 1\text{ MHz}$ | | 3,5 | dB |
| $U_{CB} = 10\text{ V}, I_C = 1\text{ mA}, R_G = 100\ \Omega,$ $f = 100\text{ MHz}$ | | 4 | dB |

Vierpol Kenngrößen Two port characteristics

$t_{amb} = 25^\circ\text{C}$

Emitterschaltung Common emitter configuration

$U_{CB} = 10\text{ V}, I_C = 1\text{ mA}, f = 0,45\text{ MHz}$

| | | | |
|----------------------------------------------------------------------------|-------------------------------|-------------------------|---------------------|
| Kurzschluß-Eingangsadmittanz Short circuit input admittance | g_{ie} C_{ie} | 0,5 27 | mS pF |
| Kurzschluß-Rückwärtssteilheit Short circuit reverse transfer admittance | $ y_{re} $ $-\varphi_{re}$ | 1,8 90° | μS |
| Kurzschluß-Vorwärtssteilheit Short circuit forward transfer admittance | $ y_{fe} $ $-\varphi_{fe}$ | 35 $\approx 0^\circ$ | mS |
| Kurzschluß-Ausgangsadmittanz Short circuit output admittance | g_{oe} C_{oe} | 2,5 1,5 | μS pF |

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| | | Min. | Typ. | Max. |
|-----------------------------------------------------------------------------------|-----------------|------|------|---------------|
| Emitterschaltung | | | | |
| <i>Common emitter configuration</i> | | | | |
| $U_{CB} = 10\text{ V}, I_C = 1\text{ mA}, f = 10,7\text{ MHz}$ | | | | |
| Kurzschluß-Eingangsadmittanz <i>Short circuit input admittance</i> | g_{ie} | | 0,55 | mS |
| | C_{ie} | | 27 | pF |
| Kurzschluß-Rückwärtssteilheit <i>Short circuit reverse transfer admittance</i> | $ y_{re} $ | | 44 | μS |
| | $-\varphi_{re}$ | | 90° | |
| Kurzschluß-Vorwärtssteilheit <i>Short circuit forward transfer admittance</i> | $ y_{fe} $ | | 35 | mS |
| | $-\varphi_{fe}$ | | 5° | |
| Kurzschluß-Ausgangsadmittanz <i>Short circuit output admittance</i> | g_{oe} | | 4,5 | μS |
| | C_{oe} | | 1,5 | pF |
| Emitterschaltung | | | | |
| <i>Common emitter configuration</i> | | | | |
| $U_{CB} = 10\text{ V}, I_C = 1\text{ mA}, f = 35\text{ MHz}$ | | | | |
| Kurzschluß-Eingangsadmittanz <i>Short circuit input admittance</i> | g_{ie} | | 1,1 | mS |
| | C_{ie} | | 22 | pF |
| Kurzschluß-Rückwärtssteilheit <i>Short circuit reverse transfer admittance</i> | $ y_{re} $ | | 140 | μS |
| | $-\varphi_{re}$ | | 90° | |
| Kurzschluß-Vorwärtssteilheit <i>Short circuit forward transfer admittance</i> | $ y_{fe} $ | | 34 | mS |
| | $-\varphi_{fe}$ | | 16° | |
| Kurzschluß-Ausgangsadmittanz <i>Short circuit output admittance</i> | g_{oe} | | 5 | μS |
| | C_{oe} | | 1,5 | pF |
| Emitterschaltung | | | | |
| <i>Common emitter configuration</i> | | | | |
| $U_{CB} = 10\text{ V}, I_C = 1\text{ mA}, f = 100\text{ MHz}$ | | | | |
| Kurzschluß-Eingangsadmittanz <i>Short circuit input admittance</i> | g_{ie} | | 6 | mS |
| | C_{ie} | | 21 | pF |
| Kurzschluß-Rückwärtssteilheit <i>Short circuit reverse transfer admittance</i> | $ y_{re} $ | | 380 | μS |
| | $-\varphi_{re}$ | | 95° | |
| Kurzschluß-Vorwärtssteilheit <i>Short circuit forward transfer admittance</i> | $ y_{fe} $ | | 33 | mS |
| | $-\varphi_{fe}$ | | 30° | |
| Kurzschluß-Ausgangsadmittanz <i>Short circuit output admittance</i> | g_{oe} | | 12 | μS |
| | C_{oe} | | 1,5 | pF |

Min. Typ. Max.

Basisschaltung
Common base configuration

$$U_{CB} = 10 \text{ V}, I_C = 1 \text{ mA}, f = 100 \text{ MHz}$$

Kurzschluß-Eingangsadmittanz
Short circuit input admittance

| | | |
|-----------|------|----|
| g_{ib} | 33 | mS |
| $-b_{ib}$ | 3,25 | mS |

Kurzschluß-Rückwärtssteilheit
Short circuit reverse transfer admittance

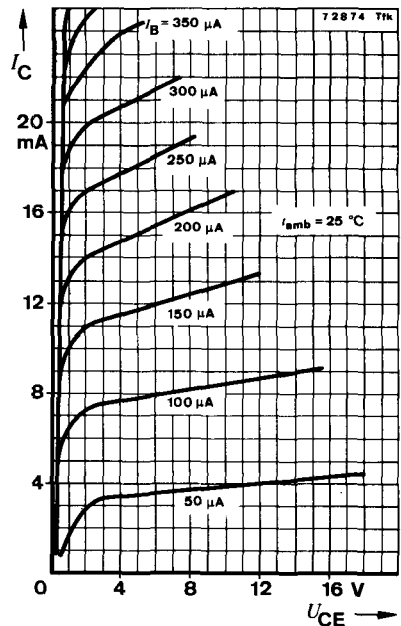
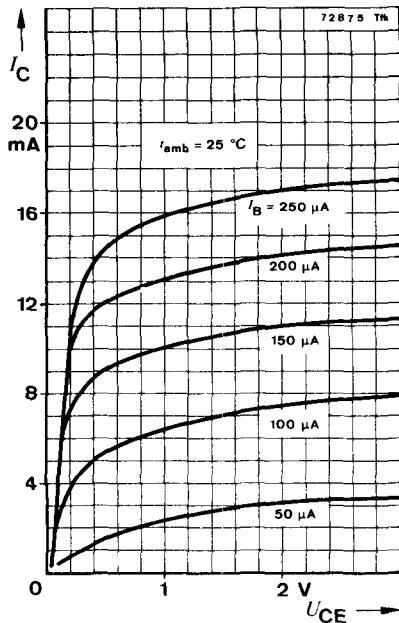
| | | |
|--------------|------------|---------------|
| $ y_{rb} $ | 220 | μS |
| $-\phi_{rb}$ | 87° | |

Kurzschluß-Vorwärtssteilheit
Short circuit forward transfer admittance

| | | |
|--------------|-------------|----|
| $ y_{fb} $ | 33 | mS |
| $-\phi_{fb}$ | 150° | |

Kurzschluß-Ausgangsadmittanz
Short circuit output admittance

| | | |
|----------|-----|---------------|
| g_{ob} | 12 | μS |
| C_{ob} | 1,5 | pF |



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