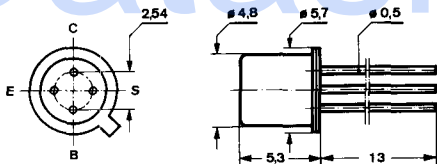


Silizium-NPN-Epitaxial-Planar-HF-Transistor
Silicon NPN Epitaxial Planar RF Transistor

Anwendungen: Allgemein bis 100 MHz

Applications: General up to 100 MHz

Abmessungen in mm
Dimensions in mm



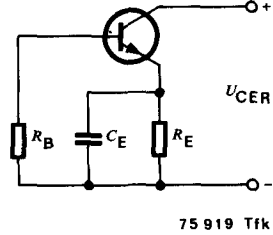
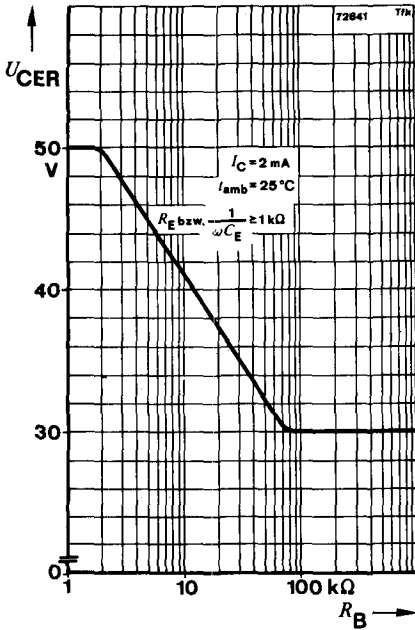
Anschluß „S“
mit Gehäuse verbunden
Terminal „S“
connected with case

Normgehäuse
Case
18 A 4 DIN 41 876
JEDEC TO 72
Gewicht · Weight
max. 0,5 g

Absolute Grenzwerte
Absolute maximum ratings

| | | | |
|--|------------------------|--------------|------------------|
| Kollektor-Basis-Sperrspannung Collector-base voltage | U_{CBO} | 50 | V |
| Kollektor-Emitter-Sperrspannung Collector-emitter voltage $R_B \leq 1 \text{ k}\Omega, R_E \geq 1 \text{ k}\Omega$ | U_{CEO} U_{CER} | 30 50 | V V |
| Emitter-Basis-Sperrspannung Emitter-base voltage | U_{EBO} | 5 | V |
| Kollektorstrom Collector current | I_C | 30 | mA |
| Basisstrom Base current | I_B | 1 | mA |
| Gesamtverlustleistung Total power dissipation $t_{amb} \leq 45^\circ\text{C}$ | P_{tot} | 145 | mW |
| Sperrschichttemperatur Junction temperature | t_j | 175 | $^\circ\text{C}$ |
| Lagerungstemperaturbereich Storage temperature range | t_{stg} | -55 ... +175 | $^\circ\text{C}$ |

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Warmwiderstand Thermal resistance

Sperrschicht-Umgebung
Junction ambient

Min. Typ. Max.

R_{thJA} 900 °C/W

Statische Kenngrößen DC characteristics

$I_{amb} = 25^\circ\text{C}$, falls nicht anders angegeben
unless otherwise specified

Kollektorreststrom
Collector cut-off current

$U_{CB} = 20\text{ V}$, $I_{amb} = 175^\circ\text{C}$

I_{CBO} 0,5 μA

Kollektor-Basis-Durchbruchspannung
Collector-base breakdown voltage

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

$U_{(BR)CBO}$ 50 V

Kollektor-Emitter-Durchbruchspannung
Collector-emitter breakdown voltage

$I_C = 2\text{ mA}$

$U_{(BR)CEO}$ 30 V

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

| | | Min. | Typ. | Max. | |
|--|---|------|------|------|---------|
| Emitter-Basis-Durchbruchspannung Emitter-base breakdown voltage $I_E = 10 \mu\text{A}$ | $U_{(\text{BR})\text{EBO}}$ | 5 | | | V |
| Basis-Emitter-Spannung Base-emitter voltage $U_{\text{CE}} = 10 \text{ V}, I_{\text{C}} = 1 \text{ mA}$ $U_{\text{CE}} = 2 \text{ V}, I_{\text{C}} = 20 \text{ mA}$ | U_{BE} U_{BE}^{\prime} | 650 | 700 | 740 | mV V |
| Kollektor-Basis-Gleichstromverhältnis DC forward current transfer ratio $U_{\text{CE}} = 10 \text{ V}, I_{\text{C}} = 1 \text{ mA}$ $U_{\text{CE}} = 2 \text{ V}, I_{\text{C}} = 20 \text{ mA}$ | h_{FE} h_{FE}^{\prime} | 48 | | 167 | |

Dynamische Kenngrößen

AC characteristics

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

Transitfrequenz

Gain bandwidth product

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

f_{T}

230

MHz

Rückwirkungskapazität

Feedback capacitance

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

$C_{\text{üre}}$

0,65

0,8

pF

Rauschmaß

Noise figure

$$U_{\text{CB}} = 10 \text{ V}, I_{\text{C}} = 1 \text{ mA}, R_{\text{G}} = 300 \text{ k}\Omega,$$

$$f = 200 \text{ kHz}$$

F

1,5

dB

$$f = 1 \text{ MHz}$$

F

1,2

dB

$$U_{\text{CB}} = 10 \text{ V}, I_{\text{C}} = 1 \text{ mA}, R_{\text{G}} = 50 \Omega,$$

$$f = 1 \text{ MHz}$$

F

3,5

dB

$$U_{\text{CB}} = 10 \text{ V}, I_{\text{C}} = 1 \text{ mA}, R_{\text{G}} = 100 \Omega,$$

$$f = 100 \text{ MHz}$$

F

4

dB

Mischrauschmaß

Noise figure for mixer

$$U_{\text{CB}} = 10 \text{ V}, I_{\text{C}} = 1 \text{ mA}, R_{\text{G}} = 1 \text{ k}\Omega,$$

$$f = 0,2 \text{ MHz}$$

F_{C}

3,5

dB

$$U_{\text{CB}} = 10 \text{ V}, I_{\text{C}} = 1 \text{ mA}, R_{\text{G}} = 500 \Omega,$$

$$f = 1 \text{ MHz}$$

F_{C}

2,5

dB

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

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Vierpol Kenngrößen Two port characteristics

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

Emitterschaltung Common emitter configuration

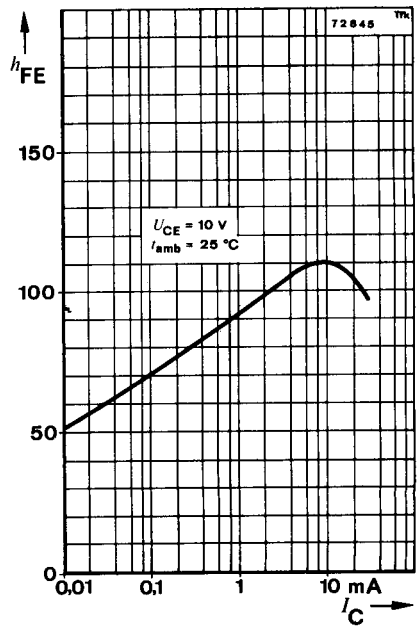
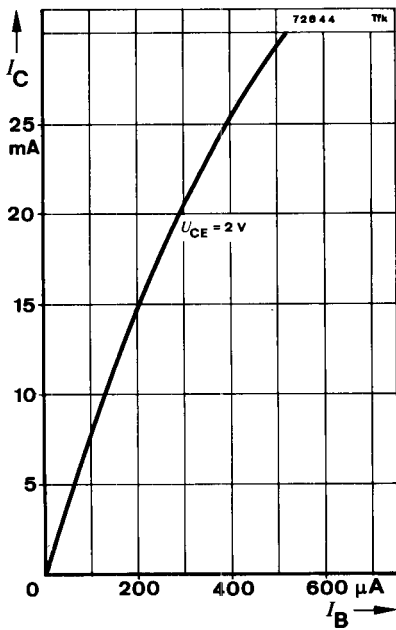
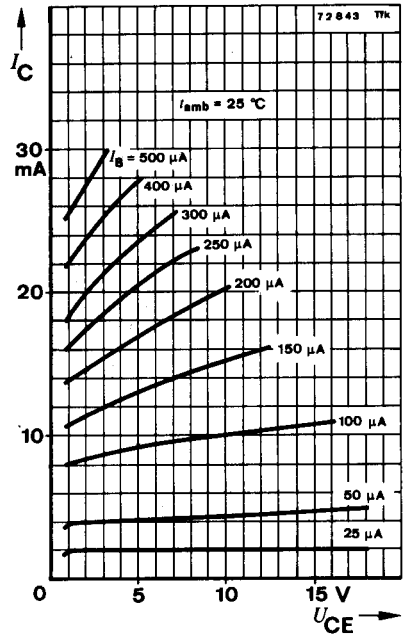
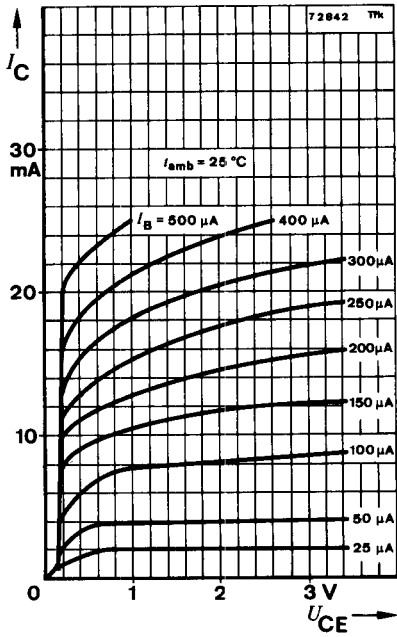
$$U_{\text{CB}} = 10 \text{ V}, I_{\text{C}} = 1 \text{ mA}, f = 0,45 \text{ MHz}$$

| | | Min. | Typ. | Max. |
|--|-------------------------------|------|---------------------------|---------------------|
| Kurzschluß-Eingangsadmittanz Short circuit input admittance | g_{ie} C_{ie} | | 0,4 25 | 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} $ φ_{fe} | | 35 $\approx 0^{\circ}$ | mS |
| Kurzschluß-Ausgangsadmittanz Short circuit output admittance | g_{oe} C_{oe} | | 4 1,5 | μS pF |

Basisschaltung Common base configuration

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

| | | | | |
|--|-------------------------------|--|------------|---------------------|
| Kurzschluß-Eingangsadmittanz Short circuit input admittance | g_{ib} $-b_{ib}$ | | 33 3,8 | mS pF |
| Kurzschluß-Rückwärtssteilheit Short circuit reverse transfer admittance | $ y_{rb} $ $-\varphi_{rb}$ | | 220 87° | μS |
| Kurzschluß-Vorwärtssteilheit Short circuit forward transfer admittance | $ y_{fb} $ φ_{fb} | | 33 150° | mS |
| Kurzschluß-Ausgangsadmittanz Short circuit output admittance | g_{ob} C_{ob} | | 14 1,5 | μS pF |



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