

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

Anwendungen: HF-Verstärker in Emitter-schaltung in Dick- und Dünnschaltungen

Applications: RF-amplifier in common emitter configuration in thick and thin film circuits

Vergleichbarer Typ: BFS 20

Comparable type: BFS 20

Besondere Merkmale:

Features:

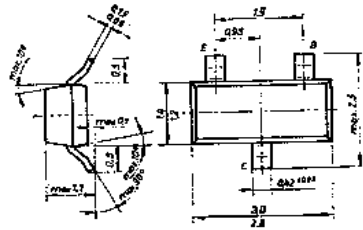
- Transitfrequenz 910 MHz

- Gain bandwidth product 910 MHz

Abmessungen in mm

Dimensions in mm

Gehäuse Bauform Y,
 ähnlich SOT 23
 TGL 11 811
 Plastikgehäuse
 Masse ca. 0,02 g



Case construction Y,
 similar SOT 23
 TGL 11 811
 Plastic case
 Weight about 0.02 g

Absolute Grenzwerte
Absolute maximum ratings

Kollektor-Basis-Spannung Collector-base voltage	U _{CB0}	40	V
Kollektor-Emitter-Spannung Collector-emitter voltage	U _{CEO}	25	V
Emitter-Basis-Spannung Emitter-base voltage	U _{EBO}	4	V
Kollektorstrom Collector current	I _C	25	mA
Gesamtverlustleistung Total power dissipation <i>t_{amb} ≤ 45 °C, R_{thJA} ≤ 0,7 K/mW</i>	P _{tot}	150	mW
Sperrschichttemperatur Junction temperature	t _j	150	°C
Umgebungstemperaturbereich Ambient temperature range	t _{amb}	-55 ... +125	°C
Lagerungstemperaturbereich Storage temperature range	t _{sig}	-55 ... +150	°C

Wärmewiderstände
Thermal resistances

	Min.	Typ.	Max.	
Sperrschicht-Umgebung Junction-ambient auf Glassubstrat 7×7×1 mm on glass substrat	R _{thJA}		0,7	K/mW
auf Keramik 30×12×1 mm on ceramic	R _{thJA}		0,45	K/mW

Statische Kenngrößen
DC characteristics *t_{amb} = 25 °C — 5 K*

Kollektor-Basis-Reststrom Collector cut-off current U _{CB} = 40 V	I _{CBO}	< 1	500	nA
Basisstrom Base current U _{CE} = 10 V, I _C = 7 mA	I _B	54	185	µA
Kollektor-Emitter-Durchbruchspannung Collector-emitter breakdown voltage I _C = 1 mA	U _{(BR)CEO} ¹⁾	25		V
Emitter-Basis-Durchbruchspannung Emitter-base breakdown voltage I _C = 10 µA	U _{(BR)EBO}	4		V

Dynamische Kenngrößen
AC characteristics *t_{amb} = 25 °C — 5 K*

Transitfrequenz Gain bandwidth product U _{CE} = 10 V, I _C = 7 mA, f = 100 MHz	f _T	910		MHz
Rauschfaktor Noise figure U _{CE} = 10 V, I _C = 2 mA, f = 36 MHz, 1/Y _G = 240 Ohm	F	2,5		dB
U _{CE} = 10 V, I _C = 2 mA, f = 100 MHz, Y _G = Y _{Gopt} = (5,0 — j 6,6) mS	F	2,2		dB
U _{CE} = 10 V, I _C = 2 mA, f = 200 MHz, Y _G = Y _{Gopt} = (8,33 — j 13,3) mS	F	2,9		dB
Kollektor-Rückwirkungszeitkonstante Feedback time constant U _{CB} = 10 V, I _C = 7 mA, f = 30 MHz	t _{bb·C_{b'c}}	9,5		ps

Rückwirkungskapazität

Feedback capacitance

$U_{CE} = 10\text{ V}, I_C = 1\text{ mA}, f = 10,7\text{ MHz}$

$-C_{re}$	0,45	0,5	pF
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Leistungsverstärkung

Power gain

$U_{CE} = 10\text{ V}, I_C = 7\text{ mA}, f = 36\text{ MHz}$

$G_{pe^{(2)}}$	25,5	27,5	dB
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y-Parameter in Emitterschaltung

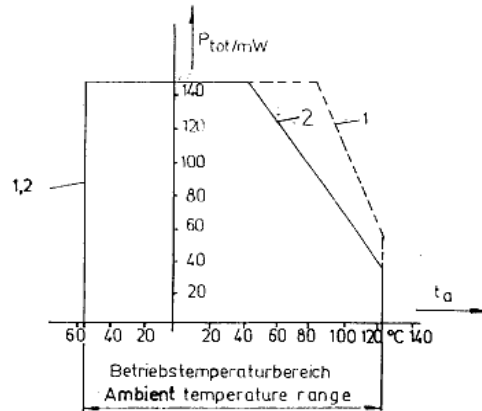
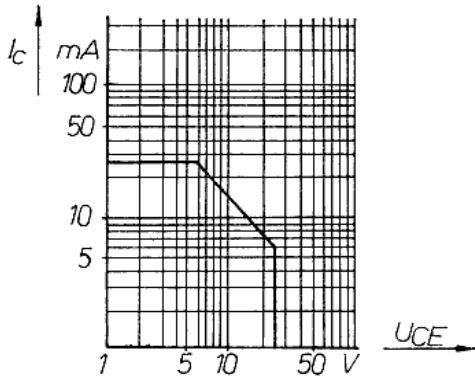
y-parameters in common emitter configuration

$U_{CE} = 10\text{ V}, I_C = 7\text{ mA}, f = 36\text{ MHz}$

g_{ie}	2,8	mS
C_{ie}	8	pF
$ y_{re} $	90	μS
$-\varphi_{re}$	102	$^\circ$
$ y_{fe} $	50	mS
$-\varphi_{fe}$	-70	$^\circ$
g_{oe}	280	μS
C_{oe}	1,3	pF

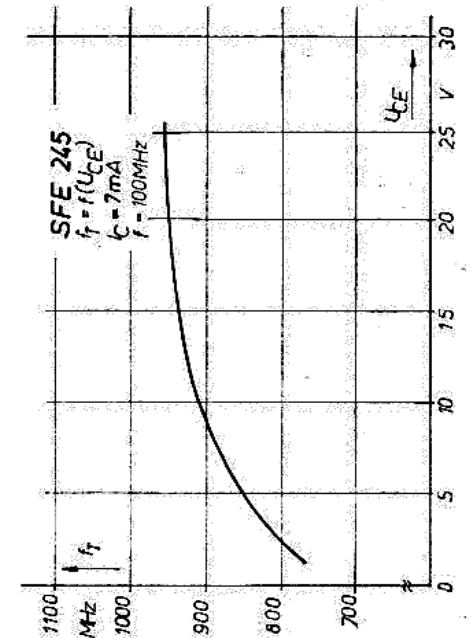
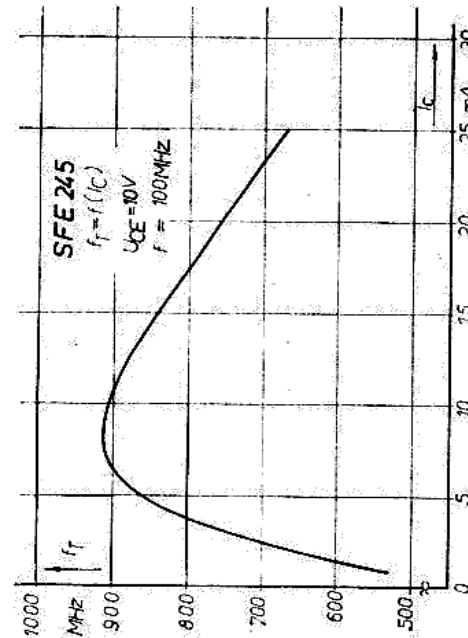
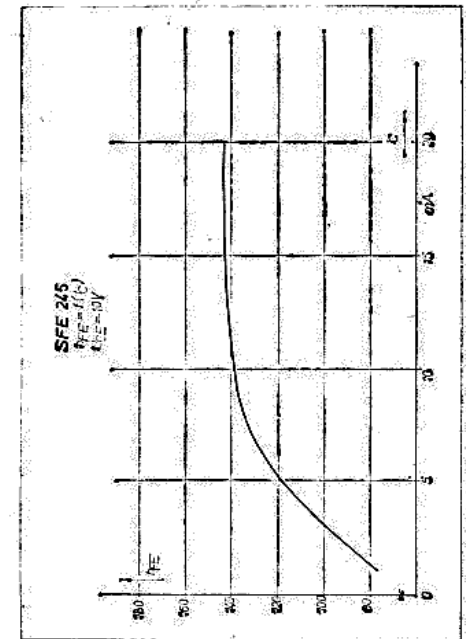
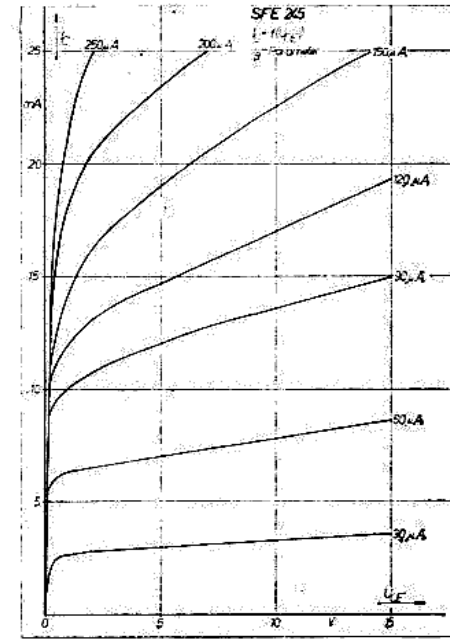
1) Messung erfolgt impulsmäßig, $t_p/T = 0,01$, $t_p = 0,3\text{ ms}$
Pulse measurement

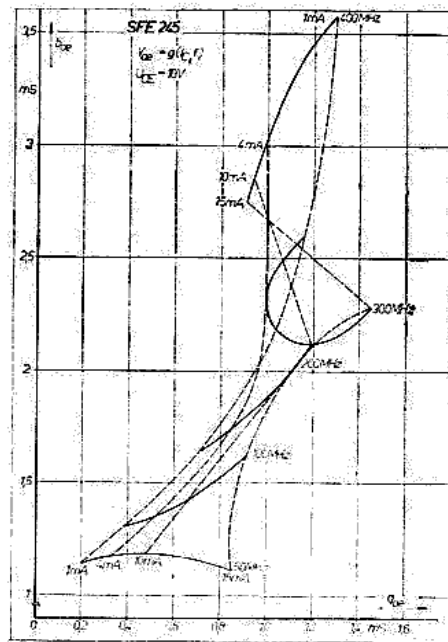
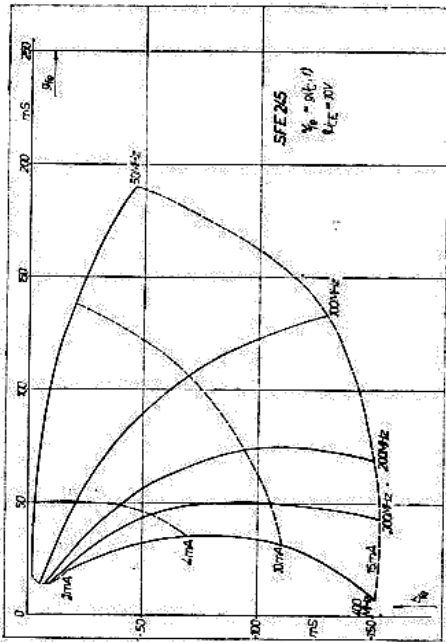
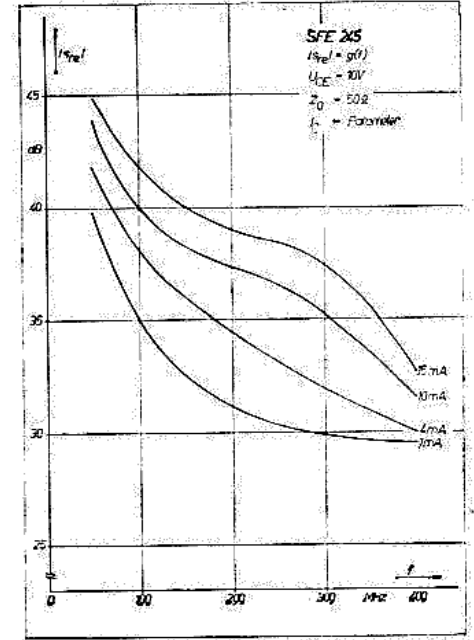
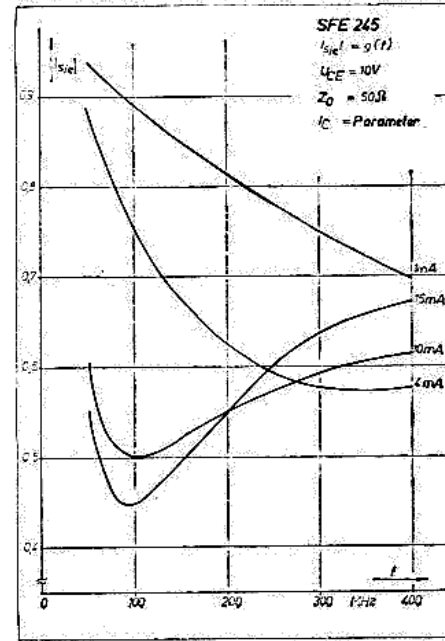
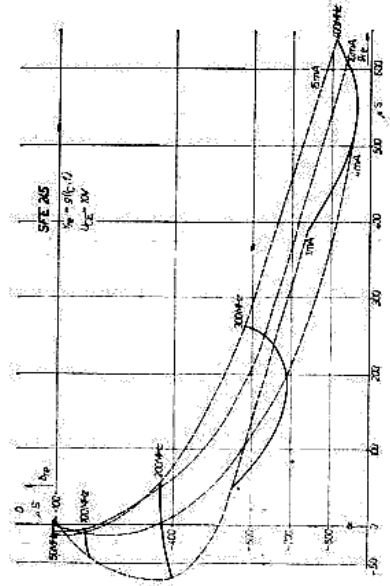
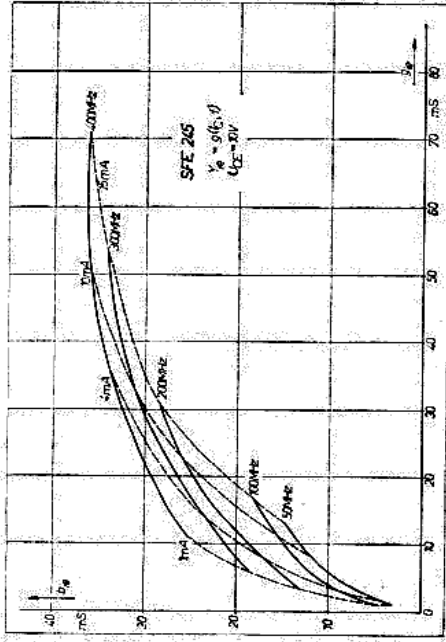
2) $G_{pe} = P_L/P_{Gmax}$



1 $R_{thJA} = 0,45\text{ K/mW}$
auf Keramik/on ceramic $30 \times 12 \times 1\text{ mm}$

2 $R_{thJA} = 0,7\text{ K/mW}$
auf Glassubstrat/on glass substrate $7 \times 7 \times 1\text{ mm}$





Stempelcode: / Code on case:

SFE 245

LO