RENESAS

Phase-out/Discontinued

SILICON TRANSISTOR
2SC2954

NPN SILICON EPITAXIAL TRANSISTOR
POWER MINI MOLD

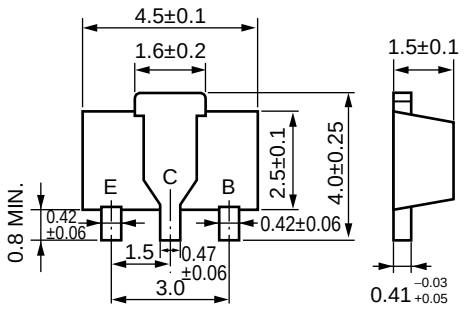
DESCRIPTION

The 2SC2954 is an NPN epitaxial silicon transistor disigned for low noise wide band amplifier and buffer amplifier of OSC, for VHF and CATV bnad.

FEATURES

- Low Noise and High Gain.
  - f = 200 MHz, 500 MHz
  - NF: 2.3 dB, 2.4 dB
  - $|S_{21e}|$: 20 dB, 12.5 dB
- Large P_T in Small Package.
  - P_T: 2 W with 16 $cm^2 \times 0.7$ mm Ceramic Substrate.

PACKAGE DIMENSIONS
(Unit: mm)



Term, Connection
E : Emitter
C : Collector (Fin)
B : Base
(SOT-89)

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

Collector to Base Voltage	V_{CBO}	35	V
Collector to Emitter Voltage	V_{CEO}	18	V
Emitter to Base Voltage	V_{EBO}	3.0	V
Collector Current	I_C	150	mA
Total Power Dissipation	P_T*	2.0	W
Termal Resistance	$R_{th(j-a)}$*	62.5	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	−65 to +150	°C

* With 16 $cm^2 \times 0.7$ mm Ceramic Substrate

★ **h_{FE} Classification**

Class	QK
Marking	QK
h_{FE}	30 to 200

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The mark ★ shows major revised points.

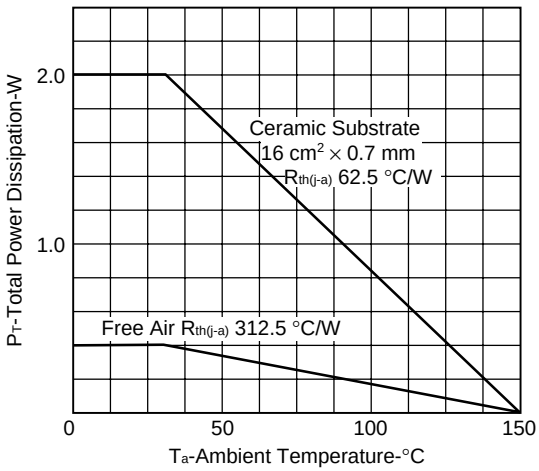
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Collector Cutoff Current	I_{CBO}	V_{CB} = 10 V, I_E = 0			100	nA
DC Current Gain	h_{FE}	V_{CE} = 10 V, I_C = 50 mA ***1**	30	100	200	–
Gain Bandwidth Product	f_T	V_{CE} = 10 V, I_C = 50 mA	3.0	4.0		GHz
Feedback Capacitance	C_{re}	V_{CB} = 10 V, Emitter Grounded, f = 1.0 MHz		1.1	1.8	pF
Insertion Power Gain	$\|S_{21e}\|^2$	V_{CE} = 10 V, I_C = 50 mA, f = 500 MHz R_G = 50 Ω	10	12.5		dB
Noise Figure	NF	V_{CE} = 10 V, I_C = 30 mA, f = 500 MHz R_G = 50 Ω		2.4	4.0	dB

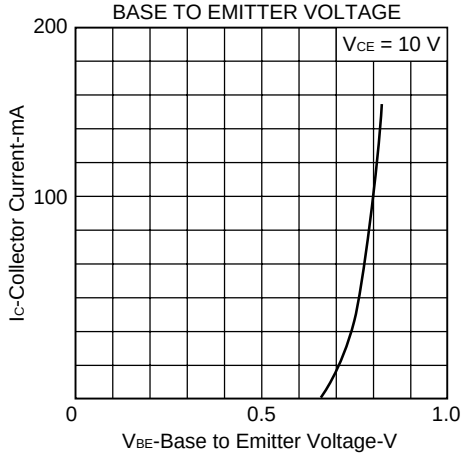
***1** Pulse Measurement PW ≤ 350 μs, duty cycle 2 %/Pulsed

TYPICAL CHARACTERISTICS (T_A = 25 °C)

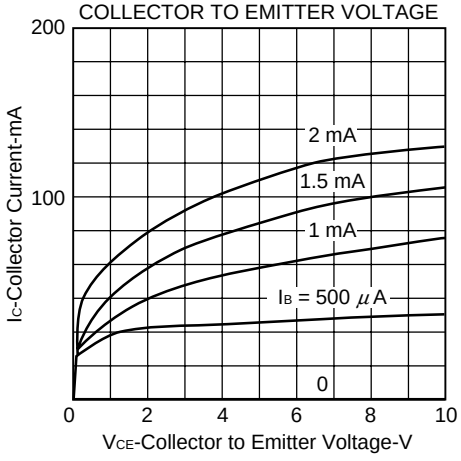
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



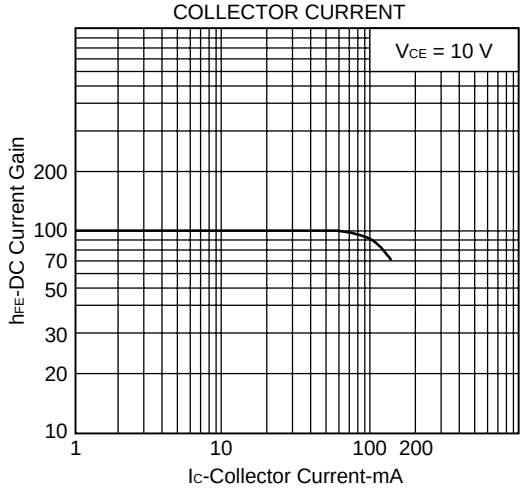
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



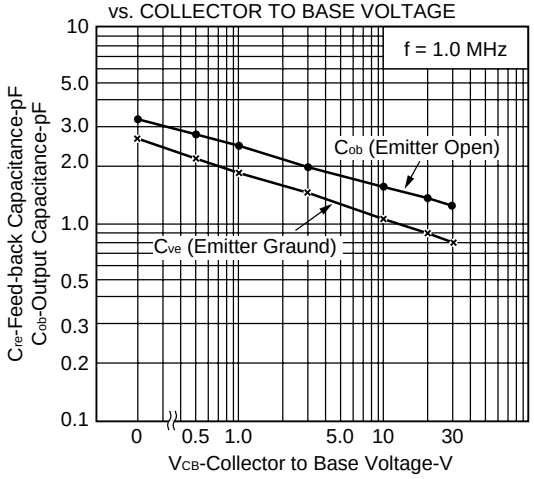
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



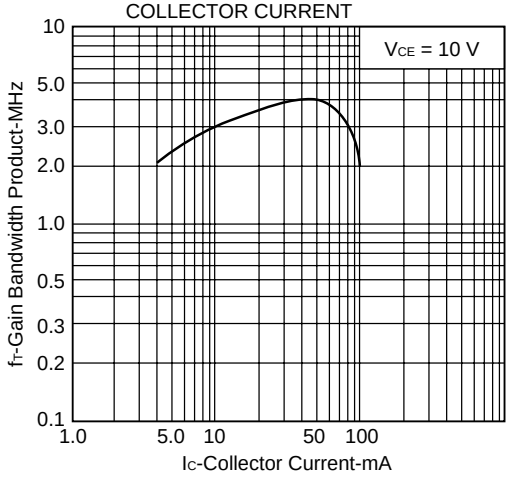
DC CURRENT GAIN vs. COLLECTOR CURRENT



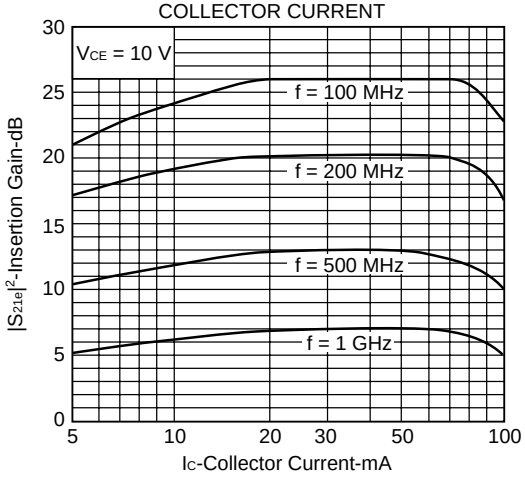
FEED-BACK AND OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



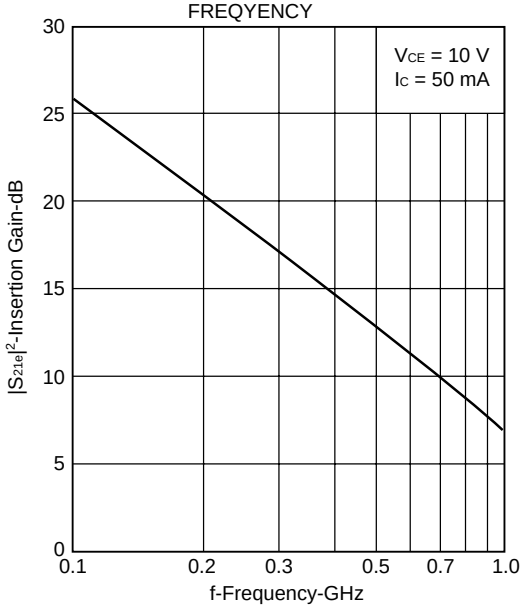
GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



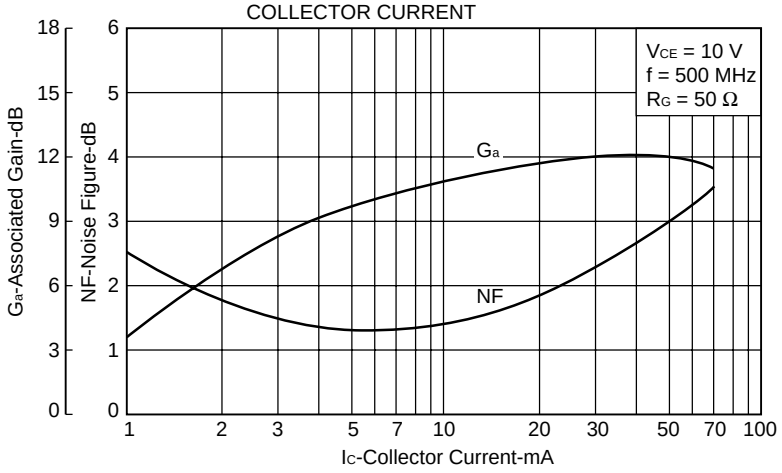
INSERTION GAIN vs. COLLECTOR CURRENT



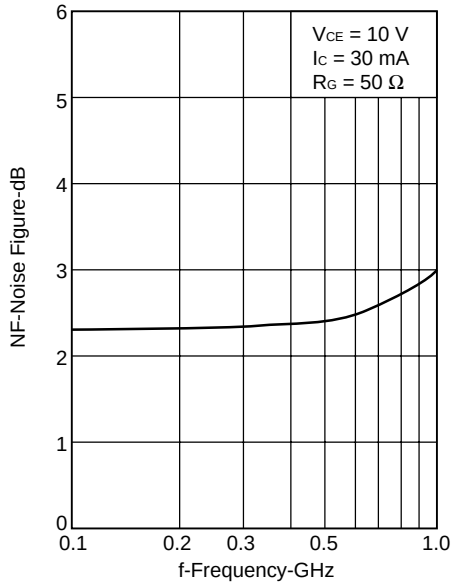
INSERTION GAIN vs. FREQYENCY



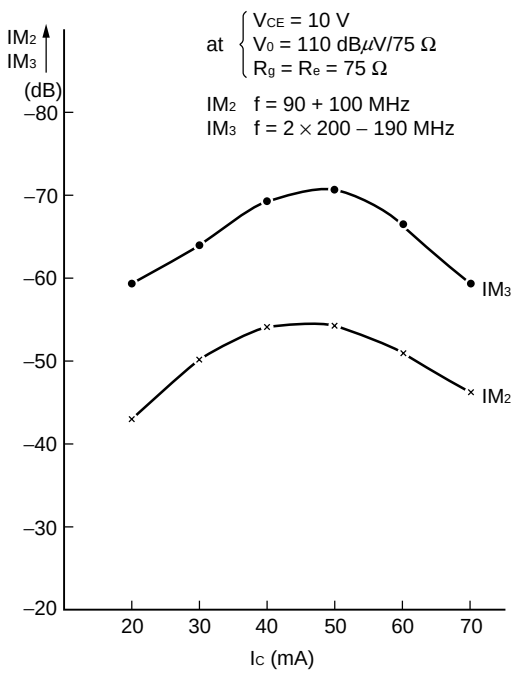
NOISE FIGURE, ASSOCIATED GAIN vs.
COLLECTOR CURRENT



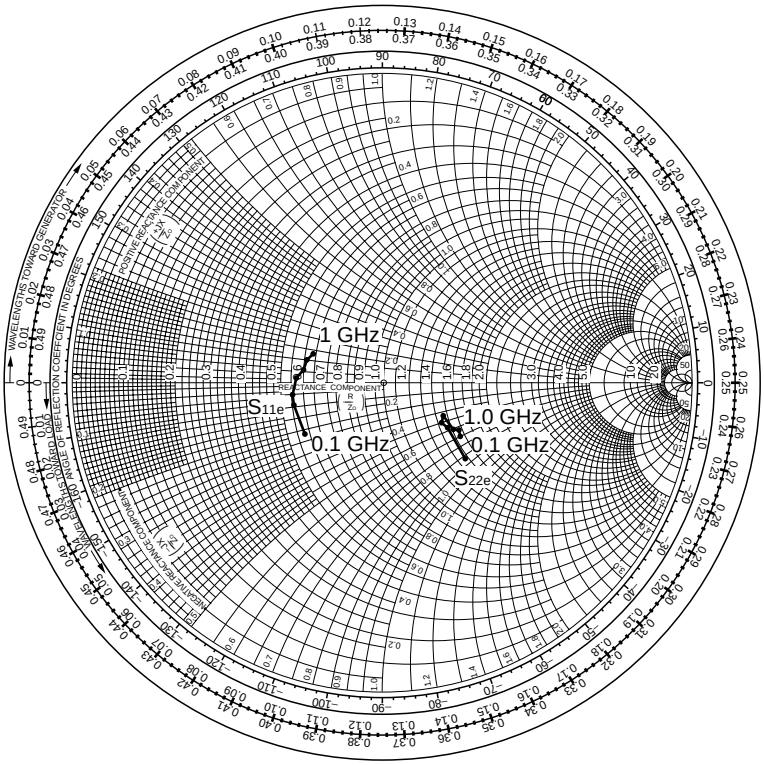
NOISE FIGURE,vs.
FREQUENCY



2SC2945 IM2, IM3 vs. IC

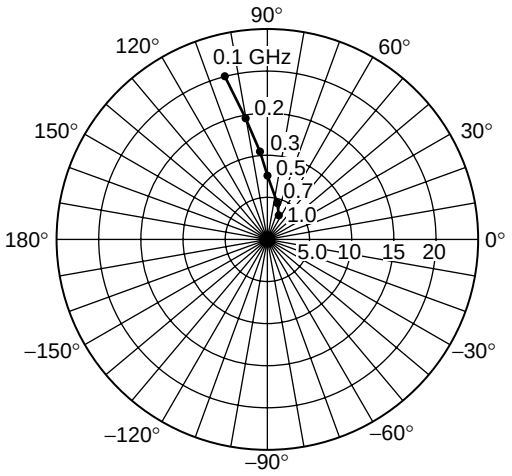


S_{11e}, S_{22e}-FREQUENCY



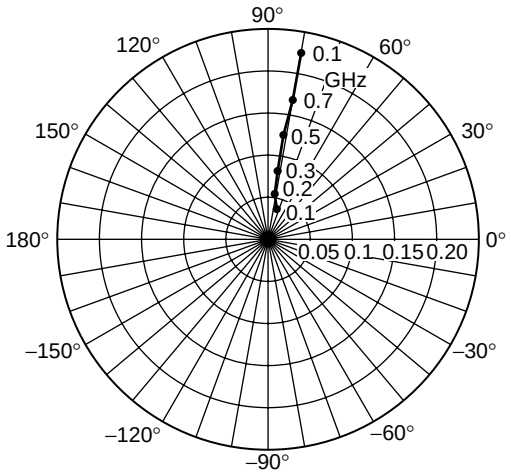
CONDITION V_{CE} = 10 V
I_C = 50 mA
f = 0.1 to 1.0 GHz (STEP. 100 MHz)

S_{21e}-FREQUENCY



CONDITION V_{CE} = 10 V
I_C = 50 mA

S_{12e}-FREQUENCY



CONDITION V_{CE} = 10 V
I_C = 50 mA