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NPN Epitaxial Planar Silicon Transistors

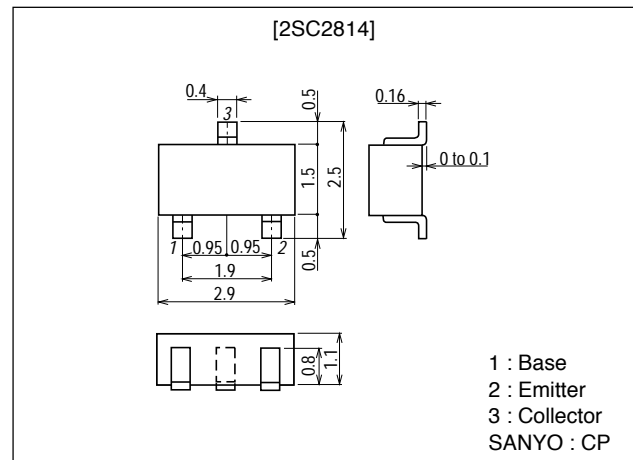
2SC2814 — High-Frequency General-Purpose Amplifier Applications

Features

- Ultrasmall package enabling compactness and slimness of sets.
- High f_T and small c_{re} ($f_T=320\text{MHz}$ typ, $c_{re}=0.95\text{pF}$ typ).

Package Dimensions

unit:mm
2018B



Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		30	V
Collector-to-Emitter Voltage	V_{CEO}		20	V
Emitter-to-Base Voltage	V_{EBO}		5	V
Collector Current	I_C		30	mA
Collector Dissipation	P_C		150	mW
Junction Temperature	T_j		125	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +125	$^\circ\text{C}$

Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CB0}	$V_{CB}=10\text{V}, I_E=0$			0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=4\text{V}, I_C=0$			0.1	μA
DC Current Gain	h_{FE}	$V_{CE}=6\text{V}, I_C=1\text{mA}$	40*		270*	
Gain-Bandwidth Product	f_T	$V_{CE}=6\text{V}, I_C=1\text{mA}$	200	320		MHz
Reverse Transfer Capacitance	C_{re}	$V_{CB}=6\text{V}, f=1\text{MHz}$	0.7	0.95	1.2	pF
Base-to-Collector Time Constant	$rb_b' C_C$	$V_{CE}=6\text{V}, I_C=1\text{mA}, f=31.9\text{MHz}$		12	20	ps
Noise Figure	NF	$V_{CE}=6\text{V}, I_C=1\text{mA}, f=100\text{MHz}$		3.0		dB
Power Gain	PG	$V_{CE}=6\text{V}, I_C=1\text{mA}, f=100\text{MHz}$		25		dB

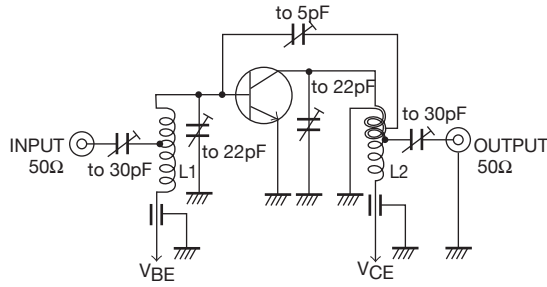
* : The 2SC2814 are classified as follows by h_{FE} at 1mA :

(Note) Marking : F

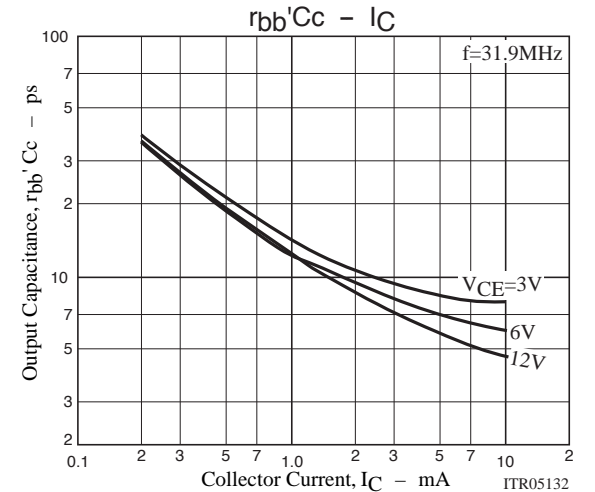
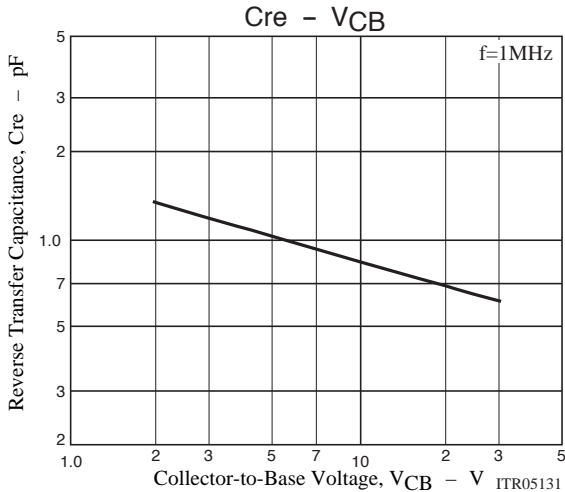
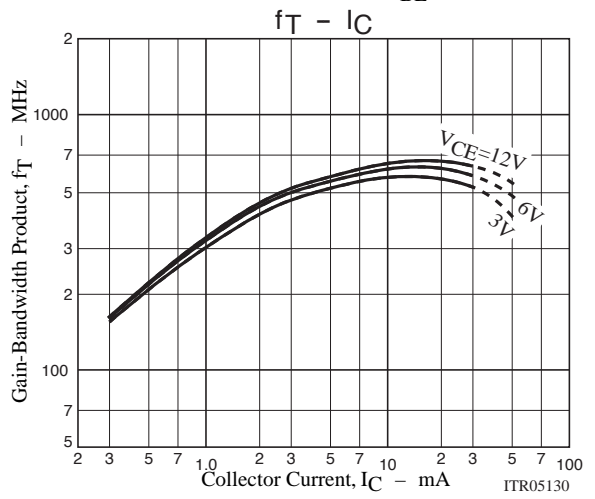
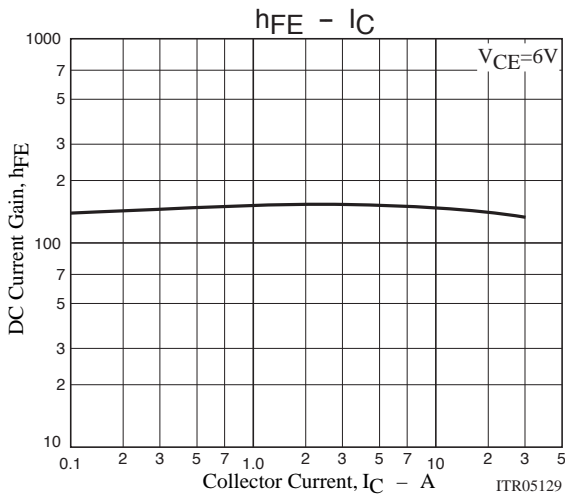
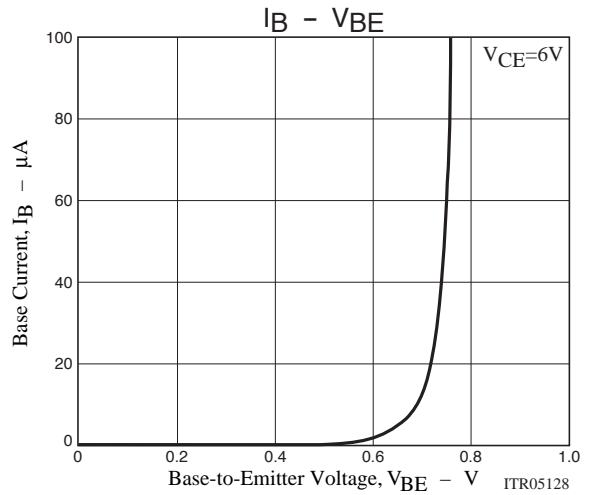
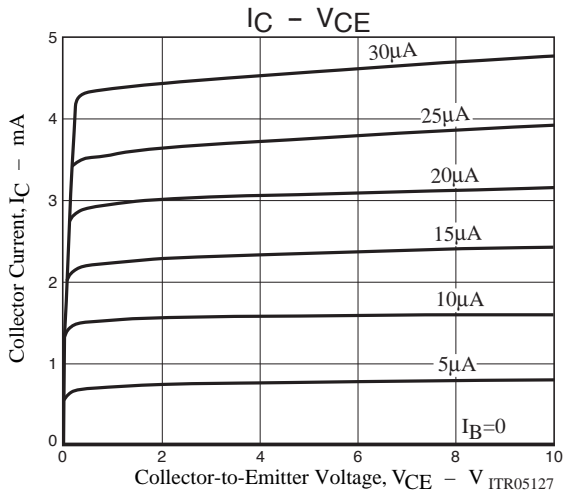
h_{FE} rank : 2, 3, 4, 5

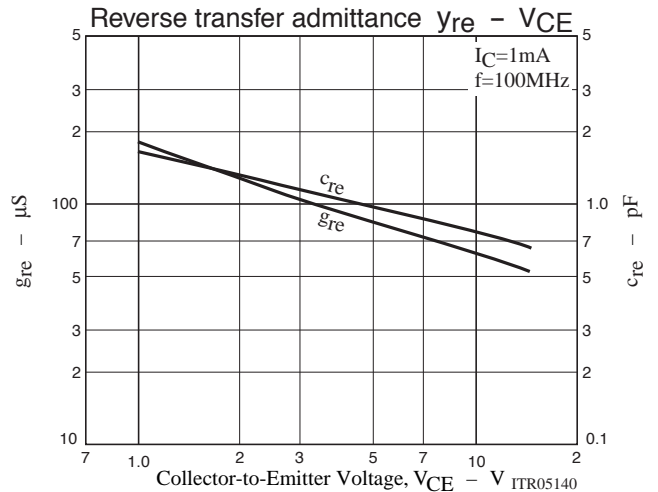
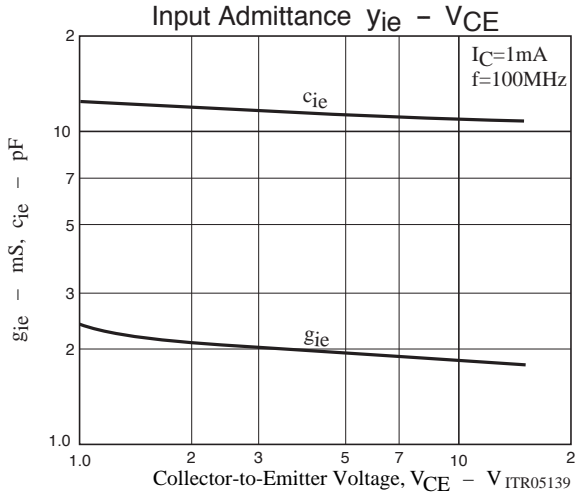
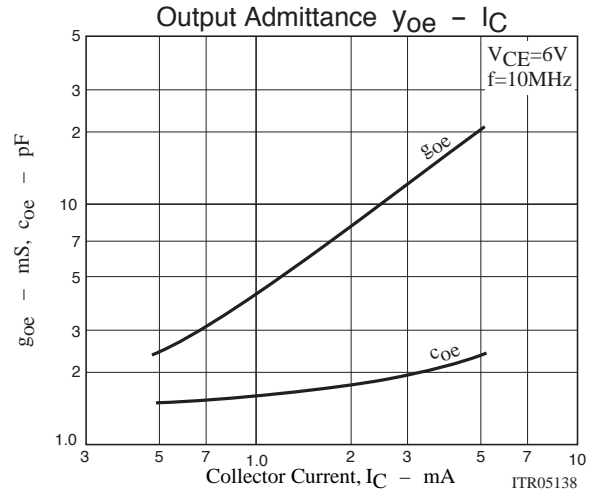
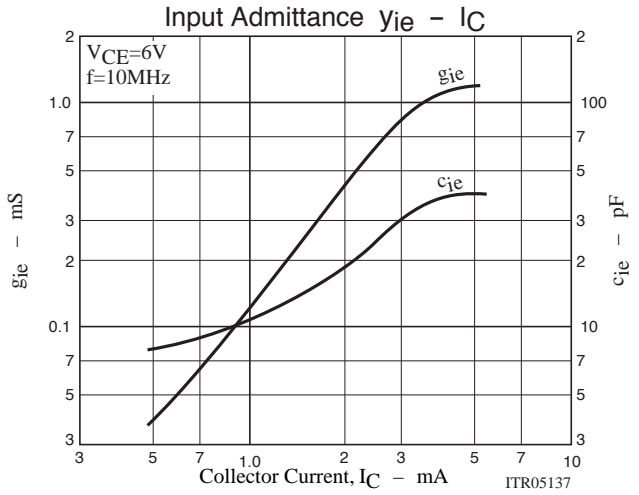
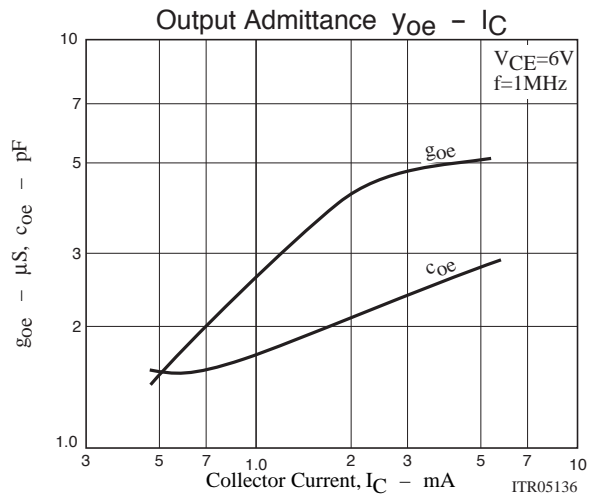
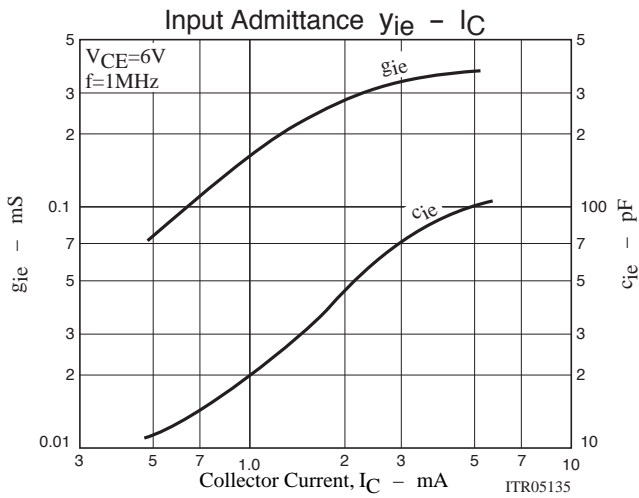
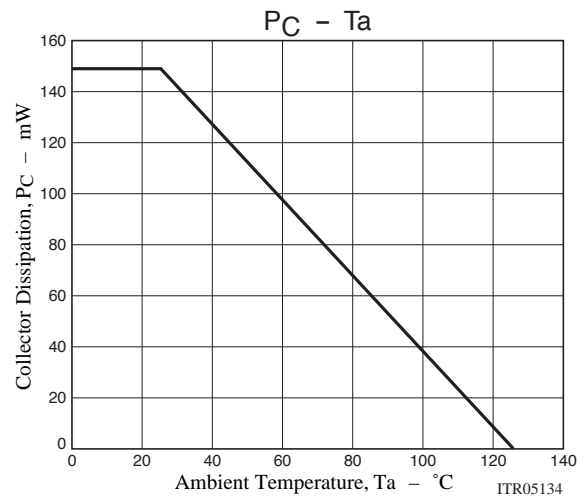
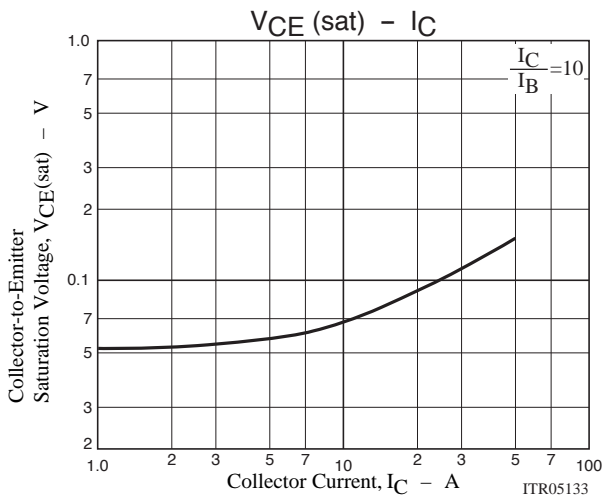
Rank	2	3	4	5
h_{FE}	40 to 80	60 to 120	90 to 180	135 to 270

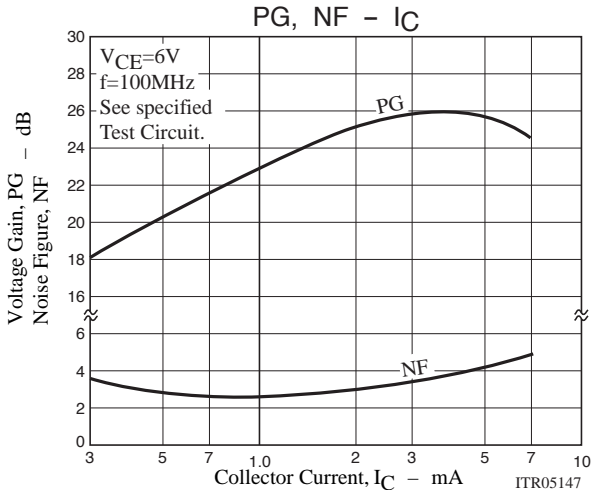
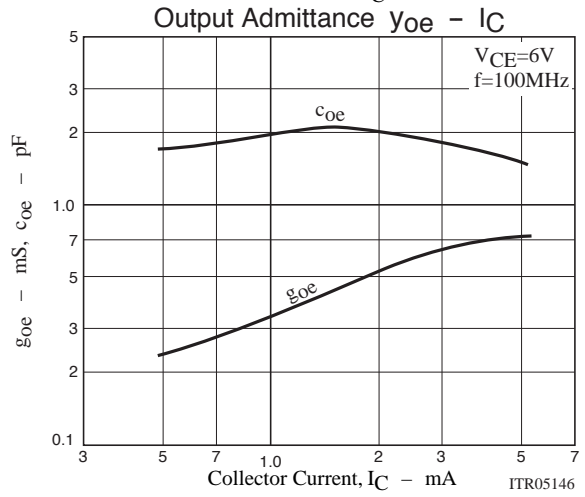
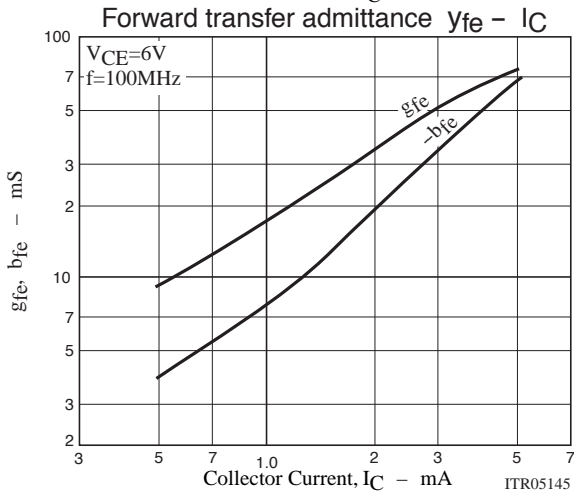
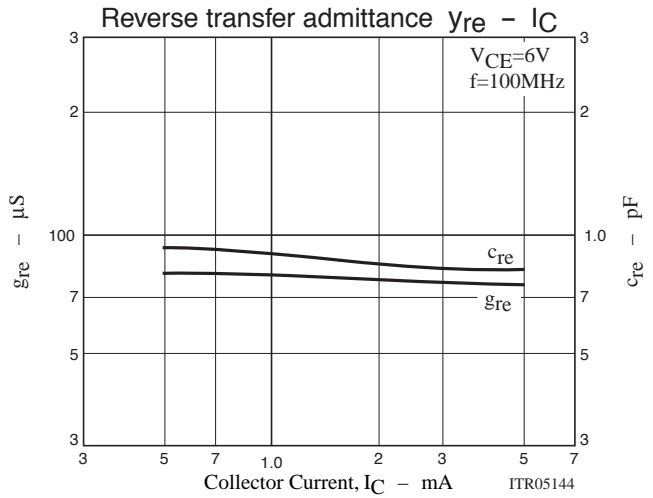
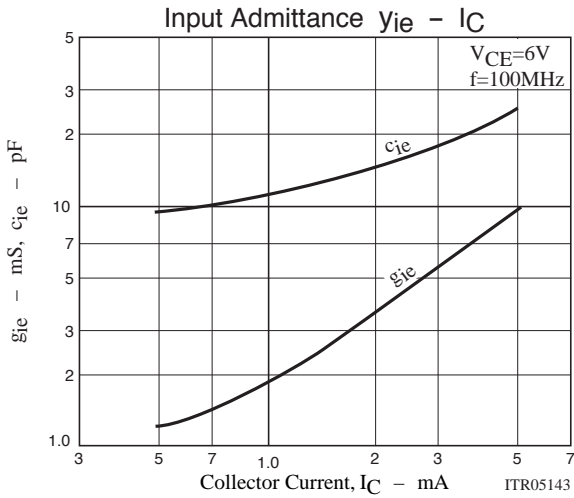
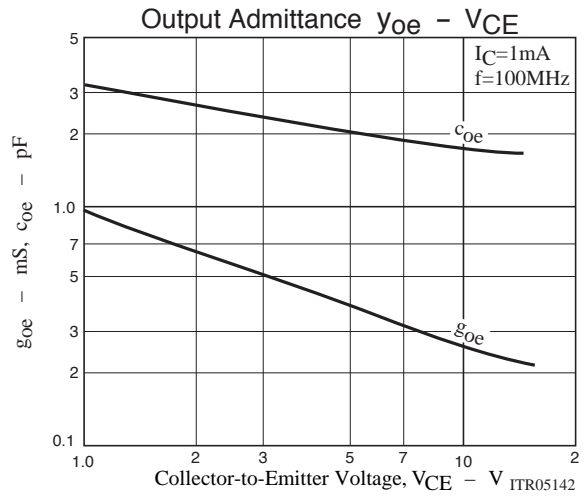
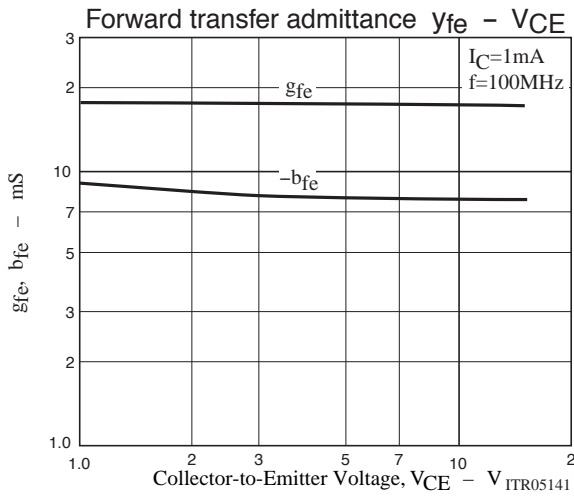
NF, PG Test Circuit



- L1 : 1mmø plated wire 10mmø 4T, tap : 2T from V_{BE} side.
- L2 : 1mmø plated wire 10mmø 7T, tap : 1T from V_{CE} side.
- L3 : 1mmø enameled wire 10mmø 3T.







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