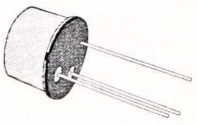
SGS-THOMSON
MICROELECTRONICS

2N3137

RF AMPLIFIER

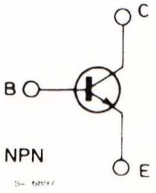
DESCRIPTION

The 2N3137 is a silicon planar epitaxial NPN transistor in a TO-39 metal case. It is a primarily designed for application as a Class-C, RF power amplifier. In addition to the large signal capabilities, the low noise and high transition frequency of the 2N3137 provide excellent performance in a variety of linear amplifier for telecommunication applications.



TO-39

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)	40	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	20	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	4	V
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25$ °C at $T_{case} \leq 25$ °C	0.6 1	W W
T_{stg}, T_j	Storage and Junction Temperature	– 65 to 200	°C

THERMAL DATA

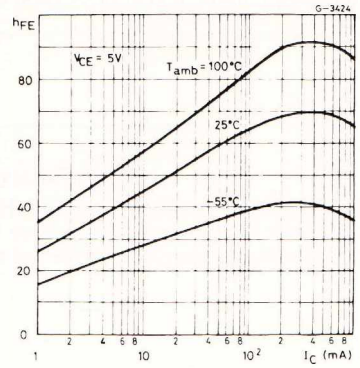
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	175	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	292	°C/W

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C unless otherwise specified)

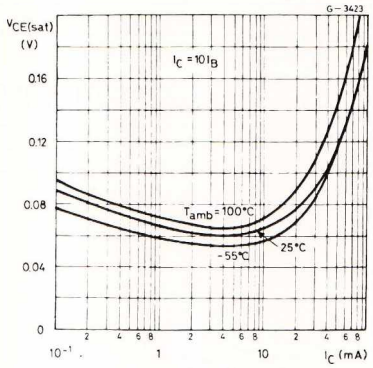
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	V_{CB} = 20 V V_{CB} = 20 V	 T_{amb} = 150 °C		0.12 0.1	50 50	nA μA
$V_{(BR)CBO}$	Collector-base Breakdown Voltage (I_E = 0)	I_C = 100 μA		40			V
$V_{CEO(sus)}$*	Collector-emitter Sustaining Voltage (I_B = 0)	I_C = 15 mA		20			V
$V_{(BR)EBO}$	Emitter-base Breakdown Voltage (I_C = 0)	I_E = 100 μA		4			V
$V_{CE(sat)}$	Collector-emitter Saturation Voltage	I_C = 50 mA	I_B = 5 mA		0.12	0.3	V
h_{FE}*	DC Current Gain	I_C = 50 mA	V_{CE} = 5 V	20	70	120	
G_{pe}	Power Gain (class-C)	V_{CE} = 20 V f = 250 MHz	P_i = 100 mW	6	7		dB
NF	Noise Figure	V_{CE} = 10 V f = 200 MHz	I_C = 30 mA R_g = 50 Ω		4		dB
C_{CBO}	Collector-base Capacitance	V_{CB} = 10 V	f = 1 MHz		2.8	3.5	pF
f_T	Transition Frequency	I_C = 50 mA	V_{CE} = 10 V	500	750		MHz
η	Collector Efficiency	V_{CE} = 20 V f = 250 MHz	P_i = 100 mW	40	60		%

* Pulsed : pulse duration = 300 μs, duty cycle = 1 %.

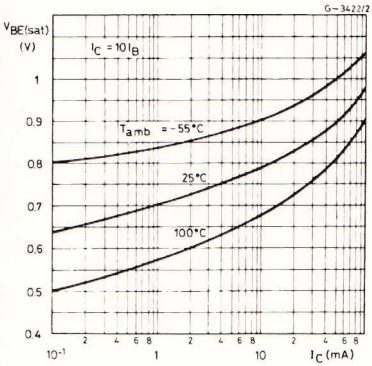
DC Current Gain.



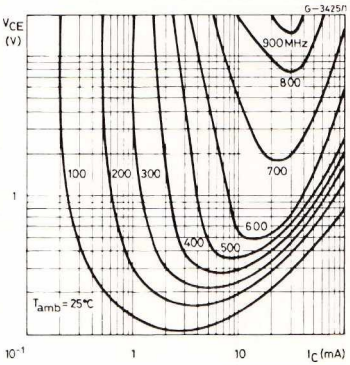
Collector-emitter Saturation Voltage.



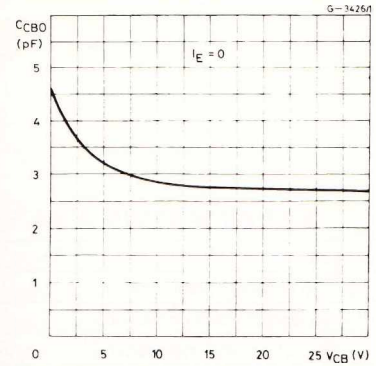
Base-emitter Saturation Voltage.



Contours of Constant Transition Frequency.



Collector-base capacitance.



Emitter-base capacitance.