

SS9015

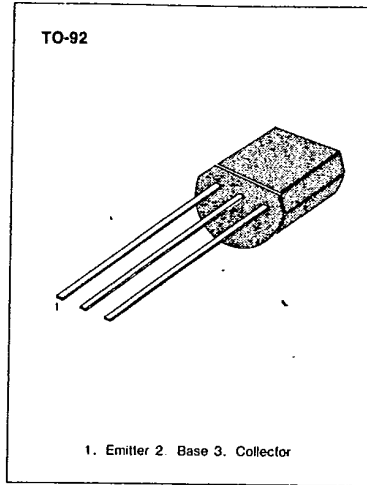
PNP EPITAXIAL SILICON TRANSISTOR

LOW FREQUENCY, LOW NOISE AMPLIFIER

• Complement to SS9014

ABSOLUTE MAXIMUM RATINGS (T_a = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V _{CB0}	-50	V
Collector-Emitter Voltage	V _{CE0}	-45	V
Emitter-Base Voltage	V _{EB0}	-5	V
Collector Current	I _c	-100	mA
Collector Dissipation	P _c	450	mW
Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-55~150	°C



ELECTRICAL CHARACTERISTICS (T_a = 25°C)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV _{CB0}	I _c = -100μA, I _E = 0	-50			V
Collector-Emitter Breakdown Voltage	BV _{CE0}	I _c = -1mA, I _B = 0	-45			V
Emitter-Base Breakdown Voltage	BV _{EB0}	I _E = -100μA, I _C = 0	-5			V
Collector Cutoff Current	I _{CB0}	V _{CB} = -50V, I _E = 0			-50	nA
Emitter Cutoff Current	I _{EB0}	V _{EB} = -5V, I _C = 0			-50	nA
DC Current Gain	h _{FE}	V _{CE} = -5V, I _C = -1mA	60	200	600	
Collector-Base Saturation Voltage	V _{CE(sat)}	I _C = -100mA, I _B = -5mA		-0.2	-0.7	V
Base-Emitter Saturation Voltage	V _{BE(sat)}	I _C = -100mA, I _B = -5mA		-0.82	-1.0	V
Base-Emitter On Voltage	V _{BE(on)}	V _{CE} = -5V, I _C = -2mA	-0.6	-0.65	-0.75	V
Output Capacitance	C _{ob}	V _{CB} = -10V, I _E = 0 f = 1MHz		4.5	7.0	pF
Current Gain-Bandwidth Product	f _T	V _{CE} = -5V, I _C = -10mA	100	190		MHz
Noise Figure	NF	V _{CE} = -5V, I _C = -0.2mA f = 1KHz, R _s = 1KΩ		0.7	10	dB

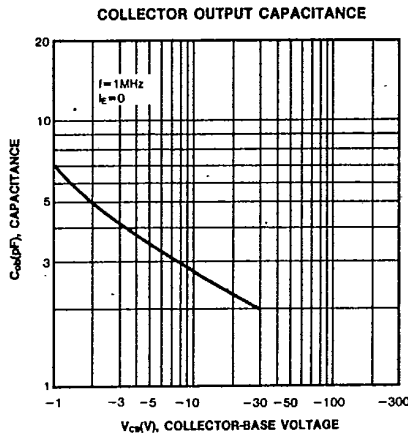
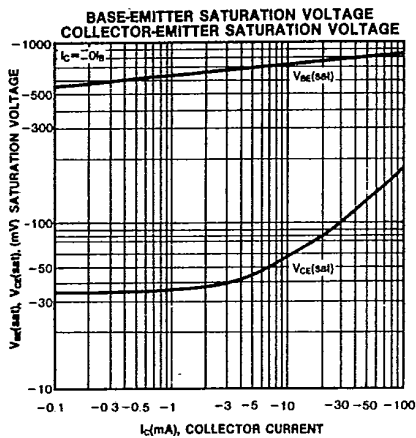
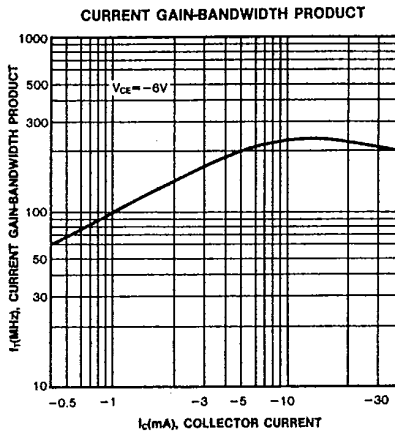
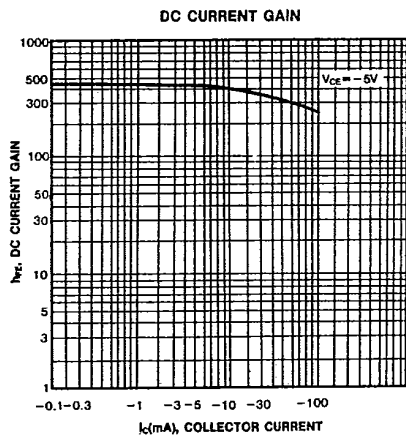
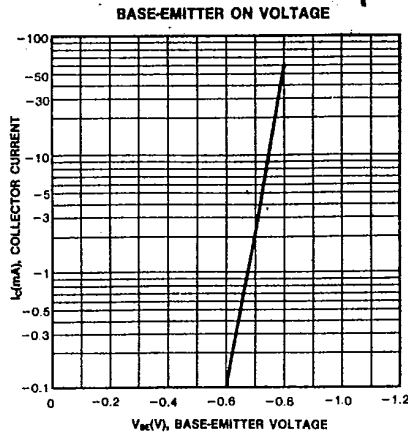
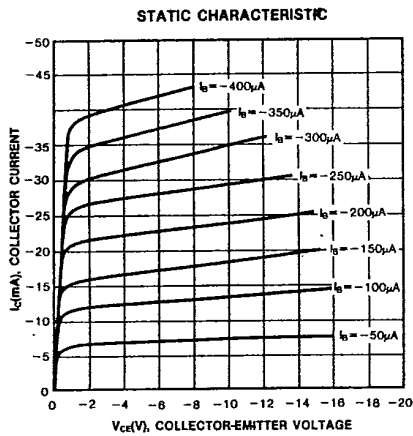
h_{FE} CLASSIFICATION

Classification	A	B	C
h _{FE}	60-150	100-300	200-600

SS9015

PNP EPTAXIAL SILICON TRANSISTOR

T-29-19



T-31-19

SS9016

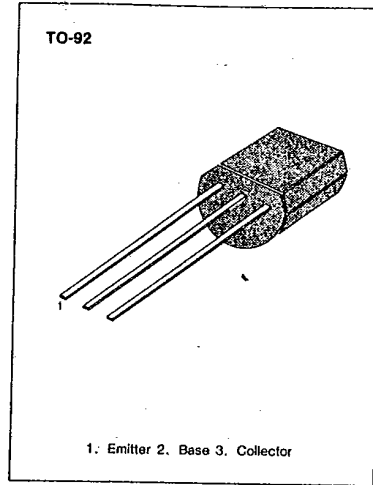
NPN EPITAXIAL SILICON TRANSISTOR

AM CONVERTER, FM/RF AMPLIFIER OF LOW NOISE.

• High total power dissipation. (PT=400mW)

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V _{CB0}	30	V
Collector-Emitter Voltage	V _{CE0}	20	V
Emitter-Base Voltage	V _{EB0}	4	V
Collector Current	I _c	25	mA
Collector Dissipation	P _c	400	mW
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-55~150	°C



ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV _{CB0}	I _c =100μA, I _E =0	30			V
Collector-Emitter Breakdown Voltage	BV _{CE0}	I _c =1mA, I _B =0	20			V
Emitter-Base Breakdown Voltage	BV _{EB0}	I _E =100μA, I _C =0	4			V
Collector Cutoff Current	I _{CB0}	V _{CB} =30V, I _E =0			100	nA
Emitter Cutoff Current	I _{EB0}	V _{EB} =3V, I _C =0			100	nA
DC Current Gain	h _{FE}	V _{CE} =5V, I _C =1mA	28	90	198	
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C =10mA, I _B =1mA		0.1	0.3	V
Base-Emitter On Voltage	V _{BE (on)}	V _{CE} =5V, I _C =1mA		0.72		V
Output Capacitance	C _{ob}	V _{CB} =10V, I _E =0 f=1MHz		1.2	1.6	pF
Current Gain-Bandwidth Product	f _T	V _{CE} =5V, I _C =1mA	400	620		MHz
Noise Figure	NF	V _{CE} =5V I _C =1.0mA f=100MHz, R _s =50Ω		3.0	5.0	dB

h_{FE} CLASSIFICATION

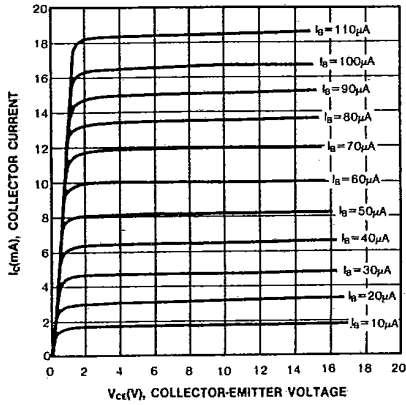
Classification	D	E	F	G	H	I
h _{FE}	28-45	39-60	54-80	72-108	97-146	132-198

SS9016

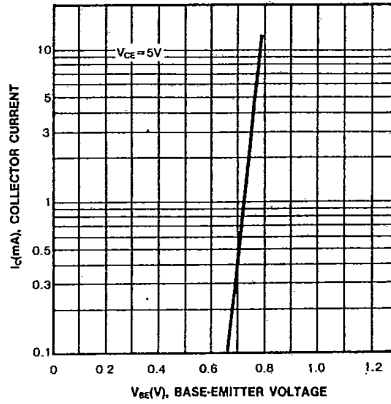
NPN EPITAXIAL SILICON TRANSISTOR

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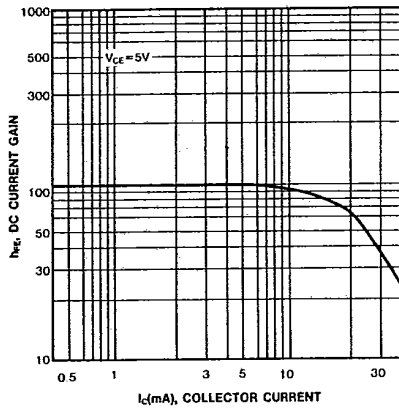
STATIC CHARACTERISTIC



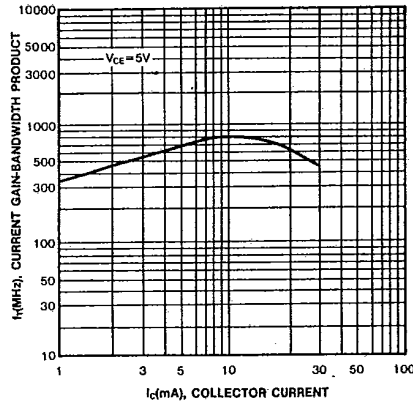
BASE-EMITTER ON VOLTAGE



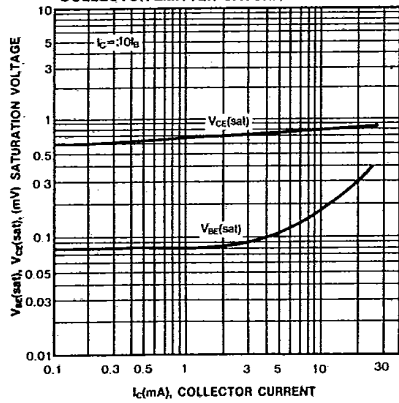
DC CURRENT GAIN



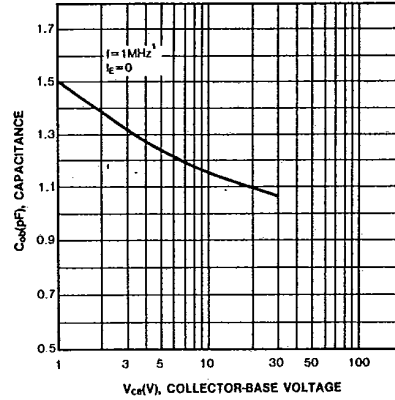
CURRENT GAIN-BANDWIDTH PRODUCT



BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



COLLECTOR OUTPUT CAPACITANCE



SS9018

NPN EPITAXIAL SILICON TRANSISTOR

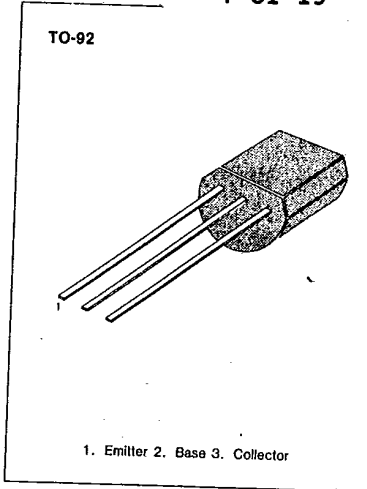
AM/FM IF AMPLIFIER, LOCAL OSCILLATOR OF FM/VHF TUNER

• High Current Gain Bandwidth Product $f_T = 1,100$ MHz (Typ)

T-31-19

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	30	V
Collector-Emitter Voltage	V_{CEO}	15	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	50	mA
Collector Dissipation	P_C	400	mW
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$



ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C = 100\mu\text{A}, I_E = 0$	30			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C = 1.0\text{mA}, I_B = 0$	15			V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E = 100\mu\text{A}, I_C = 0$	5			V
Collector Cutoff Current	I_{CBO}	$V_{CB} = 12\text{V}, I_E = 0$			50	nA
DC Current Gain	h_{FE}	$V_{CE} = 5\text{V}, I_C = 1.0\text{mA}$	28	100	198	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{mA}, I_B = 1\text{mA}$			0.5	V
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0$ $f = 1\text{MHz}$		1.3	1.7	pF
Current Gain-Bandwidth Product	f_T	$V_{CE} = 5\text{V}, I_C = 5\text{mA}$	700	1100		MHz

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h_{FE} CLASSIFICATION

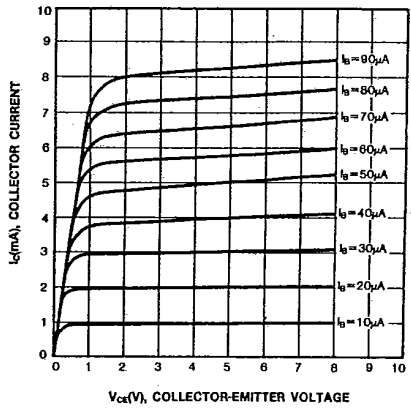
Classification	D	E	F	G	H	I
h_{FE}	28-45	39-60	54-80	72-108	97-146	132-198

SS9018

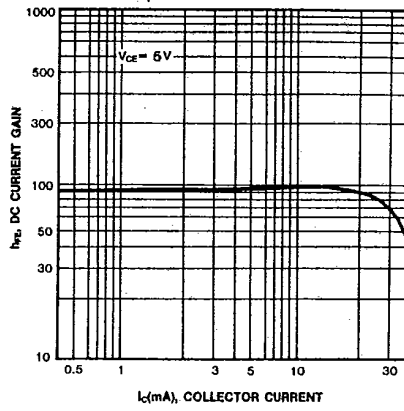
NPN EPITAXIAL SILICON TRANSISTOR

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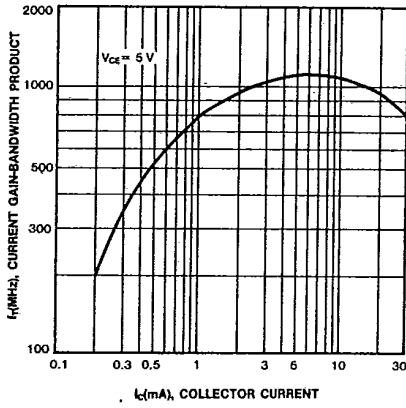
STATIC CHARACTERISTIC



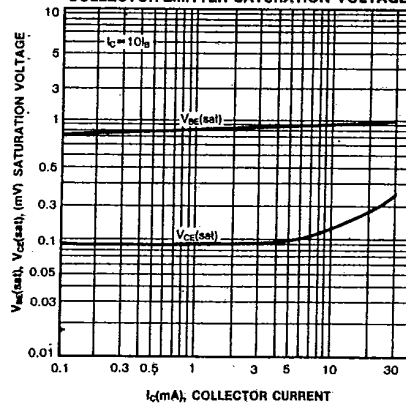
DC CURRENT GAIN



CURRENT GAIN-BANDWIDTH PRODUCT



BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



OUTPUT CAPACITANCE

