

SS9012

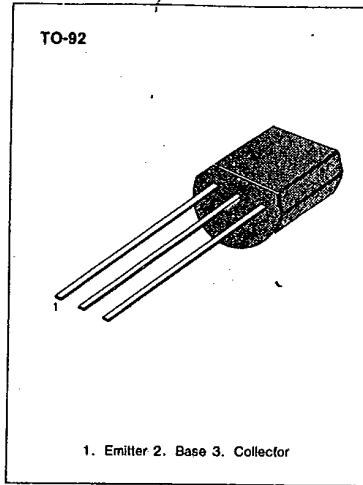
PNP EPITAXIAL SILICON TRANSISTOR

1W OUTPUT AMPLIFIER OF POTABLE
RADIO IN CLASS
B PUSH-PULL OPERATION.

- High total power dissipation. ($P_T=625\text{mW}$)
- High Collector Current. ($I_C=-500\text{mA}$)
- Complementary to SS9013
- Excellent h_{FE} linearity.

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-20	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-500	mA
Collector Dissipation	P_C	625	mW
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$



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

Characteristic	Symbol	Test Condition	Min	Typ	Max'	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C=-100\mu\text{A}, I_E=0$	-40			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C=-1\text{mA}, I_B=0$	-20			V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E=-100\mu\text{A}, I_C=0$	-5			V
Collector Cutoff Current	I_{CBO}	$V_{CB}=-25\text{V}, I_E=0$			-100	nA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=-3\text{V}, I_C=0$			-100	nA
DC Current Gain	h_{FE1}	$V_{CE}=-1\text{V}, I_C=-50\text{mA}$	64	120	202	
	h_{FE2}	$V_{CE}=-1\text{V}, I_C=-500\text{mA}$	40	90		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-500\text{mA}, I_B=-50\text{mA}$		-0.18	-0.6	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-500\text{mA}, I_B=-50\text{mA}$		-0.95	-1.2	V
Base-Emitter On Voltage	$V_{BE(on)}$	$V_{CE}=-1\text{V}, I_C=-10\text{mA}$	-0.6	-0.67	-0.7	V

 h_{FE} (1) CLASSIFICATION

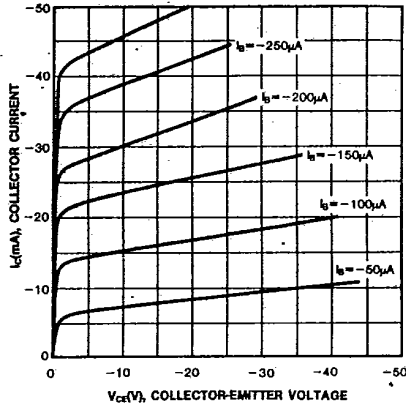
Classification	D	E	F	G	H
h_{FE} (1)	64-91	78-112	96-135	112-166	144-202



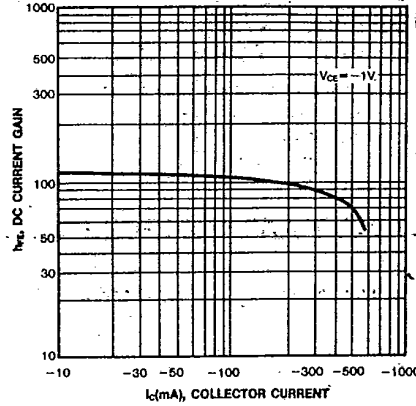
SS9012 PNP EPITAXIAL SILICON TRANSISTOR

T-31-21

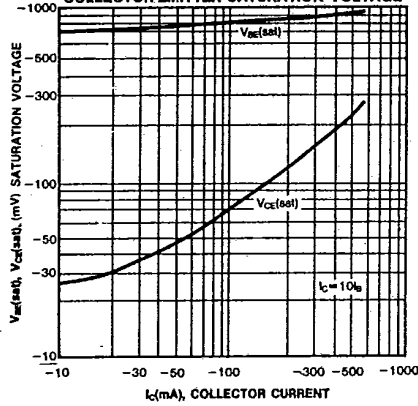
STATIC CHARACTERISTIC



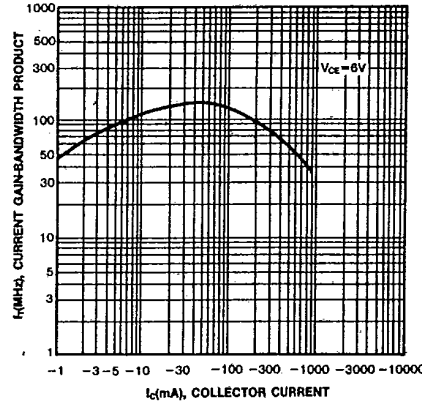
DC CURRENT GAIN



**BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE**



CURRENT GAIN-BANDWIDTH PRODUCT



SS9013

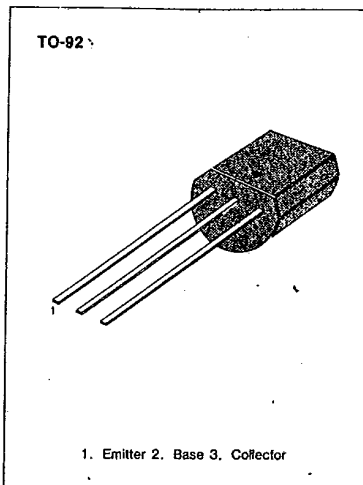
NPN EPITAXIAL SILICON TRANSISTOR

**1W OUTPUT AMPLIFIER OF POTABLE
RADIO IN CLASS
B PUSH-PULL OPERATION.**

- High total power dissipation. (PT=625mW)
- High Collector Current. (Ic=500mA)
- Complementary to SS9012
- Excellent h_{FE} linearity.

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V _{CB0}	40	V
Collector-Emitter Voltage	V _{CEO}	20	V
Emitter-Base Voltage	V _{EBO}	5	V
Collector Current	I _c	500	mA
Collector Dissipation	P _C	625	mW
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-55~150	°C



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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	40			V
Collector-Emitter Breakdown Voltage	BV _{CEO}	I _c =1mA, I _B =0	20			V
Emitter-Base Breakdown Voltage	BV _{EBO}	I _E =100μA, I _C =0	5			V
Collector Cutoff Current	I _{CB0}	V _{CB} =25V, I _E =0			100	nA
Emitter Cutoff Current	I _{EBO}	V _{EB} =3V, I _C =0			100	nA
DC Current Gain	h _{FE1}	V _{CE} =1V, I _C =50mA	64	120	202	
	h _{FE2}	V _{CE} =1V, I _C =500mA	40	120		
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C =500mA, I _B =50mA		0.16	0.6	V
Base-Emitter Saturation Voltage	V _{BE(sat)}	I _C =500mA, I _B =50mA		0.91	1.2	V
Base-Emitter On Voltage	V _{BE(on)}	V _{CE} =1V, I _C =10mA	0.6	0.67	0.7	V

h_{FE} (1) CLASSIFICATION

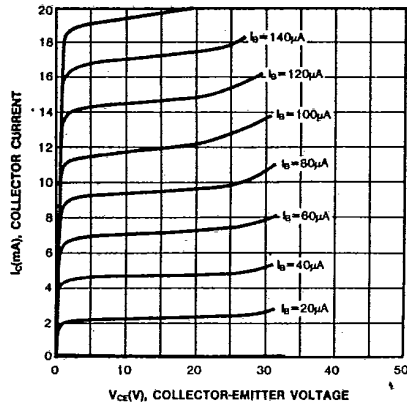
Classification	D	E	F	G	H
h _{FE} (1)	64-91	78-112	96-135	112-166	144-202

SS9013

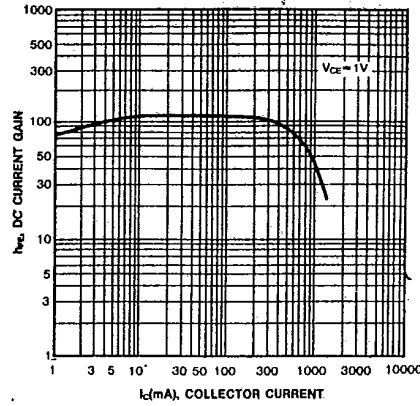
NPN EPITAXIAL SILICON TRANSISTOR

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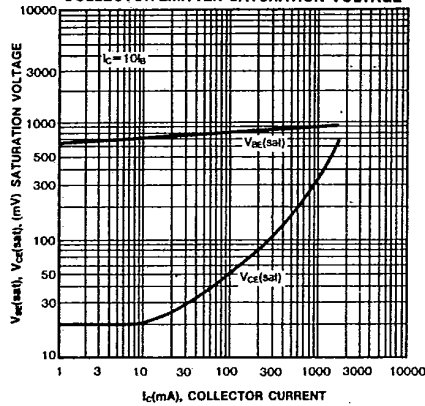
STATIC CHARACTERISTIC



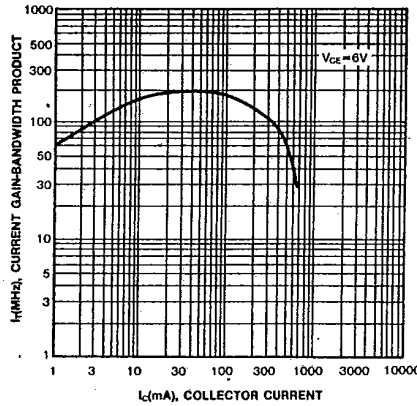
DC CURRENT GAIN



BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



CURRENT GAIN-BANDWIDTH PRODUCT

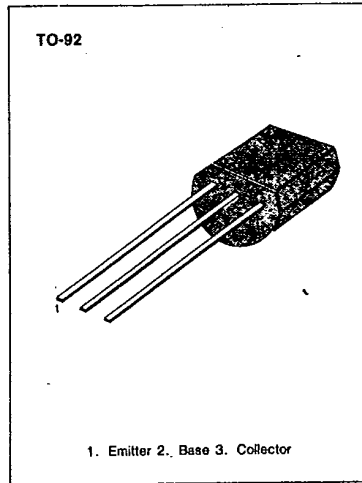


PRE-AMPLIFIER, LOW LEVEL & LOW NOISE

- High total power dissipation. (PT=450mW)
- High h_{FE} and good linearity
- Complementary to SS9015

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	45	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	100	mA
Collector Dissipation	P_C	450	mW
Junction Temperature	TJ	150	$^\circ\text{C}$
Storage Temperature	Tstg	-55~150	$^\circ\text{C}$



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

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C = 100\mu\text{A}, I_E = 0$	50			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C = 1\text{mA}, I_B = 0$	45			V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E = 100\mu\text{A}, I_C = 0$	5			V
Collector Cutoff Current	I_{CBO}	$V_{CB} = 50\text{V}, I_E = 0$			50	nA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 5\text{V}, I_C = 0$			50	nA
DC Current Gain	h_{FE}	$V_{CE} = 5\text{V}, I_C = 1\text{mA}$	60	280	1000	
Collector-Base Saturation Voltage	$V_{CE(sat)}$	$I_C = 100\text{mA}, I_B = 5\text{mA}$		0.14	0.3	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 100\text{mA}, I_B = 5\text{mA}$		0.84	1.0	V
Base-Emitter On Voltage	$V_{BE(on)}$	$V_{CE} = 5\text{V}, I_C = 2\text{mA}$	0.58	0.63	0.7	V
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0$ $f = 1\text{MHz}$		2.2	3.5	pF
Current Gain-Bandwidth Product	f_T	$V_{CE} = 5\text{V}, I_C = 10\text{mA}$	150	270		MHz
Noise Figure	NF	$V_{CE} = 5\text{V}, I_C = 0.2\text{mA}$ $f = 1\text{KHz}, R_s = 2\text{K}\Omega$		0.9	10	dB

h_{FE} CLASSIFICATION

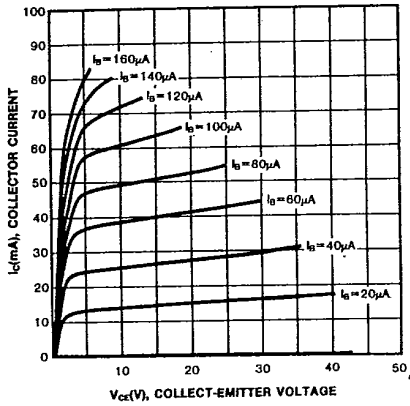
Classification	A	B	C	D
h_{FE}	60-150	100-300	200-600	400-1000

SS9014

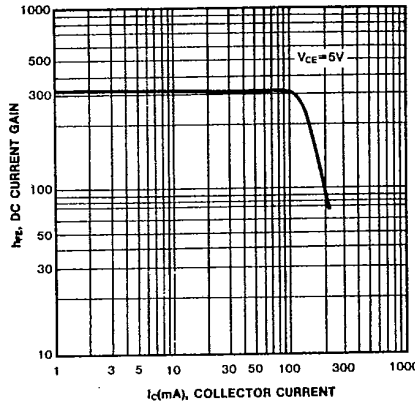
NPN EPITAXIAL SILICON TRANSISTOR

T-29-19

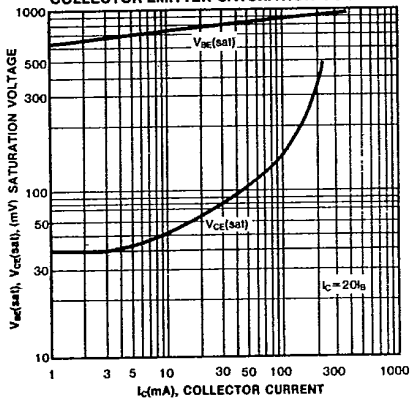
STATIC CHARACTERISTIC



DC CURRENT GAIN



BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



CURRENT GAIN-BANDWIDTH PRODUCT

