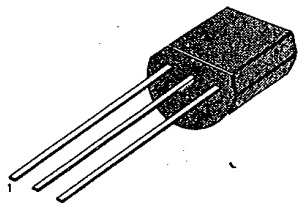
SS9012 PNP EPITAXIAL SILICON TRANSISTOR

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

- High total power dissipation: (PT=625mW)
- High Collector Current. (I_C=−500mA)
- Complementary to SS9013
- Excellent h_{FE} linearity.

TO-92



1. Emitter 2. Base 3. Collector

3

ABSOLUTE MAXIMUM RATINGS (T_a=25°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	TJ	150	°C
Storage Temperature	Tstg	−55~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	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_{CBO}	V_{CB}=−25V, I_E=0			−100	nA
Emitter Cutoff Current	I_{EBO}	V_{EB}=−3V, I_C=0			−100	nA
DC Current Gain	$h_{FE}1$	V_{CE}=−1V, I_C=−50mA	64	120	202	
	$h_{FE}2$	V_{CE}=−1V, I_C=−500mA	40	90		
Collector-Emitter Saturation Voltage	V_{CE}(sat)	I_C=−500mA, I_B=−50mA		−0.18	−0.6	V
Base-Emitter Saturation Voltage	V_{BE}(sat)	I_C=−500mA, I_B=−50mA		−0.95	−1.2	V
Base-Emitter On Voltage	V_{BE}(on)	V_{CE}=−1V, I_C=−10mA	−0.6	−0.67	−0.7	V

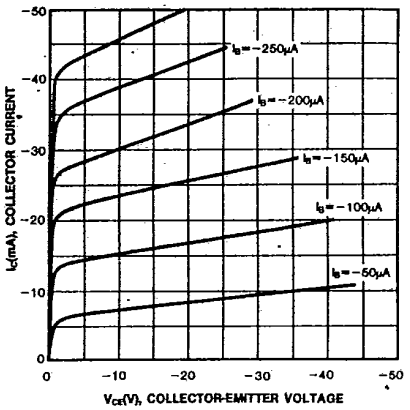
h_{FE} (1) CLASSIFICATION

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

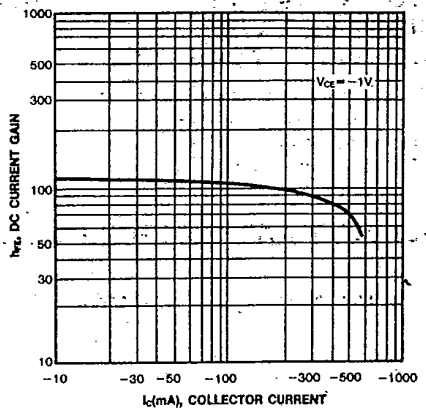
SS9012 PNP EPITAXIAL SILICON TRANSISTOR

T-31-21

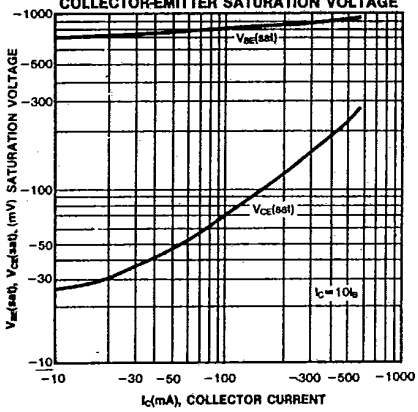
STATIC CHARACTERISTIC



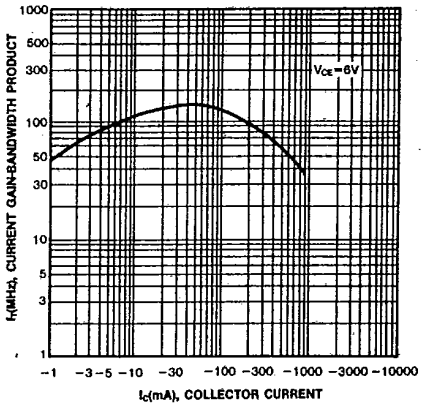
DC CURRENT GAIN



BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



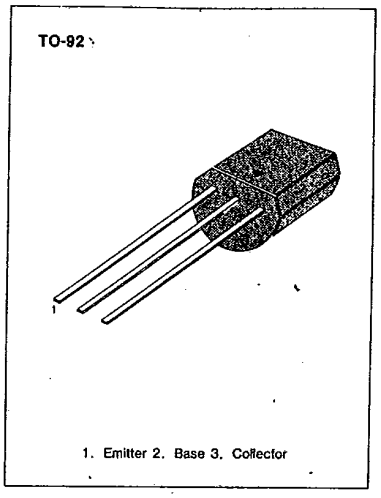
CURRENT GAIN-BANDWIDTH PRODUCT



SS9013 NPN EPITAXIAL SILICON TRANSISTOR

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

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



3

ABSOLUTE MAXIMUM RATINGS (T_a=25°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	Tj	150	°C
Storage Temperature	Tstg	−55~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	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_{CBO}	V_{CB}=25V, I_E=0			100	nA
Emitter Cutoff Current	I_{EBO}	V_{EB}=3V, I_C=0			100	nA
DC Current Gain	$h_{FE}1$	V_{CE}=1V, I_C=50mA	64	120	202	
	$h_{FE}2$	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

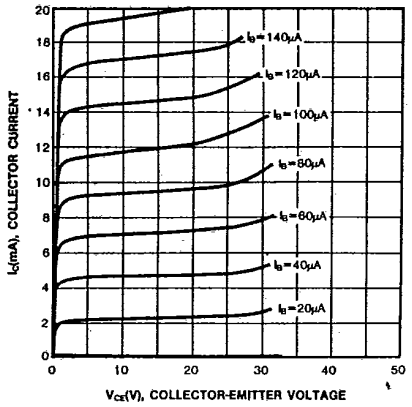
h_{FE} (1) CLASSIFICATION

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

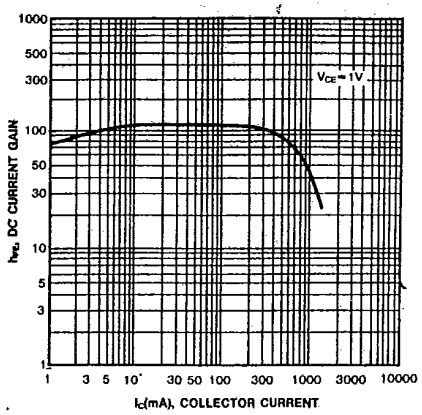
SS9013 NPN EPITAXIAL SILICON TRANSISTOR

T-31-21

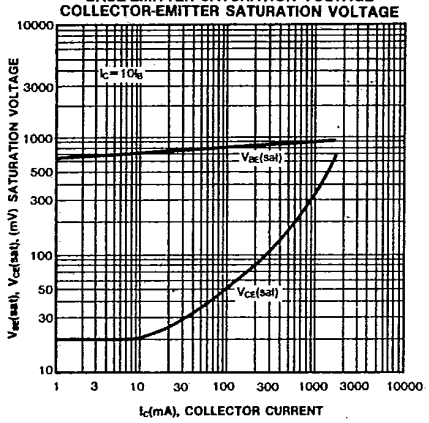
STATIC CHARACTERISTIC



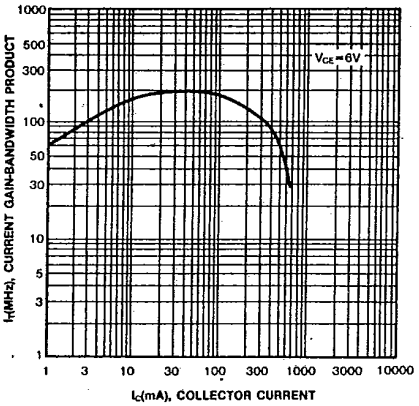
DC CURRENT GAIN



BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



CURRENT GAIN-BANDWIDTH PRODUCT

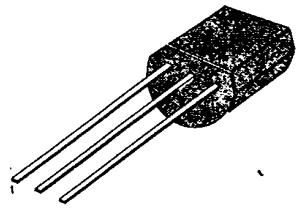


SS9014 NPN EPITAXIAL SILICON TRANSISTOR

PRE-AMPLIFIER, LOW LEVEL & LOW NOISE

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

TO-92



1. Emitter 2. Base 3. Collector

ABSOLUTE MAXIMUM RATINGS (T_a=25°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	°C
Storage Temperature	Tstg	−55~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

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

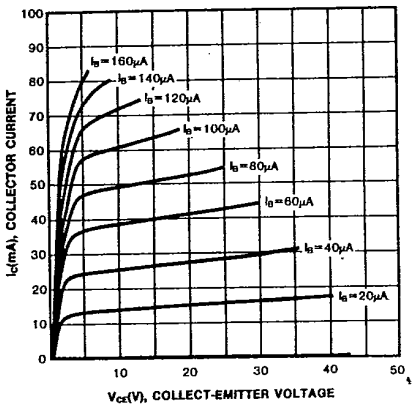
h_{FE} CLASSIFICATION

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

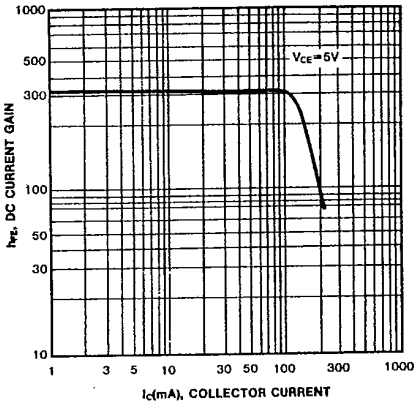
SS9014 NPN EPITAXIAL SILICON TRANSISTOR

T-29-19

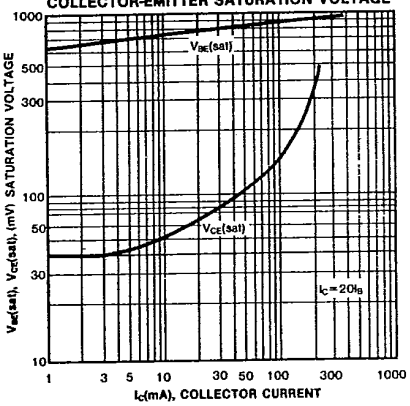
STATIC CHARACTERISTIC



DC CURRENT GAIN



BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



CURRENT GAIN-BANDWIDTH PRODUCT