

**MPSL01**

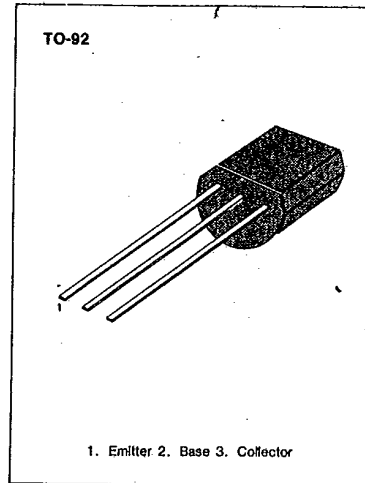
**NPN EPITAXIAL SILICON TRANSISTOR**

**AMPLIFIER TRANSISTOR**

- Collector-Emitter Voltage:  $V_{CE0} = 120V$
- Collector Dissipation:  $P_c (max) = 625mW$

**ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ C$ )**

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	140	V
Collector-Emitter Voltage	$V_{CEO}$	120	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Current	$I_c$	150	mA
Collector Dissipation	$P_c$	625	mW
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55 ~ 150	$^\circ C$



**ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )**

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
*Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_c = 1mA, I_B = 0$	120			V
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_c = 100\mu A, I_E = 0$	140			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E = 10\mu A, I_C = 0$	5			V
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 75V, I_E = 0$			1	$\mu A$
Emitter Cut-off Current	$I_{EBO}$	$V_{BE} = 4V, I_C = 0$			100	nA
*DC Current Gain	$h_{FE}$	$I_C = 10mA, V_{CE} = 5V$	50		300	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10mA, I_B = 1mA$			0.2	V
		$I_C = 50mA, I_B = 5mA$			0.3	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10mA, I_B = 1mA$			1.2	V
		* $I_C = 50mA, I_B = 5mA$			1.4	V
Collector-Base Capacitance	$C_{cb}$	$V_{CB} = 10V, I_E = 0$			8	pF
		$f = 1MHz$				
*Current Gain Bandwidth Product	$f_T$	$I_C = 10mA, V_{CE} = 10V$	60			MHz
		$f = 100MHz$				

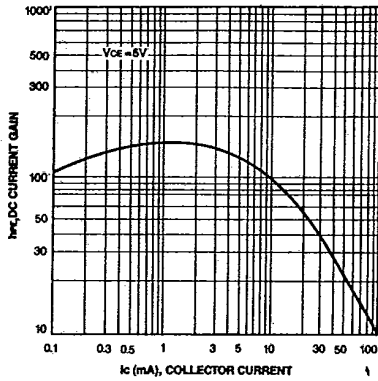
\* Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$

MPSL01

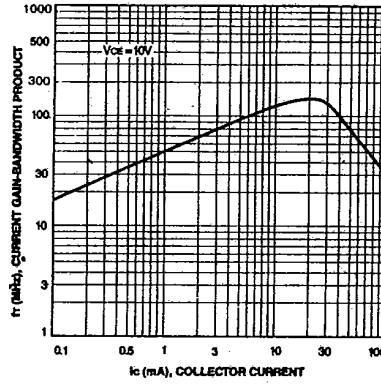
NPN EPITAXIAL SILICON TRANSISTOR

T-29-21

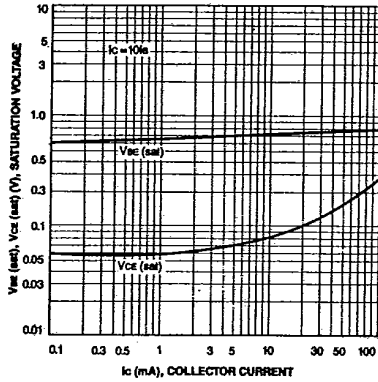
DC CURRENT GAIN



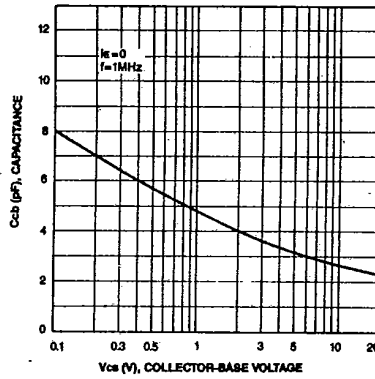
CURRENT GAIN-BANDWIDTH PRODUCT



BASE-EMITTER SATURATION VOLTAGE  
COLLECTOR-EMITTER SATURATION VOLTAGE



COLLECTOR-BASE CAPACITANCE



3

## MPSL51

## PNP EPITAXIAL SILICON TRANSISTOR

T-29-21

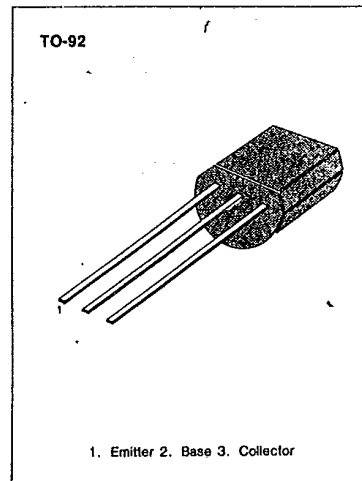
## AMPLIFIER TRANSISTOR

- Collector-Emitter Voltage:  $V_{CE0} = 100V$
- Collector Dissipation:  $P_c$  (max) = 625mW

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CB0}$	100	V
Collector-Emitter Voltage	$V_{CE0}$	100	V
Emitter-Base Voltage	$V_{EB0}$	4	V
Collector Current	$I_c$	600	mA
Collector Dissipation	$P_c$	625	mW
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55 ~ 150	$^\circ C$

- Refer to 2N5401 for graphs

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

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
*Collector-Emitter Breakdown Voltage	$BV_{CE0}$	$I_c = 1mA, I_B = 0$	100			V
Collector-Base Breakdown Voltage	$BV_{CB0}$	$I_c = 100\mu A, I_E = 0$	100			V
Emitter-Base Breakdown Voltage	$BV_{EB0}$	$I_E = 10\mu A, I_C = 0$	4			V
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 50V, I_E = 0$			1	$\mu A$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = 3V, I_C = 0$			100	nA
*DC Current Gain	$h_{FE}$	$I_c = 50mA, V_{CE} = 5V$	40		250	
*Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_c = 10mA, I_B = 1mA$			0.25	V
		$I_c = 50mA, I_B = 5mA$			0.3	V
*Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_c = 10mA, I_B = 1mA$			1.2	V
		$I_c = 50mA, I_B = 5mA$			1.2	V
Output Capacitance	$C_{ob}$	$V_{CB} = 10V, I_E = 0$			8	pF
Current Gain Bandwidth Product	$f_T$	$I_c = 10mA, V_{CE} = 10V$ $f = 1MHz$ $f = 100MHz$	60			MHz

- Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$

**SS8550**

**PNP EPITAXIAL SILICON TRANSISTOR**

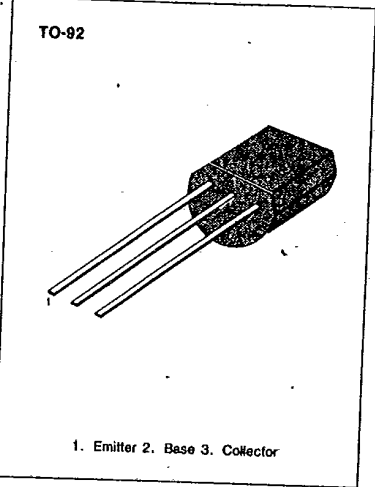
T-33-17

**2W OUTPUT AMPLIFIER OF PORTABLE RADIOS IN CLASS B PUSH-PULL OPERATION.**

- Complimentary to SS8050
- Collector Current  $I_C = -1.5A$
- Collector Dissipation  $P_C = 2W$  ( $T_C = 25^\circ C$ )

**ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ C$ )**

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CB0}$	-40	V
Collector-Emitter Voltage	$V_{CE0}$	-25	V
Emitter-Base Voltage	$V_{EB0}$	-6	V
Collector Current	$I_C$	-1.5	A
Collector Dissipation	$P_C$	1	W
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-65~150	$^\circ C$



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**ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )**

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$BV_{CB0}$	$I_C = -100\mu A, I_E = 0$	-40			V
Collector-Emitter Breakdown Voltage	$BV_{CE0}$	$I_C = -2mA, I_B = 0$	-25			V
Emitter-Base Breakdown Voltage	$BV_{EB0}$	$I_E = -100\mu A, I_C = 0$	-6			V
Collector Cutoff Current	$I_{C0}$	$V_{CB} = -35V, I_E = 0$			-100	nA
Emitter Cutoff Current	$I_{E0}$	$V_{EB} = -6V, I_C = 0$			-100	nA
DC Current Gain	$h_{FE1}$	$V_{CE} = -1V, I_C = -5mA$	45	170		
	$h_{FE2}$	$V_{CE} = -1V, I_C = -100mA$	85	160	300	
	$h_{FE3}$	$V_{CE} = -1V, I_C = -800mA$	40	80		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -800mA, I_B = -80mA$		-0.28	-0.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = -800mA, I_B = -80mA$		-0.98	-1.2	V
Base Emitter Voltage	$V_{BE}$	$V_{CE} = -1V, I_C = -10mA$		-0.68	-1.0	V
Output Capacitance	$C_{ob}$	$V_{CB} = -10V, I_E = 0$		15		pF
		$f = 1MHz$				
Current Gain-Bandwidth Product	$f_T$	$V_{CE} = -10V, I_C = -50mA$	100	200		MHz

**$h_{FE}$  (2) CLASSIFICATION**

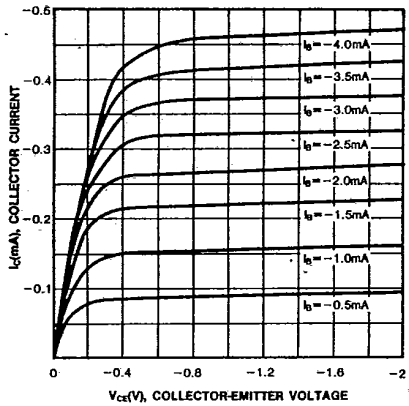
Classification	B	C	D
$h_{FE}$ (2)	85-160	120-200	160-300

SS8550

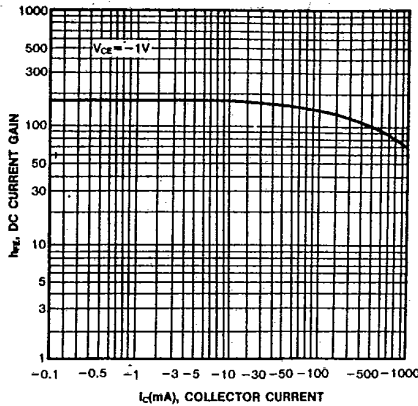
PNP EPITAXIAL SILICON TRANSISTOR

T-33-17

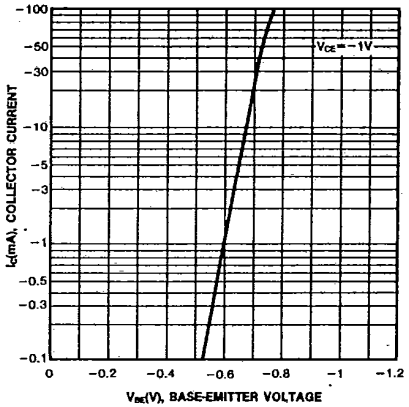
STATIC CHARACTERISTIC



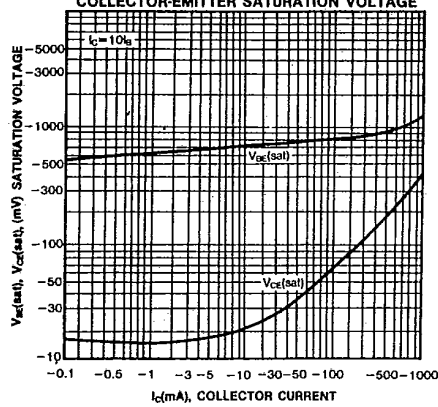
DC CURRENT GAIN



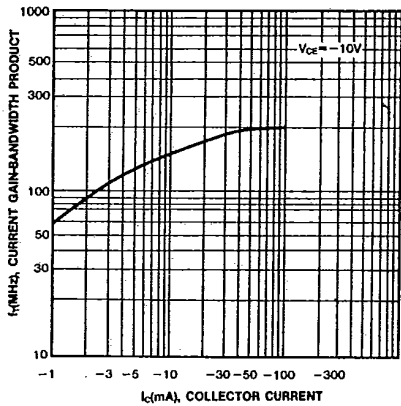
BASE-EMITTER ON VOLTAGE



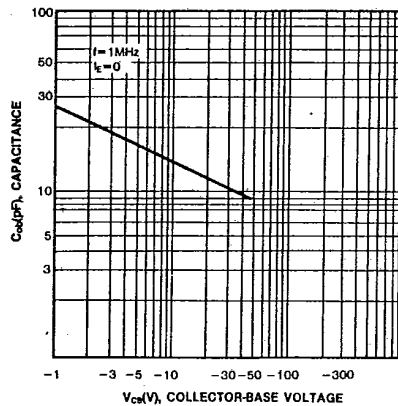
BASE-EMITTER SATURATION VOLTAGE  
COLLECTOR-EMITTER SATURATION VOLTAGE



CURRENT GAIN-BANDWIDTH PRODUCT



COLLECTOR OUTPUT CAPACITANCE



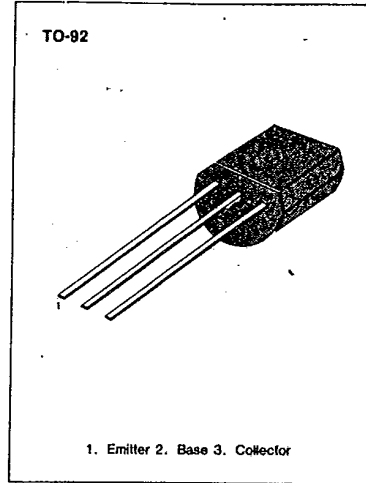
## SS9011

## NPN EPITAXIAL SILICON TRANSISTOR

AM CONVERTER, AM/FM IF AMPLIFIER  
GENERAL PURPOSE TRANSISTOR

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	50	V
Collector-Emitter Voltage	$V_{CEO}$	30	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Current	$I_C$	30	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	$BV_{CBO}$	$I_C=100\mu\text{A}, I_E=0$	50			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=1\text{mA}, I_B=0$	30			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E=100\mu\text{A}, I_C=0$	5			V
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=50\text{V}, I_E=0$			100	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=5\text{V}, I_C=0$			100	nA
DC Current Gain	$h_{FE}$	$V_{CE}=5\text{V}, I_C=1\text{mA}$	28	90	198	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$		0.08	0.3	V
Base-Emitter Voltage	$V_{BE}$	$V_{CE}=5\text{V}, I_C=1\text{mA}$	0.65	0.7	0.75	V
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}, I_E=0$ $f=1\text{MHz}$		1.5		pF
Current Gain-Bandwidth Product	$f_T$	$V_{CE}=5\text{V}, I_C=1\text{mA}$	150	370		MHz
Noise Figure	NF	$V_{CE}=5\text{V}, I_C=1.0\text{mA}$ $f=1\text{MHz}, R_s=500\Omega$		2.0	4.0	dB

 $h_{FE}$  CLASSIFICATION

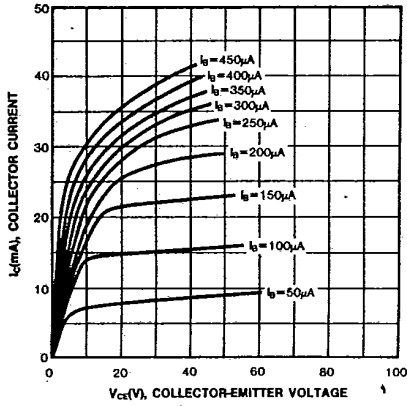
Classification	D	E	F	G	H	I
$h_{FE}$	28-45	39-60	54-80	72-108	97-146	132-198

SS9011

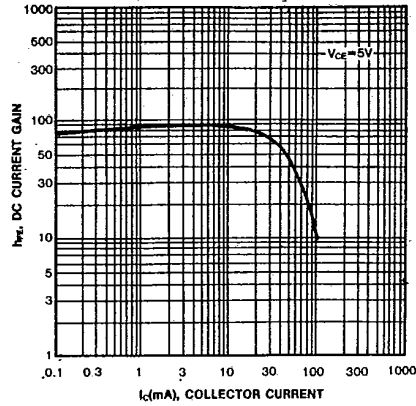
NPN EPITAXIAL SILICON TRANSISTOR

T-31-19

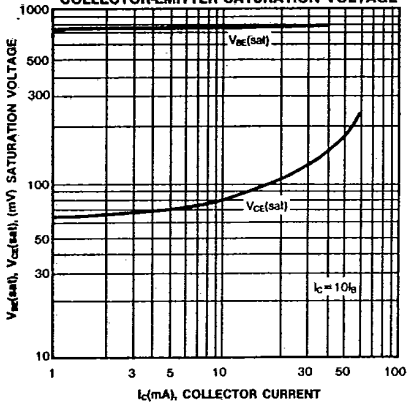
STATIC CHARACTERISTIC



DC CURRENT GAIN



BASE-EMITTER SATURATION VOLTAGE  
COLLECTOR-EMITTER SATURATION VOLTAGE



CURRENT GAIN-BANDWIDTH PRODUCT

