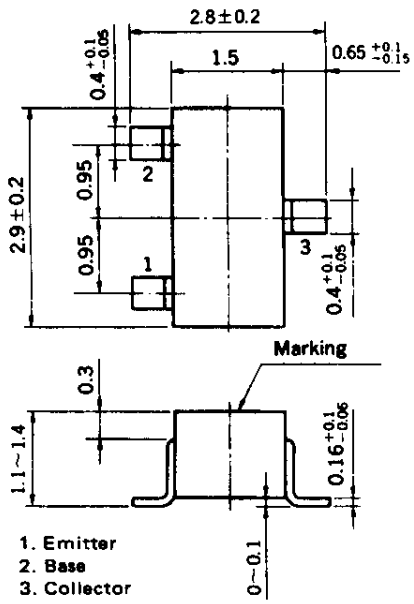
SILICON TRANSISTOR
2SA1411

AUDIO FREQUENCY AMPLIFIER, SWITCHING
PNP SILICON EPITAXIAL TRANSISTOR

PACKAGE DIMENSIONS
in millimeters



FEATURES

- Very high DC current gain : h_{FE} = 500 to 1600
- High V_{EBO} Voltage : V_{EBO} = −10 V

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Current (T_a = 25 °C)			
Collector to Base Voltage	V_{CBO}	−25	V
Collector to Emitter Voltage	V_{CEO}	−25	V
Emitter to Base Voltage	V_{EBO}	−10	V
Collector Current (DC)	I_C	−150	mA
Maximum Power Dissipation			
Total power Dissipation at 25 °C Ambient Temperature	P_T	200	mW
Maximum Temperatures			
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	−55 to +150	°C

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			−100	nA	V_{CB} = −25 V, I_E = 0
Emitter Cutoff Current	I_{EBO}			−100	nA	V_{EB} = −7 V, I_C = 0
DC Current Gain	h_{FE1}*	500	1000	1600		V_{CE} = −5.0 V, I_C = −1.0 mA
DC Current Gain	h_{FE2}*	200	400			V_{CE} = −5.0 V, I_C = −100 mA
Base to Emitter Voltage	V_{BE}*		−580		mV	V_{CE} = −5.0 V, I_C = −1.0 mA
Collector Saturation Voltage	$V_{CE(sat)}$*		−0.15	−0.30	V	I_C = −50 mA, I_B = −5.0 mA
Base Saturation Voltage	$V_{BE(sat)}$*		−0.8	−1.2	V	I_C = −50 mA, I_B = −5.0 mA
Gain Bandwidth Product	f_T		200		MHz	V_{CE} = −5.0 V, I_E = 10 mA
Output Capacitance	C_{ob}		4.6		pF	V_{CB} = −5.0 V, I_E = 0, f = 1.0 MHz
Turn-on Time	t_{on}		0.12		ns	V_{CC} = −10 V, $V_{BE(off)}$ ≒ 2.7 V
Storage Time	t_{stg}		0.58		ns	I_C = −50 mA
Turn-off Time	t_{off}		0.75		ns	I_{B1} = −I_{B2} = −1.0 mA

* Pulsed: PW ≦ 350 μs, Duty Cycle ≦ 2 %

h_{FE} Classification

Making	M15	M16
h_{FE1}	500 to 1000	800 to 1600