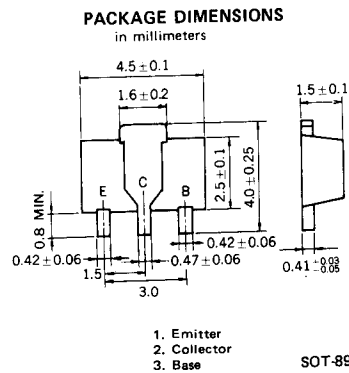


SILICON TRANSISTOR 2SD999

NPN SILICON EPITAXIAL TRANSISTOR POWER MINI MOLD

DESCRIPTION

The 2SD999 is designed for audio frequency power amplifier application, especially in Hybrid Integrated Circuits.



FEATURES

- World Standard Miniature Package
: SOT-89
- Low Collector Saturation Voltage
: $V_{CE(sat)} < 0.4$ V ($I_C = 1.0$ A, $I_B = 100$ mA)
- Excellent DC Current Gain Linearity
: $h_{FE} = 140$ TYP. ($V_{CE} = 1.0$ V, $I_C = 1.0$ A)
- Complements to PNP type 2SB798

ABSOLUTE MAXIMUM RATINGS ($T_a = 25$ °C)

Maximum Voltages and Currents

Collector to Base Voltage	V_{CBO}	30	V
Collector to Emitter Voltage	V_{CEO}	25	V
Emitter to Base Voltage	V_{EBO}	5.0	V
Collector Current (DC)	I_C	1.0	A
Collector Current (Pulse)*	I_C	1.5	A

Maximum Power Dissipation

Total Power Dissipation at 25 °C Ambient Temperature**	P_T	2.0	W
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Maximum Temperatures

Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	-55 to +150	°C

*PW ≤ 10 ms, duty cycle ≤ 50 %

**When mounted on ceramic substrate of 2.5 cm² × 0.7 mm

ELECTRICAL CHARACTERISTICS ($T_a = 25$ °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			100	nA	$V_{CB} = 30$ V, $I_E = 0$
Emitter Cutoff Current	I_{EBO}			100	nA	$V_{EB} = 5.0$ V, $I_C = 0$
DC Current Gain	h_{FE1}	90	200	400		$V_{CE} = 1.0$ V, $I_C = 100$ mA ***
DC Current Gain	h_{FE2}	50	140			$V_{CE} = 1.0$ V, $I_C = 1.0$ A ***
Collector Saturation Voltage	$V_{CE(sat)}$		0.21	0.40	V	$I_C = 1.0$ A, $I_B = 0.10$ A ***
Base Saturation Voltage	$V_{BE(sat)}$		1.0	1.2	V	$I_C = 1.0$ A, $I_B = 0.10$ A ***
Base to Emitter Voltage	V_{BE}	600	630	700	mV	$V_{CE} = 6.0$ V, $I_C = 10$ mA ***
Gain Bandwidth Product	f_T		130		MHz	$V_{CE} = 6.0$ V, $I_E = -10$ mA
Output Capacitance	C_{ob}		22		pF	$V_{CB} = 6.0$ V, $I_E = 0$, $f = 1.0$ MHz

***Pulsed: PW ≤ 350 μs, duty cycle ≤ 2 %

h_{FE} Classification

MARKING	CM	CL	CK
h_{FE1}	90 - 180	135 - 270	200 - 400