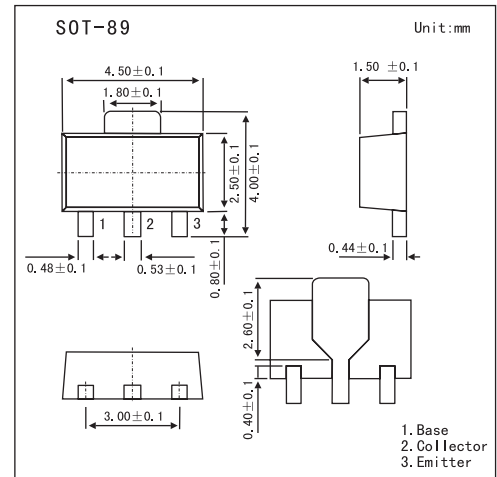


## NPN Silicon Epitaxial Transistor

## 2SD999

## ■ Features

- World standard miniature package:SOT-89.
- Low collector saturation voltage.
- Excellent dc current gain linearity.

■ Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Rating	Unit
Collector-base voltage	$V_{CB0}$	30	V
Collector-emitter voltage	$V_{CEO}$	25	V
Emitter-base voltage	$V_{EBO}$	5	V
Collector current (DC)	$I_C$	1	A
Collector Current (pulse) *	$I_C$	1.5	A
Total power dissipation	$P_T$	2.0	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

\* Pulse Test  $PW \leq 10\text{ms}$ , Duty Cycle  $\leq 50\%$ .

■ Electrical Characteristics  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = 30\text{ V}$ , $I_E = 0\text{ A}$			100	nA
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 5.0\text{ V}$ , $I_C = 0\text{ A}$			100	nA
DC current gain *	$h_{FE}$	$V_{CE} = 1.0\text{ V}$ , $I_C = 100\text{ mA}$	90	200	400	
		$V_{CE} = 1.0\text{ V}$ , $I_C = 1.0\text{ A}$	50	140		
Collector saturation voltage *	$V_{CE(sat)}$	$I_C = 1.0\text{ A}$ , $I_B = 0.1\text{ A}$		0.21	0.4	V
Base saturation voltage *	$V_{BE(sat)}$	$I_C = 1.0\text{ A}$ , $I_B = 0.1\text{ A}$		1	1.2	V
Base-emitter voltage *	$V_{BE}$	$V_{CE} = 6.0\text{ V}$ , $I_C = 10\text{ mA}$	600	630	700	mV
Gain bandwidth product	$f_T$	$V_{CE} = 6.0\text{ V}$ , $I_E = -10\text{ mA}$		130		MHz
Output capacitance	$C_{ob}$	$V_{CB} = 6\text{ V}$ , $I_E = 0$ , $f = 1.0\text{ MHz}$		22		pF

\* Pulsed:  $PW \leq 350\ \mu\text{s}$ , duty cycle  $\leq 2\%$

■  $h_{FE}$  Classification

Marking	CM	CL	CK
$h_{FE}$	90~180	135~270	200~400