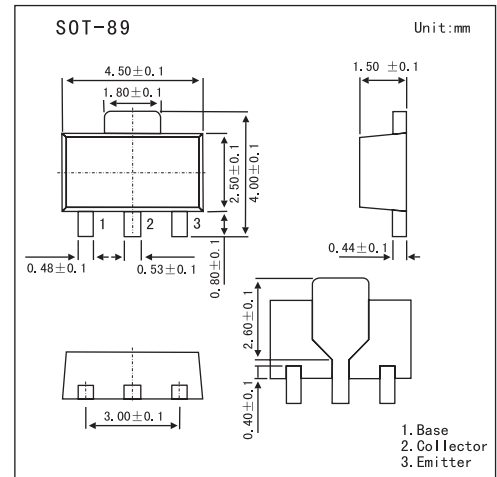


NPN Silicon Epitaxial Transistor

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