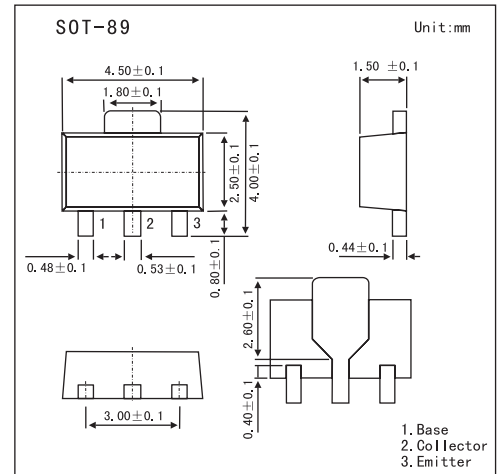


NPN Epitaxial Planar Silicon Transistor

2SD1999



Features

- Low saturation voltage.
- Contains diode between collector and emitter.
- Contains bias resistance between base and emitter.
- Large current capacity.
- Small-sized package making it easy to provide highdensity, small-sized hybrid ICs.

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

Parameter	Symbol	Rating	Unit
Collector-base voltage	V_{CB0}	25	V
Collector-emitter voltage	V_{CEO}	20	V
Emitter-base voltage	V_{EBO}	6	V
Collector current	I_C	4	A
Collector current (pulse)	I_{CP}	6	A
Collector dissipation	P_C	1.5	W
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Collector cutoff current	I_{cB0}	$V_{CB} = 20V, I_E = 0$			1.0	μA
DC current Gain	h_{FE}	$V_{CE} = 2V, I_C = 0.5A$	70			
		$V_{CE} = 2V, I_C = 3A$	50			
Gain bandwidth product	f_T	$V_{CE} = 2V, I_C = 0.5A$		200		MHz
Output capacitance	C_{ob}	$V_{CB} = 10V, f = 1\text{MHz}$		45		pF
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 3A, I_B = 150\text{mA}$		0.25	0.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 3V, I_B = 150\text{mA}$			1.5	V
Collector-to-base breakdown voltage	$V_{(BR)CBO}$	$I_C = 10\mu\text{A}, I_E = 0$	25			V
Collector-to-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 10\mu\text{A}, R_{BE} = \infty$	25			V
		$I_C = 10\text{mA}, R_{BE} = \infty$	20			
Diode forward voltage	V_F	$I_F = 0.5A$			1.5	V
Base-emitter resistance	R_{BE}			1.5		k Ω

Marking

Marking	DN
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