

NPN Epitaxial Planar Silicon Transistor

2SD2099

■ Features

- Contains input resistance (R_1), base-to-emitter resistance (R_{BE}).
- Contains diode between collector and emitter.
- Low saturation voltage.
- 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}	40	V
Collector-emitter voltage	V_{CEO}	30	V
Emitter-base voltage	V_{EBO}	6	V
Collector current	I_C	3	A
Collector current (pulse)	I_{CP}	5	A
Collector dissipation	P_C	1.5	W
Jumction 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_{CBO}	$V_{CB} = 30\text{V}$, $I_E = 0$			1.0	μA
DC current Gain	h_{FE}	$V_{CE} = 2\text{V}$, $I_C = 0.5\text{A}$	70			
		$V_{CE} = 2\text{V}$, $I_C = 2\text{A}$	50			
Gain bandwidth product	f_T	$V_{CE} = 2\text{V}$, $I_C = 0.5\text{A}$		100		MHz
Output capacitance	C_{ob}	$V_{CB} = 10\text{V}$, $f = 1\text{MHz}$		40		pF
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 1\text{A}$, $I_B = 50\text{mA}$		0.12	0.3	V
Base-emitter on state voltage	$V_{BE(ON)}$	$V_{CE} = 2\text{V}$, $I_C = 1\text{A}$	0.7	1.5	4.0	V
Collector-to-base breakdown voltage	$V_{(BR)CBO}$	$I_C = 10\mu\text{A}$, $I_E = 0$	40			V
Collector-to-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 10\mu\text{A}$, $R_{BE} = \infty$	40			V
		$I_C = 10\text{mA}$, $R_{BE} = \infty$	30			
Diode forward voltage	V_F	$I_F = 0.5\text{A}$			1.5	V
Base-emitter resistance	R_{BE}			0.8		$\text{k}\Omega$
Base resistance	R_1		60	90	120	Ω

■ Marking

Marking	DL

