

2SD2051

Silicon NPN epitaxial planar type Darlington

For low-frequency amplification

Features

- High forward current transfer ratio h_{FE}
- Incorporating a built-in zener diode
- Full-pack package which can be installed to the heat sink with one screw

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$)

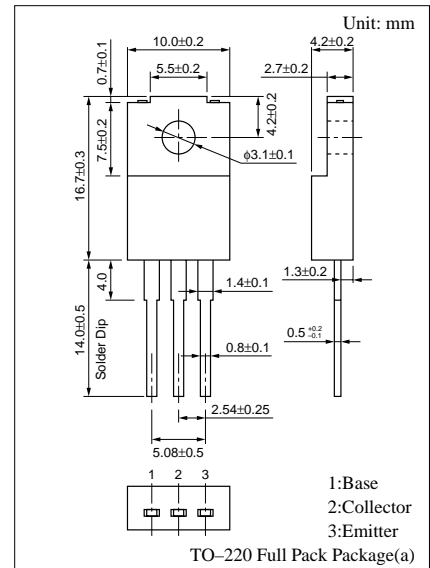
Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	60 ± 10	V
Collector to emitter voltage	V_{CEO}	60 ± 10	V
Emitter to base voltage	V_{EBO}	5	V
Peak collector current	I_{CP}	2.5	A
Collector current	I_C	1.6	A
Collector power dissipation	P_C	$T_C=25^\circ\text{C}$	12
		$T_a=25^\circ\text{C}$	2.0
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics ($T_C=25^\circ\text{C}$)

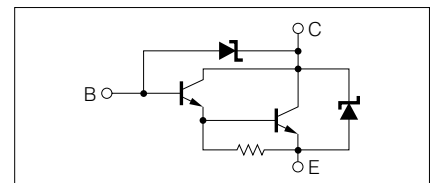
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 25\text{V}, I_E = 0$			1	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = 4\text{V}, I_C = 0$			1	μA
Collector to base voltage	V_{CBO}	$I_C = 100\mu\text{A}, I_E = 0$	50		70	V
Collector to emitter voltage	V_{CEO}	$I_C = 1\text{mA}, I_B = 0$	50		70	V
Emitter to base voltage	V_{EBO}	$I_E = 100\mu\text{A}, I_C = 0$	5			V
Forward current transfer ratio	h_{FE}^*	$V_{CE} = 10\text{V}, I_C = 1.0\text{A}$	4000		40000	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 1.0\text{A}, I_B = 1.0\text{mA}$			1.5	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = 1.0\text{A}, I_B = 1.0\text{mA}$			2.2	V
Transition frequency	f_T	$V_{CE} = 10\text{V}, I_C = 10\text{mA}, f = 200\text{MHz}$	200			MHz

* h_{FE} Rank classification

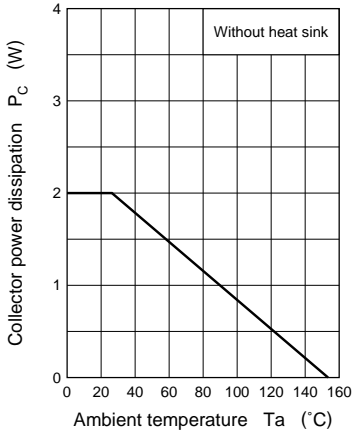
Rank	Q	R	S
h_{FE}	4000 to 10000	8000 to 20000	16000 to 40000



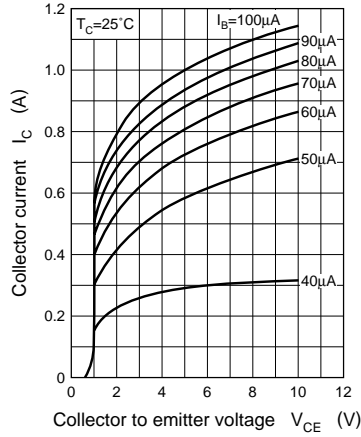
Internal Connection



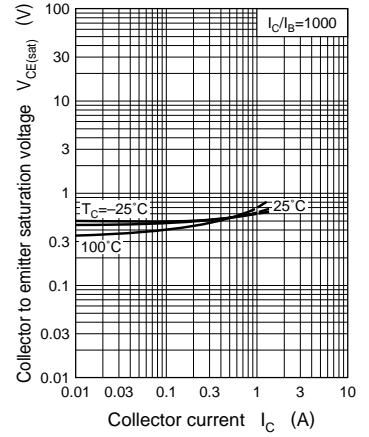
$P_C - T_a$



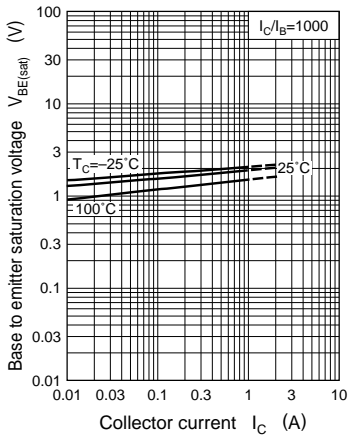
$I_C - V_{CE}$



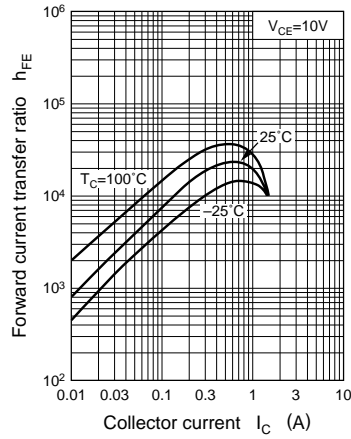
$V_{CE(sat)} - I_C$



$V_{BE(sat)} - I_C$



$h_{FE} - I_C$



$C_{ob} - V_{CB}$

