

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 ($T_C=25^\circ C$)

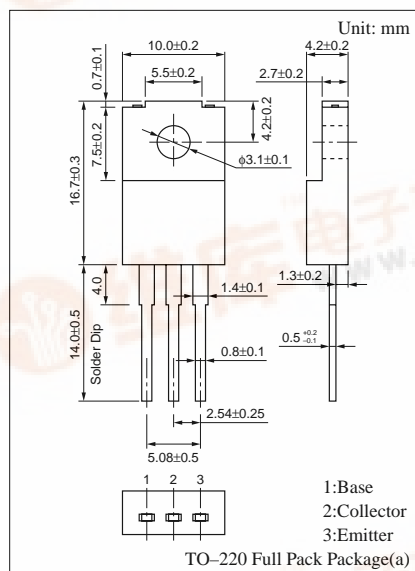
Parameter	Symbol	Rated	Unit	
Collector to base voltage	V_{CBO}	60 ± 10	V	
Collector to emitter voltage	V_{CEO}	60 ± 10	V	
Emitter to base voltage	V_{EBO}	5	V	
Peak collector current	I_{CP}	2.5	A	
Collector current	I_C	1.6	A	
Collector power dissipation	P_C	$T_C=25^\circ C$	12	W
		$T_a=25^\circ C$	2.0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

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

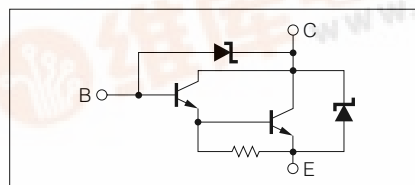
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 25V, I_E = 0$			1	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = 4V, I_C = 0$			1	μA
Collector to base voltage	V_{CBO}	$I_C = 100\mu A, I_E = 0$	50		70	V
Collector to emitter voltage	V_{CEO}	$I_C = 1mA, I_B = 0$	50	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

* h_{FE} Rank classification

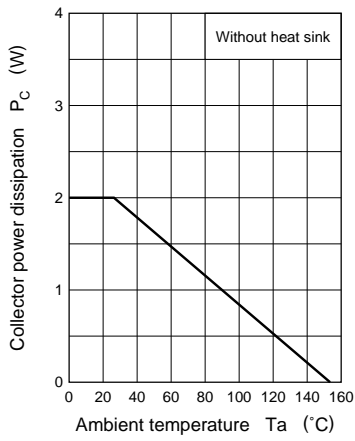
Rank	Q	R	S
h_{FE}	4000 to 10000	8000 to 20000	16000 to 40000



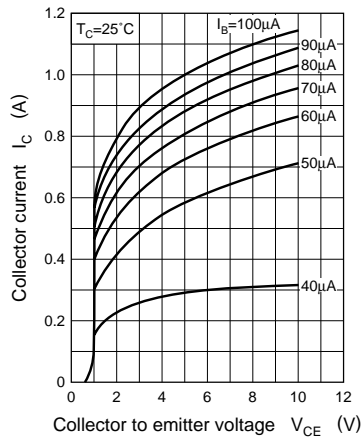
Internal Connection



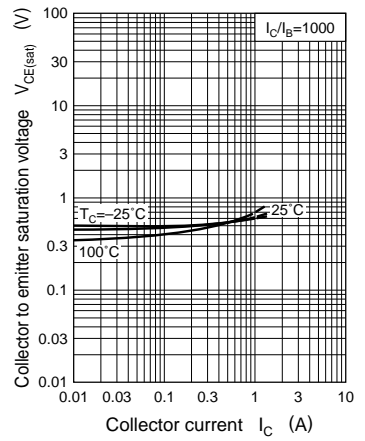
$P_C - T_a$



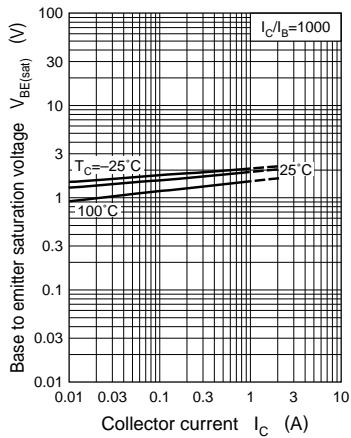
$I_C - V_{CE}$



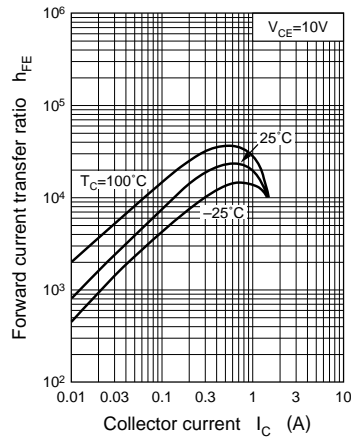
$V_{CE(sat)} - I_C$



$V_{BE(sat)} - I_C$



$h_{FE} - I_C$



$C_{ob} - V_{CB}$

