

2SD1511

Silicon NPN epitaxial planer type darlington

For low-frequency output amplification

■ Features

- Forward current transfer ratio h_{FE} is designed high, which is appropriate to the driver circuit of motors and printer bammer: $h_{FE} = 4000$ to 2000 .
- A shunt resistor is omitted from the driver.
- Mini Power type package, allowing downsizing of the equipment and automatic insertion through the tape packing and the magazine packing.

■ Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	100	V
Collector to emitter voltage	V_{CEO}	80	V
Emitter to base voltage	V_{EBO}	5	V
Peak collector current	I_{CP}	1.5	A
Collector current	I_C	1	A
Collector power dissipation	P_C^*	1	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 ~ +150	°C

* Printed circuit board: Copper foil area of 1cm² or more, and the board thickness of 1.7mm for the collector portion

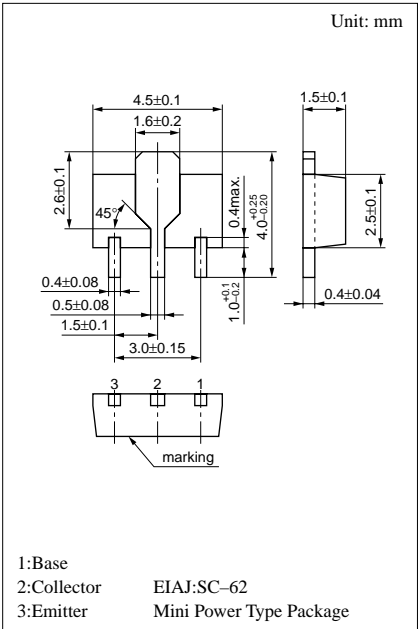
■ Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 25V, I_E = 0$			100	nA
Emitter cutoff current	I_{EBO}	$V_{EB} = 4V, I_C = 0$			100	nA
Collector to base voltage	V_{CBO}	$I_C = 100\mu A, I_E = 0$	100			V
Collector to emitter voltage	V_{CEO}	$I_C = 1mA, I_B = 0$	80			V
Emitter to base voltage	V_{EBO}	$I_E = 100\mu A, I_C = 0$	5			V
Forward current transfer ratio	h_{FE}^{*1}	$V_{CE} = 10V, I_C = 1A^{*2}$	4000		40000	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 1.0A, I_B = 1.0mA^{*2}$			1.8	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = 1.0A, I_B = 1.0mA^{*2}$			2.2	V
Transition frequency	f_T	$V_{CB} = 10V, I_E = -50mA, f = 200MHz$		150		MHz

^{*2} Pulse measurement

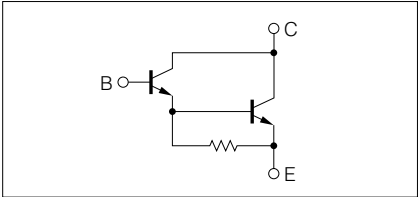
^{*1} h_{FE} Rank classification

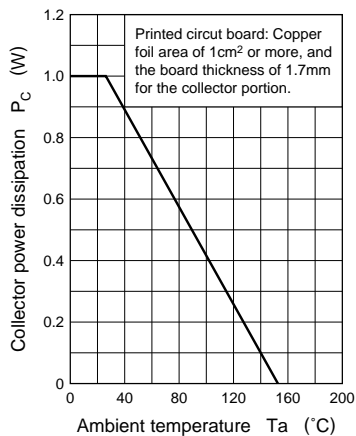
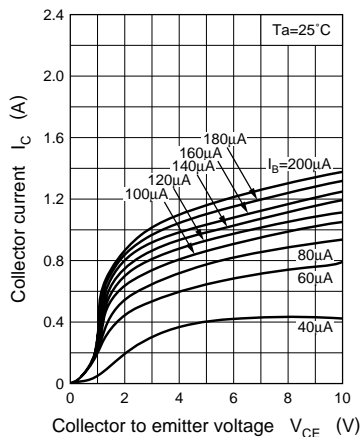
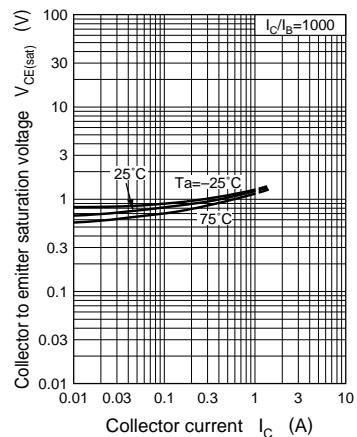
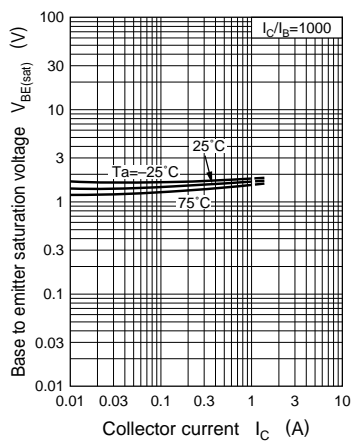
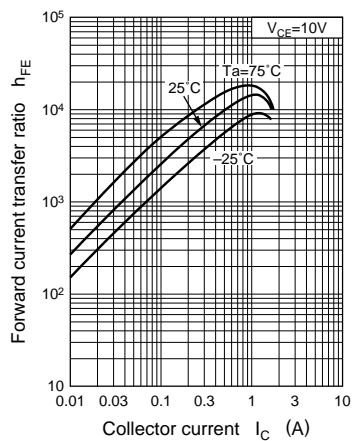
Rank	Q	R	S
h_{FE}	4000 ~ 10000	8000 ~ 20000	16000 ~ 40000
Marking Symbol	PQ	PR	PS



Marking symbol : P

Internal Connection



$P_C - T_a$  $I_C - V_{CE}$  $V_{CE(sat)} - I_C$  $V_{BE(sat)} - I_C$  $h_{FE} - I_C$  $C_{ob} - V_{CB}$ 