

2SD1478, 2SD1478A

Silicon NPN epitaxial planar type darlington

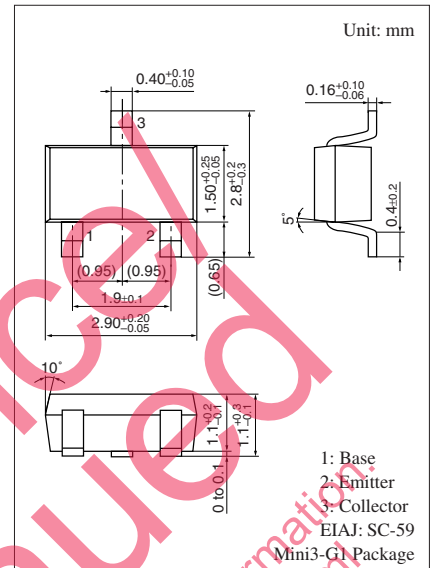
For low-frequency amplification

■ Features

- Forward current transfer ratio h_{FE} is designed high, which is appropriate to the driver circuit of motors and printer hammer
- A shunt resistor is omitted from the driver.

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

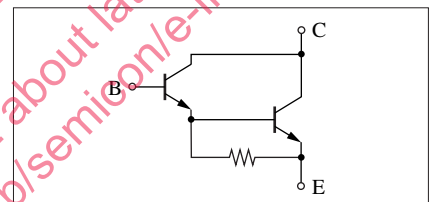
Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	2SD1478	30	V
	2SD1478A	60	
Collector-emitter voltage (Base open)	2SD1478	25	V
	2SD1478A	50	
Emitter-base voltage (Collector open)	V_{EBO}	5	V
Collector current	I_C	500	mA
Peak collector current	I_{CP}	750	mA
Collector power dissipation	P_C	200	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$



Marking Symbol:

- 2SD1478: 2N
- 2SD1478A: 2O

Internal Connection



■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

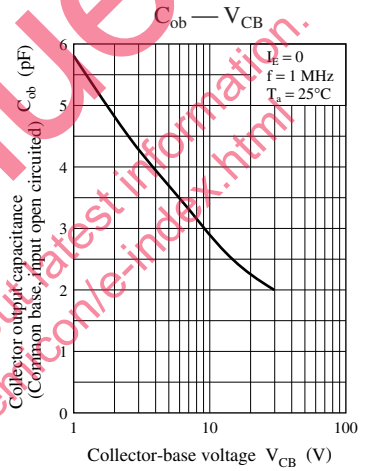
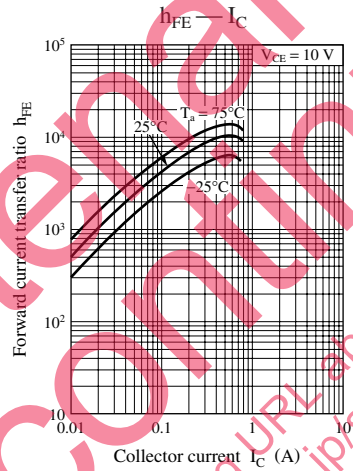
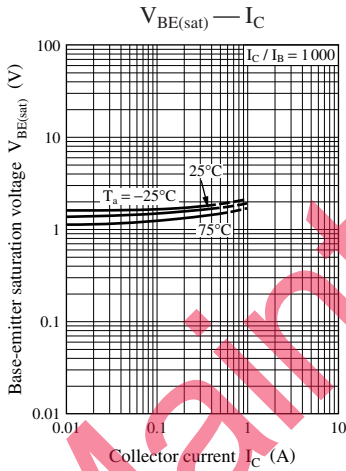
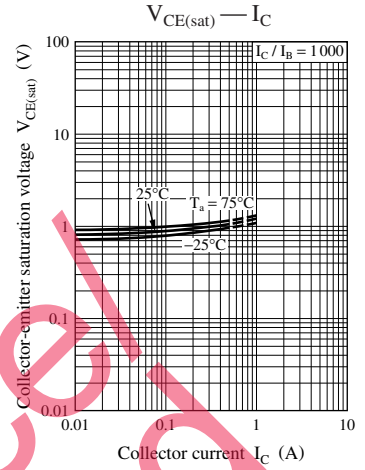
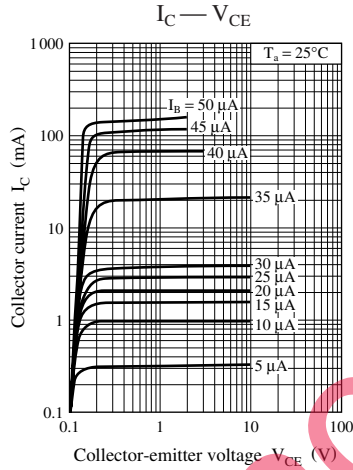
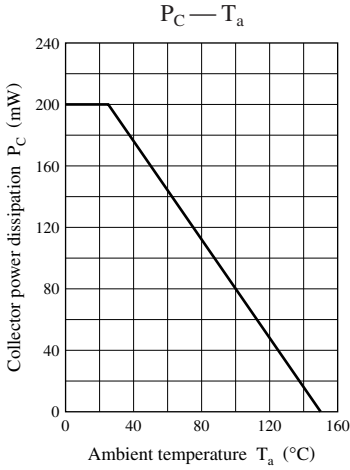
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	2SD1478	$I_C = 100 \mu\text{A}, I_E = 0$	30			V
	2SD1478A		60			
Collector-emitter voltage (Base open)	2SD1478	$I_C = 1 \text{ mA}, I_B = 0$	25			V
	2SD1478A		50			
Emitter-base voltage (Collector open)	V_{EBO}	$I_E = 100 \mu\text{A}, I_C = 0$	5			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = 25 \text{ V}, I_E = 0$			100	nA
Emitter-base cutoff current (Collector open)	I_{EBO}	$V_{EB} = 4 \text{ V}, I_C = 0$			100	nA
Forward current transfer ratio *1, 2	h_{FE}	$V_{CE} = 10 \text{ V}, I_C = 500 \text{ mA}$	4000		20000	—
Collector-emitter saturation voltage *1	$V_{CE(sat)}$	$I_C = 500 \text{ mA}, I_B = 0.5 \text{ mA}$			2.5	V
Base-emitter saturation voltage *1	$V_{BE(sat)}$	$I_C = 500 \text{ mA}, I_B = 0.5 \text{ mA}$			3.0	V
Transition frequency	f_T	$V_{CB} = 10 \text{ V}, I_E = -50 \text{ mA}, f = 200 \text{ MHz}$		200		MHz

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. *1: Pulse measurement

*2: Rank classification

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



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