

2SD1198, 2SD1198A

Silicon NPN epitaxial planar type darlington

For low-frequency amplification

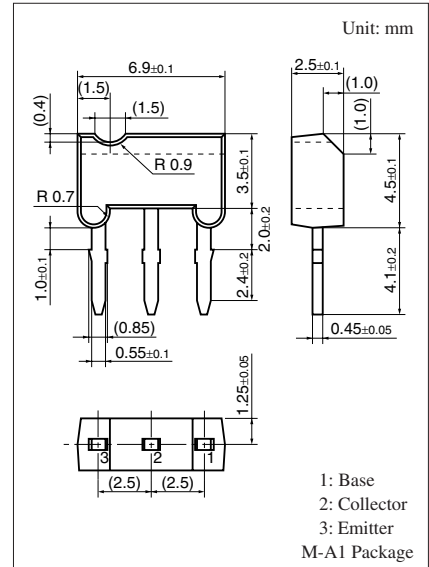
■ Features

- Forward current transfer ratio h_{FE} is designed high, which is appropriate to the driver circuit of motors and printer hammer: $h_{FE} = 4\ 000$ to $20\ 000$.
- A shunt resistor is omitted from the driver.
- M type package allowing easy automatic and manual insertion as well as stand-alone fixing to the printed circuit board.

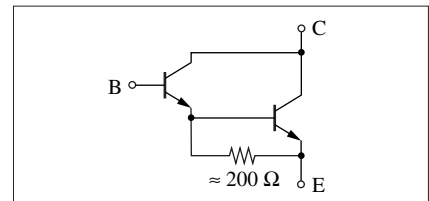
■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit	
Collector-base voltage (Emitter open)	2SD1198	V_{CBO}	30	V
	2SD1198A		60	
Collector-emitter voltage (Base open)	2SD1198	V_{CEO}	25	V
	2SD1198A		50	
Emitter-base voltage (Collector open)	V_{EBO}	5	V	
Collector current	I_C	1	A	
Peak collector current	I_{CP}	1.5	A	
Collector power dissipation *	P_C	1	W	
Junction temperature	T_j	150	$^\circ\text{C}$	
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$	

Note) *: Printed circuit board: Copper foil area of $1\ \text{cm}^2$ or more, and the board thickness of $1.7\ \text{mm}$ for the collector portion



Internal Connection



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

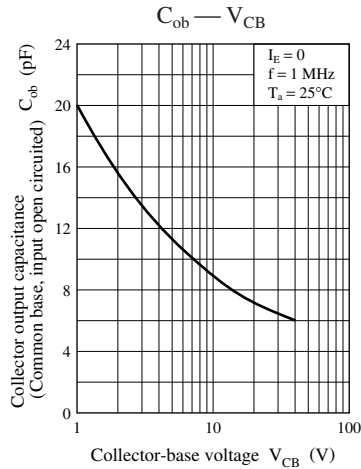
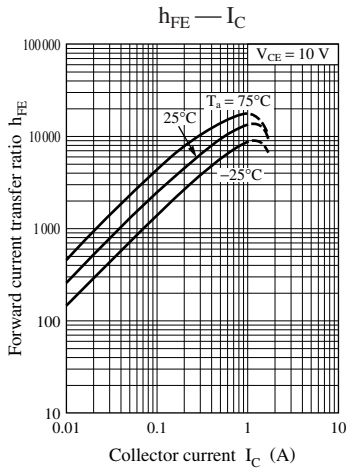
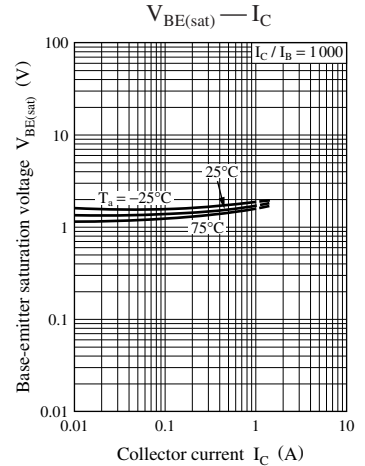
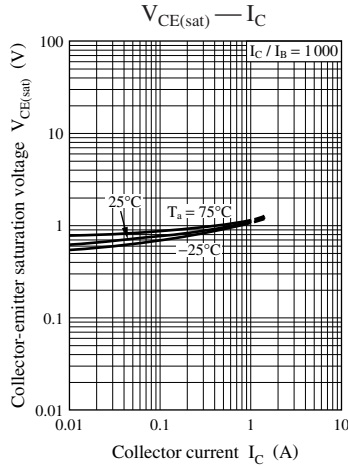
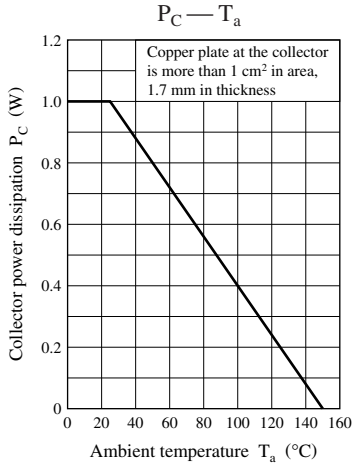
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	2SD1198	$I_C = 100\ \mu\text{A}, I_E = 0$	30			V
	2SD1198A		60			
Collector-emitter voltage (Base open)	2SD1198	$I_C = 1\ \text{mA}, I_B = 0$	25			V
	2SD1198A		50			
Emitter-base voltage (Collector open)	V_{EBO}	$I_E = 100\ \mu\text{A}, I_C = 0$	5			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = 25\ \text{V}, I_E = 0$			100	nA
		$V_{CB} = 45\ \text{V}, I_E = 0$				
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}	$V_{CE} = 10\ \text{V}, I_C = 1\ \text{A}$	4000		20000	—
Collector-emitter saturation voltage *1	$V_{CE(sat)}$	$I_C = 1\ \text{A}, I_B = 1\ \text{mA}$			1.8	V
Base-emitter saturation voltage *1	$V_{BE(sat)}$	$I_C = 1\ \text{A}, I_B = 1\ \text{mA}$			2.2	V
Transition frequency	f_T	$V_{CB} = 10\ \text{V}, I_E = -50\ \text{mA}, f = 200\ \text{MHz}$		150		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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