

# 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	30	V
	2SD1198A	60	
Collector-emitter voltage (Base open)	2SD1198	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 mm for the collector portion

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

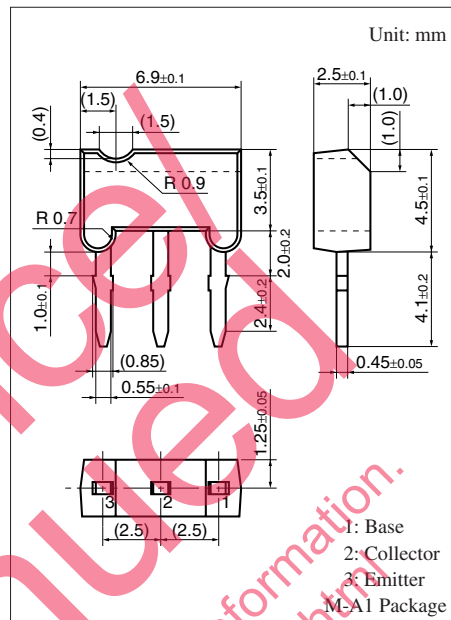
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	2SD1198	$I_C = 100\ \mu\text{A}, I_E = 0$	30			V
	2SD1198A		60			
Collector-emitter voltage (Base open)	2SD1198	$I_C = 1\ \text{mA}, I_B = 0$	25			V
	2SD1198A		50			
Emitter-base voltage (Collector open)	$V_{EBO}$	$I_E = 100\ \mu\text{A}, I_C = 0$	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.

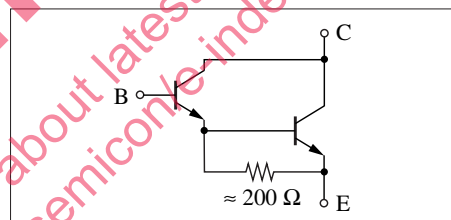
2. \*1: Pulse measurement

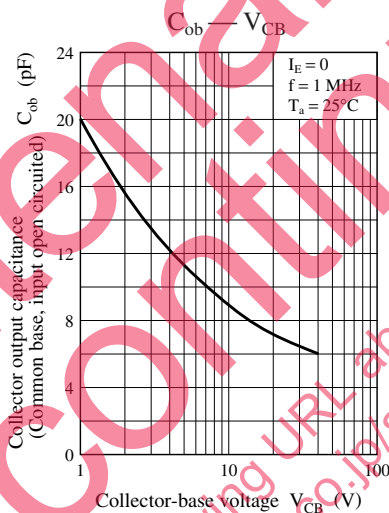
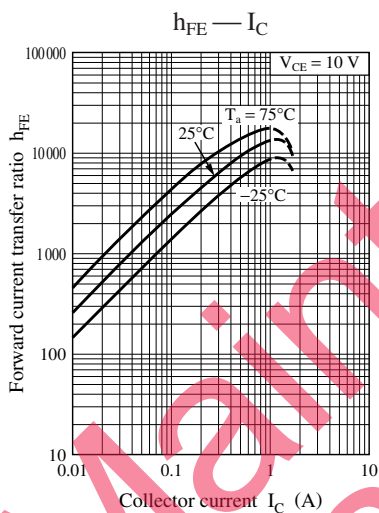
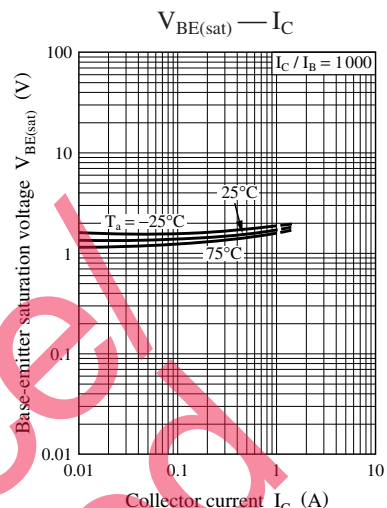
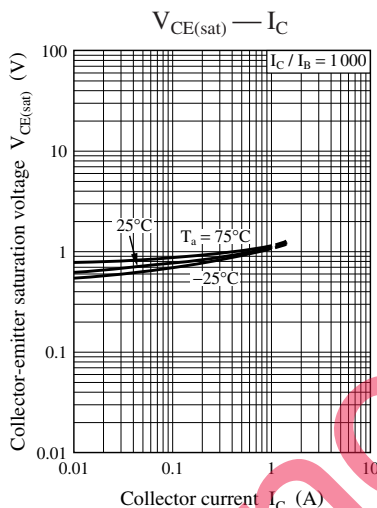
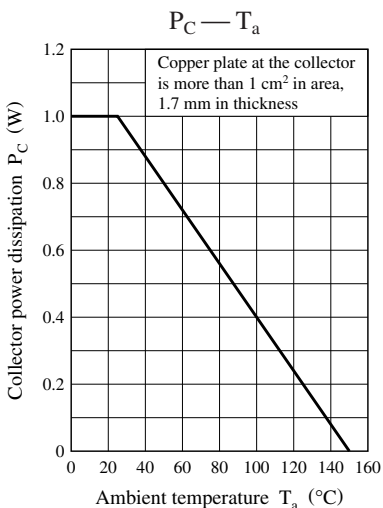
\*2: Rank classification

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



### Internal Connection





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