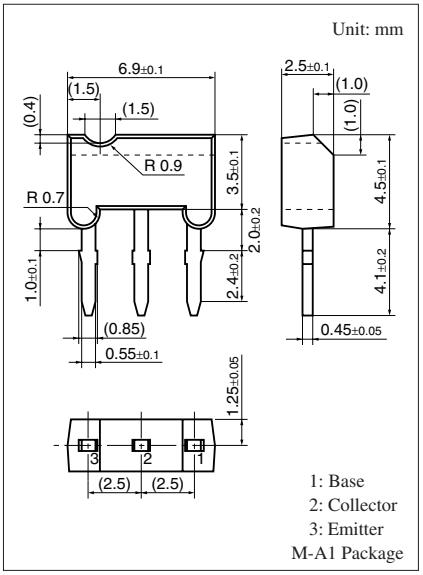
2SD1198, 2SD1198A

Silicon NPN epitaxial planar type darlington

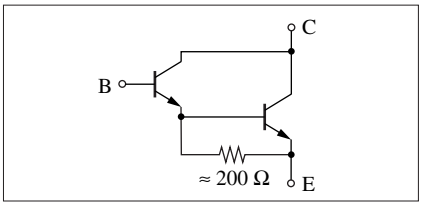
For low-frequency amplification

■ 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.



Internal Connection



■ Absolute Maximum Ratings T_a = 25°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	°C
Storage temperature		T_{stg}	−55 to +150	°C

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

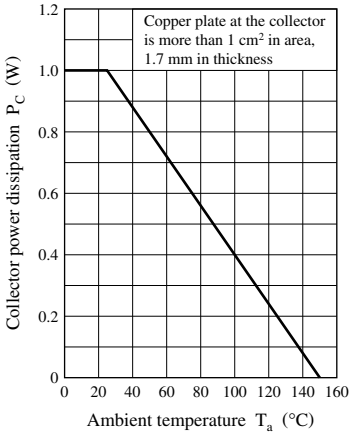
■ Electrical Characteristics T_a = 25°C ± 3°C

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	2SD1198	V_{CBO}	I_C = 100 µA, I_E = 0	30			V
	2SD1198A			60			
Collector-emitter voltage (Base open)	2SD1198	V_{CEO}	I_C = 1 mA, I_B = 0	25			V
	2SD1198A			50			
Emitter-base voltage (Collector open)		V_{EBO}	I_E = 100 µA, I_C = 0	5			V
Collector-base cutoff current (Emitter open)		I_{CBO}	V_{CB} = 25 V, I_E = 0			100	nA
			V_{CB} = 45 V, I_E = 0				
Emitter-base cutoff current (Collector open)		I_{EBO}	V_{EB} = 4 V, I_C = 0			100	nA
Forward current transfer ratio *1, 2		h_{FE}	V_{CE} = 10 V, I_C = 1 A	4 000		20 000	—
Collector-emitter saturation voltage *1		$V_{CE(sat)}$	I_C = 1 A, I_B = 1 mA			1.8	V
Base-emitter saturation voltage *1		$V_{BE(sat)}$	I_C = 1 A, I_B = 1 mA			2.2	V
Transition frequency		f_T	V_{CB} = 10 V, I_E = −50 mA, f = 200 MHz		150		MHz

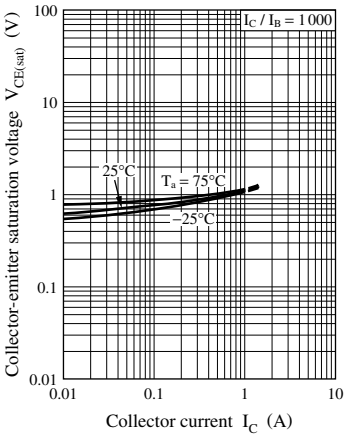
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. ∗1: Pulse measurement
∗2: Rank classification

Rank	Q	R
h_{FE}	4 000 to 10 000	8 000 to 20 000

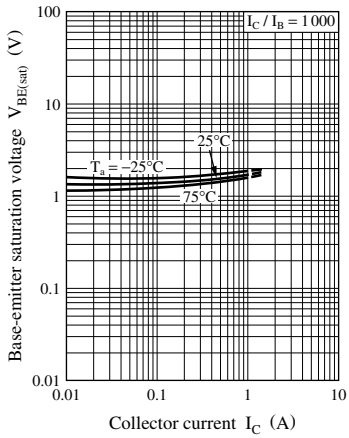
P_C — T_a



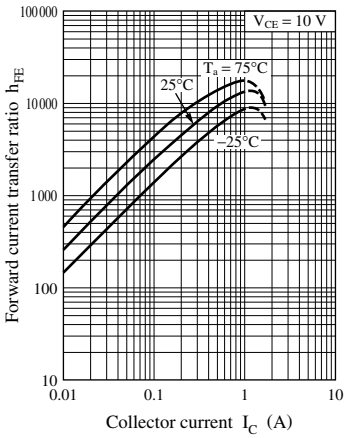
$V_{CE(sat)}$ — I_C



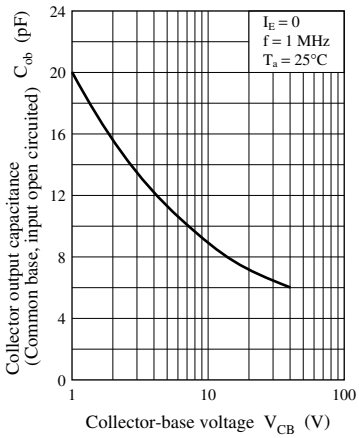
$V_{BE(sat)}$ — I_C



h_{FE} — I_C



C_{ob} — V_{CB}



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