

2SD1198, 2SD1198A

Silicon NPN epitaxial planer 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 bammer: $h_{FE} = 4000$ to 40000 .
- 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 (Ta=25°C)

Parameter	Symbol	Ratings	Unit	
Collector to base voltage	2SD1198 2SD1198A	V_{CBO}	30	V
			60	
Collector to emitter voltage	2SD1198 2SD1198A	V_{CEO}	25	V
			50	
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

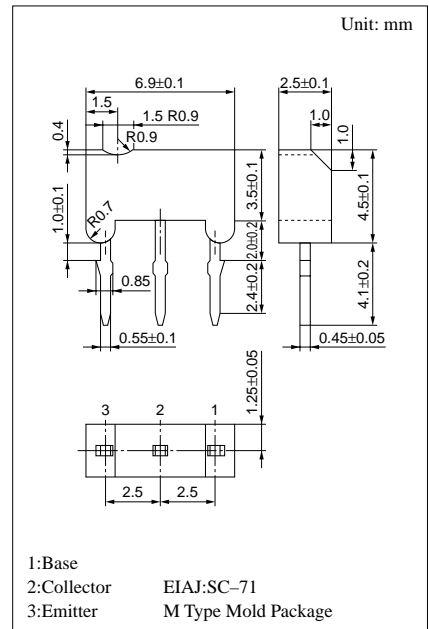
Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	2SD1198	I_{CBO}	$V_{CB} = 25V, I_E = 0$		100	nA
	2SD1198A				$V_{CB} = 45V, I_E = 0$	
Emitter cutoff current	I_{EBO}	$V_{EB} = 4V, I_C = 0$			100	nA
Collector to base voltage	2SD1198	V_{CBO}	$I_C = 100\mu A, I_B = 0$	30		V
	2SD1198A			60		
Collector to emitter voltage	2SD1198	V_{CEO}	$I_C = 1mA, I_B = 0$	25		V
	2SD1198A			50		
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	$V_{CE(sat)}$	$I_C = 1A, I_B = 1mA^{*2}$			1.8	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = 1A, I_B = 1mA^{*2}$			2.2	V
Transition frequency	f_T	$V_{CB} = 10V, I_E = -50mA, f = 200MHz$		150		MHz

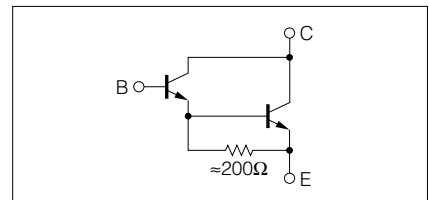
*1 h_{FE} Rank classification

Rank	Q	R	S
h_{FE}	4000 ~ 10000	8000 ~ 20000	16000 ~ 40000

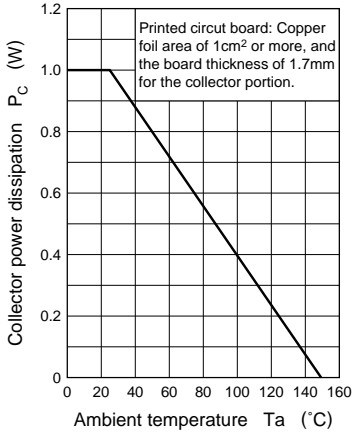
*2 Pulse measurement



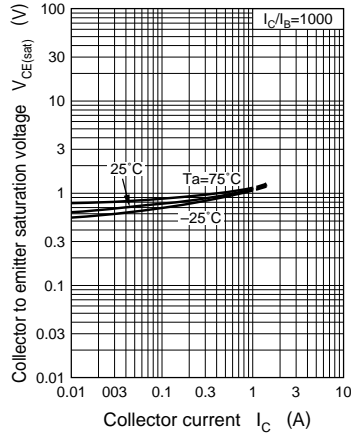
Internal Connection



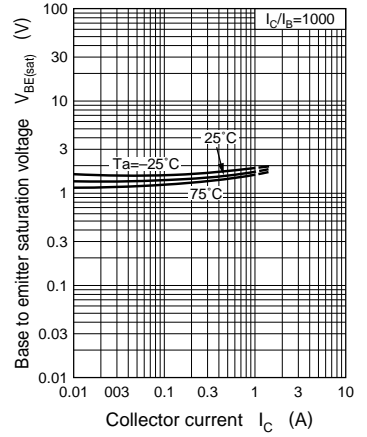
$P_C - T_a$



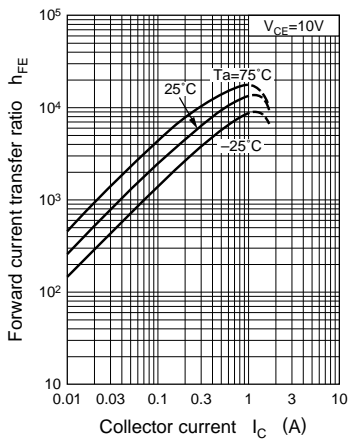
$V_{CE(sat)} - I_C$



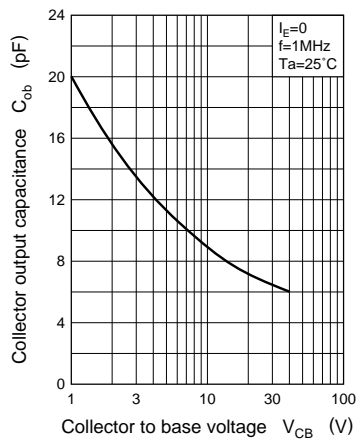
$V_{BE(sat)} - I_C$



$h_{FE} - I_C$



$C_{ob} - V_{CB}$



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