

2SD1975, 2SD1975A

Silicon NPN triple diffusion planar type

For high power amplification

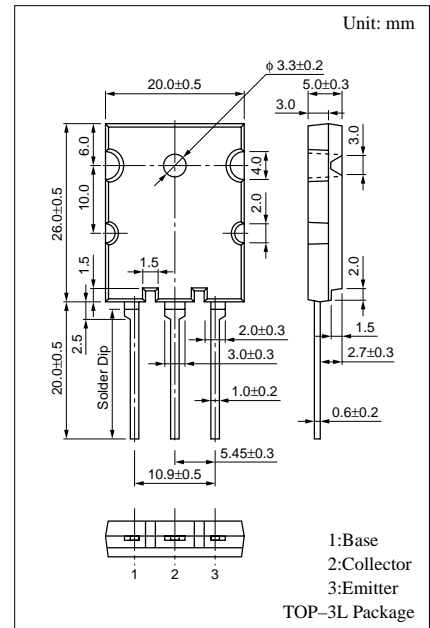
Complementary to 2SB1317 and 2SB1317A

■ Features

- Satisfactory forward current transfer ratio h_{FE} collector current I_C characteristics
- Wide area of safe operation (ASO)
- High transition frequency f_T
- Optimum for the output stage of a HiFi audio amplifier

■ Absolute Maximum Ratings ($T_C=25^\circ\text{C}$)

Parameter	Symbol	Rated	Unit	
Collector to base voltage	V_{CBO}	180	V	
2SD1975		200		
Collector to emitter voltage	V_{CEO}	180	V	
2SD1975A		200		
Emitter to base voltage	V_{EBO}	5	V	
Peak collector current	I_{CP}	25	A	
Collector current	I_C	15	A	
Collector power dissipation	P_C	$T_C=25^\circ\text{C}$	150	W
		$T_a=25^\circ\text{C}$	3.5	
Junction temperature	T_j	150	$^\circ\text{C}$	
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$	



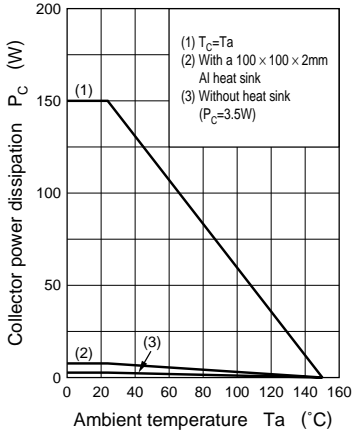
■ Electrical Characteristics ($T_C=25^\circ\text{C}$)

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 180\text{V}, I_E = 0$			50	μA
		$V_{CB} = 200\text{V}, I_E = 0$			50	
Emitter cutoff current	I_{EBO}	$V_{EB} = 3\text{V}, I_C = 0$			50	μA
Forward current transfer ratio	h_{FE1}	$V_{CE} = 5\text{V}, I_C = 20\text{mA}$	20			
	h_{FE2}^*	$V_{CE} = 5\text{V}, I_C = 1\text{A}$	60		200	
	h_{FE3}	$V_{CE} = 5\text{V}, I_C = 8\text{A}$	20			
Base to emitter voltage	V_{BE}	$V_{CE} = 5\text{V}, I_C = 8\text{A}$			1.8	V
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10\text{A}, I_B = 1\text{A}$			2.5	V
Transition frequency	f_T	$V_{CE} = 5\text{V}, I_C = 0.5\text{A}, f = 1\text{MHz}$		20		MHz
Collector output capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$		200		pF

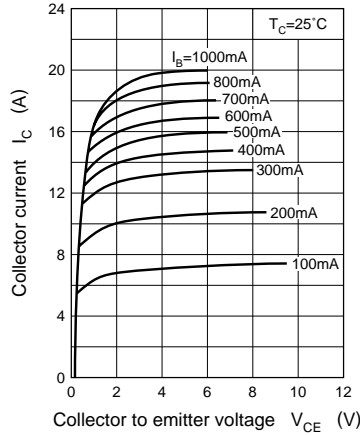
* h_{FE2} Rank classification

Rank	Q	S	P
h_{FE2}	60 to 120	80 to 160	100 to 200

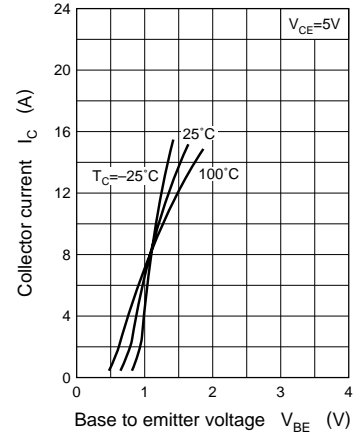
$P_C - T_a$



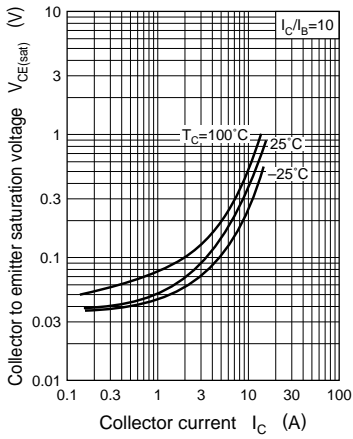
$I_C - V_{CE}$



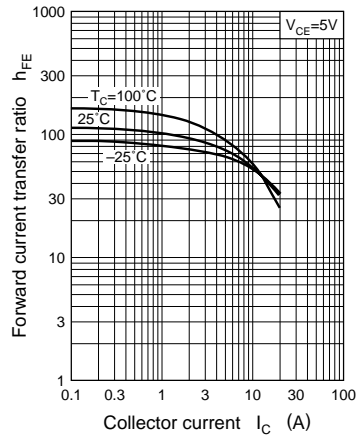
$I_C - V_{BE}$



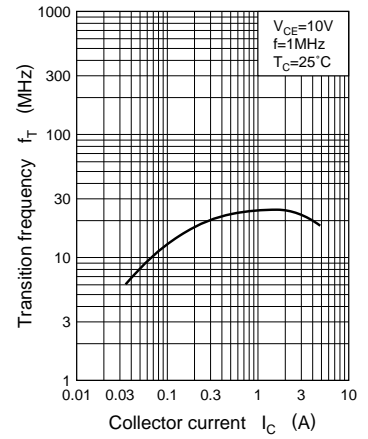
$V_{CE(sat)} - I_C$



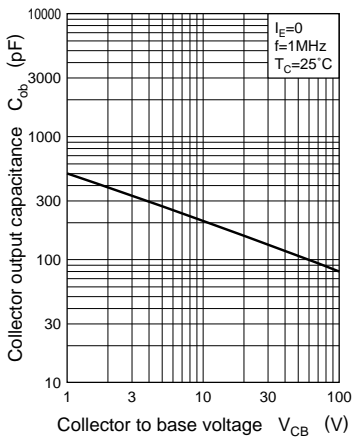
$h_{FE} - I_C$



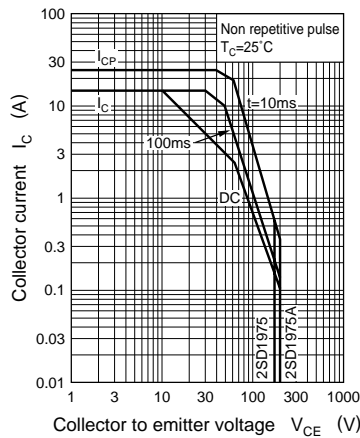
$f_T - I_C$



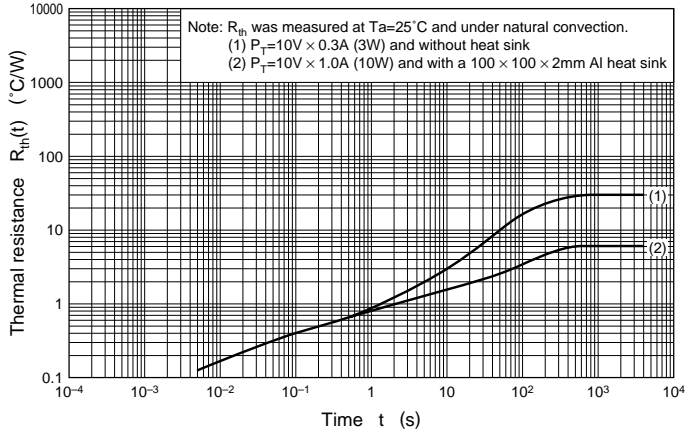
$C_{ob} - V_{CB}$



Area of safe operation (ASO)



$$R_{th(t)} - t$$



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