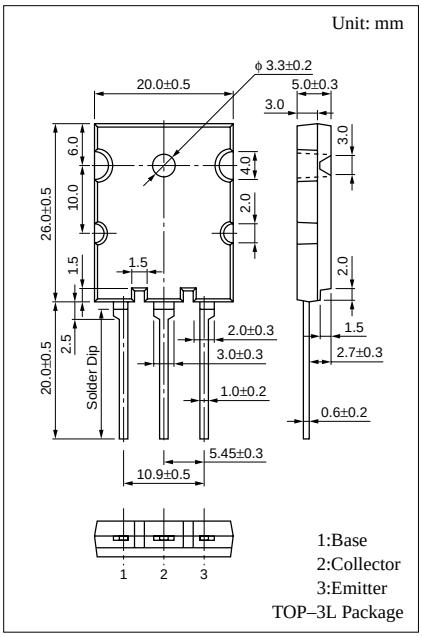
2SD1975, 2SD1975A

Silicon NPN triple diffusion planar type

For high power amplification
Complementary to 2SB1317 and 2SB1317A



Features

- Satisfactory foward 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˚C)

Parameter		Symbol	Ratings	Unit
Collector to base voltage	2SD1975	V_{CBO}	180	V
	2SD1975A		200	
Collector to emitter voltage	2SD1975	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	T_C=25°C	P_C	150	W
	Ta=25°C		3.5	
Junction temperature		T_j	150	˚C
Storage temperature		T_{stg}	–55 to +150	˚C

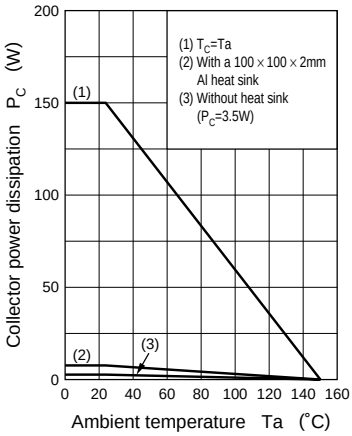
Electrical Characteristics (T_C=25˚C)

Parameter		Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	2SD1975	I_{CBO}	V_{CB} = 180V, I_E = 0			50	μA
	2SD1975A		V_{CB} = 200V, I_E = 0			50	
Emitter cutoff current		I_{EBO}	V_{EB} = 3V, I_C = 0			50	μA
Forward current transfer ratio		h_{FE1}	V_{CE} = 5V, I_C = 20mA	20			
		h_{FE2}*	V_{CE} = 5V, I_C = 1A	60		200	
		h_{FE3}	V_{CE} = 5V, I_C = 8A	20			
Base to emitter voltage		V_{BE}	V_{CE} = 5V, I_C = 8A			1.8	V
Collector to emitter saturation voltage		$V_{CE(sat)}$	I_C = 10A, I_B = 1A			2.5	V
Transition frequency		f_T	V_{CE} = 5V, I_C = 0.5A, f = 1MHz		20		MHz
Collector output capacitance		C_{ob}	V_{CB} = 10V, I_E = 0, f = 1MHz		200		pF

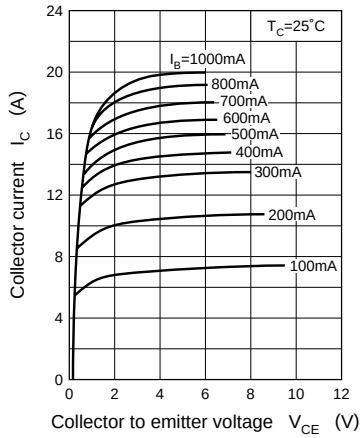
*h_{FE2} Rank classification

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

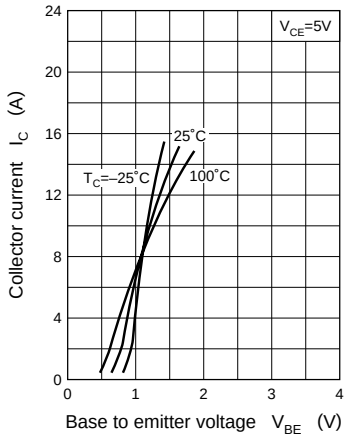
P_C — Ta



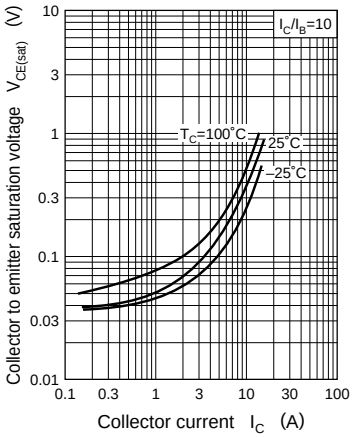
I_C — V_{CE}



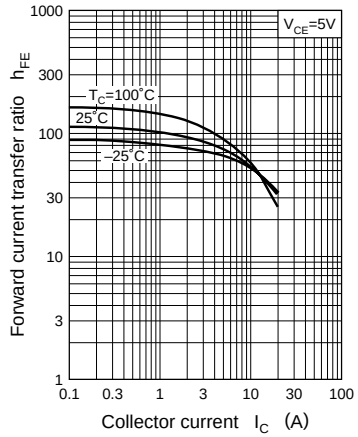
I_C — V_{BE}



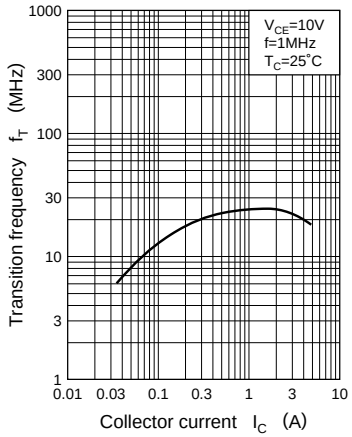
$V_{CE(sat)}$ — I_C



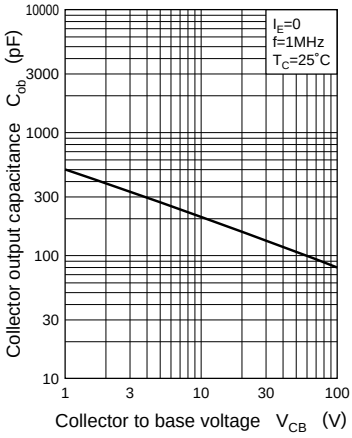
h_{FE} — I_C



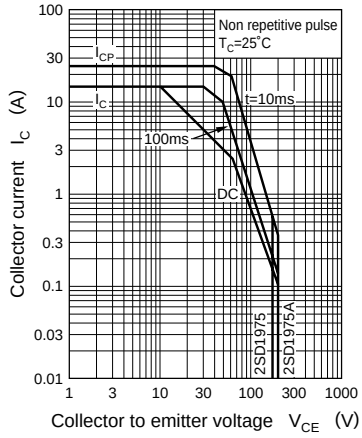
f_T — I_C



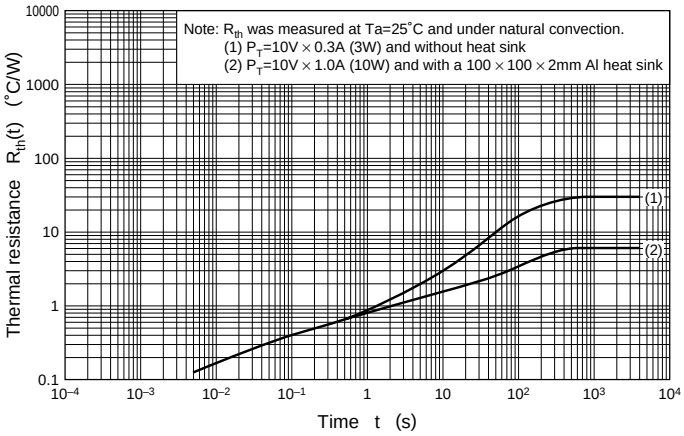
C_{ob} — V_{CB}



Area of safe operation (ASO)



$R_{th(t)}$ — t


Note: R_{th} was measured at Ta=25°C and under natural convection.
(1) P_T=10V × 0.3A (3W) and without heat sink
(2) P_T=10V × 1.0A (10W) and with a 100 × 100 × 2mm Al heat sink
Thermal resistance $R_{th}(t)$ (°C/W)
10000
1000
100
10
1
0.1
10^{-4}
10^{-3}
10^{-2}
10^{-1}
1
10
10^{2}
10^{3}
10^{4}
Time t (s)
(1)
(2)