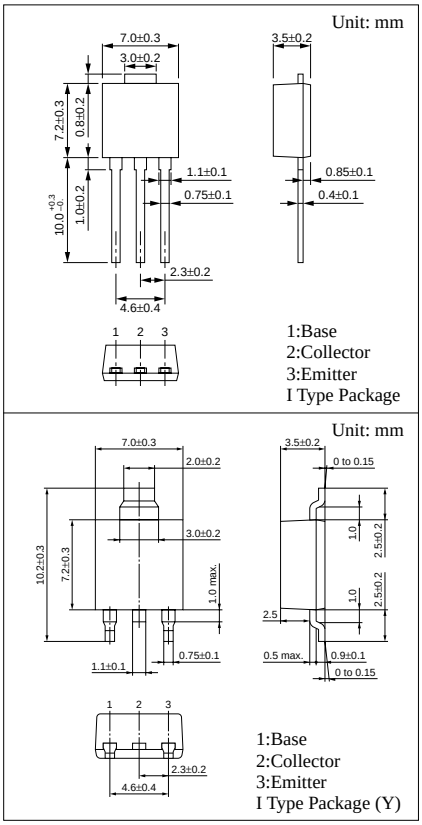
2SD1755

Silicon NPN epitaxial planar type

For power amplification with high forward current transfer ratio



Features

- High forward current transfer ratio h_{FE} which has satisfactory linearity
- High emitter to base voltage V_{EBO}
- I type package enabling direct soldering of the radiating fin to the printed circuit board, etc. of small electronic equipment.

Absolute Maximum Ratings (T_C=25˚C)

Parameter		Symbol	Ratings	Unit
Collector to base voltage		V_{CBO}	100	V
Collector to emitter voltage		V_{CEO}	60	V
Emitter to base voltage		V_{EBO}	15	V
Peak collector current		I_{CP}	12	A
Collector current		I_C	6	A
Base current		I_B	3	A
Collector power dissipation	T_C=25°C	P_C	15	W
	Ta=25°C		1.3	
Junction temperature		T_j	150	˚C
Storage temperature		T_{stg}	–55 to +150	˚C

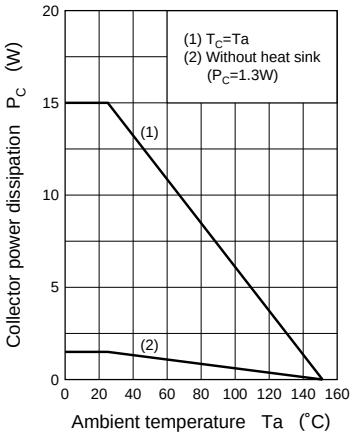
Electrical Characteristics (T_C=25˚C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	V_{CB} = 100V, I_E = 0			100	μA
Emitter cutoff current	I_{EBO}	V_{EB} = 15V, I_C = 0			100	μA
Collector to emitter voltage	V_{CEO}	I_C = 25mA, I_B = 0	60			V
Forward current transfer ratio	h_{FE}*	V_{CE} = 4V, I_C = 1A	300		2000	
Collector to emitter saturation voltage	$V_{CE(sat)}$	I_C = 5A, I_B = 0.1A			0.5	V
Transition frequency	f_T	V_{CE} = 12V, I_C = 0.5A, f = 10MHz		50		MHz
Turn-on time	t_{on}	I_C = 5A, I_{B1} = 0.1A, I_{B2} = – 0.1A, V_{CC} = 50V	0.3			μs
Storage time	t_{stg}			1.5		μs
Fall time	t_f			0.6		μs

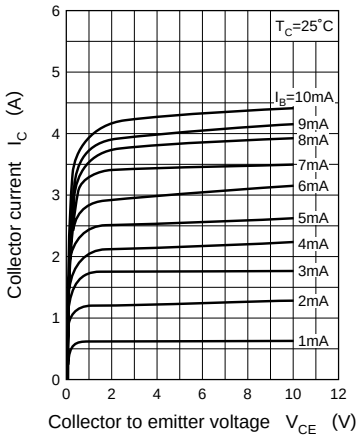
*h_{FE} Rank classification

Rank	Q	P
h_{FE}	300 to 1200	800 to 2000

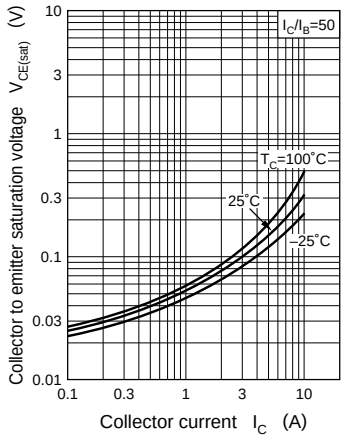
P_C — Ta



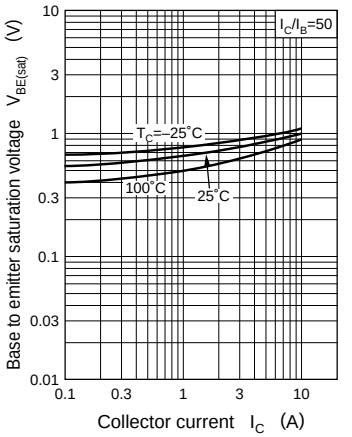
I_C — V_{CE}



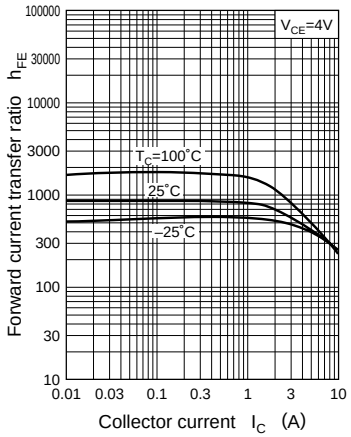
$V_{CE(sat)}$ — I_C



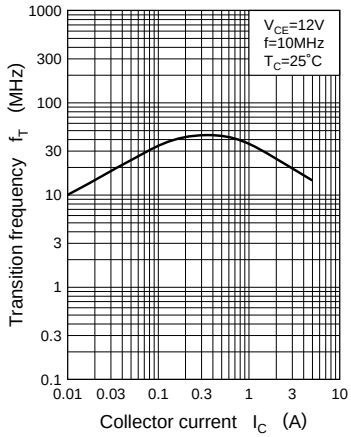
$V_{BE(sat)}$ — I_C



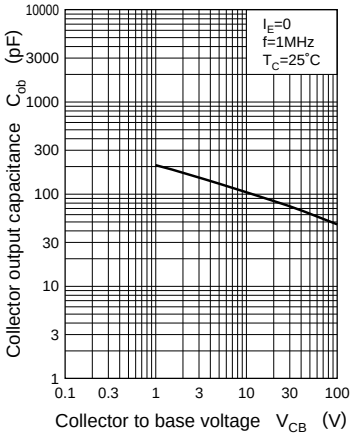
h_{FE} — I_C



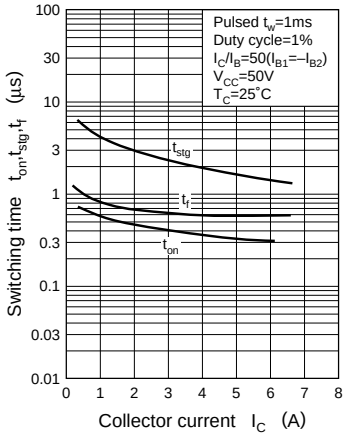
f_T — I_C



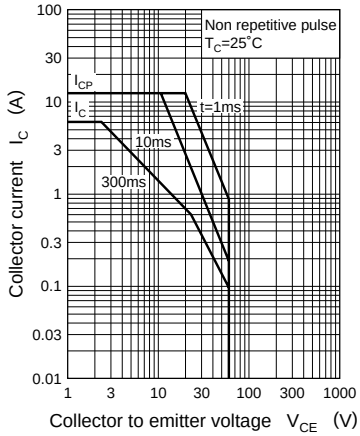
C_{ob} — V_{CB}



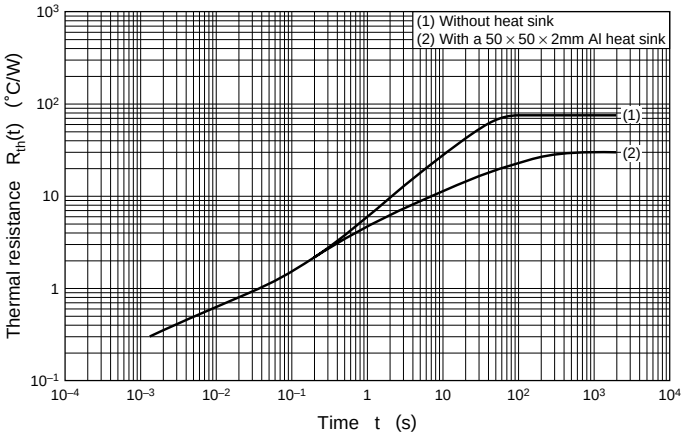
t_{on}, t_{stg}, t_f — I_C



Area of safe operation (ASO)



$R_{th(t)}$ — t


(1) Without heat sink
(2) With a 50 × 50 × 2mm Al heat sink
(1)
(2)
Thermal resistance $R_{th}(t)$ (°C/W)
10^3
10^2
10
1
10^{-1}
10^{-4}
10^{-3}
10^{-2}
10^{-1}
1
10
10^2
10^3
10^4
Time t (s)