

2SD1750, 2SD1750A

Silicon NPN triple diffusion planar type Darlington

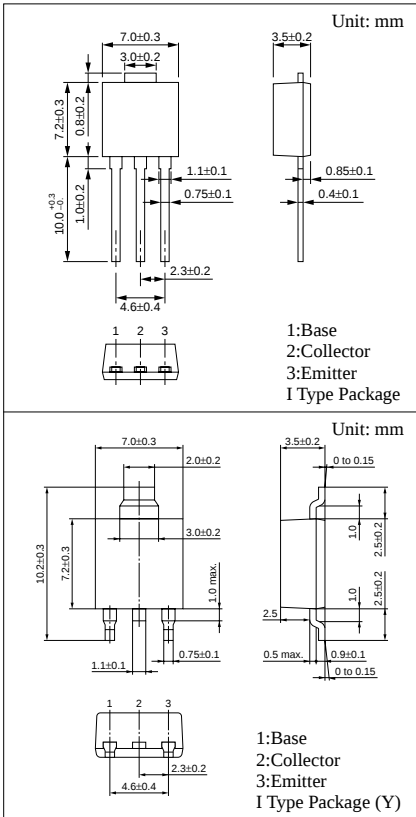
For midium speed power switching
Complementary to 2SB1180 and 2SB1180A

Features

- High foward current transfer ratio h_{FE}
- High-speed switching
- I type package enabling direct soldering of the radiating fin to the printed circuit board, etc. of small electronic equipment.

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

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	60	V
2SD1750A		80	
Collector to emitter voltage	V_{CEO}	60	V
2SD1750A		80	
Emitter to base voltage	V_{EBO}	7	V
Peak collector current	I_{CP}	12	A
Collector current	I_C	8	A
Collector power dissipation	P_C	15	W
$T_C=25^\circ\text{C}$		1.3	
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$



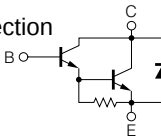
Electrical Characteristics ($T_C=25^\circ\text{C}$)

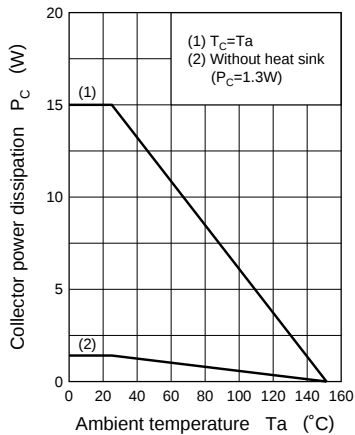
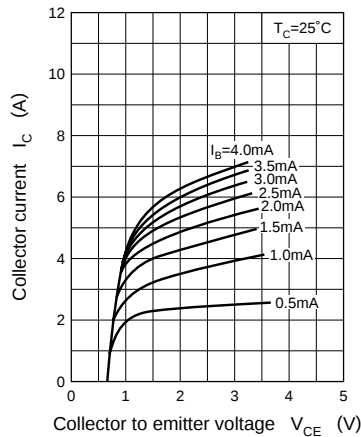
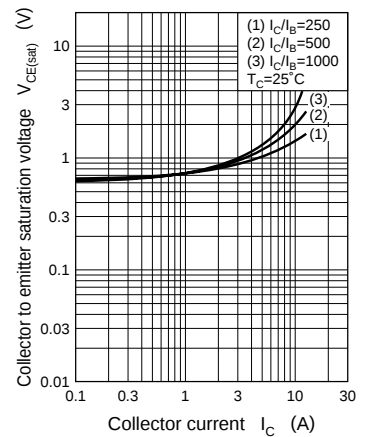
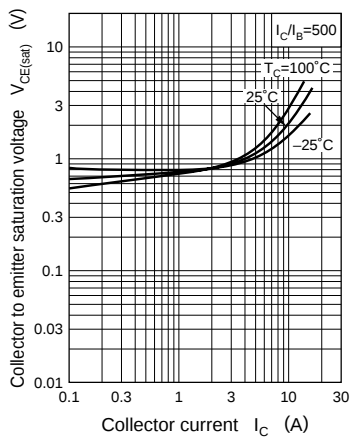
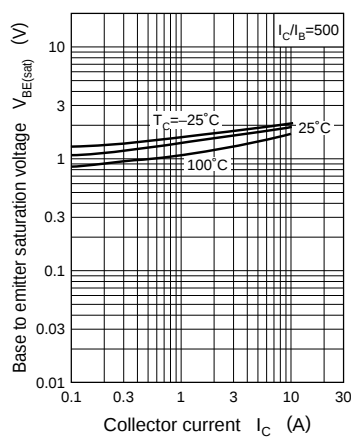
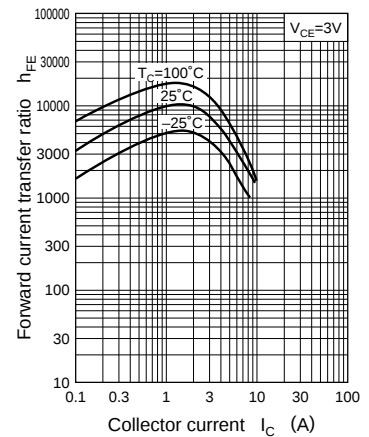
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 60\text{V}, I_E = 0$			100	μA
2SD1750A		$V_{CB} = 80\text{V}, I_E = 0$			100	
Emitter cutoff current	I_{EBO}	$V_{EB} = 7\text{V}, I_C = 0$			2	mA
Collector to emitter voltage	V_{CEO}	$I_C = 30\text{mA}, I_B = 0$	60			V
2SD1750A			80			
Forward current transfer ratio	h_{FE1}^*	$V_{CE} = 3\text{V}, I_C = 4\text{A}$	2000		10000	
	h_{FE2}	$V_{CE} = 3\text{V}, I_C = 8\text{A}$	500			
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 4\text{V}, I_B = 8\text{mA}$			1.5	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = 4\text{V}, I_B = 8\text{mA}$			2	V
Transition frequency	f_T	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}, f = 1\text{MHz}$		20		MHz
Turn-on time	t_{on}	$I_C = 4\text{A}, I_{B1} = 8\text{mA}, I_{B2} = -8\text{mA}$		0.5		μs
Storage time	t_{stg}			4		μs
Fall time	t_f			1		μs

* h_{FE1} Rank classification

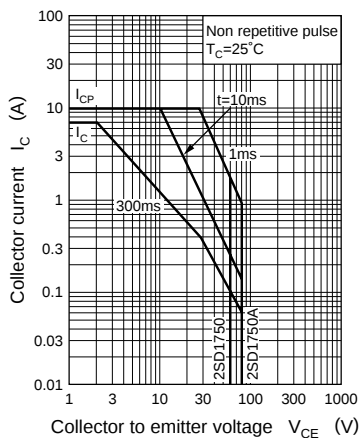
Rank	Q	P
h_{FE1}	2000 to 5000	4000 to 10000

Internal Connection



$P_C - T_a$  $I_C - V_{CE}$  $V_{CE(sat)} - I_C$  $V_{CE(sat)} - I_C$  $V_{BE(sat)} - I_C$  $h_{FE} - I_C$ 

Area of safe operation (ASO)

 $R_{th(t)} - t$ 