

2SD1749, 2SD1749A

Silicon NPN triple diffusion planar type Darlington

For low-frequency power amplification

Complementary to 2SB1179 and 2SB1179A

Features

- High forward 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
2SD1749A		80	
Collector to emitter voltage	V_{CEO}	60	V
2SD1749A		80	
Emitter to base voltage	V_{EBO}	5	V
Peak collector current	I_{CP}	8	A
Collector current	I_C	4	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	$^\circ\text{C}$

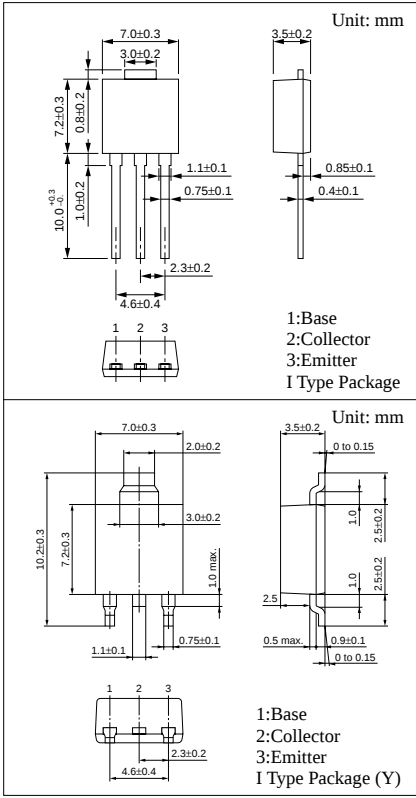
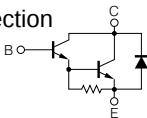
Electrical Characteristics ($T_C=25^\circ\text{C}$)

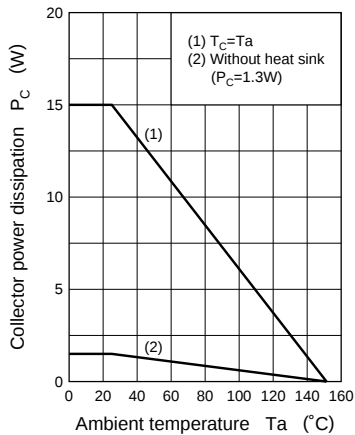
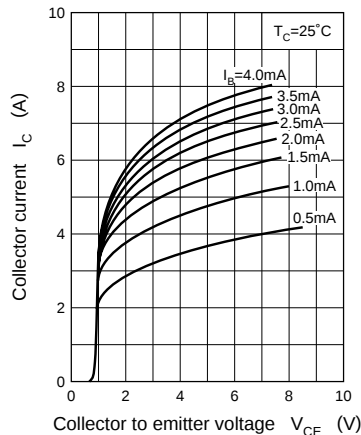
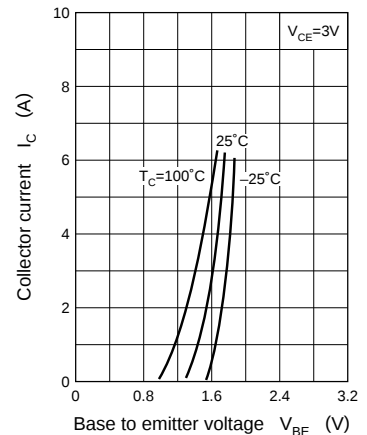
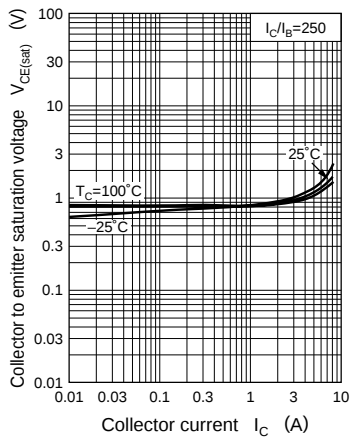
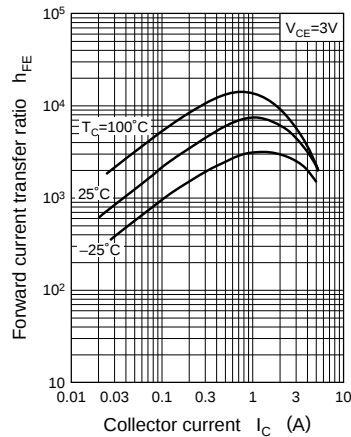
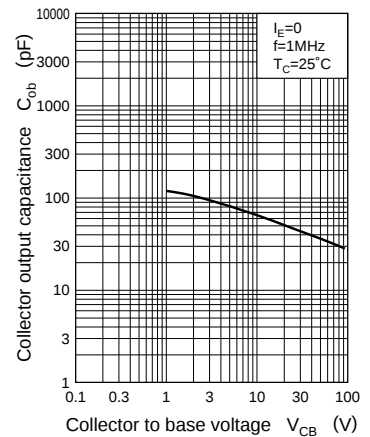
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 60\text{V}, I_E = 0$			200	μA
2SD1749A		$V_{CB} = 80\text{V}, I_E = 0$			200	
Collector cutoff current	I_{CEO}	$V_{CE} = 30\text{V}, I_B = 0$			500	μA
2SD1749A		$V_{CE} = 40\text{V}, I_B = 0$			500	
Emitter cutoff current	I_{EBO}	$V_{EB} = 5\text{V}, I_C = 0$			2	mA
Collector to emitter voltage	V_{CEO}	$I_C = 30\text{mA}, I_B = 0$	60			V
2SD1749A			80			
Forward current transfer ratio	h_{FE1}	$V_{CE} = 3\text{V}, I_C = 0.5\text{A}$	1000			
	h_{FE2}^*	$V_{CE} = 3\text{V}, I_C = 3\text{A}$	2000		10000	
Base to emitter voltage	V_{BE}	$V_{CE} = 3\text{V}, I_C = 3\text{A}$			2.5	V
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 3\text{A}, I_B = 12\text{mA}$			2	V
		$I_C = 5\text{A}, I_B = 20\text{mA}$			4	
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}	$I_C = 3\text{A}, I_{B1} = 12\text{mA}, I_{B2} = -12\text{mA}, V_{CC} = 50\text{V}$		0.5		μs
Storage time	t_{stg}			4		μs
Fall time	t_f			1		μs

* h_{FE2} Rank classification

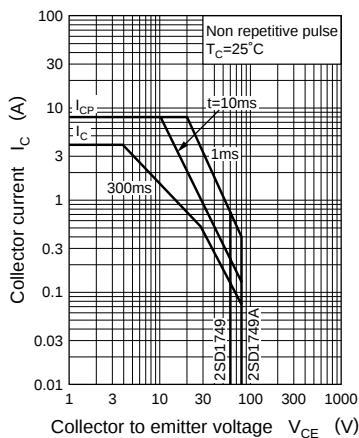
Rank	Q	P
h_{FE2}	2000 to 5000	4000 to 10000

Internal Connection



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

Area of safe operation (ASO)

 $R_{th(t)} - t$ 