

# 2SD1748, 2SD1748A

## Silicon NPN triple diffusion planar type Darlington

For low-frequency power amplification

Complementary to 2SB1178 and 2SB1178A

### 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	Rated	Unit	
Collector to base voltage	$V_{CBO}$	60	V	
2SD1748A		80		
Collector to emitter voltage	$V_{CEO}$	60	V	
2SD1748A		80		
Emitter to base voltage	$V_{EBO}$	5	V	
Peak collector current	$I_{CP}$	4	A	
Collector current	$I_C$	2	A	
Collector power dissipation	$P_C$	$T_C=25^\circ\text{C}$	15	W
$T_a=25^\circ\text{C}$		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	$I_{CBO}$	$V_{CB} = 60\text{V}, I_E = 0$			1	mA
2SD1748A		$V_{CB} = 80\text{V}, I_B = 0$			1	
Collector cutoff current	$I_{CEO}$	$V_{CE} = 30\text{V}, I_B = 0$			2	mA
2SD1748A		$V_{CE} = 40\text{V}, I_B = 0$			2	
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
2SD1748A			80			
Forward current transfer ratio	$h_{FE1}$	$V_{CE} = 4\text{V}, I_C = 1\text{A}$	1000			
	$h_{FE2}^*$	$V_{CE} = 4\text{V}, I_C = 2\text{A}$	2000		10000	
Base to emitter voltage	$V_{BE}$	$V_{CE} = 4\text{V}, I_C = 2\text{A}$			2.8	V
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 2\text{A}, I_B = 8\text{mA}$			2.5	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	$t_{on}$	$I_C = 2\text{A}, I_{B1} = 8\text{mA}, I_{B2} = -8\text{mA}, V_{CC} = 50\text{V}$		0.5		$\mu\text{s}$
Storage time	$t_{stg}$		4		$\mu\text{s}$	
Fall time	$t_f$		1		$\mu\text{s}$	

\* $h_{FE2}$  Rank classification

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

Internal Connection



