

2SD1742, 2SD1742A

Silicon NPN triple diffusion planar type

For low-frequency power amplification

Complementary to 2SB1172 and 2SB1172A

Features

- High forward current transfer ratio h_{FE} which has satisfactory linearity
- Low collector to emitter saturation voltage $V_{CE(sat)}$
- I type package enabling direct soldering of the radiating fin to the printed circuit board, etc. of small electronic equipment.

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

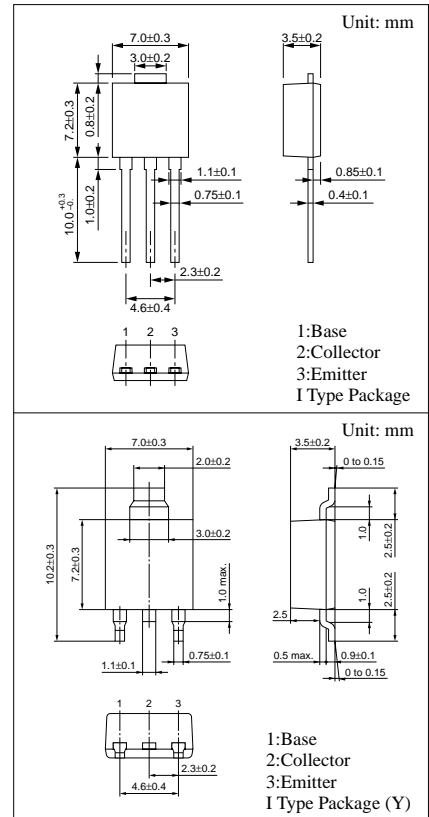
Parameter	Symbol	Ratings	Unit	
Collector to base voltage	2SD1742 2SD1742A	V_{CBO}	60	V
Collector to emitter voltage				
Emitter to base voltage	V_{EBO}	6	V	
Peak collector current	I_{CP}	5	A	
Collector current	I_C	3	A	
Collector power dissipation	P_C	15	W	
				$T_C=25^\circ\text{C}$
	$T_a=25^\circ\text{C}$	1.3		
Junction temperature	T_j	150	$^\circ\text{C}$	
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$	

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

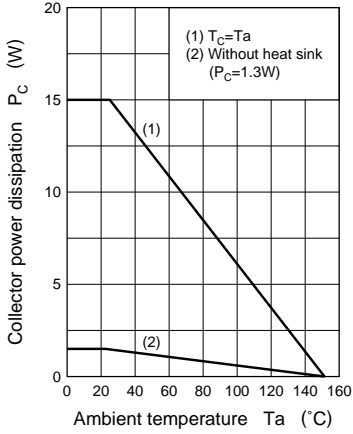
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	2SD1742 2SD1742A	I_{CES}	$V_{CE} = 60\text{V}, V_{BE} = 0$		200	μA
Collector cutoff current						
Collector cutoff current	2SD1742 2SD1742A	I_{CEO}	$V_{CE} = 30\text{V}, I_B = 0$		300	μA
Collector cutoff current						
Emitter cutoff current	I_{EBO}	$V_{EB} = 6\text{V}, I_C = 0$			1	mA
Collector to emitter voltage	2SD1742 2SD1742A	V_{CEO}	$I_C = 30\text{mA}, I_B = 0$	60		V
Collector to emitter voltage				80		
Forward current transfer ratio	h_{FE1}^* h_{FE2}	$V_{CE} = 4\text{V}, I_C = 1\text{A}$ $V_{CE} = 4\text{V}, I_C = 3\text{A}$	70		250	
Forward current transfer ratio			10			
Base to emitter voltage	V_{BE}	$V_{CE} = 4\text{V}, I_C = 3\text{A}$			1.8	V
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 3\text{A}, I_B = 0.375\text{A}$			1.2	V
Transition frequency	f_T	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}, f = 10\text{MHz}$		30		MHz
Turn-on time	t_{on}	$I_C = 1\text{A}, I_{B1} = 0.1\text{A}, I_{B2} = -0.1\text{A}, V_{CC} = 50\text{V}$		0.5		μs
Storage time	t_{stg}			2.5		μs
Fall time	t_f			0.4		μs

* h_{FE1} Rank classification

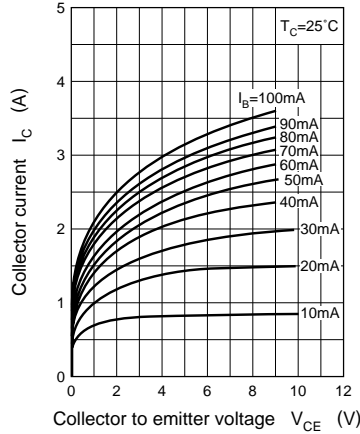
Rank	Q	P
h_{FE1}	70 to 150	120 to 250



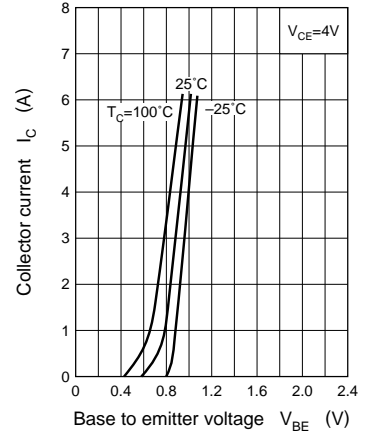
$P_C - T_a$



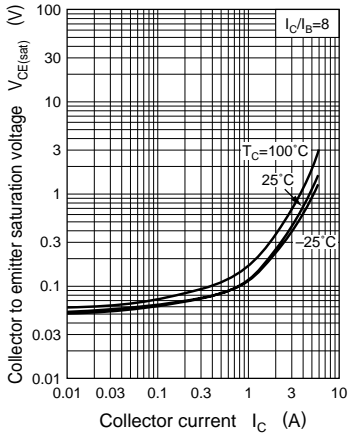
$I_C - V_{CE}$



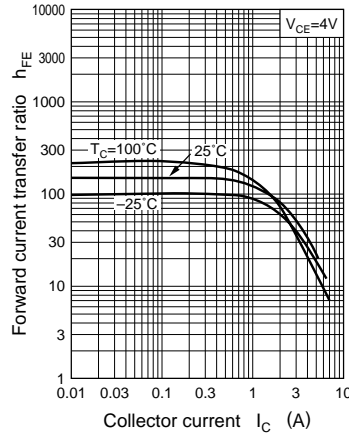
$I_C - V_{BE}$



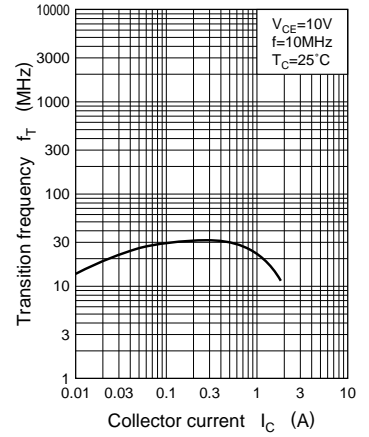
$V_{CE(sat)} - I_C$



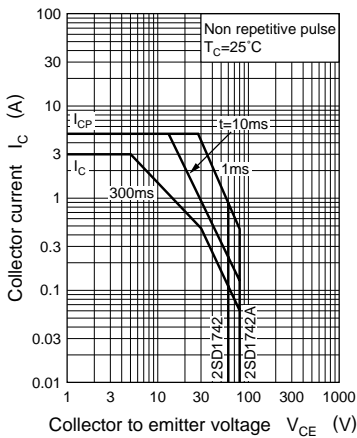
$h_{FE} - I_C$



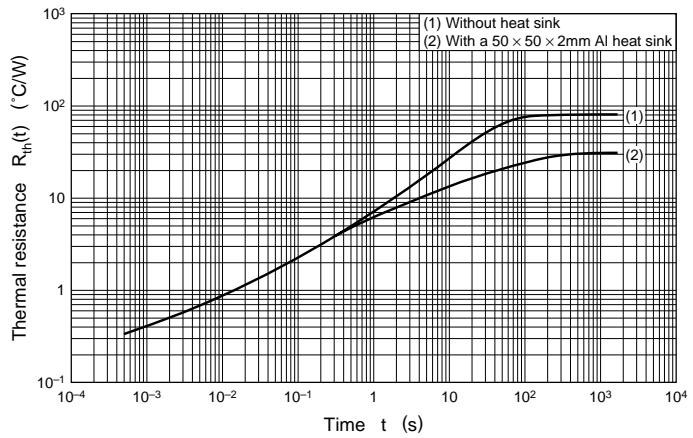
$f_T - I_C$



Area of safe operation (ASO)



$R_{th(t)} - t$



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