

2SD1985, 2SD1985A

Silicon NPN triple diffusion planar type

For power amplification

Complementary to 2SB1393 and 2SB1393A

Features

- High forward current transfer ratio h_{FE} which has satisfactory linearity
- Low collector to emitter saturation voltage $V_{CE(sat)}$
- Full-pack package which can be installed to the heat sink with one screw

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

Parameter	Symbol	Rated	Unit	
Collector to base voltage	2SD1985	60	V	
	2SD1985A	80		
Collector to emitter voltage	2SD1985	60	V	
	2SD1985A	80		
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	$T_C=25^\circ\text{C}$	25	W
		$T_a=25^\circ\text{C}$	2	
Junction temperature	T_j	150	$^\circ\text{C}$	
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$	

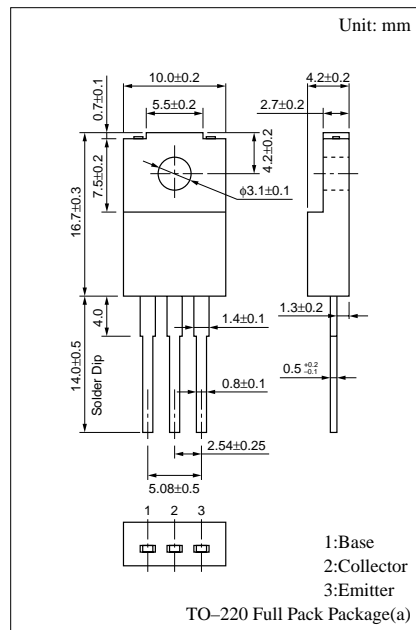
Electrical Characteristics ($T_C=25^\circ\text{C}$)

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CES}	$V_{CE} = 60\text{V}, I_B = 0$			200	μA
		$V_{CE} = 80\text{V}, I_B = 0$			200	
Collector cutoff current	I_{CEO}	$V_{CE} = 30\text{V}, I_B = 0$			300	μA
		$V_{CE} = 60\text{V}, I_B = 0$			300	
Emitter cutoff current	I_{EBO}	$V_{EB} = 6\text{V}, I_C = 0$			1	mA
Collector to emitter voltage	V_{CEO}	$I_C = 30\text{mA}, I_B = 0$	60			V
			80			
Forward current transfer ratio	h_{FE1}^*	$V_{CE} = 4\text{V}, I_C = 1\text{A}$	70		250	
		$V_{CE} = 4\text{V}, I_C = 3\text{A}$	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	$V_{CE} = 5\text{V}, I_C = 0.5\text{A}, f = 10\text{MHz}$		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

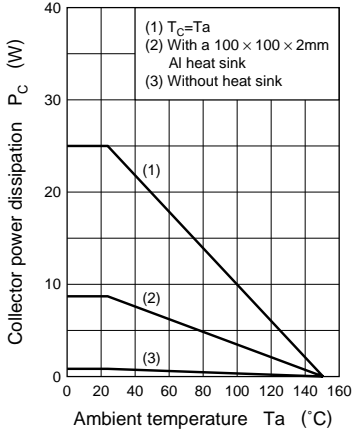
* h_{FE1} Rank classification

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

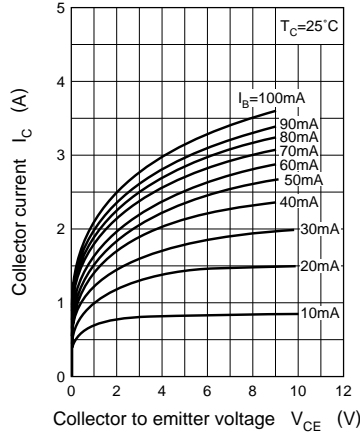
Note: Ordering can be made by the common rank (PQ rank $h_{FE} = 70$ to 250) in the rank classification.



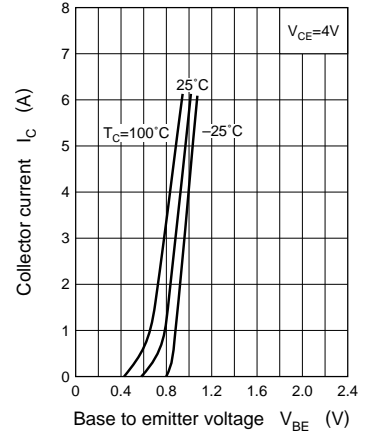
$P_C - T_a$



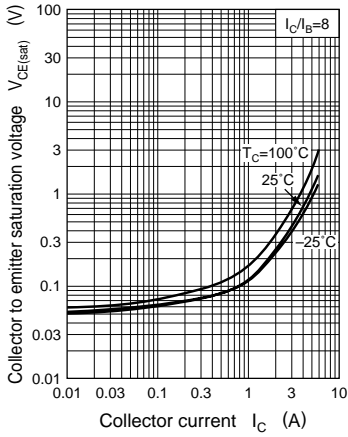
$I_C - V_{CE}$



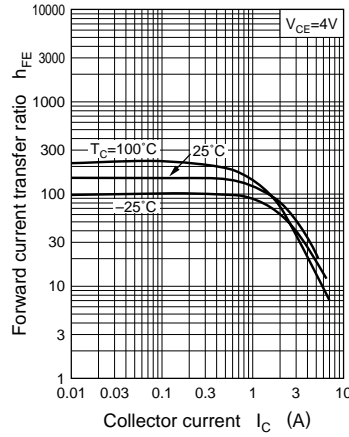
$I_C - V_{BE}$



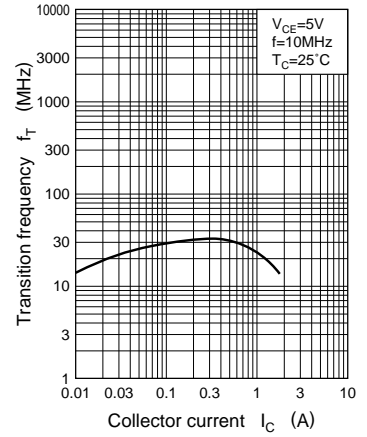
$V_{CE(sat)} - I_C$



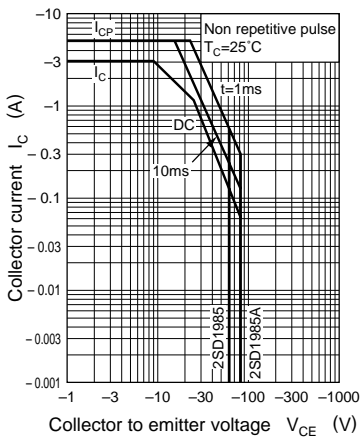
$h_{FE} - I_C$



$f_T - I_C$



Area of safe operation (ASO)



$R_{th(t)} - t$

