

2SC3506

Silicon NPN triple diffusion planar type

For high-speed switching

■ Features

- High-speed switching
- High collector to base voltage V_{CBO}
- Satisfactory linearity of forward current transfer ratio h_{FE}
- Full-pack package which can be installed to the heat sink with one screw

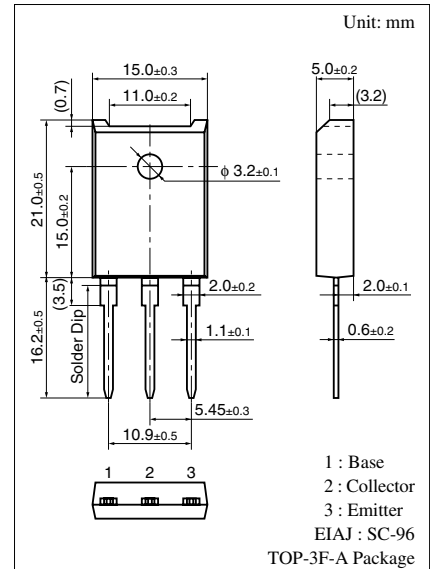
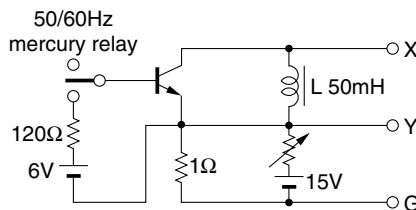
■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit	
Collector to base voltage	V_{CBO}	1 000	V	
	V_{CES}	1 000	V	
Collector to emitter voltage	V_{CEO}	800	V	
Emitter to base voltage	V_{EBO}	7	V	
Peak collector current	I_{CP}	6	A	
Collector current	I_C	3	A	
Base current	I_B	2	A	
Collector power dissipation	$T_C = 25^\circ\text{C}$	P_C	70	W
	$T_a = 25^\circ\text{C}$		3	
Junction temperature	T_j	150	$^\circ\text{C}$	
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$	

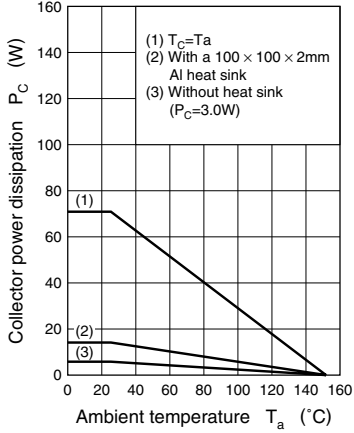
■ Electrical Characteristics $T_C = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 1\ 000\ \text{V}, I_E = 0$			50	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = 7\ \text{V}, I_C = 0$			50	μA
Collector to emitter voltage*	$V_{CEO(sus)}$	$I_C = 0.5\ \text{A}, L = 50\ \text{mH}$	800			V
Forward current transfer ratio	h_{FE}	$V_{CE} = 5\ \text{V}, I_C = 2\ \text{A}$	6			
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 2\ \text{A}, I_B = 0.4\ \text{A}$			1.5	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = 2\ \text{A}, I_B = 0.4\ \text{A}$			1.5	V
Transition frequency	f_T	$V_{CE} = 5\ \text{V}, I_C = 0.2\ \text{A}, f = 1\ \text{MHz}$		4		MHz
Turn-on time	t_{on}	$I_C = 2\ \text{A}, I_{B1} = 0.4\ \text{A}, I_{B2} = -0.8\ \text{A}, V_{CC} = 250\ \text{V}$			1	μs
Storage time	t_{stg}				2.5	μs
Fall time	t_f				0.5	μs

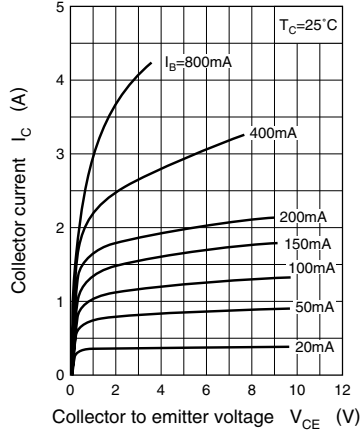
Note) *: $V_{CEO(sus)}$ Test circuit



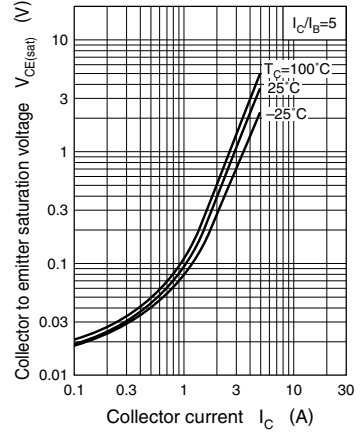
$P_C - T_a$



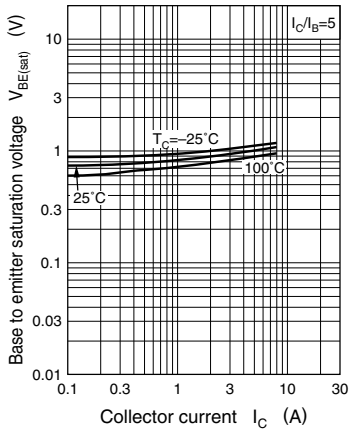
$I_C - V_{CE}$



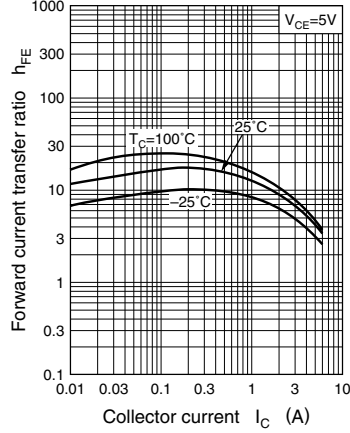
$V_{CE(sat)} - I_C$



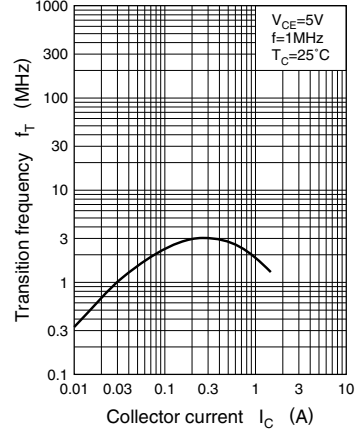
$V_{BE(sat)} - I_C$



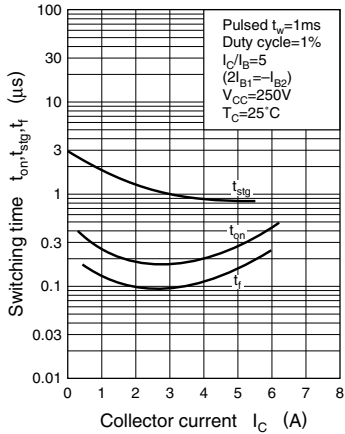
$h_{FE} - I_C$



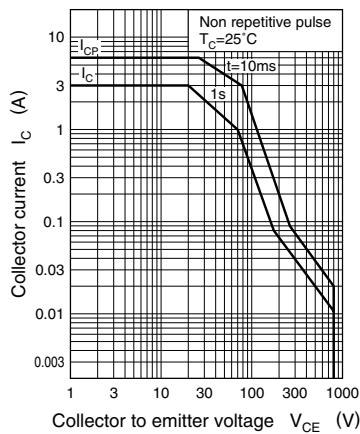
$f_T - I_C$



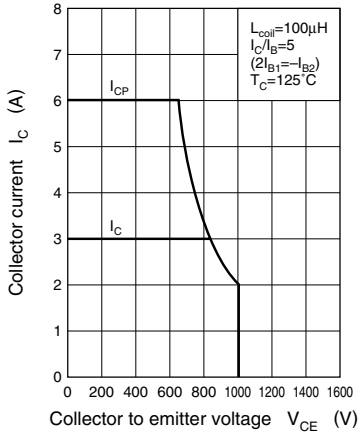
$t_{on}, t_{stg}, t_f - I_C$



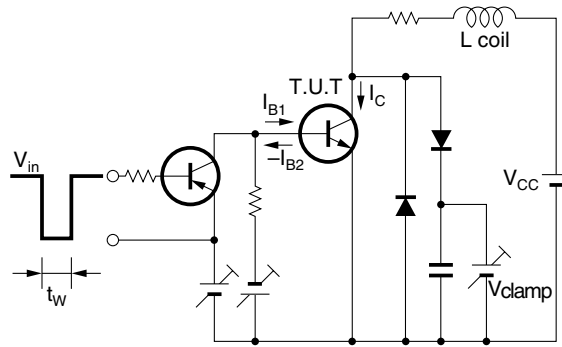
Area of safe operation (ASO)



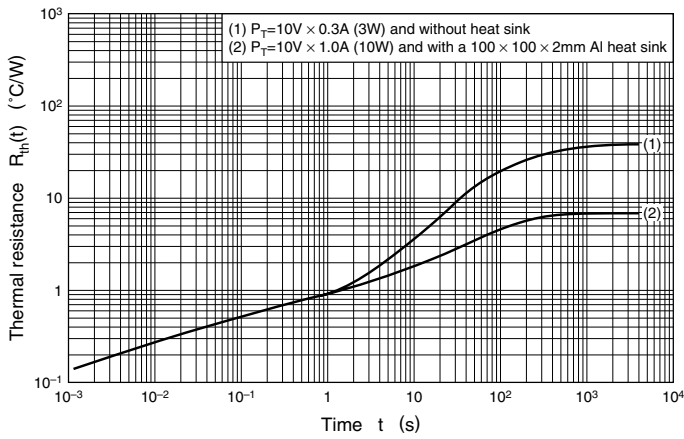
Area of safe operation, reverse bias ASO



Reverse bias ASO measuring circuit



$R_{th(t)} - t$



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