

2SC3972, 2SC3972A

Silicon NPN triple diffusion planar type

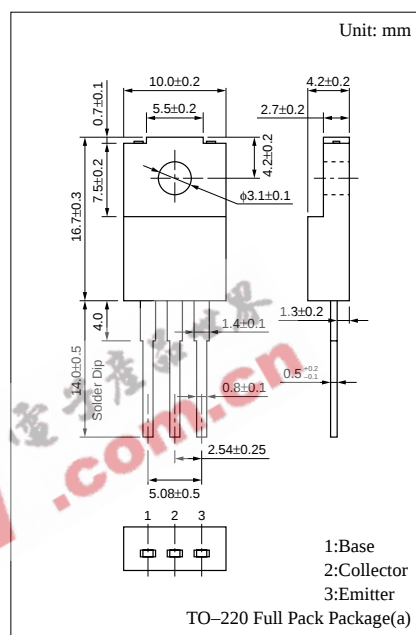
For high breakdown voltage high-speed switching

Features

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

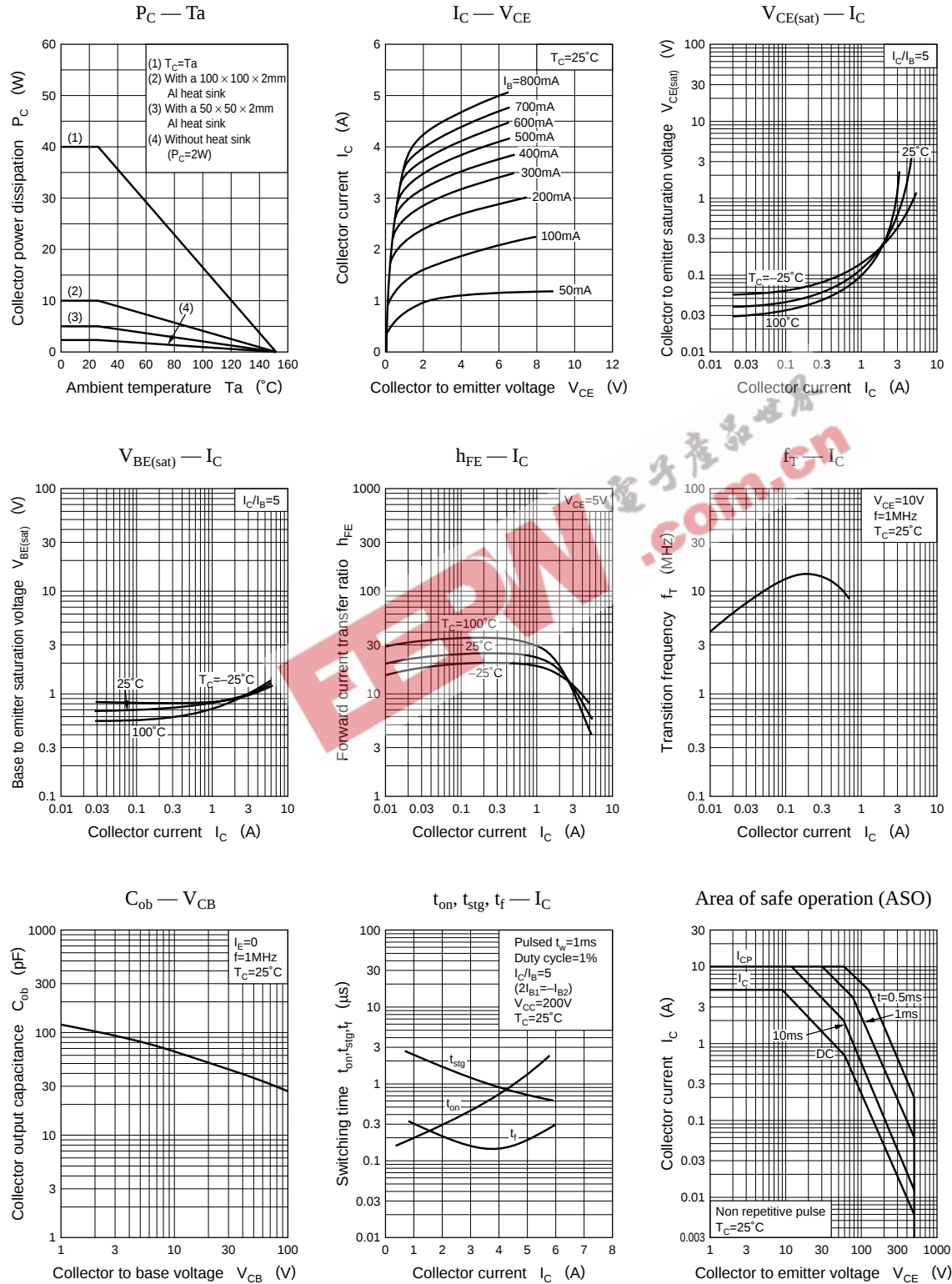
Absolute Maximum Ratings ($T_C=25^\circ\text{C}$)

Parameter		Symbol	Ratings	Unit
Collector to base voltage	2SC3972	V_{CBO}	800	V
	2SC3972A		900	
Collector to emitter voltage	2SC3972	V_{CES}	800	V
	2SC3972A		900	
Collector to emitter voltage		V_{CEO}	500	V
Emitter to base voltage		V_{EBO}	8	V
Peak collector current		I_{CP}	10	A
Collector current		I_C	5	A
Base current		I_B	3	A
Collector power dissipation	$T_C=25^{\circ}C$	P_C	40	W
	$T_a=25^{\circ}C$		2	
Junction temperature		T_j	150	$^{\circ}C$
Storage temperature		T_{stg}	-55 to +150	$^{\circ}C$

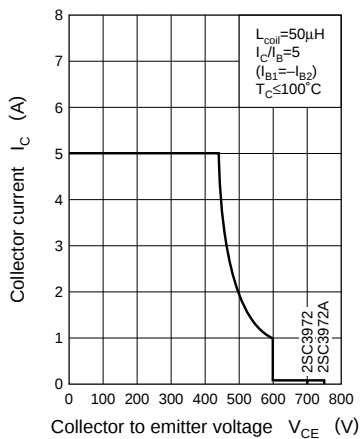


Electrical Characteristics ($T_C=25^\circ\text{C}$)

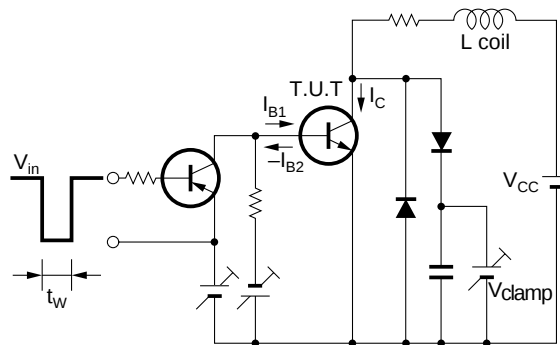
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	2SC3972 2SC3972A	I_{CBO}			100	μA
					100	
Emitter cutoff current	I_{EBO}	$V_{EB} = 5\text{V}, I_C = 0$			100	μA
Collector to emitter voltage	V_{CEO}	$I_C = 10\text{mA}, I_B = 0$	500			V
Forward current transfer ratio	h_{FE1} h_{FE2}	$V_{CE} = 5\text{V}, I_C = 0.1\text{A}$	15			
		$V_{CE} = 5\text{V}, I_C = 2\text{A}$	8			
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 2\text{A}, I_B = 0.4\text{A}$			1.0	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	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}, f = 1\text{MHz}$		20		MHz
Turn-on time	t_{on}	$I_C = 2\text{A}, I_{B1} = 0.4\text{A}, I_{B2} = -0.8\text{A}, V_{CC} = 200\text{V}$			1.0	μs
Storage time	t_{stg}				3.0	μs
Fall time	t_f				0.3	μs



Area of safe operation, reverse bias ASO



Reverse bias ASO measuring circuit

 $R_{th(t)} - t$ 